Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VII.] NEW-YORK, MAY 29, 1852. [NUMBER 37.

THE
Scientific American,
CIRCULATION 16,000.
PUBLISHED WEEKLY
At 128 Fulton street, N. Y., (Sun Buildings),
BY MUNN & COMPANY.

Hotchkiss & Co., Boston.
Dexter & Bro., New York City.
Stokes & Bro., Philadelphia.
Jno. Thomson, Cincinnati, O.
Cooke & LeCount, San Francisco, Cal.
Courtenay & Wienges, Charleston, S. C.
John Carruthers, Savannah, Ga.
M. Boullemet, Mobile, Ala.
Sidney Smith, St. Louis, Mo.
Barlow & Co., London.
M. M. Gardissal & Co., Paris.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Terms—$2 a-year—$1 in advance and the remainder in 6 months.

RAIL-ROAD NEWS.

Railway Curves, Axles, &c.

A correspondent of the Journal of Commerce has been discussing the question of railway accidents and their remedies. He has given to the world some excellent and judicious remarks on the subject. He points out the following evils of our railway system :—

First. Elevating the outer rail instead of the inner one, upon the curved portions of the railways.

Second. Large driving wheels, which require much coning, to go round the curves, and therefore exert an injurious lateral pressure upon the rails.

Third. Coupling the wheels, whereby the flanges are liable to abrade the rails, as each axle is prevented from assuming its natural position of normal to the curve.

Fourth. Two engines, tugging first on one side and then on the other, like a man sculling instead of rowing in a boat, whereby the rocking motion is greatly increased; and if it operates simultaneously with that produced by the cross winding of the axles, is almost certain at least to throw the locomotive off the rails.

All these causes tend materially to produce those accidents which usually take place upon the curves; but the greatest evil is the want of proper attention to the maintenance of the permanent way, more particularly upon the curves, and were these properly attended to, comparatively few accidents would happen upon them, more than on the straight parts of the line; but that affords no just reason for neglecting the other evils complained of. But still, the great desideratum is the perfection of the permanent way.

Talk of a director walking over a railway to examine it! why, he may as well send a carrier pigeon over it. Take a level, Mr. Director, and try round the curves, and examine the charts and then "mend your ways," "mend your ways," for they are sure to require it; it is a simple mathematical proposition, but worked out with a pickaxe, in the open air, away from the quiet, snug and comfortable office of the directory, and the engineer. The word of an ignoramus is generally taken that it's "all right," but let any man who has any common sense take a level, and put it across the rails, and he will no longer be in doubt as to the cause of many of the accidents which occur

Unparallelled Speed.

They are making time on the Hudson River Railroad now, that beats the speed on any of the English railways. The 6 o'clock train out of New York, Saturday morning, the 15th inst., made the distance in three hours and one minute. The following is the running time;—From 31st street, New York, to Peekskill, 50 minutes; to Fishkill 23 minutes; to Poughkeepsie, 20 minutes; to Rhinebeck, 20 minutes; to Hudson, 32 minutes; to Albany, 36 minutes; total 181 minutes. This is equal to about 50 miles an hour.

WOODWORTH'S SEED PLANTER.---Fig. 1.

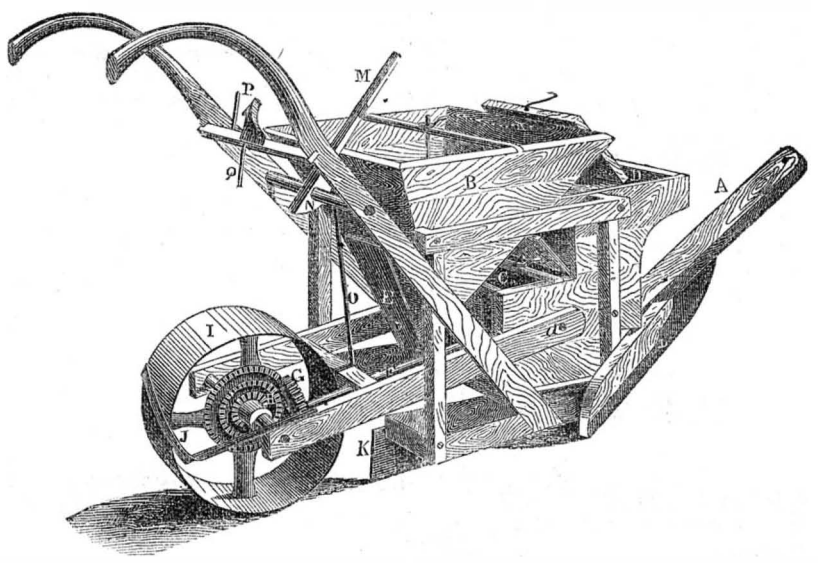
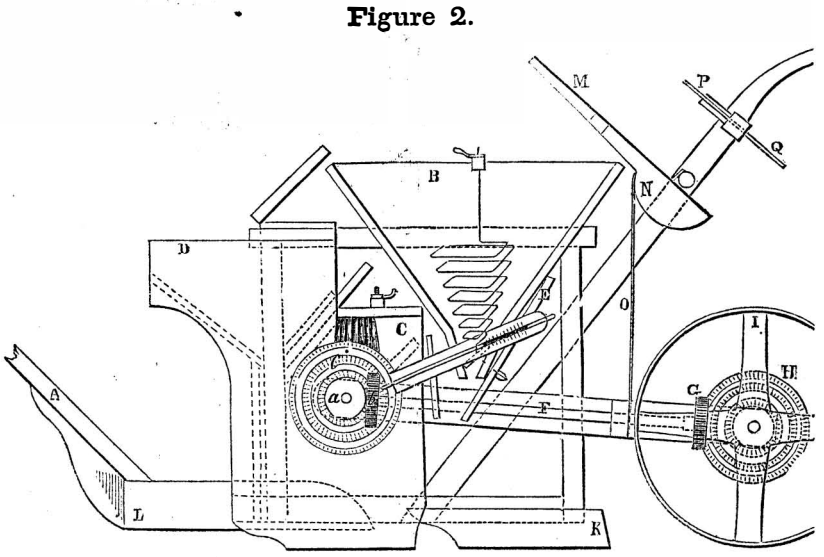


Figure 1 is a perspective view, and figure 2 is a vertical section of the Patent Seed Planter of Joshua Woodworth, of Mittineague, West Springfield, Mass. The foundation is a smoothing or surface board, with a plow or channeller, L, for opening the ground for the reception of seed; the coverer, K, is attached to the under side behind. A is the pole for drawing the planter; B is a hopper to contain ashes, plaster, lime, or poudrette, for the kind of seed which may be planting; D is a box for containing the seed; at the back end of this box there is a broad roller (*c* fig. 2) which revolves tight with its face passing through the back end of said box. No seed can pass out of this box, unless the roller takes it up. For this purpose, one or more recesses are made in the face of the roller, the seed passes into these as the roller revolves, and is carried over under a brush in the chamber, C, and then the seed drops out when the recess of the roller gets to the under side. This seed roller receives motion by a train of gear from behind; I is a broad-faced wheel, which has bevel cogs on its hub, H; J is a scraper to clean the wheel; G is a pinion on a shaft, F; this shaft has a pinion (*b*, fig. 2) on its forward end, which gears into cog gearing on the shaft, *a*, which is the shaft of the seed roller. When the wheel, I, revolves, it gives motion to the seed roller. This wheel, I, is made to be raised up at pleasure, so as to stop planting at any moment deemed necessary, while the apparatus is being drawn. The said wheel, with the shaft, F, and its gearing, are secured in a swinging frame of which, *a*, is the axis. To a brace of this frame is secured a strap or cord, O, which passes over a cam, N, and is secured on the lower end of lever M, which works on an axial shaft secured between the two stilts or arms of the planter. By taking hold of the lever, M, and bringing it downwards towards the back end of the planter, the wheel, I, is raised from the ground, and the seed planting operation is stopped. The lever, M, is retained in its place, suspending the wheel frame by a spring catch, P, which acts as jaws to embrace the lever. The arm,

Figure 2.



Q, is for the purpose of relieving the lever, M, from the spring catch, when the wheel, I, is to be lowered. The raising and lowering of the wheel frame, to suspend or put in operation the planting devices, can be done in a single moment. The opening or openings made in the seed roller, for the reception of seed, are such as to deposit the seeds at any required distance apart. The hopper, B, for the fertilizing material, which is placed behind the seed box, has a wire basket in it, which acts as a spring and regulator to govern the supply of fertilizing compound to the seed. The bottom of this hopper has a valve on the mouth of the shute, E, and it is secured to the lower end of the wire forming the basket; the upper end of this wire has a thread turned on it, and it passes through a cross bar over the mouth of the hopper; a nut works on the thread of the wire, therefore the basket can be raised or lowered by turning the said nut, and the valve on the exit end of the hopper can thus be opened to any extent desired, or it can as easily be entirely closed. The governing of the actions of the seed planting and fertilizing devices, are thus very easily accomplished. The valve for the poudrette hopper is also actuated by pins placed in the end of the seed roller, so as to operate a lever and make the valve open to drop the fertilizing material upon the seed, at such times and distances as the seeds are deposited in the furrows. The ground undergoes four processes of pulverization in the operation of planting: first, there is a smoothing board in the front end of the planter; second, the action of the plow; third, the covering operation, and then, after this, the broad-faced wheel, I, crushes all the clods, and packs the seeds with just that amount of pressure required. This apparatus can plant eight acres per day, in the most perfect manner, with the ordinary labor of one man and a horse. Two planters can be fixed so as to be drawn by one horse, for the apparatus is quite light. It can do the work better than planting with the hoe, and two horses with four planters attached together—which might be done when the weather demanded prompt action—will plant thirty-two acres in one day.

Mr. Woodward has made application for a patent for his improvements, and he warrants his machine to work to the satisfaction of any reasonable man. More information may be obtained by letter addressed to him at his place of residence.

The Art of Growing Trees from Cuttings.

Professor Delacroix, of Besancon, in France, has discovered a mode of propagating from cuttings, which is not only successful in case of roses and other plants easy to live, but apples, pears, plums, apricots, &c. Out of an hundred cuttings put out in June, not one but was thriving in August in the open air, without shade or extra care, except watering a few times soon after they were planted. His method is to put the whole cutting in the ground, bent in the form of a bow, with the centre part up, and just on a level with the surface, at which point there must be a good bud or shoot, which is the only part exposed to the air; the other being protected by the earth from drying up supports and gives vigor to the bud, which starts directly into leaf, and in its turn helps the cutting to form roots and the whole even forms a thriving tree. The method of setting them is to form two drills about three inches apart, with a sharp ridge between, over which bend the cutting, and stick an end in each drill, and cover up and press the earth firmly, and water freely. Cuttings should be of the last years growth fresh and vigorous.

