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The Sun's Offer.

Since we noticed the offer made by the "Sun" for a feeding apparatus to its presses, we have been literally flooded with letters from inventors describing plans of their own, soliciciting further information, &c. As our time is sufficiently occupied with attending to letters pertaining more especially to our own business, we have handed these over to Mr. Beach, who tells us that he has likewise been overwhelmed with similar communications. To explain the whole matter in a few words, we will say that the offer is not for a plan but a machine, which must be put in actual operation in connection with the "Sun's" presses, and that nothing short of this will receive any attention from the proprietor. Any one intending to compete for this prize should visit the establishment of the "Sun," in order to make the necessary examination of its presses, their mode of operation, &c.

New Wheelbarrow.

An Englishman has invented a new wheelbarrow. The wheel is placed under, and sunk into the bottom, so that the weight rests on the wheel and not on the hand, and there is less oscillation. By means of this barrow it is stated that twice the usual weight can be wheeled.

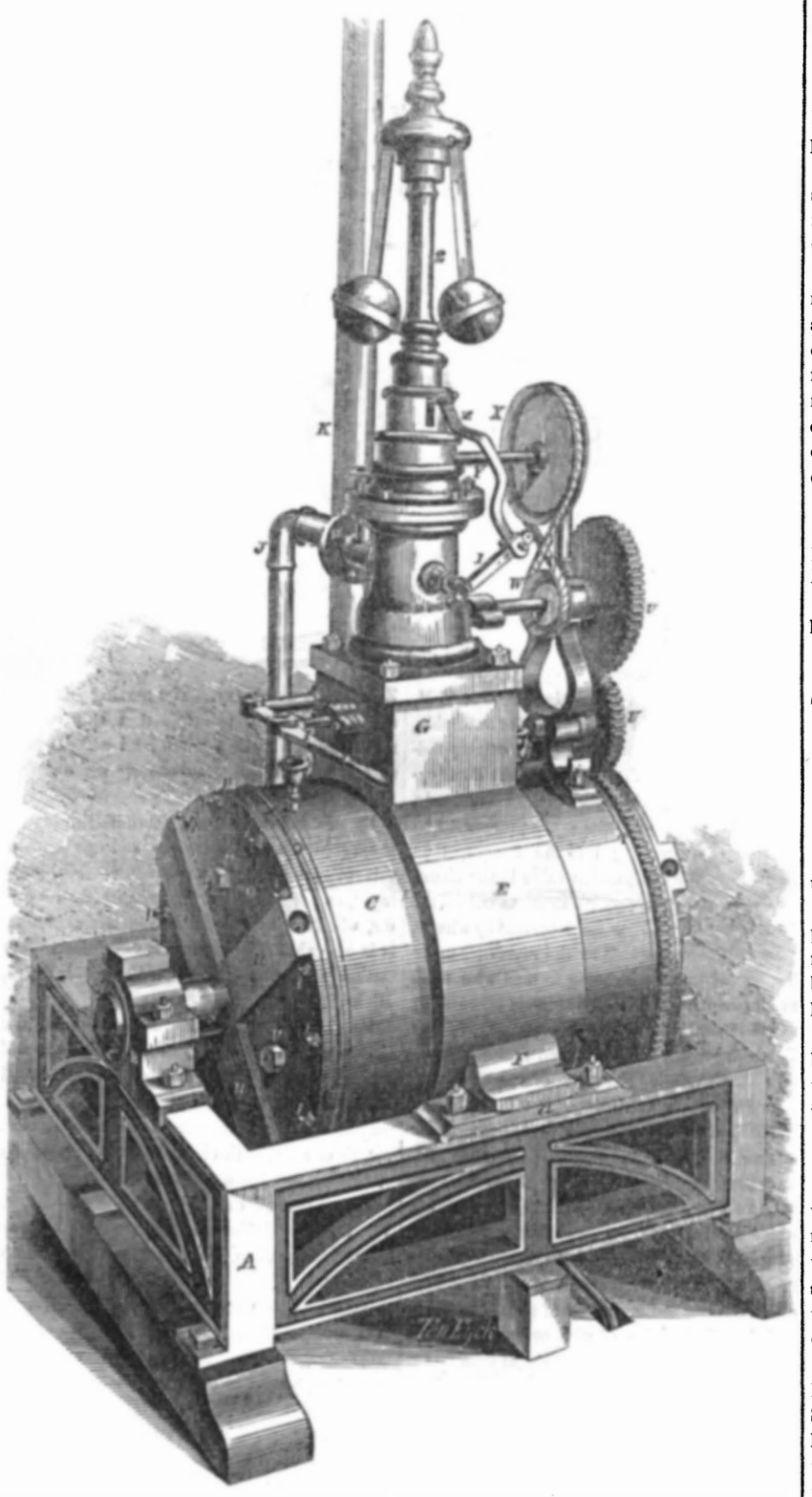
[We have seen the above in more than one of our exchanges, some, like the above, saying "the inventor was an Englishman," and others that "he was a Yankee." However new the arrangement may be, it is no improvement, and is inferior to the common barrow, which throws the weight upon the wheel, and not upon the arms. Its oscillation must also be far greater, instead of being less, because the present barrow places the person who wheels it at the long end of the levers, where he has the greatest command of the weight, and will do more work in the course of a day than with the wheel in the center, but will not perhaps be able to lift so much nor wheel it so easy for a short distance on a straight and level road.

Plasters versus the Knife.

We were present a few days since to witness the removal of a large cancer from the breast of a female, without the use of the knife, by Dr. Gilbert, of this city, recently of New Orleans, to whom we have previously referred. The female had been under treatment about three weeks, and by means of the Doctor's plasters, the cancer had been wholly killed and was now almost ready to drop from her breast which in a day or two more it would have done. It was, however, removed with but little pain to the patient. We saw some other cases which the Dr. has under treatment, which are truly wonderful. We have no doubt of his ability to remove the most malignant cancers, provided application be made in season.

Two pieces of the Gobelin Tapestry have been sent for from France; they are to be used in decorating one of the Imperial residences. It was reported (who raised it?) when the tapestries came here, that they were to be presented to adorn the Presidential Mansion, at Washington, after the Exhibition was over.

BRISTOL'S ROTARY STEAM ENGINE.---Fig. 1.



The annexed engravings are views of the Rotary Engine of R. C. Bristol, of Chicago, Illinois, for which a patent was granted on the 26th of last July; patents have also been obtained in France and England, and the patentee has the utmost confidence in its merits. Figure 1 is a perspective view; figure 2 is a vertical longitudinal section, and figure 3 is a transverse vertical section. The same letters of reference indicate like parts.

A is the frame of the engine; B B are the journal boxes for receiving the main shaft, S, to which the revolving part of the engine is secured; C is a cylinder; it is bored true, faced at the ends, and is surrounded by a steam case, E, which is furnished with two lugs, F F; the lower faces of these lugs are slightly convex and rest on suitable bearing plates, which are adjustable by set screws to adapt it to the bearing surfaces of the shaft, S. The double steam case, E, has passages, *b b*, (figure 2) both encircling the cylinder, but independent of each other, the former communicating with the interior of the cylinder, through openings, *c c*, and *d d*, (fig. 2) and the latter communicating with the same by openings, *c' c'*, and *d' d'*, (same figure). On the top is the steam chest, G, which is supplied by steam from the boiler by pipe, J. K is the exhaust pipe, to receive the whole steam through the exhaust port, *f*, (figs. 2 and 3). N N′ N″ N‴ are four sliding pistons. They are set in the slots, *i i i i*, of the steam wheel, which is composed of cylinder, D, having a hub, *g*, secured on shaft, S. The cylinder, C, being stationary, by the steam acting inside of it on the sliders, N N′ N″ N‴, it moves the wheel composed of D, *g*, S, with its ends, arms, and sliders, forming the rotating parts of the engine. When the engine is running in one direction, it takes its steam by only one of the slide valve ports, and is shown in figure 2, to be taking it by the passage, *e*. When moving in a contrary direction it takes

[*Continued on Second Page.*]

Economy of Baker's Furnace.

In the last number of the "Scientific American" we published an illustrated description of Baker's Patent Furnace, and stated that it was employed under the boilers at the Crystal Palace. Since that time, in the absence of Superintendent Holmes, who is out of the city, we have been furnished with a memoranda of its performance by his associate, Henry S. Babbitt.

The coal consumed by this furnace for the six days ending on the 29th ult., amounted to 33,863 lbs., the water evaporated by this quantity amounted to 388,000 (33,863÷388,000= 11·457) or 11·457 pounds. of water evaporated by 1 lb. of coal. This is the greatest amount of water evaporated by one pound of coal in a boiler, ever recorded. The best Cornish boilers with the best quality of coal evaporate 9 lbs. of water, nearly 2½ lbs. less. It comes within three pounds of the theoretical evaporation of water by the best quality of coal, in the laboratory.

The following memoranda, furnished by Mr Amory, presents the results of a number of experiments, feeding with warm water without Baker's furnace:—

Navy yard at Washington, evaporation 7·538 lbs. of water to 1 lb. of coal.

Navy yard at Boston 6·712 to 1 lb. of coal.

Trial by Engineers in Boston, at East Boston, 7·705.

Otis Tuft's boilers, 8·768.

Flour mill at East Boston, 7.

Ocean Mills, Newport, 7.

Portsmouth Mills, 6·260.

Atlantic Mills, 6·637.

East London Water Works, supposed to be the best in England, 8·217-1000.

All these establishments have many boilers supposed to be doing the best duty, we might give many inferior resultst. The trials of these have been made with the greatest care and so acknowledged."

The very best of these results, (Otis Tuft's boilers) amount to nearly three pounds less of water evaporation to the pound of coal, than the experiments at the Crystal Palace.

Electrical Conductor—A Disputed Point.

In the "Scientific American" of the 29th ult., we stated that Robert Stephenson had made the remark that "an electric current could be sent with a double-wire to any distance without any sensible diminution of force." We also stated that "so far as our knowledge extended this was destitute of any foundation in fact."

We have received a letter from James P. Duffey, of Philadelphia, who asserts that R. Stephenson is right, and the fact has been known to him for the past nine months, and was discovered by him while experimenting upon a new galvanic machine for medical purposes."

Our telegraph engineers are better qualified to decide this question than any other person or persons. It simply consists in this, "can an electric current be conducted to any dstance without any sensible diminution of force by a double wire?" This also involves the question of using a single wire, whether it is as good as a double one. This question has nothing to do with multiplying the plates of the battery; we are well aware of the effect that would thus be produced; it merely relates to the double wire.

The Present to Joseph E. Holmes.

We have received a note from L. H. Gibbs, stating that the present of the gold watch made to Mr. Holmes, was not by some exhibitors, as stated, but those who were employed under him, 'honor to whom honor is due."

The Society of Industry in France has offered a prize of 1,000 francs for the best treatise on the potato.

[*Continued from First Page.*]

its steam by the passage, *e'*, where it is now shown exhausting the steam through the cavity of the slide valve, H, and through the exhaust port, *f*, into pipe, K. The slide valve is for reversing the motion of the engine; I is its lever; it is like those in common use; R R are two fixed abutments attached to the fixed cylinder, C; these have concave flanges between them, branching from their apexes, and have packing bars, *m m*, which are adjusted by screws, *p p*, to press steam tight against the rotary cylinder.

The steam is now shown as being let in through the ports *c' c'* on both sides of the engine, the one at the right hand side, figure 3, on the upper side of the abutment, and at the other side beneath the abutment, making the engine rotate in the direction of the arrow. Of course the steam exhausts at the right hand side through the ports below the abutment, and on the left hand side above the abutments.—When the engine is moving in a contrary direction, the present steam passages become the exhaust passages.

The sliders, N N' N'' N''', by this arrangement of the steam and exhaust ports, are relieved of all steam pressure when passing the abutments, so that there is very little friction on them. Sliding pistons and abutments like these have been used in rotary engines, but the arrangement of the exhaust ports is to relieve the sliders from pressure in passing the abutments—a good arrangement and entirely new. In other rotary engines with abutments, the sliders are forced out by a heart or similar cam, but these sliders are forced out by steam pressure acting on small pistons in the chambers, *u u u u* in both ends of the engine. The ends of the

Figure 2.