Buffalo and Lockport Railroad.

The Lockport Courier states that the Buffalo and Lockport Railroad Company has been organized, and that it has been resolved to build an independent line of railroad from Lockport to Buffalo, connecting at Lockport with the Rochester, Lockport, and Niagara Falls Railroad. It is contemplated to construct that part of line between Lockport and Tonawanda this summer, so that in connection with the Buffalo and Niagara Falls Railroad, a railway communication will be opened during the fall and winter between Buffalo and Lockport, having the residue of the line completed by the spring of 1853.

Commercial Navy of Great Britain.

The commercial steam-navy of Great Britain, available for the national defence in the time of need, amounted, on the first of January last, to twelve hundred and eighteen vessels; and it is stated upon authentic information, that there were at least one hundred steamers in advanced states of construction, or completed since the beginning of the year, and not included in the official return. The vessels constituting this great steam-navy vary in size from two hundred tons burthen to three thousand. The steamers of four companies now employed in the ocean mail contract service, and warlike operations, comprised seventy vessels, amounting in the aggregate of tonnage to 93,431 tons, with 32,500 engines horse-power.

MISCELLANEOUS.

The Composition of Water.

MESSRS. EDITORS—I notice in your paper of the 15th inst., some remarks from the "Year Book of Facts," on the composition of water. The writer says, that "if any scientific fact is established, it is the composition of water. The conditions of oxygen and its broad distinctions from hydrogen, have been determined by the most able investigations the world ever produced—Lavoisier, Watt, Cavendish, Davy, and Faraday, are not to be treated lightly, because a pseudo-scientific American press proclaims to the world its new views." Permit me, in reply to the "Year Book," and your own remarks, to submit the following extracts of a paper read before the Royal Society, on January 24, by M. Daniel Paret, "On the Gaseous Transformation of Water, by means of a Pile in two separate compartments, having no other electric communication between them besides conducting wires of copper, and giving in the one oxygen alone, and hydrogen alone in the other." This arrangement and result is precisely what I have been ridiculed and abused for announcing, for the last five years. After premising that, at the present time, it is the generally received opinion that water is a compound of oxygen and hydrogen, M. Daniel Paret states that he now brings forward an experiment which proves, not that water is a compound, but really a simple element, since, without being decomposed, a given volume of water may be entirely transformed, at will, either into oxygen or hydrogen. Thus he considers it is no longer a decomposition of pre-existing elements which is effected, but really a gaseous transformation into two sub-elements, which are formed at the expense of the water, by the transposition of its combined or coercitive electricity, which places itself in the water, which becomes oxygen at the expense of another volume, which becomes hydrogen. After describing the experiments which support his theory, the author observes —"these experiments prove, first, that, contrary to the indefensable theory, a compound electric fluid, which is decomposed and recomposed, there is a true transfer of fluid in the current, which, besides, would be sufficiently evident by its motive power. Second, that the electric fluid is really the coercitive agent of cohesion. Third, that water is not a compound, is not an oxide, but truly a first element—the generator of oxygen and hydrogen. Fourth, in fine it reveals a body unknown until now, and very likely many other bodies are in the same condition as water."

No one questions the high attainments of Lavoisier, and others cited by the "Year Book," but I do question the right of any one to assume that these eminent men have exhausted scientific research—that no more can be known than they knew. But it is no evidence that Davy himself doubted that water was a compound, for he says, "that it may yet be found that water is but the basis of those gases."

In conclusion, I would remark that M. Daniel Paret, is but one of many that have proven my theory true, and he is also but one of many who treat the matter as their own discovery, in spite of the fact that I have been denounced as a humbug, for years, on the score of announcing myself as the discoverer. This is hardly fair. I have borne the odium and I will have the honors. HENRY. M. PAINE.

Worcester, Mass., May, 1852.

[If Mr. Paine will describe the manner, minutely, of resolving water into either oxygen or hydrogen, we shall then be able to test the truth or incorrectness of his alleged discovery. We have tried, but have not been able to resolve water all into oxygen nor hydrogen, and Mr. Paine has not made his plan public. We place but little dependence upon what Mr. Paret says, and do not take his opinions more than any other man's, for facts, without the demonstrations. A few years ago a respectable Edinburgh chemist announced he had made the discovery that all matter could be resolved into like substances—iron to gold, &c. This was a mistake; the old philosopher's stone revived. It is true that chemistry is but a young science, and no man should be bigotted respecting former discoveries, for what was a fact in chemistry five years ago, is a fiction to-day,—we only want the facts in this case, not the allegements.

The Cultivation of Madder and other Dyes.

A correspondent of the U. S. Gazette, living in Frankfort, Pa., directs the attention of our agriculturists to the cultivation of madder. The use of madder as a dye for our browns, reds, pinks, and lilacs—all fast colors, renders this dye indispensable to the dyer and color maker. All the madder used in America is cultivated in France and Holland; the French sells for 14 cents, the Dutch for 10 cents per pound. If our commerce with Europe were obstructed where should we look for our madder? To ourselves to be sure. We have every variety of soil and climate, and it can be cultivated here as well as in France, and certainly it would be a very profitable crop, for at the very lowest calculation one acre will produce 2,000 lbs., which would be nearly $280. It is believed that 10,000 tons are used annually, the cost of which is $2,000,000. It will be a long time before our farmers will be able to supply this demand, and while they may be striving to do so its use will be extending so fast that we cannot conceive of a period where, as a crop, it may be unprofitable. We do not use one-twentieth the quantity we might It dies a variety of beautiful colors, from a jet black to a lilac and deep red. The rich Turkey red, a piece of which is not dyed in our country, is colored with madder root, and to dye one pound of cotton it takes at least more than one pound of madder.

When our manufactures are more extended, we will have to cultivate the madder root, or else the price of the foreign article will greatly advance. We therefore hope that many of our agriculturists will devote more attention to the cultivation of this drug. The correspondent of the Gazette spoken of says:

"My attention was first called to this matter during the last autumn by a gentleman from Delaware, Dr. Allen V. Lesley, of New Castle, whose intelligence and public spirit will, I, trust, ere long, place him in the same niche in the temple of fame with Junius Smith, as a benefactor to his country. He has now upon his plantation about twelve acres of madder growing beautifully. I saw it a few days since, when it was about six inches above ground, far in advance of all other vegetation, except asparagus. He intends, I believe, to occupy his whole plantation, of 170 acres, with it, and will, I presume, introduce its culture generally, and, perhaps, simultaneously, with the tea by Mr. Smith. The Doctor sent me, some time since, a sample of the first lot that he gathered, about ninety pounds, which I had tested at the Frankford Print Works, where it was pronounced superior to the French madder that now sells at fourteen cents. This now fully establishes, to my certain knowledge, the adaptation of our country to its production, if it had not been established before. The Doctor informed me, however, that an individual in Herkimer county, New York, had been for several years cultivating it, and that one acre of ground afforded him an ample support, which was the height of his ambition."

We are glad to know that some of our enterprising farmers have commenced the culture of madder, it will no doubt afford them ample remuneration.

There is another dye drug which might be more extensively cultivated; we mean indigo. There is no good indigo made in the United States. The best indigo in our markets, is that which comes from Bengal, in the East Indies, and the next best is that which comes from Guatamala, in Central America. It appears to us that good indigo might be cultivated and manufactured in South Carolina, Florida, some parts of Georgia, Texas, Louisiana, and Alabama. A considerable quantity is cultvated in the Southern States for domestic use, but like our *sumac*, it is never for sale in the market; we have never seen a sample of it to compare with the poorest *Spanish float*. If we are not much mistaken South Carolina cultivated the indigo plant more extensively and made better indigo eighty years ago than is made in that State to-day. This should not be, and need not be. The Bengal indigo sells for two dollars per pound, a good price truly, and enough to incite our people, we should think, to make strong exertions to rival it.

There is another dye, but it is not a vegetable production, for which a great amount of money is expended, we mean cochineal. It is employed for producing the most brilliant scarlets, reds, and pinks, on silk and woolen goods. No other dye can approach it. All the cochineal used in our country comes from Mexico and some of the South American States. It is a small insect which feeds upon the cactus, and which, when dried and ground in a coffee mill, and boiled along with the hydro-chloride of tin and tartar, in a clean vessel, dyes the beautiful red on white wool. Owing to its high price—about two dollars per pound—a substitute for it, named *lac*, is extensively used. This latter substance is also an insect product, and comes from the East Indies. We are therefore dependent upon foreign countries for those dye drugs which have become a necessity to us, for where is there a man or woman in our whole country that is not indebted to the practical chemist for the coloring of some article of dress? We have been informed that the cochineal can be successfully cultivated in Florida; we have not doubt of it, but then it is not. It is our opinion that by quiet national expansion, the flag of our Republic will, in twenty years at the farthest, be the national banner of Mexico, and in that case we suppose more attention would then be devoted to the raising of cochineal, but for all this it would be good policy to cultivate all those expensive dye drugs now, in those parts of our country where this can be done successfully and profitably. We wish to direct the attention of our people to these objects; we have done so before, and may do so again. There are other dye drugs which we might speak about, and will do so at some other time.

The Discovery of Jupiter's Satelites.

When Galileo first turned his telescope to the planets, he was delighted to perceive that they exhibited a round appearance like the sun or moon. Jupiter presented a disc of considerable magnitude, but in no other respect was he distinguished from the rest of the superior planets. Having, however, examined him with a new telescope of superior power on the the 7th of January, 1610, his attention was soon drawn to three small but very bright stars that appeared in his vicinity two on the east side and one on the west side of him. He imagined them to be three fixed stars, and still there was something in their appearance which excited his admiration. They were all disposed in a right line parallel to the plane of the ecliptic, and were brighter than other stars of the same magnitude. This did not, however, induce him to alter his opinion that they were fixed stars, and therefore he paid no attention to their distances from each other, or from the planet. Happening to examine Jupiter again on the 8th of January, he was surprised to find that the stars were now arranged quite differently from what they were when he first saw them. They were all now on the west side of the planet and were nearer to each other than they had been on the previous evening; they were also disposed at equal distances from each other. The strange fact of the mutual approach of the stars did not yet strike his attention, but it excited his astonishment that Jupiter should be seen on the east of them all, when only the preceding night he had been seen to the west of two of them. He was induced on this account to suspect that the motion of the planet might be direct contrary to the calculations of astronomers, and that he had got in advance of the stars by means of his proper motion. He therefore waited for the following night with great anxiety, but his hopes were disappointed, for the heavens were on all sides enveloped in clouds. On the 10th he saw only two stars, and they were both on the east side of Jupiter. He suspected that the third might be concealed behind the disc of the planet. They appeared as before in the same right line with him, and lay in the direction of the zodiac. Unable to account for such changes by the motion of the planet, and being at the same time fully assured that he always observed the same stars, his doubts now resolved themselves into admiration, and he found that the apparent motions should be referred to the stars themselves, and not to the planet. He therefore deemed it an object of paramount importance to watch them with increased attention. On the 11th he again saw only two stars, and they were also both on the east side of Jupiter. The more eastern one appeared nearly twice as large as the other, although on the previous evening he had found them almost equal. This fact, when considered in connection with the constant change of the relative positions of the stars, and the total disappearance of one of them, left no doubt on his mind of their real character. He therefore came to the conclusion, that there are three stars in the heavens revolving round Jupiter in the same manner as Venus and Mercury revolve round the sun. on the 12th he saw three stars; two on the east side of Jupiter and one on the west side. The third began to appear about three o'clock in the morning, emerging from the eastern limb of the planet; it was then exceedingly small, and was discernable only with great difficulty. On the 13th he finally saw four stars. Three of them were on the west side of the planet, and the remaining one on the east side. They were all arranged in a line parallel to the ecliptic, with the exception of the central star of the three western ones, which declined a little towards the north. They appeared of the same magnitude, and though small, were very brilliant, shining with a much greater lustre than fixed stars of the same magnitude. The future observations of Galileo established beyond all doubt that Jupiter was attended by four satellites. He continued to examine them until the latter end of March, noting their configuration, and recording the stars which appeared in the same field of view with them.—[Grant.

The Crystal Palace.

It has been decided by the British Parliament that this structure must come down. It has been sold, we believe, for about $350,000. It was thought by many that it would be retained and kept in Hyde Park as a public green house, and this was suggested and advocated by Paxton. But it was allowed to be erected in Hyde Park with a pledge that it should come down after the World's Fair was over, and it was no more than just and honorable that the pledge should be fulfilled. Public parks are public property, and no buildings but temporary ones for important purposes should ever be erected on them. It is also well, as affording a subject to talk about, that the building should be removed. Let it be a thing of memory, rising grand in the past, canopying pilgrims for a happy season from all countries under the sun. It was the Congress of nations paying homage to peace and good will as connected with the "Arts and Sciences,"—to use it for another purpose would be desecration.

Compensating Pendulums.

MESSRS. EDITORS—In the last number of the "Scientific American" I noticed an article on "Compensation Pendulums," by Wm. E. Lukens, who would like to have the fallacy of his plan shown.

Now, in the first place, his wooden support, with the rod, would not be so firm to hold the pendulum, as to have the pendulum hung in the slit of the brass cap that is screwed to the plate, thus every jar affects it. If his plan be adopted, the clock case will expand, thus lengthening the vibrating part of the pendulum, and of course compensating only as accurately as the expansion of wood will allow. Would it not be better merely to have a pine or maple pendulum rod, as it would be compensated just as near perfection as it would with his extra rod and fixtures?

D. R. HALE.

Lowell, Mass., May 17, 1852.

The London Artizan.

The advertisement of this able monthly appears in this number; it is longer, by several lines, than we are in the habit of inserting, but as this journal is one of sterling merit, we cheerfully comply with the Editor's request to publish at length. Persons wishing to obtain it can do so by ordering through Messrs. Willmer & Rogers, corner of Liberty and Nassau streets.

Benefits to Readers.

MESSRS. EDITORS—Having been a subscriber to your most invaluable paper (the "Scientific American") for upwards of four years, I trust I may take the liberty of directing a few ideas of my own to you for consideration.

I wish I could persuade a thousand of my young fellow countrymen to become subscribers to the Scientific American, it certainly is just the paper for this Province. First, I will state the benefit I am about to reap by being a subscriber.

Last spring I started a new steam saw-mill of thirty horse-power, to saw boards from white pine, the trimmings of which are poor fuel; and from the economical manner my gang works, going round sweeps, &c., the trimmings were not sufficient to keep up steam, consequently I was at an expense of $1000 per annum for coal. This winter, noticing in No. 15. Sci. Am., the plan of fire bridges adapted to shaft boilers (of which I have two, 42 feet long by 3 feet diameter), I fitted up three of them, and the result is, that, notwithstanding the wetness of the present season, I have no more need of coal, and consequently I shall save the above sum.

I will now describe an occurrence that took place one day at the mill. This mill was wholly constructed and conducted by myself; the whole establishment cost $12,000, besides this, there were logs afloat enough to make 5,000,000 feet of board; under these circumstances you may readily comprehend my feelings, when a man came into the engine room giving an alarm of fire; I sprang to the door and discovered the rafters overhead in a blaze. I felt that it was too bad to have mill and all burn up, when there was plenty of water in the boilers and a force to throw it out; as quick as thought it struck me that the steam might be thrown loose and quench the fire. I sung out to have the doors closed, seized a wrench, started off the nuts at the butt end of the cylinder, threw forward the slide valve, and, in much less time than I pen this the mill was full of steam, and the fire quenched.

After the steam cleared away, drops of water fell copiously from the roof inside. It seems to me that had the engineer of the ill-fated Amazon closed the hatches and started the covers of the valve boxes, the fire would soon have been put out. It would be a good plan to have branch pipes running fore and aft steam vessels, with valves, or cooks, so arranged as to be able to turn out the steam into whatever apartment might take fire, the largest one being in the boiler apartment, that being the part most exposed.

E. D. DAVISON.

Mill Village, Nova Scotia, 1852.

[Many steamships and boats have pipes connected with the steam boilers, to use in case of fires. It would be a good thing if all such vessels were provided in this manner —The use of steam, as a fire extinguisher, has been known to us for a great number of years.

We publish the above to show what benefits have been conferred on one of our readers by the article on Boilers. We receive letters daily from readers, speaking of this and that benefit which they have received from the Scientific American. We do not like to publish them, as that would seem like blowing our own trumpet too loud; still, in many cases, and like the one of Mr. Davison, it would scarcely be unjust to ourselves and readers not to publish the letter. Our time and talents have long been devoted to acquiring, collecting, and spreading *useful* information among the people. Sources are open to us for this purpose which few possess, and we endeavor to cull that which is practical and profitable for the benefit of our readers. We are confident that there is something contained in our columns, in every volume, which is worth, to each subscriber, the amount of his subscription, and which he could have obtained no where else. One subscriber told us, a short time ago, he had copied a receipt of japanning from Vol. 3, Sci. Am., and sold it to a man for five dollars, and afterwards he was told by the same person that he considered it worth twenty dollars, for he had been in search of it for five or six years.

In America, granite is not found higher than 12,000 feet above the sea.

Recent Foreign Inventions.

Richard A. Brooman, of the firm of J. C. Robertson & Co., London, of the Mechanics' Magazine, has recently taken out a patent in England for improvements of a most varied character in the manufacturing arts. The objects of the improvements are for *felting*, cleansing, preserving, and dyeing, flax, cotton, hemp, wood, &c., also for making seeds germinate with great rapidity. The following are condensed extracts from the patent selected from the Mechanics Magazine:—

To produce a "contracting," or as it is technically termed "milling" or "felting" effect on the goods operated upon, I so combine certain substances as to form a compound or salt incorporated bodily therein, or intimately combined therewith, taking care that the combination is not preceded by decomposition. For example, I steep the goods in dilute sulphuric acid, and then without any intermediate washing, immerse them in caustic soda, whereby a sulphate of soda is formed, which produces the desired result. Other acids than sulphuric, and other hydrates than soda may be substituted. If I employ oleic, or any other similar organic acid, instead of sulphuric, a compound is formed in the material itself, and the same result obtained.

To produce an expansive effect, or one the opposite to contraction, or milling, or felting, I first saturate the material with some compound (say, for example, a carbonate), which on subsequent contact with an acid will suffer decomposition, accompanied by the escape of gas. I sometimes employ, instead of an acid, some salt, such as alum, which having an acid reaction, decomposes the first compound, and sets free the gas. Mere heat alone may be made to serve the same purpose as the acid body; and so also cold may be substituted for the alkaline action. Thus, milling or felting may be produced by immersing a heated body suddenly in a cold medium, and expansion effected by reversing the process.

To clean or decolorise a fibrous or membraneous substance, I first produce chemical decomposition in the substance itself. By decomposition, here is meant the separation of the constituents forming a compound body, which separation must always be accompanied by an evolution of gas. Thus, if a substance be immersed in a carbonate, and then exposed, to the action of a sulphuric acid, carbonic acid in the state of gas is evolved, and a sulphate of the base is formed. Instead, therefore, of following the ordinary chlorine bleaching process, I proceed in the following manner:—

Suppose white China silk is the article to be operated upon, I first immerse it in a solution of sulphate of magnesia, then transfer it to a bath of carbonate of potash or soda, upon which an insoluble carbonate of magnesia is formed in the silk; I then dip the silk so impregnated in an acid which will decompose the carbonate and form a soluble salt which is afterwards easily removed by washing.

A good compound for cleansing as well as for milling and felting purposes, is formed by combining some oily, fatty, or resinous compound (hydrocarbons) with an alkaline carbonate or hypochlorite. In this case a hot solution of carbonate of soda is first prepared, and there is then added to it cold oleine, fat, resin, or other suitable hydro-carbon until the base is saturated. To facilitate the combination of oily, fatty, or resinous compounds with alkalies, I saturate cloth or other porous material, such as pumice-stone, with the oily, fatty, or resinous compounds, and then boil it in an alkaline solution, by which means I obtain a larger surface to act upon.

To preserve animal or vegetable substances, I form a salt or compound of an anticeptic nature within their cells or fibres, taking care that the combination is not preceded by decomposition, or accompanied by the evolution of any gas, thus, for example, I immerse it first in muriatic, nitric, or acetic or saccharic acid, or other equivalent compound, and then into a solution of some basic hydrate, which, with the preceding acid or any other equivalent acid compound, will form in the meat itself an anticeptic salt. The meat thus treated will be perfectly wholesome, and will keep so for a long time.

To preserve and tan hides and skins, I form in like manner within those substances some conservative salt; for example, I steep them in tannic or other similar acid, and then immerse them in a mixture or solution of some hydrate, such as those of soda, lime, magnesia, baryta, or alumina.