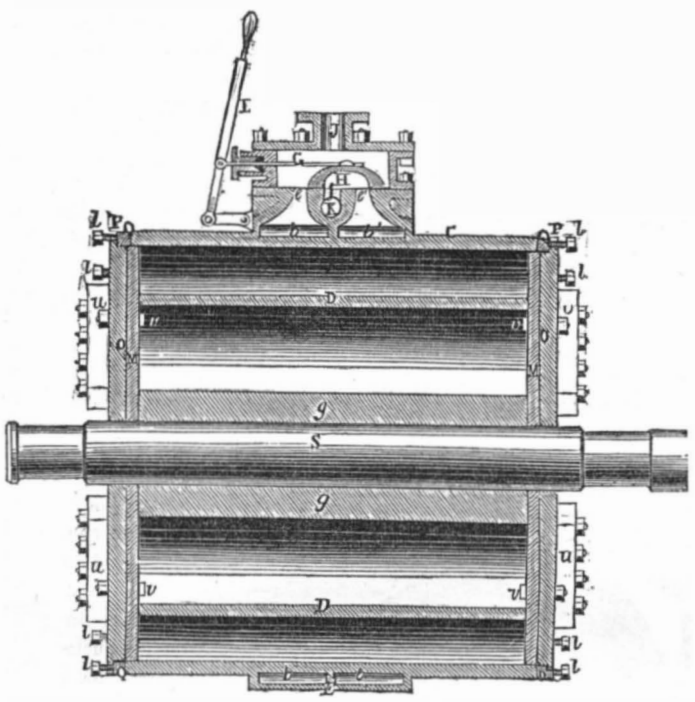
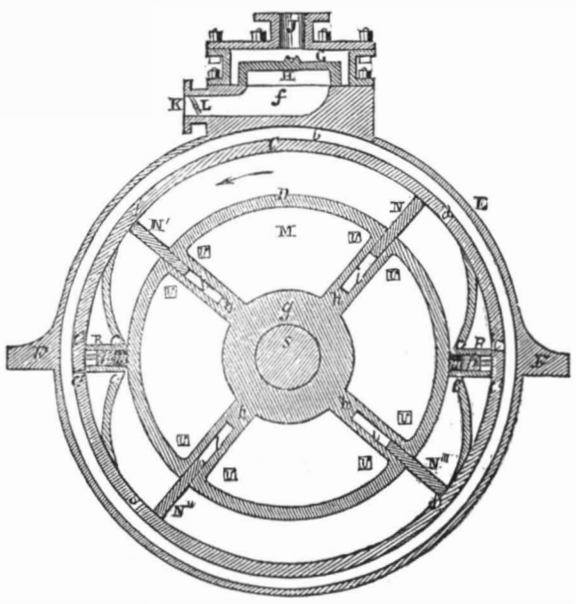


Figure 3.



sliders have projections outside of the ends of D, these are connected to small pistons in the chamber, *u u*, which small pistons are actuated by steam in the chambers at the ends of the cylinder. The steam from the small pistons is exhausted before a slider comes to an abutment, but commences to act to press out the slider when it passes an abutment. These sliders work free in their recesses, *i i* in the arms, *h h*, but are always pressed steam tight and allow no steam to pass them. This method of working the sliders by steam to press them out, is also new.

M M are the inside cylinder heads, in which there are slots for the projections of the sliders, to be actuated by the small steam pistons mentioned before. O O are other cylinder heads, secured by bolts, *v v*, and fitting close to M M, but have flanges, P P, all around the outer side, Q Q are stiff metal packing rings, corresponding with the size of the interior of the outer cylinder, and fitting closely over the inner heads, M M. These packing rings are pressed up by the screws, *l l*, passing into the flanges, P P. There is a rotary expansion valve in the chamber above G, which may be made to cut off the steam at any desired point, it is rotated by wheels, U V, which are operated by the revolving cylinder, one of the heads being formed with teeth on its periphery. The governor is operated by a cord passing from the small pulley, W, over X, which rotates its spindle and that of the governor; the sliding sleeve, 2, of the balls, operates the throttle valve through the angle arm Z Y, in the usual way. The moving joints are all made upon the principle that two smooth metal surfaces make a steam joint without pressure or weight, and consequently without friction.

By this description and these illustrations, a proper idea of the principle and operation of this rotary engine will be obtained. Its advantages, as pointed out, when compared with others, will show how free it is from lateral friction. It is on exhibition at the Crystal Palace. For further particulars address R. C. Bristol, China, Mich.

Mr. Bristol will be in attendance at the Crystal Palace until the 20th inst., where he will be happy to exhibit his engine to all interested in such matters.

Recent Foreign Inventions.

Improvements in obtaining Tin.—Mr. F. W. Emerson, of the Trereiffe Chemical Works, Penzance, England, has patented an invention, which consists in a means of purifying and separating the ore of tin, from other metallic oxydes, sulphurets, arseniates, tungstates, or other compounds, previously to its introduction into the smelting furnace, by digesting the ore (either with or without the aid of heat) in a mixture of common salt, sulphuric acid, and nitrate of soda or potash; the last of these not being absolutely necessary to the success of the operation, though it helps to shorten the time in which the process is performed. The inventor first makes a correct analysis of a fair sample drawn from the bulk of the ore to be operated upon, in order to ascertain the exact nature and amount of the impurities. In the event of its being found to contain any compound of sulphur or arsenic, he first roasts or calcines the ore by any of the ordinary known methods. This process is not necessary, unless such compounds are present. If it is found to contain oxyde of tin—the ores of tin mostly occur as a peroxyde—it will be necessary, in order to avoid loss, either first to peroxydize it, or afterwards to precipitate from solution by the insertion of metallic zinc, or any other precipitating agent. To peroxydize the oxyde of tin, he saturates the bulk of the ore to be operated upon with nitric or nitrous acid, and after allowing it to stand for two or three hours, to permit a full re-action to take place, he puts it into an iron, fire-clay, or other convenient retort, and distils or evaporates it to dryness, receiving the nitric or nitrous acid gases into stoneware or other convenient condensers, to be used over again. He then mixes the ore with such a quantity of common salt, as by decomposition with sulphuric acid shall yield a sufficient amount of muriatic acid to combine with the contained impurities of metallic oxydes, or bring the oxydes of iron or manganese in wolfram, or the lime in tungstate of lime into a soluble state. He then puts the ore thus mixed with salt into a cistern formed of granite, slate stoneware, or other material that is not seriously acted upon by acid (a wooden trough has been found to answer the purpose), and pours upon it such a quantity of either brown acid or oil of vitriol as will effect the decomposition of the salt. The inventor prefers to use an excess of sulphuric acid. He then turns into the mixture a jet of steam from a steam boiler, so as to keep the mixture at about 200° Fah., stirring it about from time to time with a wooden rake or shovel, so as to expose fresh surfaces to the action of re-agents, adding a small quantity, say 6 or 7 lbs. to the ton of nitrate of soda or potash, for the purpose of enlivening and quickening the operation. If the material should contain micaceous or magnetic iron ores, it would be advisable to increase the amount of nitrate of soda or potash, to assist their oxydation and conversion. The invention also describes analogous methods of treating the ores when copper or tungstate is contained. Claim. Purifying and separating the ores of tin by acting upon the contained impurities with a mixture of sulphuric acid and chloride of sodium, either with or without the addition of nitrate of potash or soda, with or without the application of heat by any known means.

Manufacture of Iron and Steel.—Mr. T. W. Dodds, of Holmes Engine and Railway Works, Rotherham, York, England, has patented some improvements in the treatment and manufacture of iron and steel. The inventor thus specifies his claims—1. A general arrangement of machinery. 2. The conversion of iron into steel, wholly or partially, by the use of a carbonaceous fuel or a mixture of soda-ash, soda, potash, pearlash, or other alkaline matter, and carbonate or bi-carbonate of lime and charcoal. 3. The mode of converting iron, wholly or partially, into steel by the use of a compound of soda ash, lime, and charcoal, or any mixture of alkaline matter with carbonate or bi-carbonate of lime and charcoal. 4. The mode of treating iron, partially or wholly converted metal, by plunging it when red hot, or thereabouts, into a wet or dry bath—that is, either into water, water impregnated with carbonaceous matter, liquid ammonia, or ammoniacal liquor, a solution of potash, or hydrate of potash, or into a mass of dry carbonaceous material, as highly carbonized sand, charcoal, and soda ash, or other carbonaceous matter. 5. The mode of arranging and working the furnaces of conversion, wherein the retorts or converting chambers may be charged and discharged whilst they are in working condition, without being permitted to cool. 6. The mode of adjusting the anvil level of steam-hammers by means of a hydrostatic cylinder or chamber.—7. The mode of working hammers or tilt levers so as to strike in both directions by the use of a rotary crank shaft connected therewith. 8. The use of an atmospheric buffer for increasing the rapidity of the hammer strokes. The use of coke or other partially elastic material at the points of metallic connection of hammer details for the purposes described.

(For the Scientific American.]

Preparing Indigo.

The following is a new mode of preparing the indigo plant for home and foreign consumption.

Before the discovery of South America, all the blues made in Europe, were obtained from the woad plant (*isiatio tinctoria*), but since the introduction of indigo the blue vats for woolens have been made with woad and indigo. My object in sending you this article, is to show that the indigo plant, worked up in the same way as woad, would be far more valuable. I am led to this suggestion by experiments made with the wild indigo plant during the last English war, when no European woad could be obtained in our market.

The following is the process of preparing the woad plant for the use of the dyer:—

The seed is planted in rows as early in the spring as the season will allow. When the leaves are ripe, which can be known by a blue ring near the top of the leaves with a spot in the centre, they are gathered and ground in a trough mill, the trough being made water-tight to prevent a leakage of the juice. Knives follow the roller to cut the plant, and thereby facilitate the grinding. When well ground it is made into balls of about three inches diameter, and then placed on boards to be dried. Should there be any appearance of fly-blows on the balls, a little dry slacked lime must be sprinkled over them; without such precaution the balls will breed innumerable maggots, and be spoiled. Some dyers use the balls, but the greater number use them after being couched. The woad plant affords three pickings in one season, and when the whole have been balled and dried, the balls are beaten pretty fine with mallets, or passed through a pair of rollers, then moistened with water, and laid in a heap to ferment. When the heap becomes quite warm, it is turned over to prevent the fermentation from progressing too fast. This operation is repeated several times, until the heap becomes perfectly and uniformly cool; it is then packed in hogsheads, and no further fermentation will ensue. The French and Germans sell their woad in balls, and they are couched by the dyer, or by some one he employs for that operation. I have bought many hogsheads of their balls sent to New York for a market.

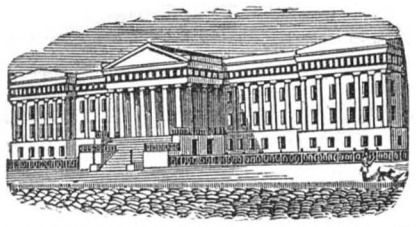
The woad vats used in England are 7 feet 6 in. diameter at the bottom, 6 feet at the top, and 7 feet in depth. To set one of these, 560 lbs. of woad is used with 24 lbs. of indigo. This vat can be kept at work for six months when skillfully managed, by adding more woad and indigo when required. The quantity of woad used for the six months is 1120 lbs., or one ton for each per annum. My consumption, when so employed in England, was twenty-four tons yearly, and my younger brother, who now occupies the same premises much enlarged, has consumed from sixty to seventy tons in one year.

Indigo used in the woad and other vats, has to be deoxydized by fermentation, or by some suboxydized metal, and brought back to the same state as the liquor in making indigo when drawn from the steep, before it is oxydized in the beater; and if the fermentation of this liquor were regulated by the same means as is the woad vat, it would make an excellent and permanent blue dye. As the indigofera plant contains vastly more indigo than the isatis, why, if prepared after the same manner, would it not answer for both woad and indigo; at least with much smaller additions of indigo? The consumption of woad in Europe amounts, annually to many thousands of tons, and if the dyers there could be supplied with the indigo plant prepared in the same way, there can be no doubt but the consumption would soon be quadrupled.

Wm. Partridge.

Binghamton, N. Y.

There is now a speck of war between Switzerland and Austria.



[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 1, 1853.

PROTECTING BULWARKS FOR WAR VESSELS—By William Ballard, of New York City: I claim the use of the shield boards, in combination with the bulwarks of a ship, as set forth.

I also claim the use of the stanchions and panels, in combination with the deck of the vessel, and the shield board, for the purpose and principle of construction and operation, as set forth.

MAGNETO-ELECTRIC MACHINES—By Calvin Carpenter, Jr., of Pawtucket, Mass. Patented in France April 18, 1853: I do not claim the employment of permanent magnets of helical coils of wire of metallic segments upon a cylinder of non-conducting material, or of springs such as I have described, either separately or in combination, for the purpose set forth, otherwise than in the manner in which I have arranged, connected, and combined them.

But I claim the combination of one or more series of permanent magnets radially arranged, the poles of each series being in one plane, and in two concentric circles, with a disc or discs of helices, arranged in three sets in such manner that the three sets may be acted upon successively at nearly equal intervals of time, one set by the inner circle of poles, and the other two sets by the outer circle of poles; the currents of the several sets of helices being thrown into one constant or uninterrupted current by means of the current discharges and springs, or their equivalents, as described.