As it is important, however, to avoid the formation of tannates of soda or potash on account of the deep color communicated by them to the hides, I prefer those bases which, with tannic acid, give the least amount of color; such, for example, as magnesia.

To preserve wood, canvas, and other like fabrics, I form a salt within the fibres thereof, by first immersing them in some suitable acid; such as sulphuric, pyroligneous, or muriatic, and then in a solution or mixture of some suitable base.

If I wish to produce color in wood or any other vegetable substance, as well as to preserve it, I use a solution of catechu or some other coloring material, and afterwards a solution of caustic soda or potash, whereby subinate of soda or potash is formed within the fibres of the substance.

To promote the germination of seeds, and cause them to throw out powerful first and second sets of leaves, whereby they may the more rapidly and effectually absorb food from the air, I form some fertilizing or stimulating compound within the seed themselves in the following manner:—I steep the seeds in phosphoric acid, and then in ammonia, potash, or lime, whereby a phosphate of one of those bases is formed within the seeds.

The Megatherium.

This leviathan of the vast plains of South America, which were once occupied by immense numbers of the race, now entirely extinct, partakes of the generic character of the existing diminutive sloths. It rivalled in size the largest rhinoceros, was armed with claws of enormous length and power, its whole frame possessing an extreme degree of solidity. With a head and neck like those of the sloth, its legs and feet exhibit the character of the armadillo and the ant-eater. Some specimens of the animal give the measurement of five feet across the haunches, and the thigh bone was nearly three times as thick as that of the elephant. The spinal marrow must have been a foot in diameter, and the tail, at the part nearest the body, twice as large, or six feet in circumference. The girth of the body was fourteen feet and a half, and the length eighteen feet.

The teeth were admirably adapted for cutting vegetable substances, and the general structure and strength of the frame for tearing up the ground in search of roots, wringing off the branches of trees, and uprooting their trunks, on which it principally fed. "Heavily constructed and ponderously accoutred," says Dr. Buckland, in his eloquent description of the megatherium, "it could neither run, nor leap, nor climb, nor burrow under ground; and all its movements must have been necessarily slow. But what need of rapid locomotion to an animal whose occupation of digging roots for food was almost stationary? And what need of speed for flight from foes, to a creature whose giant carcass was encased in an impenetrable cuirass, and who, by a single pat of his paw, or lash of his tail, could in an instant have demolished the cougar or the crocodile? Secure within the panoply of his strong armor, where was the enemy that would dare to encounter this leviathan of the pampas? or in what more powerful creature can we find the cause that has effected the extirpation of his race? His entire frame was an apparatus of colossal mechanism, adapted exactly to the work it had to do. Strong and ponderous in proportion as this work was heavy and calculated to be the vehicle of life and enjoyment to a gigantic race of quadrupeds, which, though they have ceased to be counted among the living inhabitants of our planet, have, in their fossil bones, left behind them imperishable monuments of the consummate skill with which they were constructed."—[Dr. Mantell.

The dust of the puff-ball (Lycoperdon bovista) is a powder so minute that a cubic vessel of a hair's breadth in size, would hold 125,000 of the little spherule grains. There are, in pepper-water, animalculæ whose thickness is not the 7800th part of a hair breadth. Their length is to their breadth as 50 to 1.

The Mouth of the Mississippi.

The New Orleans Commercial Bulletin, in an article on the Steam Tow-boats of the Mississippi, thus alludes to the difficulties in entering that river:—

But towing large and heavy drafts up and down stream, is only a comparatively small part of the business of tow-boats, as we have before observed. After their work proper is done, there is another extra labor to be performed, in the execution of which the strength and power of steam, iron, wood, hawsers, springs, and cordage of every kind, are tested to their utmost capacity of endurance. At the mouths of the river there are barriers to the ingress and egress of vessels propelled by wind and sails alone, as impassable as if constructed of solid rock, instead of plastic mud. Through, not over, these mud-flats, in water twelve and fourteen feet deep, ships from eighteen to twenty feet draught, are dragged by these boats. Sometimes they stick and hold fast, with an adhesiveness which it seems no power can overcome, requiring the work of hours, often days, and even weeks to remove them from their tenacious moorings. The mouths of the Mississippi, and there are now only two that are used at all for the passage of vessels of even tolerable size, are now so choked up with the alluvian that is brought down by the current, and deposited at the debouche of the river, that they are impassable, without the application of steam power; and no vessel of any size worth speaking of, ever attempts to cross the bar, inward or outward bound, without the aid of a tow-boat, oftener two, and frequently four, pulling and dragging her through the mud, with all their concentrated power, at a snail's pace. This, as it may well be supposed, is hard and tedious work, involving often great risk of property, sometimes jeopardy life, requiring consummate skill and prudence, and always attended with serious responsibility. The boarding of a large ship at sea, with a fresh breeze and a heavy swell, (and these boats sometimes go out fifty and sixty miles), and arranging all the necessary preliminaries for towing her into a harbor is a nice and hazardous undertaking.

A Wonder.

According to some Italian journals, a new organized being has been discovered in the interior of Africa, which seems to form an intermediate link between vegetable and animal life. This singular production has the shape of a spotted serpent. It drags itself along on the ground, and, instead of a head has a flower shaped like a bell, which contains a viscous liquid. Flies and other insects attracted by the smell of the juice, enter into the flower, where they are caught by the adhesive matter. The flower then closes and remains shut until the prisoners are bruised and transformed into chyle. The indigestible portions, such as the head and wings, are thrown out by two aspired openings. The vegetable serpent has a skin resembling leaves, a white and soft flesh, and, instead of a bony skeleton, a cartilagenous frame filled with yellow marrow. The natives consider it delicious food, at least so says the paper from which we copy the above, but we consider the whole story a fabrication.

Mortality at the Andover Theological Seminary.

A most remarkable mortality has attended this institution within a few months. Prof. Stuart has died. Prof. Edwards departed this life among strangers, in the place he visited to seek for health, and Deacon Noyes, the Treasurer of the Institution, late of the firm of Maynard & Noyes, of Boston, died quite suddenly; and besides the loss of these distinguished men, several of the wives of the professors have lost one or both of their parents within the same short space of a few months.—[Boston Journal.

[In Professors Stuart and Edwards our country has lost two of its ablest theological writers. The Bibleotheca Sacra is an evidence of this.

Velocity of sound, as assigned by different philosophers:—Newton, 968 feet per second; Flamsteed, Halley, and Derham, 1142: Florentine Academy, 1148; Du Hamel, 1172; Boyle, 1200; Roberts, 1300; Walker, 1338; Mersenne, 1474.

NEW INVENTIONS.

Improvement in Gas Meters.

John Laidlaw, of this city, has taken measures to secure a valuable improvement in gas meters. The improvement relates to the "Wet Meter." The principle of the "Wet Meter," to measure the quantity of gas consumed in any house or establishment, consists of a drum submerged in water, which is revolved by the gas passing through it and this drum moves a train of gears, which indicate the number of revolutions for cubic feet of gas, on signalling dials. Unless the water in the meter is maintained at a uniform level, it will not work accurately; this improvement effects this object. In the common meter the water often overflows and lodges in the gas inlet tube to the drum. This evil is remedied. There are screws or caps used in the common meter, which require to be removed to allow the escape of water from the inlet pipe, and the surplus water from the meter, these are dispensed with, and as the water accumulates its escape is provided for. Accidents are sometimes caused when these screws are left out by carelesness, such accidents will be prevented by the improved meter. A self closing valve is also employed as a substitute for the cap which closes the pipe through which the water is introduced, this cap is a source of great trouble if left off by accident. These improvements are very important.

Club Feet—A Benevolent Invention.

Dr. Zimri Hussey, of Chillicothe, O., has taken measures to secure a patent for an improvement in adjusting club feet. The club foot adjuster consists of two side pieces of wood or metal of sufficient length to extend from the knees to the bottom of the feet; these are intended to lie directly along the outside of the legs, and are connected together behind in such a manner as to be adjustable at any required distance apart, and to be always parallel or nearly so with each other. To each of the side pieces two or more metallic bands are attached by loops; these bands encircle the limbs below the knees and above the ankle joints, keeping the limbs in the same relative positions. A foot-piece or shoe is attached to each side piece for the foot, its attachment being such as to allow of every movement which may be necessary for the foot and for securing it in any position to which it may be brought. The management and arrangement of the foot pieces, for the cure of club feet, are peculiar. This is a meritorious invention.

Improvement in Buttons.

Elias Howe, Jr., first inventor of the Lock Stitch Sewing Machine, has made a very excellent improvement in buttons for gentlemen's garments. The improvement consists in surrounding the shank of a button with a small elastic ring of india rubber, which prevents the shanks from being worn, and the thread from being chafed. It also serves to preserve the button-holes of a coat or vest, as the shank of the button is thus made smooth, and therefore it does not catch and draw out the silk of the button hole. Measures have been taken to secure a patent.

Improvements in Roofing.

Aaron Price, of Dana, Worcester County, Mass., has taken measures to secure an improvement in the jointing of boards or planks for the purpose of forming roofs. The nature of this improvement consists in a peculiar manner of locking the boards or planks together, for roofing, and it is also applicable to the forming of floors, &c. Each board has two grooves in it, one on each side, at a convenient distance from the edges, and the projection in one board fits into the groove of the other, thus forming catches which are firm and snug, and which will enable roofs to be made with boards instead of shingles, or lining.

Improvements for Cutting Staves.

Daniel Drawbaugh, of White Hill, Cumberland Co., Pa., has invented an improvement in machinery for cutting staves. He gives the back of the rough block of wood to be cut into staves, an oblique motion, by means of inclined guides attached to a concave, said guides fitting in recesses in the inner edge of the movable bed on which the block is placed. The bed, as it is moved upwards, forces the block against a concave knife, which cuts the staves, giving them the requisite concavo shape. Behind the concave knife there is a roller which holds the stave against the knife as it is being cut, thus preventing it from splitting and riving into a bad and incorrectly formed rough stave. The improvement is a good one. Measures have been taken to secure a patent.

IMPROVEMENT IN SPEAKING TUBES.

Fig. 1.

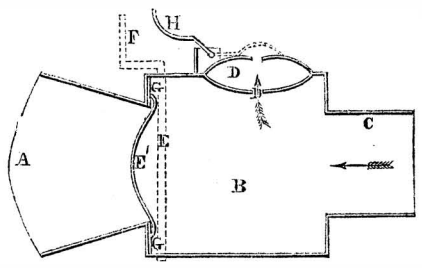
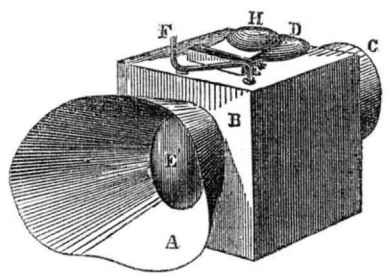


Fig. 2.



The accompanying engravings are views of improvements in Speaking Tubes, invented by Thomas J. Woolcock and William Ostrander, of this city, and patented on the 4th instant (May, 1852). This improvement in speaking tubes consists of the introduction within each mouth of the tube of an alarm valve, which performs two offices, viz., one to close the mouth when not in use, so that currents of air are prevented from passing through, and the other is to afford a signal by a sharp whistle, to direct the attention of those who may be distant from the tube when signalled too.

Fig. 1 is a longitudinal section taken through the middle. Figure 2 is a perspective view. The same letters of reference indicate like parts on both figures. The tubes are made and conducted from place to place in the usual way, and terminate at each end in a small mouth-piece, A, similar to that of a speaking trumpet. Behind the mouth-piece there is a small chamber, B, which is fitted to receive the alarm or whistle valve, D. C is the tube, which may extend down or up to any room in the usual way. The whistle valve consists of a hollow disc, formed so as to produce a shrill sound by means of the embouchure or small hole, D, through which the arrow is represented as passing. E is the valve which closes the orifice, E', of the mouth-piece; it is secured on a small spindle working in bearings, G G, of the chamber, B. F is a handle to throw open the valve, which fits close to the orifice. Above the whistle opening, D, there is a very small flap valve, H, which covers the outside embouchure. When a person blows up through the tube, C, from below, the light valve or cap, H, is thrown up as represented in fig. 1, and stays in that position till it is put down. The great benefit of this is as follows:—supposing a number of these signals were arranged in a shop, where a number of men were employed, all leading from different rooms, no one could tell which signal was operated by the sound, but this little cap H, shows to the eye what has been revealed to the ear by the whistle; the improvement is, therefore, both a signal and alarm. When a person has to speak through the mouth, A, the handle, F, opens valve, E, to allow of this being done, otherwise the valves are always closed.—When the speaking tube is not used, both ends are closed by the valves, so that neither dust, effluvia, currents of air, nor anything that can annoy, will pass through. The claim of the patent is for the combination of an alarm valve with the speaking tube. We have had one of them in use in our office for nearly a year and can speak highly of its usefulness. No speaking tube can be complete without this alarm and signal. It is neat, small, and cheap. They are made by the inventors and patentees at No. 57 Ann street, this city.

PATENT BLIND AND SHUTTER FASTENER.

Figure 1.

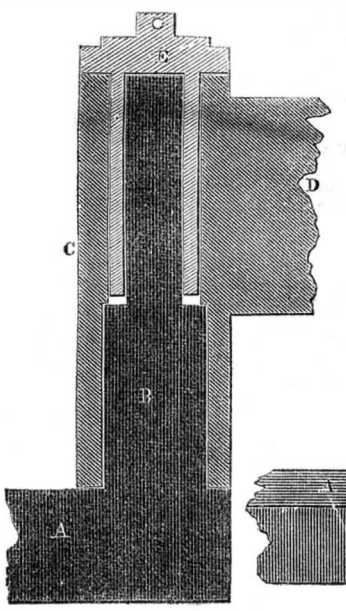
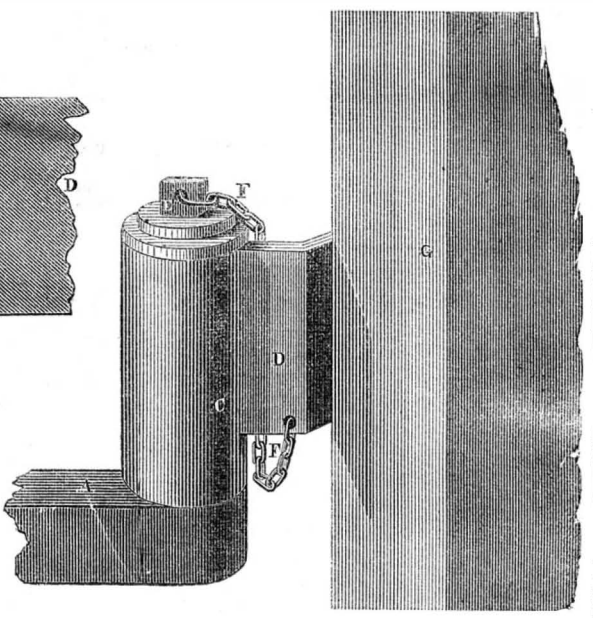


Figure 2.



The accompanying engravings are views of a most valuable improvement in Blind and Shutter Fasteners, which was patented on the 11th May, instant, by Samuel Barker, of this city.

Figure 1 is a vertical section of the pintel, socket, and cap of a blind hinge of the improved construction, taken through the centre. Figure 2 is a perspective view of the combined hinge and fastener attached to a window shutter, which is represented as swung back against the wall. The same letters of reference indicate like parts on both figures.

The object of this invention consists in securing or fastening shutters, or blinds of windows, in any position desired, either quite open—the blind resting against the wall of the building—or only half way open, or only a part open.

The hinge fastener is constructed as follows:—The upper portion of the pintel of the hinge is made of a square or octagon shape, as may be desired, and the upper part of the socket is made to correspond, a space being left between the upper portion of the pintle and socket. A cap corresponding in form to the upper part of the socket and pintle fits over the pintle inside the socket, and fills the space between the two, and thus makes the socket fast to the pintle, preventing the blind, which is attached to the socket, from swinging or turning on its hinges. A is the shank, of which the pintle, B, forms the vertical part.

The upper portion of the pintle is square and the lower part is round, like the pintle in an ordinary hinge (see fig. 1). C is the socket; its inside corresponding in shape to the pintle on which it fits. D is the shank of the hinge, which is secured to the blind or shutters, G, in the usual manner. The lower part of the socket, C, fits snugly on the corresponding part of the pintle, but its upper part is of a hollow square form. The shank, A, is driven into the casement of the window, or secured to it in any way desired. The principle of this fastener is embraced in making the upper half of the pintle of a blind hinge of a square or octagon shape, and the internal portion of the upper part of the socket of a corresponding form, and using a capped hollow bolt, E, of the same form, as an adjuster or fastener to slide over the pintle and inside of the socket, thus filling the space between the pintle and socket, to prevent the latter from turning on its axis.

This hollow cap bolt has a small chain, F, attached to it, which is made fast to the shank of the hinge, to prevent its being lost; besides, it is a convenient handle by which to withdraw the hollow bolt, E, from the socket, thus relieving the shutter from its fastening.

By those who have had experience in inserting hooks in the walls of granite or other stone buildings for blind fasteners, this invention will be particularly appreciated, for they know the difficulties of drilling seventy-five or one hundred holes in the sides of a single granite building, besides the trouble of adjusting the hooks after the holes have been made, which is a very laborious operation.

Another advantage which this blind and shutter fastener possesses, is its accessibility to operate from the inside of a dwelling. When it is raining, or in stormy weather, the common shutter and blind fasteners are very troublesome and inconvenient to operate, especially when it is raining violently; this fastener obviates these difficulties, for instead of having to open the window inside and extend the arm around to the hook, which has to be done with the common fastener, the person who wishes to close the shutter or blind with the new fastener, merely opens a small part of the window, withdraws the cap bolt and closes the shutter, without being exposed to the rain or storm.

We think this blind fastener the best invention of the kind we have ever seen, and we hope the inventor will be rewarded for his ingenuity, and remunerated for the expense it has cost him to secure his invention by Letters Patent. For further particulars see advertisement in another column.

The American Great Exhibition.

We have received very many communications on this subject. We can but do what we have already done—warn emphatically as to the duty of caution. The exhibition is in no way national; it is simply a bazaar—a private speculation for private gain. A legislative enactment creates it; but such enactment is neither more nor less than a legislative permission. The works exhibited are to be "in bond" without payment of duty, until sold; but this is a privilege which any merchant might enjoy. It is clear that the authorities in America anticipate some danger; for they are nervously anxious to have it clearly understood that Government is in no way responsible for the issue. It is not yet even certain that the Exhibition will take place, for the money is not yet collected

[We copy the above from the London Art Journal for May, and we think the writer has a proper conception of the object and end of the American World's Fair. An exhibition not countenanced by Government cannot but be a failure.

In the process of gold-beating the metal is reduced to laminæ or leaves of a degree of tenuity which would appear fabulous, if we had not the stubborn evidence of common experience in the arts as its verification. A pile of leaf gold to the eighth of an inch would contain 282,000 distinct leaves of metal! The thickness, therefore, of each leaf is in this case the 282,000th part of an inch. Nevertheless, such a leaf conceals the object which it is used to gild; it moreover protects such objects from the action of external agents as effectually as though it were plated an inch thick.

Scientific American

NEW-YORK, MAY 29, 1852.

The Benefits of Patents.

It has been suggested by some of our daily papers who endeavor to make the public believe they are acquainted with all subjects, that it would be well, instead of granting patents, to have a Government Board, composed of distinguished men, to whom inventions should be referred for examination, and if found to be new and useful, the inventors of them should be paid accordingly, out of the Treasury, and the inventions made free to the public. No other plan, worth a moment's consideration, has been proposed as a substitute for the present patent system. This is evidence to those acquainted with this subject, that such persons know not what they talk about. In many cases, however, they may deceive the people by their sophistry; this is the reason why we, as a matter of duty, find it necessary to combat, and allude to such ideas, more often than we otherwise would.

As a measure of common justice, every inventor who benefits community by his improvements, should receive his reward,—"the laborer is worthy of his hire." If he be not rewarded, community acts the part of a robber and ingrate towards him, when there is no fault on his part. Well, allowing our present system of patents to be suspended, and a Government Board constituted to carry out the object of special rewards for useful inventions, how would it carry out continually the great principle of its organization? According to the manner of conducting our government politics, a very excellent and impartial Board of Examiners might be appointed when one party was in power, and then, in the course of four years, a most partial and inefficient Board might be appointed when the next party came into office. Offices are often filled by party favorites of no great qualifications, and a Board of such men might grant a large reward for a poor and miserable invention, and on the other hand, reject a most meritorious one. In this way the whole community would be taxed to pay a premium for discouraging useful inventions. And even if the Examining Board were made permanent, like our United States Judges, the members of it would be liable to fall behind the light of the age—all Government Boards do, if not frequently renovated. Our mercantile marine is in advance of our navy; and England is behind us in nautical architecture, not because she has no philosophic and scientific men at the head of her dockyards, but because improvements spring from the mass of the practical, driving people, of which there are so many in the United States.