CAR COUPLINGS—By A. P. Chatham, of Canoga, N. Y.: I claim constructing the buffer, A, with a recess to hold the link in the proper position for entering the buffer, B, and the buffer, B, with a cavity, and an inclined draught catch extending to nearly the top of its cavity, so that when a link is connected to the buffer, A, and passed over the catch of the buffer, B, it cannot jump up and become detached from the catch while the cars are in motion, whereby the danger of the cars being separated while running is greatly lessened, while the coupling is simple; cheap, and not liable to get out of order.

PEN AND PENCIL CASE—By G. S. Clark, of New York City: I claim neither the pen or pencil slide separately, for both have been previously used, but I claim the peculiar arrangement of the pen and pencil slides, as described, viz., having the pencil slide with its covering tube placed within the pen slide or the tubes C and D, operating the two slides independently of each other in the manner set forth.

[This improvement is noticed on page 4 of this Vol.]

CANE AND MAIZE CUTTERS—By John W. Cormack, of Quincy, Ill.: I claim the framing and manner of attaching the knife and arm to the sled.

CONDENSERS FOR STEAM ENGINES—By Benjamin Crawford, of Pittsburg, Pa.; I claim the arrangement of the tubes or passages in the condenser, with the inlet and outlet openings in the case, as specified, so that a current of cold water is caused to flow round both ends of the tubes, whereby the condenser is prevented from undue heating, and the tubes kept coolest at both ends, and warmest at the middle, whereby the great bulk of the heat is transferred to the condensing water, near the point at which it is discharged from the case.

Second, constructing the case of the condenser with stuffed or other equivalent joints, to render it flexible, and thereby prevent fracture.

MACHINES FOR STICKING PINS—By C. O. Crosby, of New Haven, Conn.: I am aware that conical rollers have been used for forming the inclined channel for conducting the pins, and that a screw has been used to separate the pins, and that pliers have been used in the manufacture of pins, and that clamping bars have been used for clamping the paper, after it has been crimped, and that the paper has been drawn through and rolled up by a revolving cylinder so graduated as to regulate the quantity of paper, as to folding up. I therefore do not claim either of these, as such.

I claim the method of crimping the paper by means of movable folding blades in combination with the bed plate, while the back and front sides of the paper are sustained by the clamping bars, as described.

Second, I also claim the method of crimping the paper by means of moving folding blades descending and ascending between the stationary and moving clamping bars, when the clamping bars serve as a part of the crimping apparatus, whether the paper be sustained by a bed plate or otherwise, when constructed and operating as described.

Third, I also claim the method of lifting the pins from the distributor, and carrying them away and sticking them into the crimped paper, while the distributor is bringing another supply of pins in front of the clamping bars, thereby keeping the lifting pliers or other lifting apparatus continually in operation, when performed by the means and in the manner described.

Fourth, I also claim the lifting apparatus, or any substantial part thereof, when constructed, combined and made to operate as described.

Fifth, I also claim the combination of the lifting apparatus described, with the inclined transverse notches in the stationary clamping bar, by which means the pins will always be stuck in an exact line, even though the pins are not straight, when constructed, combined, and made to operate, as described.

Sixth, I also claim the combination of the conical rollers, with the side planes, to form a straight inclined conducting channel, when combined, constructed and made to operate as described.

Seventh, I also claim the lifting pliers, when constructed and made to operate, as described, either with or without the creeper sliding guide or director.

MACHINES FOR STICKING PINS—By C. O. Crosby, of New Haven, Conn.: I do not claim the channels nor grooves, nor the punches working in the grooves, nor the use of clamping bars, to serve also as crimping bars, because these have all been used before or claimed in my former applications.

I claim the combination of the punches, working in horizontal grooves, with the slide, and the straight inclined channels, when arranged as set forth.

I also claim the combination of the punches with the double folding blades, when these are combined with the movable and stationary clamping bars, constructed as described.

I also claim the method of crimping the paper by means of folding blades working between stationary and moving clamping bars, when those clamping bars serve as a part of the crimping apparatus, when constructed and operating as described.

I also claim the bars (forming the side guides to the spaces) to guide the pins while falling down from the separator to the horizontal grooves, in combination with the grooves and punches, when they are constructed and arranged as set forth.

MACHINES FOR STICKING PINS—By C. O. Crosby, of New Haven, Conn.: I claim the use of a slide wheel to connect the lower end of the straight inclined conducting channel with the upper end of the vertical side guides to convey the pins from the former to the latter, while it changes the position of the pins from vertical to horizontal, as described, whether with or without the countersinks in the inner edge of the peripheries.

I also claim the use of a separating wheel with teeth on its periphery to sustain the column of pins, separate them, and drop them separately into the grooves in the sliding bed, at the proper time by its revolution, as described, whether the wheel be made of two discs or with the periphery grooved out or the periphery be single, and the teeth cut directly across it.

I also claim the method of crimping the paper by the use of jaws with a tongue between them to slide across the paper in such a manner that the paper may be crimped by double folding blades forcing the two folds of paper through the space between the tongue and the jaw on each side, so that the pins may be stuck through the crimps over the open edges of the folding blades, while the tongue will be between the pins and the paper, and so that both the bars and tongue, and the double folding blades may be readily withdrawn to release the paper, and this whether the double folding blades are above or below the jaws and tongue, when they are constructed, used, and made to operate as described.

HOSE PROTECTOR—By David Demarest, of New York City: I claim the employment of a portable section of a rail track constructed as described, and with an opening in its center for the hose to fit in, when said section is placed over said hose, the same being employed in the manner described, and for the purpose of covering the hose at certain points, and saving them from the great injury they sustain from carriages and cars passing over them during the time of fires, and as fully set forth.

[This useful invention is noticed on page 380 Vol. 8, Sci. Am.]

CAR WHEELS—Joseph Farnsworth. Jr., of Madison, Ind., I am aware that P. W. Gates made a cast-iron car wheel in which the rim is connected to the central parts by two sets of short spokes, but this (without admitting its priority to my invention) I do not claim, as my improvement relates exclusively to that class of wheels in which a disc extends from the hub to the rim, my object being to support the rim and strengthen the disc by flexible supports, which will perform their duty without straining and endangering the breaking of the disc, as in the case of the wheels of this class.

I claim a cast-iron car-wheel, constructed as described, but I make no claim to any part of the wheel by itself, nor to any other combination of parts than those set forth.

REGULATING THE SPEED OF STEAM ENGINES—By Luther R. Faught, of Macon, Ga.: I do not confine myself to the employment of a pendulum or air-spring, as there may be other devices that would produce analogous effects; neither do I confine myself to the precise methods of producing friction described, as both the methods that I have shown are well known, viz., by the pressure of the steam in the valve chest, and by plates compressed to the rod by a spring; nor do I confine myself to the adjustment of the relation between the pendulum, and the device or devices which produce the friction, as it will be evident that the lengthening or shortening of the pendulum will produce the same effect.

I claim connecting the cut-off with the slide valve, so that the latter drives the former by friction when the cut-off is at the same time connected with a pendulum air-spring, or some other device, offering such a resistance to its movement as will prevent its moving the same distance as the valve, and arrest it at such a point in the motion of the valve, as to cut off the steam at the desired point in the stroke, and will increase or diminish with any increase or diminution of the speed of the engine, and thereby retard the motion of the cut-off, more or less, in order to cut off the steam earlier or later in the stroke, and thus regulate the speed, as described.

[See notice of this invention on page 388, Vol. 8, Sci. Am.]

GRAIN CRADLES—By C. P. Kelsey, of Livingstonville, N. Y.: I claim, first, the bar or its equivalent, for attaching the fingers of the frame to the snath, for the purpose set forth.

Second, I claim so connecting the braces with the fingers, by means of link or other universal joints, that the snath may be folded close against the fingers, without requiring that the said braces should be loosened in the snath, as set forth.

COATING SHEETS OF METAL—By Edmund Morewood & George Rogers, of London, England: We claim the method described of coating sheets of metal by immersing them in other molten metals, which are more fusible, by means of rollers arranged as described, so that with the same machine, sheets of metal, varying in thickness, may be coated free from puckers, bends, or indentations on their surfaces, thus rendering unnecessary the subsequent operation of flattening, which heretofore could not be dispensed with.

ADJUSTABLE SPRINGS FOR CARRIAGES—By R. S. Morse, of Dixfield, Me.: I claim the adjustable auxiliary springs in combination with the bed spring or springs as set forth.

BRACE AND BIT FASTENER—By Howard Perkins, of North Bridgewater, Mass.: I claim the manner of constructing and fastening the bit into the socket by the slide lock, as described, having the end of the bit so formed as to fit into the groove in the key, as set forth, and having the end of the bit press down upon the key, so that when the key is slipped back, the bit may be easily removed.

GOLD WASHER—By Henry M. Ritterband, of New York City: I claim the combination of the tube, valve, and lip, constructed and having the relative proportions, as described, forming an apparatus for removing earth and stones from auriferous earth, as specified.

STRAW AND GRAIN SEPARATORS—By John A. Taplin, of Fishkill, N. Y.: I claim the vibrating straw carrier and grain separator, constructed as set forth with a screen and fluted bottom board, for the purpose of separating the grain from the straw, returning the former to the winnowing apparatus, and conveying the straw to the hinder extremity of the machine.

METALLIC PENS—By Wm. H. Towers, of Philadelphia, Pa.: I claim making metallic pens with depressions or cavities for retaining the requisite quantity of ink to supply the same, and making them flat on both surfaces, and tapering the shank or main body of the same, and inserting it in a corresponding socket or opening in the center of the lower end of the pen holder, in the manner set forth.

MACHINE FOR TURNING CYLINDERS OF WOOD—By Increase S. Waite, of Hubbardston, Mass.: I claim the combination composed of the feeding hopper, the series of rotary mandrels and centers, applied to the shaft, the revolving cutter or cutter cylinder, the mechanism for giving to each mandrel an endwise movement backward and forwards, as described, mechanism for arresting the rotary movement of the shaft, or the heads, during the time necessary for the operation of the cutter or cutter wheel, on each piece of wood, and finally a mechanism for rotating the shaft and its two heads, all as described; the mechanism for moving each mandrel endwise, as described, being the spring, the wheel, and cam plate, as described, that for rotating the mandrel being the gear, and the gear on the shaft put in revolution as described, that for arresting the rotation of the shaft during the time necessary to turn down an article, being the stud or stop plate, and the screw applied to each mandrel, and made to operate, as specified: and finally, that for rotating the shaft, being the friction roller made to operate against the periphery of the circular head, and to be rotated and borne against said head, as set forth.

GENERATING AND CONDENSING STEAM—By Peter H. Watson, of Washington, D. C. Ante-dated May 2, 1853: I claim the method of recovering the heat of the exhaust steam, by passing it through the comparatively cool water in the lower portion of the boiler, as set forth.

I also claim the arrangement of the upper end of the drop flues, in an inclined plate, to facilitate the entrance of the smoke into the flues, and the passage of the steam from beneath the inclined plate into the upper part of the boiler, as set forth.

[Our cotemporary is becoming a veteran in the field of invention.]

GRAIN SEPARATORS—By J. V. A. Wemple, of Chicago, Ill.: I claim the employment of a cylinder, having tangential, or other suitably projecting plates across or along its periphery, for the purpose of separating the grain and breaking the impinging effect produced by the threshing cylinder on the endless apron, the said cylinder being so situated and operating in rear of the threshing cylinder, as gently to feed over it the straw and headings, as they are delivered from the threshing cylinder.

BEE HIVE—By Geo. Calvert, of Upperville, Va.: I claim the combination of the honey boxes with another box and cross-pieces, arranged and operated in the manner set forth.

DEVICES FOR STEERING CULTIVATORS—By Seneca Lapham, of Salem, Ohio: I claim the combination and arrangement of the parts, consisting of the lever and its attachment to the brace, and the connection of the tongue to the lever by the staple. This I claim in its application to the purpose of changing the direction of this and other machines, as specified.

FLUID METERS—By Wm. B. Leonard, of New York City: I claim the combination in fluid meters of mechanism for measuring the volume of a flowing fluid, however variable, mechanism for measuring the velocity of the flowing fluid, however that may vary, mechanism for multiplying these two quantities together, and mechanism for recording the product, in such manner as to show on a register the quantity of fluid that has passed, as set forth.

I also claim the combination of a self-acting guard valve or valves, however constructed or arranged, with the water wheel or other motor, in a meter, in such manner that the flow of water through the meter, will be arrested whenever its pressure is not sufficient to give motion to the motor the instant it begins, whereby the escape of water through the meter unmeasured is prevented.

[This is a very ingenious and useful invention.]