Such a system as the one recommended instead of granting patents, would very soon be condemned by our whole people, for every one would then have to pay for a rewarded invention, whether he used it or not, and this would be all the more galling, because all would, in many cases, have to pay for rewards bestowed upon men who had done nothing to deserve them. The present system of patents, taxes no person who does not receive a benefit, for no one is required to pay for a patent if he does not use it; he can use it and pay for it, or he may let it alone, and get along the same way as he did before the improvement was invented and patented.

We are now prepared to point out the great benefits conferred upon society by patents,—we mean in the struggle for superiority with that spirit by which one man endeavors to surpass his neighbor by improvements. This spirit to excel, and to attain riches, when well and honestly directed, is certainly commendable. Let us take, for an example, two rival manufacturers engaged in the same business; one, let us suppose, is more wealthy than the other, and this gives him an advantage to purchase better machinery, and, to use a good pithy American phrase, "he goes ahead;" the other manufacturer, his rival, never knew what it was to say *fail*, and he is an inventor,—is there an American who is not? He toils hard all day, and studies much at night, and at last he quietly has a model made, and then comes a patent from Washington for James Ridgely, manufacturer, of such-and-such a place, for making bed posts; it can turn out twice as many in the same time, and do the work much better than any machine in use. He now feels safe, and his rival looks somewhat blue; but he, too, has the true American *grit* in him—he, too, can invent. By-and-bye he makes a superior improvement to that of James Ridgely, and, in a short time, a patent is issued to John Jenkins, for an improvement in turning bed posts, which will turn out three times the quantity of Ridgely's—and now Jenkins *goes ahead* again. Thus it is, our improvements, fostered by the refreshing dews of our patent system, gush along like thousands of rills, fed from as many prolific plodding American brains. If the system of granting patents were to cease, the spirit of improvement would flag, and perhaps die out. It is owing to the cheap and easy mode of securing patents in the United States, in comparison with other countries that we, as a people, have become celebrated as a nation of inventors:—McCormick's Reaper, Dick's Press, Day & Newell's unpickable Lock, Borden's Meat Biscuit, Colt's Pistols, &c., which commanded prizes, and the admiration of all men at the World's Fair,—were all the subjects of American Patents. He that is opposed to patents, however honest and sincere he may be, is, ignorantly, not a true friend to genius nor his country.

Hot Air Engines.

We have lately required some communications, making inquiries about hot-air engines, and one mentioning "Ericsson's Caloric Engine," and asking our opinion about it. Reference is made to an article in the Boston Evening Transcript, which speaks very flauntingly upon the subject. So far as our opinion goes, we have expressed it already. It would be a great improvement indeed, if the common atmosphere were used instead of huge boilers filled with water, but why is it that large boilers are required for steam engines, and found to be more economical than small ones? Our knowledge of these things is experimental, practical, and not speculative. We cannot, by reasoning, find out what kind of fuel is best, neither can we, by sophistry, discover whether air is better than water, or water better than air for propelling machinery by heating these substances. The economy of propelling agents is determined by stern experience and careful observation. The loss of heat, by the use of steam, is but very small in the Condensing Engines of our river boats; it is greater in steamships where the salt sediment has to be blown out frequently. No Caloric Air Engine whatever can economize more fuel than Condensing Engines, unless it has a better principle of combustion. Heat, or caloric, is the great motive power sensible to us, when combined with some known substance, such as water, air, or carbonic acid gas,—and it is certainly good reasoning to say, that it requires the same amount of heat always to produce the same effect. It cannot be otherwise, or we could not obtain any correct ideas of the qualities of heat. The engine, therefore, which will economize most of the heat generated to produce a certain effect, will work with the least expense unless it has other disadvantages. The advantages claimed for the Caloric Air Engine (all steam engines are caloric engines) have yet to be substantiated. The employment of hot air to propel machinery is not new now—nor is this Engine young with Capt. Ericsson. Those newspapers that publish flaming accounts of new inventions, very often exhibit a great deal of ignorance.

The following extract from the Boston Transcript does this:

"The idea of substituting a new and superior motive power for steam will no doubt strike many minds as extravagant if not chimerical. We have been so accustomed to regard steam power as the *ne plus ultra* of attainment in subjecting the modified force of nature to the service of man, that a discovery which promises to supersede this agency, will have to contend with the most formidable preconceptions as well as with gigantic interests. Nevertheless, it may now be predicted with confidence that we are on the eve of another great revolution, produced by the application of an agent more economical and incalculably safer than steam. A few years hence we shall hear of the 'wonders of caloric' instead of the 'wonders of steam.' To the question, 'How did you cross the Atlantic?' the reply will be—'By caloric, of course!' On Saturday I visited the manufactory, and had the privilege of inspecting Ericsson's caloric engine of sixty horse-power, while it was in operation. It consists of two pair of cylinders, the working pistons of which are 72 inches in diameter. Its great peculiarities consist in its very large cylinders and pistons, working with very low pressure; and in the absence of boilers or heaters, there being no other fires employed than those in small grates under the bottoms of the working cylinders. During the eight months that this test-engine has been in operation, not a cent has been expended for repairs or accidents."

We must say there is nothing new in all this; In January, 1834, the "Repertory of Patent Inventions," in London, published a review of an unpublished pamphlet, written by Mr. Ericsson, on this subject, he having, at that time, taken out a patent for his Hot Air Engine, so he has been more than sixteen years before the public. It was stated, in 1834, that Mr. Ogden, the U. S. Consul at Liverpool, was a joint inventor with him, and application was made that year to Congress for a Special Act for a patent to Ericsson & Ogden, for what reason we know not. Various substances have been brought forward from time to time, to supersede the use of steam, such as gunpowder, carbonic acid gas, &c. In 1827, R. & J. Stirling, of Glasgow, Scotland, took out patents for a "Hot Air Engine," the principle of which had been devised by them ten years before that. A hot air engine, by R. Stirling has been employed at Dundee since 1844, and in 1846 he read a paper before the institution of Civil Engineers, England, and in answer to a question of Mr. Gordon, he said, "the economy of his engine depended upon the reiterated use of the same air giving out and absorbing the same caloric." This is the benefit which is claimed for the Ericsson Engine. We have not heard of a single engine on Stirling's principle being used on a steamboat in Britain—this, however, is no argument against the Ericsson Engine, for many good inventions have laid dormant for some time, after having been brought once before the public.

In 1828 Messrs. Parkinson & Crossley, of London, took ont a patent for improvements in "Hot Air Engines," and Dr. Arnott, in his "Elements of Physics," published in 1829, in treating of light and heat, presented a design for a "Hot Air Engine." The application of hot air as a mover of machinery is, therefore, not a thing of to-day—it is twenty-five years since the Stirlings took out their first patent, and eighteen years since Ericsson took out his, and the question of comparative economy, from an impartial source, between the hot air and the steam engine, has yet to be laid before the public.

Street Sewers---Iron Pipes.

Among the many nuisances to citizens, and obstructions to travel in our streets, we must set down the construction and repairing of sewers as a class of the very worst kind. Sewers are generally very deep, and from the time the operation of digging is commenced, until a sewer is completed, the street is wholly obstructed. The time required for such operations, is so long in comparison with paving a street, that the nuisance is more aggravated on this very account. Some important remedy, we hope, will soon be suggested and carried into practice. City drainage, by underground sewers, is important to public health. Our sewers are simply brick arches, and are inferior in many respects to those which were constructed more than two thousand years ago in Rome. With a considerable back pressure of water, caused by high tides, &c., or by obstructions, our sewers are liable to burst, for they are not very strong structures. When one bursts, the water soon finds its way to the surface of the street. The repairs of sewers are very expensive, because it requires so much time to make them. One great remedy would be a preventive of sewer disruption, by making them of stronger material. For example, if large cast-iron tubes were employed instead of brick—these never would burst by any water pressure to which our sewers are generally subjected. They could also be laid down much faster than brick arches. Their flanges have only to be coupled together in laying them down, and this can be done very fast by competent men. The only objection which may be urged against the use of iron pipes is their liability to oxydize and decay; but then they are used for water pipes, and last for a very long time, as cast-iron is altogether different from wrought-iron, and does not oxydize readily. They might be glazed both inside and out, to prevent oxydization; or a composition of black lead and coal tar might be applied to them, both inside and out, which, when dried, would act as an effectual coating for a century.

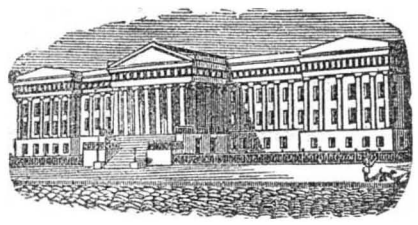
Whatever the opinion of city engineers and architects may be at present, about brick sewers, we are of the opinion that the time is not far distant, when cast-iron pipes alone will be used in their construction. This will also be the case with pipes for house as well as city drainage.

New York Times and the Patent Laws.

The "Times" of last Saturday, with that perversity of common sense peculiar to the egotistical and ignorant, and which should not characterize that otherwise able paper, takes up the subject of Patent Laws again, and discusses some of the principles of the New English Patent Law. The Bill has been introduced under the care of Lord Brougham, and Earl Granville. "Entertaining," says the "Times," similar views to those repeatedly expressed in the "*Daily Times*," the noble Earl avows decided opposition to all patent enactments, but gives way to prejudice; the bill makes use of what is commendable in the American system; the originality is to be inquired into, and advancing upon *our ideas*, it is provided that the *utility* of the invention shall always be a branch of the inquiry. The introduction of this principle of utility into the official examination, we would therefore recommend as an improvement upon *present modes*." What ignorance, just like that displayed by the "Times" about *a caveat*. *Advancing* upon the "Times'" ideas, forsooth; what conceit; why, it is specially provided for in our Patent Law of 1836, that an invention shall be new and useful, Sec. 7, Act 1836 says,—"If the Commissioner shall deem it to be sufficiently useful and important, it shall be his duty to issue a patent therefor." Is this advancing on the "Times'" ideas of 1852? The "Times" says "it is *probably foolish* to anticipate an abandonment of prejudices in favor of a system as hoary as patent rights." We believe so; but we were not aware that *the* patent right system *for inventions* was very hoary. It only dates from James I. The principles opposed to patents which the "Times" admires, we know to be hoary. They belong to the age of "the good old robber plan, that he would take who had the power." It is a great anomaly, to advocate on the one hand a system of protection in manufactures to men of wealth, and at the same time condemn the system of protecting the inventions of Whitney, Blanchard, Morse, &c., which have conferred so many blessings upon our people. Reasoning upon the principles of logic and morality embraced by the "Times," it was wrong for Whitney to find fault with those pirates who broke into his office and stole his invention—he was not a true man for so doing; he ought to have been content with the gratitude of his fellows. Such principles, we must say, are of that progressive species, which would destroy present good systems, and establish on their ruins the practices of a dark, degraded, and benighted age.