OPENING AND CLOSING GATES—By Wm. T. Merritt, of Hart's Village, N. Y.: I claim elevating or depressing, or opening and closing the gate, as described, viz., by means of the shaft, having upon it the pulley F, the pulleys, G G, being attached permanently to said shaft, and having ropes attached to them: and the pulleys, F F, being placed loosely on the shaft and connected to it at a certain period by means of pins on the shaft working in slots in the bosses or hubs of the pulleys, said pulleys having the chains attached to them and to the upper ends of the gate styles, and also the chains, I I, with the weights, the chains, I I, being attached to the lower ends of the styles, the gate being prevented from being casually depressed by means of the pawl, which is freed from the notch in the boss or hub by the dog, substantially as set forth.

[See notice of this invention on page 404, Vol. 8, Sci. Am.]

STRAIGHTENING AND CURVING RAILS—By Geo. Williston, of Brunswick, Me.: I am aware that a machine has been used in Bavaria, which acts by the pressure of a screw upon the bar to be bent, the bearing or platform being placed underneath the bar. This I do not claim.

But I claim the combination of the screw, strap beam, and slides, constructed as described, with the beam placed on the top or side of the rail for the purpose of straightening or curving rails on railroads, without the necessity of removing the same from the sleepers.

NOTE—In the above list of patents, seven were secured through the Scientific American Patent Agency.

DESIGN.

PARLOR STOVE—By Winslow Ames, of Nashua, N. H., assignor to Hartshorn, Ames & Co., of Boston, Mass.

(For the Scientific American.)

Nova Scotia Patent Laws.

[Synopsis of an Act of the General Assembly of the Province of Nova Scotia, relative to patents for useful inventions; passed in 1851.—Condensed by Peter Stubs, Barrister, Attorney at Law, and Notary Public, of St. John, N. B., B. N. A.]

SEC. 1. A resident of Nova Scotia for one year, may apply to the Governor, alledging that he has discovered any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement thereon, previously unknown, the Governor may direct Letters Patent to be issued, granting to the person so applying, and his representatives, for a term not exceeding fourteen years, the exclusive right of making, using, and vending his discovery. Letters to be recorded by the Provincial Secretary, in a book to be kept in his office for that purpose.

SEC. 2. Where Letters Patent are thus granted, and another person shall discover any improvement in the principle or process of such invention, and shall obtain Letters Patent for such improvement, the person obtaining the new patent shall not make, use, or vend the original invention, nor shall the original patentee make, use, or vend the improvement.

SEC. 3. Simple change of form or proportions of any machine or composition of matter, not deemed a discovery.

SEC. 4. Applicants for Letters Patent to pay in the Secretary's office, twenty shillings ($5.)

SEC. 5. Any person may obtain copies of Letters Patents at sixpence (10 cents) per folio, and drawings obtainable also at a reasonable fee.

SEC. 6. Applicant for Letters Patent to make oath that he believes that he is the true inventor or discoverer, and that his use, invention, or discovery was not previously known in the Province.

SEC. 7. Before Letters Patent are granted, applicant to deliver a full description of his invention or discovery, and the manner of using, or process of compounding the same, and in case of a machine, to deliver a model, and explain the principles by which it may be distinguished from other inventions, and shall accompany the same with drawings, when the case admits of drawings, or with specimens of ingredients sufficient for the purpose of experiment. The whole to be filed or lodged in the Secretary's office, and copies of description are evidence in a court of Justice, when certified by the Provincial Secretary, where matters concerning such patents may come in question. Governor may dispense with the delivery of a model at the Secretary's Office.

SEC. 8. The patentee may assign Letters Patent, and assignee then stands in the stead of the patentee, as well as regards his rights as his liabilities. Assignment to be recorded in Secretary's Office.

SEC. 9. Actions maintainable for pirating patents, and damages recoverable.

SEC. 10. Defendant may plead the general issue, and give this act in evidence, and every special matter, to prove that the specification does not contain the whole truth, or contains more than is necessary to produce the described effect, and upon further proof that concealment or addition is fraudulently made, or that the invention or discovery is not original, or that such patentee had surreptitiously obtained his Letters Patent, then the verdict and judgment shall be for the defendant, with costs, and such Letters Patent shall be declared void.

N. B. It would appear that any person, whether a British subject or not, can take out Letters Patent in Nova Scotia, and *all* applicants are liable to the same expense; but in any case, the applicant must have resided in Nova Scotia for twelve months prior to the date of his application. This was formerly the case in New Brunswick.

Gum Arabic Solutions.

MESSRS. EDITORS—Your correspondent, "S. A. C.," of Hartford, I think, is very much mistaken in his article on gum arabic solutions, if he intends to convey the idea that they can be kept a considerable length of time without changing, by use of the means he has cited. An aqueous solution of gum arabic remains but a certain length of time unchanged, and that term is as conditions for fermentation are avoided, viz., an elevated temperature and exposure to air; when these occur the introduction of so small a quantity of alcohol or volatile oil will not prevent a change, while the former would rather tend to facilitate acetous fermentation particularly if the solution be fluid. Therefore for the better preservation of gum pastes, they should be made of a good consistence and kept in closed vessels in a cool place when not wanted for immediate use. Tragacanth paste (which is not strictly a solution of the gum in water) undergoes change much sooner than gum arabic, probably owing to the presence of a small proportion of starch which it contains, and acquires a more foetid odor, particularly if not of a fine quality. Essential oils may serve to cover this foetor and render it tolerable for a longer time, but the most advisable plan is to prepare these pastes in quantities to serve but for a short time as they are so readily made, and it would be well to observe cleaning the vessels thoroughly before preparing a new batch. Nothing, I believe, is known that will preserve gum solutions unless added in such quantities to make them less valuable as pastes or cements. Gum arabic and tragacanth are preservable only in the dry state.

JNO. H. KASER.

Reading Pa., Nov. 1, 1853.

Arresting for Infringement of a Patent.

MESSRS. EDITORS—Can a resident of one State be arrested in any one of the United States for the alleged infringement of a patent and be required to give bail and stand trial in such State as the plaintiff may please to arrest him? M. C. H.

[Yes he can, if in accordance with the laws of the State wherein he is arrested, not otherwise. If the resident of one State goes to another, and infringes a patent, he is surely amenable to the laws as they exist in that State with respect to arrest and bail. The practice of the U. S. Courts in preliminary matters is to be guided by the local laws of the States. In one case, that of Sherman versus Cook, for the unlawful use of Woodworth's planing machines in Vermont, a bill was filed on the 27th June, 1850, and the suit brought in New York before Judge Nelson. An objection was taken by the defendant's counsel to the jurisdiction of the Court, on the ground that the use of the machines complained of was in another judicial district, viz., in Vermont. It was urged that the proceedings should have been instituted in that District. Judge Nelson, however, decided that the party concerned in the infringement was responsible, and it was enough if the offending machine was reached through him, who was accountable for the wrong, and without whose agency there would have been no room for complaint. The United States' Courts have the jurisdiction of patent matters.

New Inventions.

New Surveyor's Instrument.

John R. Averill, of Waterloo, N. Y.. has invented a new instrument for measuring distances in surveying. His instrument is founded on the well-known principle in trigonometry that if the perpendicular and one of the angles of a right angled triangle are known it is easy to determine the base. To illustrate the nature of the invention and its use, let us suppose that we measure off from one extremity of the line to be measured, at right angles with it a distance of ten rods; now, if we place the instrument at this latter station, and direct its sighting tube to the distant extremity of the line it is evident that a scale may be so calculated that an index attached to the sighting tube shall indicate upon it the distances of the two stations. It is certainly a convenient mode of measuring lines when their extremities can be readily seen. The inventor has applied for a patent.

Improved Saw Dresser.

D. B. Kimmell, of West Unity, Ohio, has invented an improved machine for dressing saw teeth, a patent for which he has taken measures to secure. This machine consists of a stock having attached to it adjustable ways on which a carriage containing the cutter is placed. By properly adjusting the ways, the cutter may be made to move either in a horizontal or oblique direction so that both the upper and under surface of each tooth may be cut. The carriage and cutter are made to move from and towards the saw by a peculiar arrangement of gearing. This machine is intended to answer the purpose of a gummer and a file.

Parallel Rod Connection for Locomotives.

J. B. Martin, of Corning, N. Y., has invented and taken measures to obtain a patent for an improved coupling rod for locomotive engines, the nature of which consists in extending the strap of the connecting rod beyond the box of the crank pin of the driving axle, to hold a pin to be received in a box attached to the parallel rod. This brings the connecting rod and parallel rod in the same plane, and enables their boxes to be tightened without allowing the play left in other modes of connection. The advantages of connecting the other wheels of locomotives with their driving wheels, are well known, and this is intended to remove the difficulties existing in other modes of doing this.

New Hat Presser.

S. Fields, and S. A. Kinsman, of Barre, Mass., have invented an improved machine for pressing hat bodies, upon which they have applied for a patent. Their improvements consist in supporting the hat block on a vibrating carriage so arranged in relation to stationary flats or pressing irons, and controlled by springs, that it is always kept in contact with the pressing irons during the operation of pressing; and also in a mode of attaching the angle iron for the corner of the crown to the crown iron. This enables them to be heated by steam, and at the same time to be connected so firmly together as not to be likely to get out of order.

Invalid Bedstead.

S. Bigelow, of Shelburne, Mass., has invented a bedstead for the use of invalids, the peculiarity of which consists in constructing the bottom of the bedsteads in sections, these being adjustable so as to place the invalid in different positions, thus affording relief to the weary. These changes of position can be made without annoyance to the invalid. This is a desirable invention.

Portable Stoves.

A very nice portable stove heated by an oil lamp, has been invented by F. Arnold, Middle Haddam, Conn. Its sides being of glass protected by grating, it may also be used as a lantern. It is also adapted for heating a kettle of water by the heat of the lamp, and thus it is very useful at night in families when there is sickness. The inventor has applied for a patent.

Hot Air Furnaces.

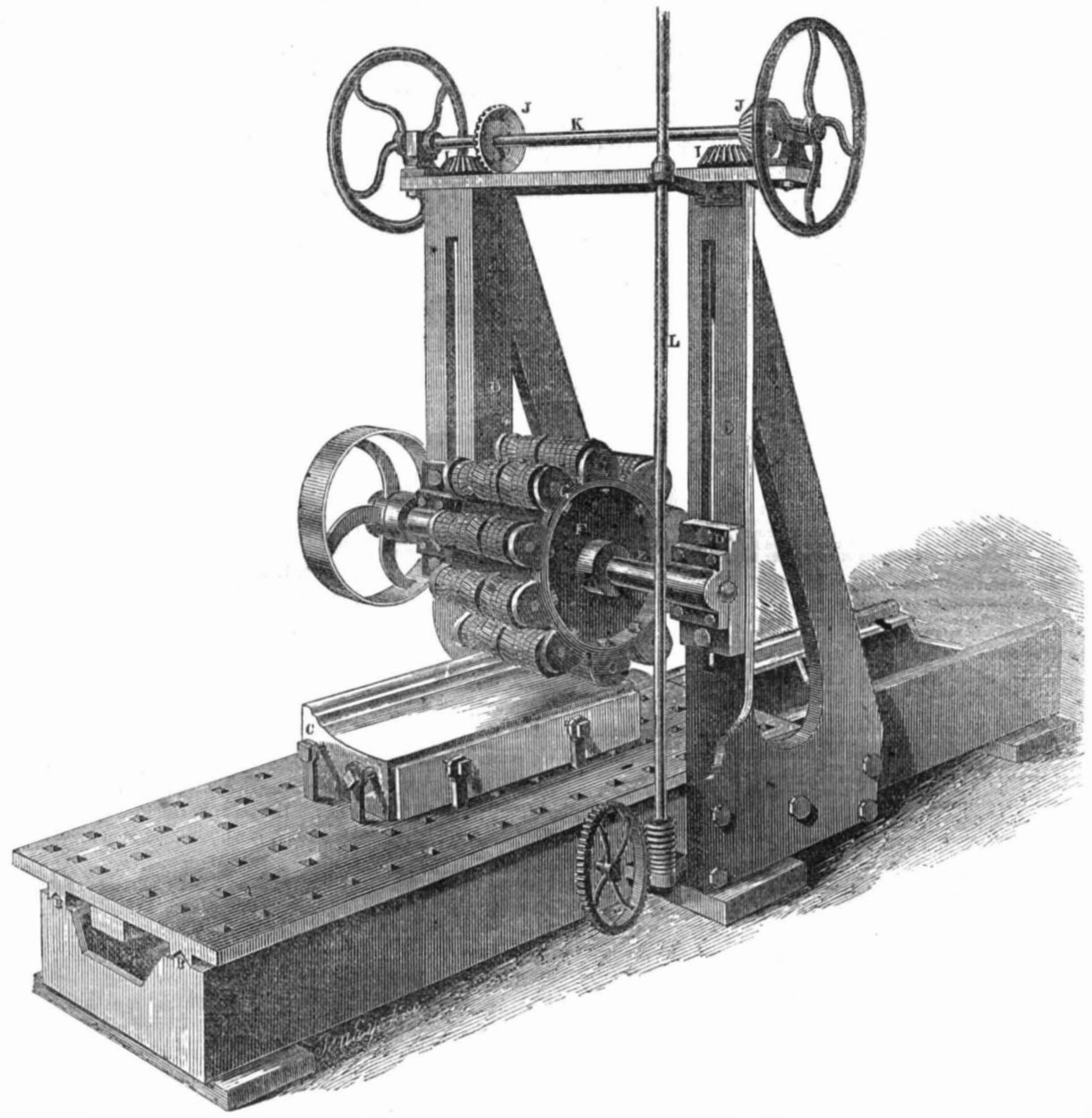
Frederick Tiffany, of Buffalo, N. Y., has invented an improvement in furnaces for heating buildings by hot air, the nature of which consists in arranging within the furnace chamber a series of collateral pipes, so that a very large amount of heating surface is combined in a small space. These tiers are connected by vertical boxes or chambers in such a manner that two separate spaces will be formed for the cold air, and also a circuitous passage for the flame. The cold air spaces are further divided in such a manner that the air will have to remain some time in contact with the surfaces heated by the flame. A very good improvement.