The Woodworth Patent.

We hope that the U. S. Senate will act upon this question soon. It should be settled at once, one way or the other, and not left over to cause more excitement and agitation throghout the country. The thousands of petitioners who have presented their opinions on this question to their respected Senators, expect of them more than the mere presentation of their petitions, and surely it must commend itself to Senators, to see that those petitions receive some answer.



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING MAY 18, 1852.

CARDING—By Jonas Holmes & Ephraim French, of Lee, Mass: We claim traversing the doffer or doffers of a card, or setting the teeth upon them, serpentine or zig-zag, or in such other curves, points, or angles as may suit the taste or fancy of the operator; also to traverse them, when so set, if desirable, so as to take the wool or other materials, from such parts of the main or other cylinder of the card, and deliver it to the condensing rollers or other apparatus, so as to make roving variegated, either in colors or materials, or both, when said colors or materials are fed upon the card, substantially as described.

STOVES—By G. W. Kennison, of Newburyport, Mass.: My invention consists in a combination of the following particulars or elements, viz.: first, a close drum or chamber, made with one or more air inlets, and their closing slides, or doors, in the lower part, and a fuel opening and door at or near its upper part.

Second, a fire pot or chamber of combustion, placed within the said drum, and having a grate in its lower part, and a smoke discharge pipe leading out of it at or near its apper part.

Third, an air space under the fire-pot grate.

Fourth, a space between the external sides of the fire pot and the internal sides of the drum, and made to freely communicate with the space under the grate.

Fifth, a space above the fire pot, or place for the fuel, and made to freely communicate with the space around the fire pot

Sixth, a fuel supply opening and door, and an air register in the top of the fire pot, the whole being arranged and made to operate together, substantially as described.

SHIP'S BLOCK—By Chas. H. Platt. of New York City: I do not claim the metal plate for connecting the checks, for that has been previously employed; but I claim the employment or use of the metal bands or hoops, said hoops or bands encompassing the cheeks and fitting in grooves in the peripheries of the cheeks, the hoops or bands having eyes formed in them at the upper end of the block through which the bolt passes, securing the cheeks the proper distance apart at the upper end of the block, as set forth.

UMBRELLAS—By J. V. Tibbets, of New York City: I do not lay special claim to the device consisting of a female screw slide working over or on a screw rod, and operating together, for opening and closing the frame of the umbrella, as the devices to effect this may be varied; but I claim distending or opening the embrella by the rods which have heretofore simply served as studs to the covering, and been permanently attached thereto, the covering being secured to the apex of the central rod, and the lower ends of the distending rods; and this I claim, whether the inner ends of the distending rods be made to descend or the central rod to ascend with the apex of the covering, in distending the umbrella.

I also claim the manner of securing the cover to the frame, viz., by means of swivels attached to the cover and screwed on to the ends of the rods, as described.

I also claim the application of the springs of the rods to the slide, operating in the manner and for the purpose described.

IRON SAFES—By Wm. Alford & J. D. Spear, of the District of Southwark, Pa.: We claim the application of chalk, or whiting, which has been subjected to the action of acids, and has been partially deprived of the carbonic acid, the material which we use being, in fact, the waste, or residual matter left from the manufacture of what is called mineral water, after chalk or whiting has been subjected to the action of acids for the purpose of expelling a portion of its carbonic acid, this residual matter consisting, substantially, of the substances named in the analysis before referred to in the construction of double iron chests or safes, in the manner described, or in any other manner substantially the same.

SAW-SETS—By Asahel G. Bachelder, of Lowell, Mass.: I claim the dog or set, so constructed and arranged as to traverse or slide upon a rod or bar in a direction parallel to the toothed edge of the saw, for the purpose of setting the same, substantially as described.

STRAINING SAWS IN SAW MILLS—By Edward Booth, of Philadelphia, Penn.: I claim the employment of the lever, or its equivalent, the spring connected to the lever by a rod or link, which is secured or attached to the lever near its fulcrum, both operating together and in combination with a reciprocating saw connected to the lever, and the whole being constructed, arranged, and operating substantially as described.

CARTRIDGES FOR BREECH-LOADING GUNS—By Wm W. Marston & F. Goodell, of New York City: We claim the application of the leather breech-piece to cartridges used with breech-loading guns, such leather breech-piece serving the purposes of a foundation for its own cartridge, a protection to the breech-pin, a wad for the next cartridge, in succession, and of a swab to clean out the soilage caused in the barrel by the antecedent explosion, producing a safe cartridge for pieces that load at the back of the breech, and in which explosion is also caused in the line of the axis of the barrel, substantially as described, but without regard to the sizes of arms used with the cartridges, and irrespective of the machinery or mechanical means, by which the cartridge itself is made.

SWINGS—By Edward Maynard, of New York City: I claim the combination of the wire frames constructed as set forth, with the net work and swing cords.

COTTON BATTING—By E. P. Rider, of Brooklyn, N. Y.:—I claim uniting two or more layers of cotton batting together by means of any glazing material, thereby producing a new article of manufacture, which I term cotton felt, to be used for upholstery and all other purposes to which it is applicable, as set forth.

[This is an important invention for upholsterers, and we predict that, within a few years, cotton will be the principal article used for nearly all kinds of upholstering purposes.]

CHURNS—By Clarkson Rhodes, of Morrow Ohio: I claim hanging the series of beaters or dashers by rods extending from the shaft, the lower ends of which rods support the fulcrum on which the beaters or dashers move (not confining myself to the number or form of the dashers), the said dashers being operated by the rods and bell cranks, substantially as set forth.

OVENS—By T. N. Reid, of Baltimore, Md.: I claim the construction of said oven, with recesses on the side, or sides, for fuel, substantially as set forth, and in combination therewith, the cooking chambers, as described.

HAY RAKES—By C. R. Soule, of Fairfield, Vt.: I claim so constructing revolving spring tooth rakes, as to bring the centre of revolution nearer the lower ends of the teeth, than can be done by having them revolve on the head, around which the teeth are coiled (which is the usual mode), by which means I cause them to revolve much quicker, and in giving a much shorter distance than otherwise can be done, while, at the same time, they revolve much easier and more readily, in consequence of having the second head, coil, &c., to balance, or nearly so, the remaining heft of the teeth, &c., which will be on the other side of the centre of revolution, or nearly so, thereby giving the required length and elasticity to the teeth, with a quick and easy revolution, which I accomplish as set forth, or by means analogous thereto.

CEMENTS—By B. S. Welch, of Brooklyn, N. Y: I claim the primary cement, as described, formed of the hydrate of lime in a finely subdivided state, and resin in a finely subdivided state, mixed together with water in a cold state, for the purpose set forth.

DESIGNS.

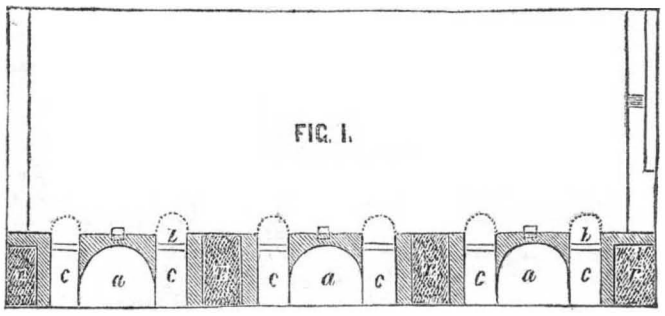
COOKING STOVES—By T. A. Herrick, of Boston, Mass. (assignor to L. M. Leonard, of Taunton, Mass.)

COOK STOVE—By N. S. Vedder & Wm. L. Sanderson of Troy, N. Y., (assignor to Peter J. Clute, of Schenectady, N. Y.)

[Just one half of all the Patents in the above list (exclusive of the designs on stoves) were cases on which the applications were prepared at the Scientific American Office.]

LINTON'S IMPROVEMENT IN BRICK KILNS.

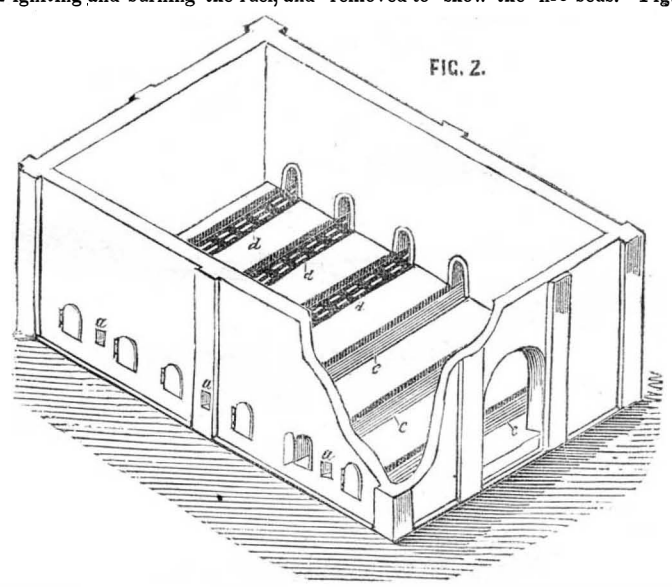
FIG. 1.



This invention is an improvement in the construction of Brick Kilns for burning coal or hard wood, and was patented by the inventor, William Linton, of Baltimore, Md., on the 20th of last Januuary, 1852. The improvement consists in the form of the air chambers, and the bottom of the fire beds, and in the mode of introducing the air into the kiln for igniting and burning the fuel, and causing a free, steady, and unimpeded heat, equalized throughout the body of the kiln, by which fuel is economized and the time required for burning the kiln shortened.