New Liquor Meter.

"A very ingenious little instrument has just been brought before the public. It is entitled Horrison's meter, and is for the purpose of detecting fraud, or rather for exactly registering the quantity of spirits, &c., drawn out of vessels. The principle is, that the liquid, in passing through, acts in two opposite directions between two flexible diaphragms placed between chambers, into which it is alternately admitted, thus displacing, at every movement, from one chamber the quantity of liquid equal to that admitted into the other. This action gives a motion to spindles, which is ultimately communicated to the registering hands, and thus the meter shows accurately, at a glance, the quantity drawn off, in gallons, quarts, pints, etc. The instrument is well finished, and of moderate price."—[London Correspondence U. S. Gazette.

[The above description would lead us to infer that Horrison's metre is identical with the gas metre of James Bogardus, of this city, which was patented a number of years ago, only it is used for a different purpose.

ROTARY STONE DRESSING MACHINE.



In our last number we published an illustration of Eastman's Chisel Stone Dressing Machine; this engraving is a perspective view of his burring stone dresser. A series of discs with grooved or burred faces, made of cast iron and chilled, are strung, as it were, on a series of spindles, around a drum; the drum is revolved, and the stone to be dressed is fed forward to it, when the burring tools dress the face of the stone, by abrasion.

A is the sliding bed of the machine, it is similar to that of an iron planer; B B is the bed plate with its guide rails for the grooves of the slide; C is a stone secured in the slide, and is being fed into the burring tools; F is a drum or cylinder on a strong shaft, E, at one end of which is a driving pulley, by which a band can rotate the cylinder; G is a series of burring discs or rings on a spindle. A number of such are secured at equal distances from the center on the periphery of cylinder, F. These burring tools have chilled serrated faces. Any number of them may be secured on a spindle. As the stone, C, is fed forward on its sliding bed, the cylinder, F, is rotated, and the burring tools act upon the stone, and reduce it to an exceedingly smooth surface. The burring tools may be of unequal diameter, so that they can dress a stone with one or more grooves. The stone, C, is represented as being dressed with a groove.

The shaft, E, of the tool cylinder is secured in movable journal boxes, D'. These are supported on the vertical posts, D D, which are well braced. These posts have elongated slots in them, so as to elevate and depress the journal boxes, D', in them, to adapt the tools for stones of different thicknesses; K is a top shaft with bevel pinions, J J, meshing into others, I I, on vertical spindles, which have screws upon them working into nuts, (not shown,) on the inside of the boxes, D', for raising and lowering the cutter drum; L is a shaft with a worm screw on the lower end which meshes with a wheel having a shaft running transversely under the slide A, it has a pinion on it meshing into a rack on the under side of the slide to feed it and the stone forward and back. The spindle, L, is driven by band and pulley (not shown).

This machine is so simple that every person will be able to understand its construction and operation, from the description given of the engraving. It can dress smooth surfaces, and fluted work, and is adapted to produce fluted columns by giving the stone an axial motion on its bed, when a flute is cut its whole length. The burring tools can be cast of various forms to produce the reverse surfaces on the stone. These cutters can also be set at various distances apart by having washers between them. As these tools are cast, they are not expensive; they are also very durable, as they roll on the face of the stone, reducing it to a smooth surface —By a duplicate arrangement of the burring tools, the stone can be dressed on both sides, at one operation, and on four sides by a double operation. The burrers can be cast to produce either grooves or beading on stones, and we have seen a circular stone with a number of concentric grooves formed in it by a different arrangement of the same tools. The tools are cast with chilled surfaces in moulds and are a composite of iron and steel.

This machine was patented two years before the one which was illustrated last week. The patent is owned by the same assignees, Seth Eastman and B. H. Cheever, Washington, D. C., Jos. Greeley, Nashua, N. H., and Darcy E. Bolton, of Coburg, Canada West, from whom more information may be obtained by letter. This machine is also on exhibition at the Crystal Palace, beside the chisel cutter illustrated in the last number, and has also been patented in all the important kingdoms of Europe.

The Jewish Rabbi, Doctor Raphall is engaged in the delivery of a course of popular lectures on the Sacred Poetry of the Hebrews, at the Broadway Tabernacle. Lectures (each Monday evening) commence at 8 o'clock.

Commodore Perry, of the Japan Expedition has succeeded in obtaining an interview with the two Princes of the Empire. He was well received.

Great strikes have taken place in the cotton manufacturing districts of England; the employers are leagued on the one hand, and the operatives on the other.

Scientific American.

NEW YORK, NOVEMBER 12, 1853.

Chemistry of the Universe.

Curiosity is a prominent feature of the human mind; a strong desire to pry into the unknown of the future and the past, is characteristic of all men. Subjects which must remain a mystery to man are the very ones which engage the most discussion, and were it not that science is so often dragged in to support untenable theories, we would never notice such effusions of lecture, epistle, or debate. On the evening of the 24th ult., Prof. Doremus, of this city, delivered an able lecture in the Hall of the Medical College, to demonstrate, chemically, the manner in which our planet and the universe came into existence. Adopting the nebulous theory of La Place, he laid down three propositions, viz., that this earth was first in a gaseous state, then fluid, then solid. To prove this, he said, our planet was round, a form assumed by all fluids when rotated, but not by a gas, nor a solid. This was a very good argument for the previous fluid state of our globe. But how came it to be in a fluid state? He assumed that its first state must have been gaseous; that is, that all the metals, gold, platina, rhodium, lime, magnesia, and the whole fifty-nine solid and fluid substances, of which this earth is composed, were in a state of gas. But how came they to be in a state of gas? He never went behind this question, the most difficult of all to answer, and from the present state of chemistry he could not answer it, for there are but very few substances which can be reduced to gas; therefore, the conclusion, "they never were gaseous," must hold good, until it is disproved. But allowing, for arguments sake, that the whole materials of which this universe is composed, were once in a state of gas, how came this gas to be resolved into a fluid state? Prof. Doremus performed a number of experiments, such as igniting antimony in chlorine gas, to show that there was a great amount of latent heat in gases, and asserted that "when the universe was in a gaseous state, the light and heat—imponderables—which it possessed, were in a latent state, and by the combinations of these gases light and heat were evolved, not created." But the Professor, instead of offering proof how these gases came into a fluid state, jumped at the following conclusion—the easiest way to get rid of the difficulty. "Matter, in a gaseous form, when deprived of its latent heat, assumes the liquid form. Into this then let us suppose the universe was brought. Streams of matter, all flowing to a common center, beget a rotary movement; set a liquid globe rotating on its axis and what results."—He answered this query by causing a large globe of oil to rotate in a jar of water around an iron rod passing through its center, when the oil became flattened at its poles. He then said, "by giving a great velocity to the oil, it would become a ring, and if it would break it would gather into globes and fly round the center. If it also were possible to overcome the attraction of gravitation, and different liquids were to be taken, such as one of mercury for the center, that covered with oil, then another of alcohol, and these set revolving around a common axis, the lightest fluid would be formed into a ring, the denser keep the center, and the rest be broken into globes or rings. This symbolizes our planetary system; the sun in the center, the farthest planets broken into more satellites than those that are nearer the center, the earth four times denser than Jupipiter; Saturn surrounded with rings, and all the planets and satellites moving in the same plane." This is a beautiful theory, but it is neither founded on chemical nor astronomical facts. If all the planets and their satelites were once united—a revolving fluid mass—and the planets were thrown off from one axis, then the satellites thrown from their planets, all would still be moving with the same velocity, and in the same direction; but instead of this being true, the satellites of Uranus move in a contrary direction, not in the same plane of that planet; this one fact destroys the theory. Another is, if this theory were true, all the planets of our system should rotate round the sun during one revolution of the sun on its axis, consequently all the planets of our system should rotate round the sun in equal times. If we take a large wheel secured on an axis to represent the fluid rotation of matter described by Prof. Doremus, and that composed of a number of concentric rings, to represent the matter of every planet in our system, the outermost ring will pass through more space in a given time than the interior one, but it must make a revolution in the same time. To complete the picture, the Professor should have rotated his globule of oil on a spindle unconfined in a jar of water, for no such vessel we presume was employed to confine the fluid of our universe.

The chemical theory is worse still, for although there is latent heat in the gases, no one can be deprived of that heat unless by transfer. Now this could not take place by any known law, if all the matter of the universe was in a state of gas. The law of diffusion belonging to gases is opposed to this theory, were it not so, we could have no lien on the atmosphere for a day's existence. It is composed of a light and a heavy gas; the heat of one by no natural law, can be transferred to the other nor separated. If the nebular hypothesis were true, the nitrogen (N14) of the atmosphere would lie on the surface of our planet, and the oxygen (O8) would lie and revolve on the top of it, in short, there would be no living thing on this globe. The only way whereby the rotary movement of the earth could be produced, as stated by the Professor, by the streams "flowing to a common center," would be by the funny theory of a hole through the center of the earth spoken of by Maupertuis for the tides to run in and the tides to run out, then roll and run on the surface about—a theory just about as conclusive and sensible as the one we reviewed last week respecting the tides. Men of science in presenting any theory should never hide a single known fact opposed to it; to do so is degrading science to individual whim and conceit.—The object of all investigation in philosophy should be truth, the whole truth, and nothing but the truth.

Patent Office Report for 1852---No. 3.

Examiner Gale: Value of Patents—The Report of this Examiner, for 1852, contains some very extraordinary announcements respecting the value of patents, the facts mentioned being obtained, no doubt, from the most reliable of all sources—documents of sale. It says, "a patent, if it is worth anything, when properly managed, is worth, and can be easily sold for from fifty to sixty thousand dollars. These remarks only apply to patents of minor or ordinary value, they do not include such as the telegraph, the planing machine, and the india rubber patents which are worth millions each. A man obtained a patent for a slight improvement in straw cutters, took a model of his machine through the Western States, and after a tour of eight months, returned with forty thousand dollars in cash, or its equivalent. Another inventor obtained an extension of a patent for a machine to thresh corn and clean grain, and sold it in the course of about fifteen months, for sixty thousand dollars. A third obtained a patent for a printer's ink, refused fifty thousand dollars, for it, and finally sold it for about sixty thousand dollars. These are ordinary cases of minor invention, of which hundreds go out of the Patent Office every year. Experience shows that the most profitable patents are those which do not contain much real invention; these, by multiplication (in the things produced) cause number to make up for the smallness of the profit in the individual case."

These statements, coming from the Patent Office, confirm a truth often asserted, that patents, when properly managed, are the best species of property in our country; and why not? A very small improvement on a threshing machine, straw cutter, printer's ink, a lock or key, or whatever it may be, while it may have added but a very small increase to the price—say one-tenth—has enhanced the value ten-fold to the buyer or user. This was the case with Watt's great improvement of the steam engine, the vulcanizing of gum elastic, and a thousand other inventions. The people who pay for useful improvements (although the inventors may derive high profits) are the greatest gainers. The machine for turning lasts, and the planing machine, have saved millions upon millions to our country at large.

The number of patents granted at this Examiner's desk for the year, was 167; rejected applicants, 256, or nearly one and a half for every one granted,—being much less than Examiner Renwick, whose rejections were as three to one. The chemical department is under charge of Prof. Gale, who has expended $500 personally for testing chemical improvements; he asks for an appropriation for a chemical apparatus for the Patent Office, as his is in his own house, and the time devoted by him to such experiments, is extra hours. We hope the appropriation will be made, for we believe, with him, that many patents for chemical improvements have been refused without full and satisfactory reasons for such rejections. The least improvement in chemistry, whereby a new manufacture is produced, should never be rejected. A new and very simple combination of old materials, frequently produces very important results. It is stated that the number of chemical applications, have greatly increased over former years, and no less than forty-eight chemical patents were granted in 1852. With a number of these we have been well acquainted, as they were obtained through our agency—a practical acquaintance with chemistry, as applied to the different arts, having been our occupation for a number of years. The leading features of some of the chemical patents, we present, knowing they are of much interest to all our readers—as chemistry, above all sciences, is entwined around every branch of art and manufacture. A patent granted for manufacturing paraffine, consists in distilling bituminous coal in a retort at a very low red heat; the products are received into a worm kept at 55° Fah., and the liquid is purified by sulphuric acid and soda in succession. One granted for a new cement consists in mixing in water half a bushel of fine slacked lime with one-fiftieth of its quantity of powdered resin. This answers well for a hydraulic cement when mixed with sand. A patent for a new burning fluid consists in mixing two measures of alcohol with one of benzole in one measure of water, and agitating them violently. Sponges placed in a suitable vessel are charged with this mixture, and air being forced through them and out of a burner, carries along the vapor of the combustible compound, which burns when ignited. This is the "Paine Light" No. 2: the first was to burn water—this to burn air. The sea still flows and the wind still blows. A patent was granted for a new soap, the ingredients being kaolin, ammonia, and the common substances of which is soap is composed; all mixed up in the soap boiler. This application was rejected at first, the reason given was, that the claim was based on a principle at variance with the chemical knowledge of the Patent Office. It was however granted freely and with excellent grace, when it was shown that it accorded with discoveries pointed out by Liebig in his work on Organic Chemistry. A patent was granted for an excellent enamel for earthenware, consisting of glass one part, lime one fourth, common salt one-eighth, by weight. These are thoroughly pulverized and ground up together, with sufficient water to make them of a cream-like consistence, when it is put on the ware with a brush, and exposed to heat in an enameller's furnace. This avoids the use of such a bad substance as lead. Another patent was granted for coating iron with copper, and consists in cleaning the iron well, then coating it with salammoniac in solution; then dipping it in a bath of molten zinc, and from that into a bath of molten copper, and holding it therein until it ceases hissing. It is then withdrawn and cooled, when it is found coated with copper. The surface of the molten zinc, and the molten copper is covered with pounded glass.

We have thus briefly noticed, presenting the substance clearly, some of the chemical patents issued from the desk of Examiner Gale, and will notice the Agricultural Patents next week, as we have not room to do so in this number of the Scientific American.

The Democracy of Science.

The "Philadelphia Ledger," in noticing the death of M. Arago, the eminent French philosopher, pays a merited tribute to the great ones of the earth in science, and points out the influence exerted by so many of them in favor of rational freedom, terming that influence "The Democracy of Science." This is true. Who did more for the liberties of his country than the greatest of American philosophers—Franklin? Watt and many other great men were also distinguished for liberal principles; but above all, we recognize the "democracy of Science," in the absence of rank and aristocratic descent, in almost every one of those men whose discoveries in science, whose inventions in mechanics, and whose works of art, have crowned the countries which gave them birth with immortal honor—Copernicus, Kepler, Newton, D'Alembert, Davy, Cuvier, Linnæus, Whitney, and a host of other great ones of all nations, were men of low degree. Among the living, science claims her noblest sons from the lower and the middle ranks. In our own country, this is particularly true, and cannot be otherwise; we can point with pride, to Hare, Henry, Silliman, Maury, Smith, citizen Agassiz, and many others; in England there is Farraday, Sir David Brewster, Stephenson, Owen, Miller, and a host of others; in fact we do not know a scientific man by descent, among all the aristocracy except, Lord Ross, who is an honor to his class.

Science, also, as if to mock the claims of learning as well as noble birth, often selects her brightest gems, from the self-taught and the lowest of the lowly. Hind, the young astronomer, who has recently made so many discoveries among the asteroids, received but a common school education. Very few of our great inventors have been favored with more than an ordinary education. It has been said that "while the sages of Cambridge in England, were evolving some problems in mathematics, the sages of the machine shop invented the spinning frame, the steam engine, the steamboat, the locomotive, the nail, the gun stock, the pin machine, &c." We do not make these remarks to disparage a collegiate education, for we believe that those men who have become great, independent of such an education, might have become greater, had they been favored in their early years with better educational advantages. In this opinion, however, we have an opponent of no less authority than Sir Walter Scott, who asserted that a classical education would have clipped the genius of both Shakspeare and Burns.

"Fair Science," in selecting so many ornaments of our race, from among the less wealthy classes, thereby weakens the power and tames the pride of those who trust in riches and boast of blood; and blind indeed must that man be, who cannot see that such an influence tends to elevate the lowly and deserving workers in machine shop and factory; in short, that Science is Democratic.

Electro Magnetic Engine.

We called a few evenings since to see Professor Vergnes' new Electro Magnetic Engine, for which a patent was granted last year, (1852.) We think from what we saw of it that it was far superior to any other that we have examined except Page's, and we are inclined to think it may be superior to his. Unlike most machines of its class, it can be constructed of any size, and the large machine will still have a proportionate power to the model. We shall examine this machine again and inform our readers of the result.

Agricultural Implements—*Reaping and Mowing Machines.*—We have frequently referred within the past summer and previously to the different reaping and mowing machines before the public, and have once enumerated those at the Crystal Palace. But as we find the agricultural and mechanical public are deeply interested in those machines, we propose to devote another article to their consideration.

Our readers are doubtless aware that there are two cutting principles employed in these machines, the sickle-edge used by McCormick, represented at A, fig. 1, and the smooth V-shaped cutters introduced in this country by Obed Hussey, seen at B, same figure. These two inventors, to whom patents were first issued in 1834 deserve the credit of having been the first to attract public attention to this class of inventions in this country and also in Europe. Their first machines, like most other new inventions, were nearly worthless—we know of some now lying in the barns of farmers which were years ago condemned as nuisances. But they persevered amidst difficulties, triumphed, and have received a rich reward.

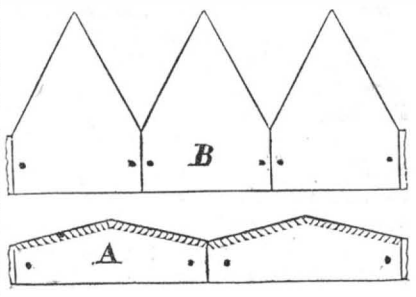
We will endeavor to state the peculiar advantages and disadvantages of these two principles of cutting. The sickle edge is adopted by many of these inventors because it seldom or never requires sharpening, the rough edge being sufficient to saw off the straw; but it will not cut green straw without choking, and our best agriculturists teach that grain should be cut before the straw is dry. The sickles also require a reel, and the reel is not only a cumbersome part of the machine, but if the grain is as ripe as it should be to cut readily with the sickles, it is liable to be badly shelled by the reel,—we have heard farmers complain, loudly on this account. Further than this the sickles never can successfully cut our eastern grasses. The coarse grass of the prairies may doubtless be cut by them, but put them in green or damp timothy or clover, and they will not cut it. We state what we know, hence we warn the public against being deceived by interested parties, who recommend their machines for mowing as well as reaping.

The principal objection which has been urged against the V-shaped cutter, is that it requires to be ground once or twice each day, but as we hold that these machines should be so constructed as to mow as well as reap, we are induced to give our preference to this form of the knife. But this is not the only difficulty to be encountered. A V-shaped knife is liable to draw the green leaves of the grass into the guard teeth, and filling them to choke the machine. Ketchum has successfully removed this difficulty by punching an elongated aperture through the blades of his knives, which, by the action of its edges upon the bottom of the guard teeth (and this is the only part liable to be clogged) removes the leaves and prevents choking. Forbush attempts to do this by the employment of a peculiar shaped guard tooth, but we have seen no evidence of his success, and from the construction of his tooth we do not think he has removed the difficulty.

McCormick's, of Chicago, Manny's, of Freeport, Atkins', of Chicago, Denton's, of Peoria, Illinois; Seymour & Morgan's, of Brockport, New York, cut with the sickle; Hussey's, of Baltimore, Md.; Ketchum's, of Buffalo, Burrall's, of Geneva, and Forbush's, of Buffalo, N. Y., use the V-shaped cutters. We believe every one of their machines, Ketchum's, Denton's, and Seymour & Morgan's excepted, are recommended to cut both grass and grain, but as we have already stated, the sickle harvesters cannot successfully do this, and we have no evidence that any machine hitherto constructed has accomplished this most desirable feat, and we doubt not that a machine which will do it, will prove the fortune of the inventor, especially if combined with a self-raking apparatus, which no reaper should be without.

Each of the machines mentioned above, and indeed nearly all of those in existence, use a reciprocating motion to the knives. Ketchum, however, has a patent for an endless chain of knives which rotate around rollers at each end of the bar, thus moving constantly in one direction. The difficulty of keeping this in order we apprehend is sufficient to prevent its use, it is at any rate certain that the inventor himself prefers the reciprocating knife. Various attempts have also been made to use circular cutters, but we consider the time and money spent upon them wholly wasted, as there are several practical difficulties in the way of their use.

Fig. 1.

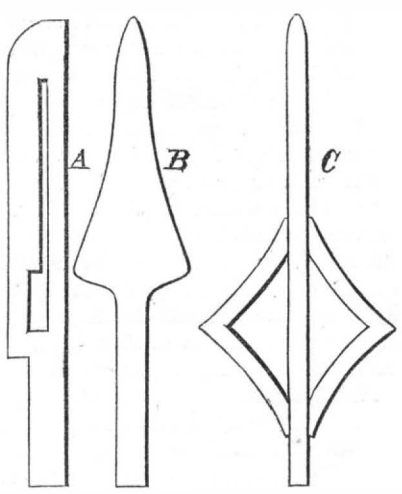


Attempts have also been made to use two sets of reciprocating V-shaped knives cutting against each other like shears, but we are confident that these will always be liable to choke in damp grass; knives vibrating on a pivot have also been invented; but these are liable to the same objection. We are therefore inclined from the considerations we have mentioned to give the preference to a reciprocating V-shaped cutter, although we admit that for reaping alone, there is some reason for preferring the sickle on the ground of its requiring no sharpening.

The shape of the guard tooth also has taxed the ingenuity of our mechanics, and very many of the patents issued have been based upon it.

A, figure 2, represents a side view of the the common form of guard tooth, showing the aperture through which the knife plays, which it will be remembered is found in all guard teeth; McCormick's is of the shape represented at B; the object of this is to retain the grain in the shoulder at the hinder part of the tooth, while it is acted upon by the sickle. This is a top view; C represents a top view of Forbush's tooth. These guard teeth, it will be remembered, are designed to answer a two-fold purpose—to act as a fixed base against which the grass may be pressed by the cutters, and also to shield the cutters from injury by stones or other obstructions.

Fig. 2.



The reciprocal motion in all these machines is obtained by a crank, which in turn derives its motion more or less remotely from the driving wheel of the machine. Now it is very desirable to obtain this motion by the use of a single gearing, but the difficulty has been the impossibility of obtaining sufficient motion to propel the cutters with the required velocity. It would not avail to increase the size of the driving wheel to which the gearing is now generally attached, as this would cause the wheel to pass over more ground in making a revolution, neither can the size of the cogs be sufficiently diminished, as this would render them too weak to resist the strain. Another difficulty in the employment of single gear, is the liability of so large a wheel to slip out of gear, as bevel gearing is necessarily employed, the motion of the cutters being in the same direction with the axis of the wheel.

Our inventors have nearly all, with good reason, discarded the "cart before the horse" plan of placing the horses behind the machine, but in so doing they have encountered another difficulty, viz., the side draft upon the team. Two plans have been adopted for avoiding this serious difficulty. Manny and one or two others have placed an extra pair of wheels in front of the machine, to which the team is attached, this removes the side draft, but the arm holding the cutters is liable to swing back, and it also renders the machine more complex and costly. Another and the best plan hitherto proposed is the one adopted by Ketchum and others, viz., placing the pole of the machine between the main wheel and the cutter-bar, but this renders it necessary to increase the length of the connecting rod, and consequently its weight, and the vibration of this consumes unnecessarily much of the power of the machine.

We have remarked on former occasions that no machine hitherto constructed possessed a sufficient degree of simplicity. The machines are intended for the use of farmers, and farmers are generally poor mechanics, hence a machine which in the hands of an intelligent mechanic would be a beautiful and efficient implement, is wholly worthless when intended for their use, as a slight derangement of its parts which could be remedied in five minutes, if neglected, will lead to a break that may cost a heavy bill for repairs, besides the inconvenience of causing the farmer to stop his work and post off to the nearest machine shop.

But our readers will expect us to say something about the comparative merits of the different machines. We know this is delicate ground, but we must be allowed to express our opinions candidly, and we shall do so, let the consequences be what they may. For cutting *grass* we have no hesitation in saying that Ketchum's is the best machine, in our opinion, yet offered to the American public. It is as simple as any other, requires but little room, and is capable of doing all its proprietors claim for it. And we will further say that this is the only machine that we know which will cut all kinds of grass without clogging.

As a mower, the only room for improving it is by devising some new mode of acquiring the necessary amount of motion, but we still say that a perfect machine should reap as well as mow.

As a *Reaper*, McCormick has won for his an enviable notoriety. More of them have been made and sold than of any other, and probably those embracing his recent improvements, have for dry grain no superior. It, however, has no raker, though any of the proposed plans may be attached. Seymour & Morgan's is also an excellent machine. Hussey's is a well known machine, and we prefer his cutter to McCormicks, although we have seen it stated that in England Hussey uses the sickle. Atkin's Automaton Raker has also of late attracted much attention. The inventor certainly deserves great credit for his mechanical ingenuity, its motions are almost life-like, and his machines will do the work expected of them well, so long as they are in good order, but they are liable to the objection we have stated, too great complexity. The same objections will, we think, apply to Denton's, the unnecessary complexity in both these instances increasing greatly the first cost.

We say then, there is yet great room for improvement in reaping and mowing machines, notwithstanding the many patents which have been granted during the past three years, and we expect that some of our ingenious mechanics will yet enrich themselves and benefit the public by producing a "simple" machine that will mow, reap, and rake.

Meat Biscuit.—No article in the Crystal Palace is of more importance than the "Patent Meat Biscuit" of Gail Borden, Jr. It was on exhibition at the World's Fair in London, and took one of the first prize medals. So very highly was this American production esteemed, that the celebrated chemist who was Chairman of the Jurors declared it was "one of of the most important discoveries of the age. Its value, as a compact, portable, preserved food is of great importance to our country. One pound of it contains as much nutriment as eight pounds of beef. It can be carried in canisters from pole to pole without fear of spoiling. It is exceedingly useful for seamen and travellers, and in this respect it is more valuable for *our people*, who are such great sailors and travellers, than any other people in the world.

Sanatory View of the Beard and Moustache.

Our attention has been frequently directed by correspondents to the question of "allowing the beard to grow for the purposes of health."—Some have directed our attention to a recent article on the subject which appeared in "Dickens' Household Words," and one has been so kind as to send us the said article cut from one of our cotemporaries, with a few of his own remarks appended, approving of wearing the beard and moustache in all their glory.

We have no doubt but the moustache and beard will be universally worn by our people in the course of four years from the present date; we thus judge from the great number who wear them now, in our city, in comparison with the number who displayed them five years ago. None but foreigners wore them then, now they are worn by one-eighth of our male population.

The masons and millers in the cities of Liverpool, Edinburgh, and Glasgow have adopted the moustache as a health preservative, and during the past winter the engineers and other employees on the Scottish Central Railroad wore the beard by the recommendation of Dr. Simpson, and have addressed a letter to their Superintendent, describing the benefits they derived from such a habit, and recommended its general adoption by all those in similar occupations.

Ten minutes of time spent in shaving every day amounts to one hour and ten minutes every week, or nearly 2½ days in one year. If in this city there are 60,000 men who each consume this time yearly in shaving, it amounts in the aggregate to 150,000 days in one year, all of which would be saved by wearing the beard.—But then what is to become of barbers and Sheffield razors? There is nothing, we admit, that would so readily reconcile any man to the inconvenience of an upper lip ornament as a bad razor. If the beard conduces to health then it should never be shaved. Clergymen, above all other classes, we believe, would be gainers by wearing the beard, it would in many cases prevent bronchitis, a disease with which they are peculiarly afflicted; they, however, will be the last to adopt the whisker, as they are so conspicuously shaven and shorn. Among the Anglo-saxon race the beard was universally worn in the days of Shakspeare, and even old John Bunyan displayed the moustache. Fashions in dress, and wearing the hair in various modes, revolve in circles, and now the reign of the beard has begun.

Patent Medicines in Kentucky.

At a recent meeting of the Kentucky State Medical Society, the following resolution was unanimously adopted:

Resolved, That a committee be appointed by this society, whose duty it shall be to memorialize the next Legislature of Kentucky to pass a law making it obligatory upon apothecaries, druggists, and all venders of medicines, to place a label on every article of patent medicines or nostrum of any description sold by them, which label shall have written or printed in plain English upon it the name and quantity of each article entering into its composition.—(Ex.

[We would amend the above resolution by adding after the words "patent medicines," (which have no existence)"and all doctors' prescriptions." It is well known that doctors do not write their prescriptions in plain English, but use Latinized old chemical terms, such as ferrum for iron, argent for silver, &c., they also employ peculiar signs of weight and measure. Surely the physicians of Kentucky cannot object to applying the same rule to themselves which they seek to apply to others.

A powder mill at Spencer, Mass., was blown up on the 4th inst.. Five persons were killed. The concussion and war of elements exhibited a terrific scene. No less than sixty kegs of powder exploded.

TO CORRESPONDENTS.

S. G. B., of Ohio.—Your plans are wholly futile and worthless. We advise you to abandon them entirely.

J. P. D., of Pa.—You had better send us your model with a full description, and we then can give you correct advice. Your discovery has been noticed to prove priority, for your benefit.

L. W., of Vt.—The lead inside of your pipe is an oxyde, and a poison. Soft is more dangerous than hard water, in lead pipe. A work on drawing published by Blackie & Son, Fulton street, this city, would suit you, price 50 cts. per number. The other on landscape drawing we cannot say anything about.

W. C. A., of Mo.—The Postmaster has charged you double postage, and ought to refund it. If he does not know the law and cannot comprehend its meaning, some one should be appointed who can.

J. C. R., of Pa.—You had better address Mr. Latham, at Washington, D. C. We cannot give the information.

R. W., Jr., of N. Y.—We believe that your self-fastening lock would be very useful and valuable.

J. K., of California.—We have demonstrated the question a number of times, of lead sinking to the bottom of the ocean to any depth; it is quite true that the Atlantic Ocean has been sounded to the depth of four miles.

R. M. R., of Ill.—The fixing of the colors on a daguerreotype plate would indeed be a fine discovery. A great many patents have been taken out for improvements in carriage wheels.

J. G., of Ala.—A common way of seasoning lumber here, is just to dry it in a close brick room, in which a common stove is placed. After the fire is kept up for some time, a window is opened to let out the moisture. Brick flues are safer than an iron stove. Bulkley's plan is a good one; it is done with steam heat. His residence is Lafayette, Ind.

O. P. W., of Conn.—By your description all the improvement is in setting the lathe to make only one revolution instead of 30 or 40. Is there not some other feature which you have not described? The result is good, and we believe you have made a patentable improvement but you must describe at greater length to enable us to judge correctly.

J. C. R., of Iowa.—We have learned since replying to you last, that Fr. Meisiner, 169 Front street, this city, is agent for the Prussian Needle Gun.

J. N. P., of Mass.—Your specification we amended as you suggested, and sent it to the Patent Office. We will endeavor to get your engraving into our next number.

W. S., of Pa.—Your letters patent were duly received. The 25 extra papers will cost you one dollar.

J. C., of C.—Your plan to propel a vessel, by pistons working in horizontal tubes communicating with the stern is not new. It was first proposed by the Earl of Stanhope, it cannot answer so well as the paddle wheel. We have the same device illustrated in one of our works.

J. W. Y. of Ark.—There is nothing new or patentable in your suggestion about the crank and walking beam engine. Neither do we see any advantage likely to grow out of it.

C. C., of Ga.—There is no work on mining that will approach to giving you the information you desire. By a study of geology you might in time be able to determine the ores likely to be found underneath the ground from the general appearance of the surface. $3 placed to your credit.

H. G. R., of Tenn.—Your Reaper is old and worthless. Send $15.

H. S. W., of Ga.—Engravings cost from 5 to 25 dollars. We cannot tell how much yours would cost without examining the invention.

D. B., of N. J.—If you have the article wanted you can take the prize. You had better when here examine all the conditions attending the introduction of the feeder.

J. F., of Ohio.—Your improvement in railroad car axles is not new. We have had the same thing in our office within the past two years—inventors name not remembered.

R. A. P., of Tenn.—You had better address C. A. Mann Troy, N. Y. He makes small engines to order.

J. N. R., of S. C.—We cannot advise how you can make the clock profitable to yourself. You had better ascertain how far railroad companies would take an interest in it by purchase, this you can do by correspondence.

R. W., of L. I.—We cannot afford you any satisfactory information of the instrument for relieving deafness.

J. S., of ——.—There is no patentable novelty in your method of making ice houses.

E. M., of N. C.—We do not remember of any patent for making paper of reeds. You had better look over the official list of patents published in the Scientific American.

N. W. W., of Ohio.—We think you cannot obtain Napier's Metallurgy in this country. G. P. Putnam & Co, of this city can import it.

J. B. U., of Ct.—Tredgold on the steam engine is published in London. You can procure it through Messrs. Blackie & Sons, 117, Fulton street, New York.

N. B. S., of Ind.—If the instrument is new it could be patented, but the idea of applying electricity to the cure of disease is old and well known.

N. R., of N. Y.—Your alleged improvements in auger handles embraces no patentable device. A model of the same thing was in our possession more than a year since

G. W., of Pa.—Send us a sketch of your pump and we will examine it. You are correct in thinking we do such things.

D. J., of Pa.—We do not think an elevated railway will be constructed in Broadway at present. The track will be laid in the street like other city railroads. Your subscription expires with No. 22. Pease's rotary steam engine embraces the feature suggested in your letter.

A. D. H., of Geo.—Direct to House Telegraph Company, New York City; this we suppose to be sufficient.

J. T., of Canada.—If you wish to advertise your machine in the "Scientific American," you are at liberty do so at our rates. We never take pecuniary interest in inventions.

J. C. W., of N. J.—Allen's patent for raising and lowering carriage tops was issued in 1850.

J. T. G., of N. J.—By reference to the back volumes of the "Scientific American," you can find a receipt for good whitewash. Three weeks before the expiration of a subscription we send a notice to that effect.

B. W., Jr., of Pa.—You cannot secure a patent for rotary cutters used in mowing machines. We have frequently had models and sketches sent to us of this device for examination.

G. S., of Pa.—Your sketches show both fans running in the same manner, a mistake on your part. The blades as in No. 1, should strike down at the back end of the fan case, driving out the air in line with the pipe.

Wm. Ferrel, Mount Holly, N. J., wishes to know where Gray's Patent Hay Scales are manufactured.

C. M. S., of Mass.—Such ideas as you have in regard to inventions, you should develope before offering them for examination. You should not engage in too many things at one time. We cannot put any one in the way of making money—this art is not in our line, we would serve ourselves and all our friends in this way if we could. Consult some maker about your chair improvement.

J. W. P., of Ill.—We have published an engraving of Richardson's Atmospheric Telegraph, it is patented.—Your plan is similar to one we saw four years ago.

W. L. K., of Ohio.—We don't think much of your plan for improving the paddle wheel. It could not in our opinion afford any advantage, and would increase the liability of accident arising from derangement and breakage of parts.

J. W. G., of N. Y.—Yours will be corrected next week.

J. B. S., of Pa.—Your initials must go in, we cannot place a fictitious name on such an article.

C. Van U., of N. Y.—We will give your's attention next week.

S. L. R., of N. Y.—The Juries of the Crystal Palace were selected, we believe, by B. Silliman, Jr., B. P. Johnson, and Samuel Webber. There are fifteen Juries appointed: no exhibitor competing for a prize was allowed to be on a Jury.

Money received on account of Patent Office business for the week ending Saturday, Nov. 5:—

J. F. F., of S. C. $54,77; B. L., of N. Y., $30; D. P. B., of Cal., $30; F. H. W., of Ga., $60; J. A. A., of Va., $30; J. H. R., of N. Y., $60; G. M. R., of N. Y., $5; H. N., of Pa., $55; C. V. A., of N. Y., $50; J. P. M., of N. Y., $8; F. & K., of Mass., $30; J. R. A., of N. Y., $15; M. J., of Va., $40; S. B., of Mass., $25; W. G., Jr., of N. Y., $35; C. W. B., of N. J., $30.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Nov. 5:—

J. P. M., of N. Y.; F. & K., of Mass.; S. B., of Mass.; J. R. A., of N. Y.; W. & T., of Md.; J. C., of Ill.; S. H., of N. Y.; G. & H., of N. Y.; N. T., of N. Y.

A Chapter of Suggestions, &c.

ALL GONE, ALL GONE.—At the commencement of the present volume, we printed 5,000 extra copies, which we concluded would be sufficient for the subsequent demand. It is now but eight weeks since Volume Nine was commenced, and to the disappointment of many we are obliged to announce that the entire editions of two numbers, 1 and 2, are all gone, and that we shall not be able to furnish the back numbers to any parties who order after this date.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and these we are ENTIRELY out of—Nos. 2, 3, 4, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 47, 48, 49, 50, 52.

TO CORRESPONDENTS.—Condense your ideas into as brief space as possible, and write them out legibly, always remembering to add your name to the communication: anonymous letters receive no attention at this office. If you have questions to ask, do it in as few words as possible, and if you have some invention to describe, come right to the business at the commencement of your letter, and not fill up the best part of your sheet in making apologies for having the presumption to address us. We are always willing to impart information if we have the kind solicited.

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

BINDING.—We would suggest to those who desire to have their volumes bound, that they had better send their numbers to this office, and have them executed in a uniform style with their previous volumes. Price of binding 75 cents.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, all; price, in sheets, $2; bound, $2,75.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post-office is located.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

FOREIGN SUBSCRIBERS—Our Canada and Nova Scotia patrons are solicited to compete with our citizens for the valuable prizes offered on the present volume. [It is important that all who reside out of the States should remember to send 25 cents additional to the published rates for each yearly subscriber—that amount we are obliged to pre-pay on postage.]

Scientific Museum.

Imponderable Agents.---No. 6.

We shall this week conclude the present series of articles upon the Imponderable Agents, by considering the application of our theory to some other natural phenomena. Let it be borne in mind that we consider all of them to be similar in their nature to heat or Calorism—that we regard them as existing in all bodies in a latent state, in the same manner in which heat thus exists, and it may be easy to explain many of those natural phenomena which have puzzled philosophers of all ages. The origin of atmospheric electricity has been explained in a variety of ways, some of them simply ridiculous, yet the explanation is very easy.

Clouds are the result of the condensation of the invisible vapor of water, consequent upon the union of a warm current of air with one that is colder. Now it is evident that the same reduction of temperature which produced a condensation of the vapor, would, by that cond nsation, set free a portion of the latent Electrism previously combined with the vapor, hence the cloud would become charged with free electricity. It might also happen that a cloud floating in the air, until its positive electricity should be dissipated, might be afterwards exposed to the intense heat of the sun, until it should be again partially dissipated; in this case it would be come negatively electrified, and if within striking distance of the air, a stroke of lightning might pass from the earth; but we think such instances seldom if ever occur—certainly never in a storm; hence we distrust the accounts which have been given of the phenomena.

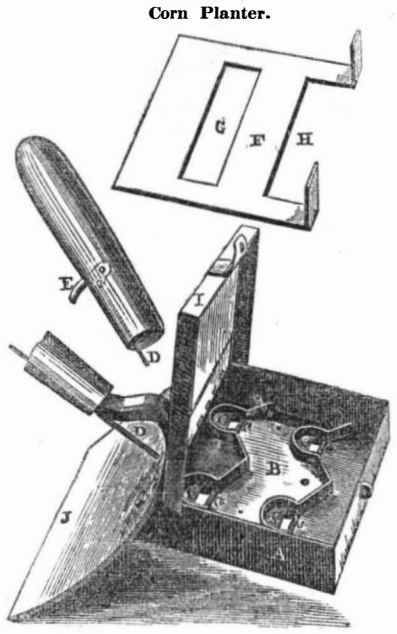
The Aurora Borealis is a phenomenon which has puzzled philosophers more than almost any other; yet, upon the principles we have laid down, its explanation becomes as easy as that given to the rainbow. All meteorologists agree that there is a strong upper current of air continually rushing from the equatorial to the polar regions. If this be true, when it arrives in the vicinity of the icebergs of the frozen zone, it necessarily undergoes condensation,—Lumenism, Calorism, and Electrism are consequently set free. The first produces the brilliant play of light seen in the Aurora Borealis—the changing colors being like the rosy hue of morning consequent upon the action of the atmosphere through which it is required to pass before reaching us; the liberated Calorism modifies the temperature of those dreary climes, and the Electrism produces those magnetic phenomena which are always the attendants of the Aurora Borealis.

The lambent play of light which is often seen in the horizon and about the edges of clouds at the close of a sultry day, is the result of a similar action. The condensation which is going on in consequence of the reduction of the atmospheric temperature, sets free the Lumenism and gives rise to this phenomena.

The cause of Gravity, too, a question on which hundreds have stumbled, and indeed of cohesion and all the other varieties of attraction, is fully explained by our theory. [See article No. 4.] The nature of Chemical Affinity has perhaps given rise to more discussion than almost any other scientific question, yet this is explained on the same principles with the others. We can safely claim at least to have offered an explanation of more of these vexed questions than has been done by any other theory.

We are willing to risk the assertion that no phenomena can be found which will militate against the theory we have advanced; if there be any we should be glad to have them pointed out to us; yet we cannot help thinking that its beautiful simplicity is after all its principal claim to consideration. It seems to us in accordance with the workings of Deity, to establish but few natural laws, and we shall generally find analogy to aid us very greatly in all researches concerning them. It was from these views we were led to the adoption of the theory we have proposed. The laws of heat were better understood than those of either of the other of these great agents, and as we perceived an undoubted similarity in their mode of existence we were induced to apply these laws to the others. Let onward by this train of thought, and guided by carefully conducted experiments, we arrived at the conclusions we have given. C.W.S.

Corn Planter.



The cut given on this page is an illustration of J. A. Pease's Patent Seeding Hoe. A is the side, and B is the bottom of the box in which is placed the corn; C C C C are valves operated by the trigger, E, on the end of the handle; F is placed in the box upon the projections which are seen curving around the apertures, *a a a a*, and is intended to prevent the escape of more than one kernel at a time, the corn passing down through the openings, G H; I is the lid of the box, and J the blade of the hoe. The advantages of this hoe are a saving of labor, as all that is required to drop the corn is to pull upon the trigger, E. By its action the kernels of corn are also dropped evenly and separate. The operation is simply striking the hoe into the ground, pulling the trigger with the fore-finger of the right hand, which drops the corn, which is then covered by the back stroke of the hoe, as it is lifted from making the forward stroke. It will be readily seen that dropping the corn in the hill separate, each kernel three or four inches from the other, gives each stalk a chance for nourishment, which cannot be obtained when the kernels are dropped by hand, all in a heap; besides, with this planter there is no stooping and consequent back aches.

This is a simple and ingenious invention, and we see nothing to hinder its practicability. It is certainly worth the attention of our agriculturists, for if the seeding apparatus should not work to their satisfaction, no great loss would be involved, as the hoe would yet be left.

For further information apply to the inventor at Burlington, N. J.

On the Disease and Preservation of the Potato.

It is now more than ten years, we believe, since what is called "the potato disease" first appeared in our country, and every year since then, although many plans have been tried to prevent it, its ravages have always been more or less manifested every season, and in none more fatally and universally than the present, excepting the terrible year of 1846, when it may be said to have been the means of depeopling Ireland of more than two millions of inhabitants. This disease has not been confined to any locality, for it has extended with more or less virulence over every country in which this useful tuber has been cultivated, consequently the cause of the disease must have been general, and a remedy for it would be hailed with gratitude by more than two hundred millions of the human race. We have published much useful information on the subject, and nothing but what was practical and sensible, and we take pleasure in laying before our readers again some new information which we look upon as valuable and worthy of being acted upon by our agriculturists. T. J. Herapath, an English chemist of celebrity, has written a letter to the "London Chemical Gazette," giving conclusions at which he has arrived after a great many experiments, respecting the cause and cure of this disease. They are as follows:

1. That the potato blight is neither directly nor indirectly caused by the ravages of any parasitical insect.

2. That it is the effect of a species of putrefactive fermentation or incipient decomposition of the nitrogenous, *i. e.* albumenoid constituents of the sap or cell-contents.

3. That this decomposition is either directly produced by a peculiar fungus, the "Botrytis infestans"—to which public attention has been already directed by other writers—or, what is in my opinion a still more probable supposition, the fungus referred to only makes its appearance after the fermentative processes have been in action for some time, and consequently is an effect, and not the cause of the disease.

4. That the blight has been in some measure produced by the long-continued and indiscriminate use of animal nitrogenous manure, which has over stimulated the potato plant, and has thus rendered it more susceptible of disease, and has, in fact, produced the same effect upon it that alcoholic drinks, when taken in excess, do on the human system; that is to say, it has injured the stamina of the plant, and rendered the organism more readily affected by atmospheric and other influences.

5. That animal or highly nitrogenous organic manures should be used with great caution in the cultivation of the potato, and indeed in that of all root crops; the best manure for the potato plant being the inorganic compounds, such, for instance, as those which are, or were at one time, used in some parts of the continent.

6. That the disease having once established itself, has become epidemic.

7. That it is contagious, if not infectious.

8. That the only mode of eradicating it is to restore the original constitution of the plant.

9. That this desirable result can be only brought about by introducing a complete alteration in the mode of cultivation that is adopted.

10. That the changes in question should consist,—1st, in thoroughly drying the seed potatoes, by the process now followed in some parts of Germany; 2ndly, in steeping them for a short time in a dilute solution of the sulphate of copper (blue vitriol or blue stone) of about the same strength as that used for "pickling" wheat; 3rdly, in planting them in poor, well-drained land; 4thly, and lastly, in substituting for the farm-yard manure, &c., now employed, some inorganic compost similar to those before alluded to.

In conclusion, I would suggest that the following simple experiment should be tried in storing the potato crop during the present season:—Let the tubers be stored in the usual way, but in the center of each heap or sackful let there be placed a quantity of unslacked lime, not in actual contact with the roots, but enclosed in some porous vessel—an old wicker basket, for instance—and covered over with and surrounded by, a thick layer of straw or hay. By this means the tubers will be kept dry; and as the presence of humidity in the air is a great incentive to putrefactive decomposition, one of the main causes of decay will be removed. The lime, so soon as it has become slacked, may be taken away and employed as manure; and, if practicable, should be replaced with fresh lime. The experiment I have described, it must be remembered, can be easily tried, and would cost but little even if carried out on a large scale; it cannot be productive of any injurious consequences, and will be doubtless attended with beneficial results."

The manure recommended here is that of *plaster* and such like substances. The experiments mentioned can easily be made and should be instituted so as to test them thoroughly.—The manner recommended of storing potatoes can be easily t ied by our farmers this winter, and we hope it will be by many. It can do no harm, and will involve no expense worth mentioning.

Medical Works.

We are in the regular receipt of six medical magazines, namely, "The Virginian Medical and Surgical Journal," edited by George A. Otis, M. D., and Howell L. Thomas, M. D., of Richmond, Va.; "The Northwestern Medical and Surgical Journal," edited by W. B. Herrick, M. D., H. A. Johnson, M. D., of Chicago, Ill.; "Nelson's American Lancet," by Horace and Alfred Nelson, Plattsburg, N. Y., "The Scalpel," edited by Edward H. Dixon, M. D., New York City, "The New York Medical Gazette," edited by Meridith and Reese, and the "Eclectical Medical Journal," by Joseph R. Buchanan, M. D., and R. S. Newton, M. D., Cincinnati.

There are a number of other journals devoted to the medical professions—we call them professions because there are different opinions among them. We must, however, give them all the credit of great ability in their respective fields.

Burning of the Henry Clay.

Our readers will remember the dreadful catastrophe of the burning of the Henry Clay, on the North River last year, by which a great number of persons lost their lives. After a shameful delay of eighteen months, one of the owners, the Captain, and the Pilot were tried in this city, and acquitted by a Jury on the 3rd inst. The trial lasted two weeks. Having carefully read the evidence, we cannot but say that from it we would have come to a different conclusion from that of the Jury, in respect to those who had charge ot the boat.

LITERARY NOTICES.

SCOTIA'S BARDS.—(Illustrated.)—This is a splendid new work, by Robert Carter & Brothers, this city: its object is to present to the American public choice extracts from the poets of Scotland, especially the minor poets of that country, of which there are not a few of great excellence, who are almost unknown to our people, such as Hector McNeil, Robert Nichol, J. Bethune, R. Tannahill, Pringle, Blair, Graham, and other worthies. The pieces and songs are selected with good judgment and great care, and are all of a religious and purely moral cast. The engravings are beautiful and numerous, the paper is superb, and the printing excellent. Edward Everett has said, "the throne and the sceptre of England will crumble in dust before the lords of Scottish song will cease to reign in the hearts of men." The work should meet with an extensive sale.

THE PRINCETON REVIEW—The last number of this able Quarterly, for 1853, of the O. S. Presbyterian denomination, published at 265 Chestnut st., Philadelphia, contains an able an exceedingly instructive article on Education in the High Schools of Germany. It should be extensively read by our people.

THE FAMILY DENTAL JOURNAL—Is a new monthly, published by Joel Munsell, of Albany, N. Y., and edited by D. C. Estes, Dentist. The first number contains a great deal of useful information respecting the teeth of children.

"Graham's Magazine," for November, has been laid on our table by Messrs. Stringer & Townsend, 222 Broadway. It has a number of capital articles, and many illustrations of scenery in Wales, with a finely written article.

"Putnam," for November, and "Littell's Living Age," have been received: also the Phrenological and Water Cure Journals, and the North Carolina University Magazine.