Fig. 1 is a sectional view of the air chamber, as situated a little below and between each of the fire beds. Fig. 2 is a general view of the kiln, with a portion of the wall removed to show the fire beds. Fig. 3 is a

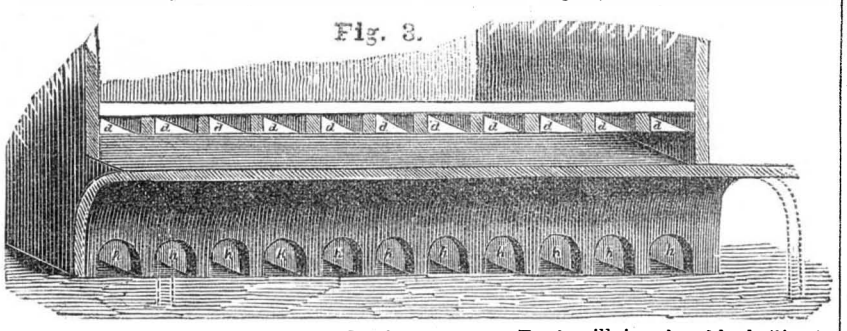
FIG. 2.



sectional view of the air chamber, showing the openings or recesses.

The construction is as follows:—An arch fig. 1, *a a a*, is formed a little below and between each of the fire beds, *b b*, in which openings, *c c c*, are made that serve to admit the air up into the fire beds, *b b*, through the conductors, *c c c*, (as at fig. 3, *h h h*, and *d d d*,) made therein, so as to cause a free current of air to every portion of the fire beds, for the purpose of equally igniting the fuel thereon. The ashes are discharged into the air chambers, and the fire beds are kept free. The bottom of the fire bed may be covered with an iron grating, as at fig. 2, *c c c*, and this is essential where coal is the fuel used, or where wood is the fuel they can be covered with brick, as at fig. 2, *d d d*. *a a a* are vent

Fig. 3.



openings leading to the air chambers. By the above improvement the inventor alleges he is enabled to burn 7,000 bricks with one ton of bituminous coal, and 4,000 bricks with one cord of oak or other wood.

For further information apply to the patentee, carner of Lexington and Pine streets, Baltimore, Md.

Preservation of Milk.

Various plans have been brought forward from time to time, for keeping milk in a fit state, at least for using with coffee and tea.

Milk has been preserved in the following manner:—Fresh milk is reduced by boiling to one-half, and beaten up with yolk of eggs, in the proportion of 8 eggs to every 10½ quarts of milk. The whole is then placed on the fire for half an hour, and skimmed frequently; it is next strained and heated in a water-bath for two hours. It is stated that this milk will keep good for two years, and if churned would afford good butter. Cream may be preserved by boiling five measures down to four; then, after cooling and skimming, it is put into a bottle, corked down, luted, and kept in the boiling heat of a water-bath for half an hour. This, it is said, will keep two years.

A much better method of preserving milk is that first pointed out by M. Dirchoff, the Russian chemist, namely, to solidify it by driving off the aqueous portion by a gentle heat. Specimens of consolidated milk were shown in the Great Exhibition; and it was stated that, after being dissolved in boiling water, and re-produced in the form of milk, the solution will keep pure for four or five days. As milk contains 873 parts water in every 1,000, it follows that 1,000 parts of milk will yield by evaporation only 127 parts.

Thunder of Waterfalls.

Dr. Tyndall, in the "Philosophical Magazine," makes the following observations on the production of bubbles in connection with the origin of the sound of agitated water:—When the smoke is projected from the lips of a tobacco-smoker, a little explosion usually accompanies the puff; but the nature of this is in a great measure dependent on the state of the lips at the time whether they be dry or moist. The sound appears to be chiefly due to the sudden bursting of the film which connects both lips. If an inflated bladder be jumped upon, it will emit an explosion as loud as a pistol-shot. Sound, to some extent always accompanies the sudden liberation of compressed air. And this fact is also exhibited in the deportment of a jet. If the surface of the fluid on which it falls intersects its limpid portion, the jet enters silently, and no bubbles, as before remarked, are produced. The moment, however, after the bubbles make their appearance, an audable rattle also commences, which becomes louder and louder as the mass of the jet increases. The very nature of the sound pronounces its origin to be the bursting of the bubbles; and to the same cause the rippling of streams and the sound of breakers appear to be almost exclusively due. I have examined a stream or two, and in all cases where a ripple made itself heard I have discovered bubbles. The impact of water against water is a comparatively subordinate cause, and could never of itself occasion the murmur of a brook, or the musical roar of the ocean. It is the same as regards water-falls. Were Niagara continuous and without lateral vibration, it wold be as silent as a cataract of ice. It is possible, I believe, to get behind the descending water at one place; and if the attention of travellers were directed to the subject, the mass might perhaps be seen through. For in all probability it also has its "contracted sections;" after passing which it is broken into detached masses, which, plunging successively upon the air-bladders formed by their precursors, suddenly liberate their contents, and thus create the thunder of the waterfall.

Extension of a Patent.

On the petition of Phineas Bennet, of New York, N. Y., praying for the extension of a patent granted to him on the third day of August, 1838, for an improvement in apparatus for generating steam, for seven years from the expiration of said patent, which takes place on the third day of August, 1852.

It is ordered that the said petition be heard at the Patent Office on Monday the 26th of July, 1852 at 12 o'clock M.; and all persons are notified to appear and show cause, if any they have, why said petition ought not to be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specifically set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing, must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

THOS. EWBANK, Com. of Patents.

Washington, 1852.

Foucault Illustrated.

The Springfield Republican says, that Mr. Geo. M. Dimmock, a workman in the U. S. Armory, in that city, has invented an apparatus to illustrate the pendulum experiment of M. Foucault, demonstrating the rotation of the earth upon its axis. This apparatus is an artificial globe, with an adaptation of a pendulum, which is put in vibratory motion over a dial, divided into degrees, at any required latitude of the globe.

TO CORRESPONDENTS.

H. L. W., of Miss.—There can be no doubt but it appears rational that a strong iron casing would nullify the effects of a steam boiler explosion in a measure, but we, nor any other person, are in possession of data in respect to the casing. Experiment alone, as you suggest, can determine this.

W. M. F., of Pa.—We have examined your sketches of the wheel and the description. We cannot see where you can get more power; but we have never seen a wheel like it; it is not an infringement on any other that we know of.

M. R, of Me.—It would perhaps be well for you to file a caveat, until your model is completed. You know the value of the improvement, and the sooner you have it protected by a patent, so much the better for you.

W. A. R., of ——.—Your plan of using a highly heated vessel and ejecting a small quantity of water continually into it, for the purpose of raising steam, is not new; the same plan is described in Hebert, but the principle is not correct. Your plan of a compact condenser is new to us, but we prefer the old one.

G. S. C., of N. Y.—If there be any novelty in your "Rotary" we have failed to discover it.

F. C., of N. Y.—From the description you give of your "Blower" we are inclined to think there is nothing patentable in it. If you will send us a model we will examine your invention further and advise you of the result of our investigation, however.

G. M., Jr., of Ill.—The plan you propose for raising water for such emergencies as extinguishing fire aboard of vessels is impracticable. We should dislike to take up your case that has been rejected, and in the event of our consenting to do so we should charge you just the same as if it were a new application, viz., $25.

W. P. F., of Ga.—Harris & Son, at Elizabethtown, N. J., manufacture and sell a good Smut machine.

A. J. C., of La.—In volume 5, Sci. Am., you will see a propeller wheel illustrated, which is precisely like yours; it was patented in England in 1826, and then abandoned.

G. G. S., of Mass.—Your spirit is commendable, your object and aims are noble. Go on in your good resolves; you have yet to study and learn much, but your labor will not return unto you void.

R. P., of Me.—We replied to you understandingly by mail, and your diagram since received does not tend to change our opinion as formerly expressed.

B. & C., of Auburn, N. Y.—Some points in your press, as we understand it from so indefinite a description as you sent us, are new and patentable, but we could not specify to you what claims to make without a better understanding of the machine.

E. S. P., of Va.—You will find that very subject discussed, in some of the back numbers which we have sent you.

W. H., of Wis.—It is not applicable to an ordinary engine, and in order to test its merits, it would require an engine constructed expressly for it.

H. T. P., of S. C.—Your letter enclosing $20 came safely to hand.

C. W. G., of N. Y.—Your letter covering $10 came duly.

D. W., of Mass.—Your letter with $6 was received.

B. O'B., of N. Y.—To obtain a patent for the Canadas, the law requires that the applicant shall be the inventor and a resident subject. You can obtain an English patent, including the colonies, by application to the office in London, which is the best course you can pursue. We can attend to it at any time when you are prepared.

L. K., of N. Y.—We cannot execute the engravings so well from the daguerreotype as from a model. We prefer the Letters Patent, but can get along well with a model.

J. B. C., of Tenn.—The remittance of $10 came duly to hand. We have not yet received Mr. Thompson's model. We omit the article referred to, not wishing to continue a controversy.

R. E. A., of Mass.—There is now a bill before the English Parliament modifying the Patent Laws considerable. It is, however, very doubtful whether it will pass or not. Legislators care little or nothing for inventors. We say it in humiliation and shame in view of their conduct.

G. E., of Va.—You had better hurry along the model as fast as possible. It is dangerous to delay with any invention, as there are always plenty of sharpers on the lookout. No other person has corresponded with us.

J. A. P, of N. Y.—None of the engravings named in yours of the 9th inst are in our possession; they were executed for the inventors, and have by them been taken away, otherwise we should have been glad to have furnished them.

C. G., of Boston—Dick's Press has been highly spoken of, and for many purposes we think well of it. Engravings, we notice, have just appeared in "Le Genie Industriel," an interesting scientific monthly, by Armengaud & Bro., Paris.

Money received on account of Patent Office business or the week ending May 22:

A. M. G., of S. C., $40; S. & M., of N. J., $25; E. [illegible] of N. Y., $25; T. H. D., of N. H., $10; J. C., of [illegible]55; M. B., of N. Y., $20; W. S. H., of N. Y., $[illegible]; D. S., of N. Y., $20: P. McK., of N. Y., $10; E. C. H., of O., $48.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending May 22:

R. R. F. & Co., of N. Y. (3 cases); G. P., of N. Y.; S. & M., of N. J.; L. A. S., of Pa.; M. B., of N. Y.; S. M., of N. Y; D. S., of N. Y.; A. B., of N. J.

An Important Paragraph.

Whenever our friends order numbers they have missed—we always send them if we have them on hand. We make this statement to save time and trouble, to which we are subjected in replying when the numbers called for cannot be supplied.

The Post Office Laws do not allow publishers to enclose receipts; when the paper comes regular subscribers may consider their money as received.

Subscribers ordering books or pamphlets are particularly requested to remit sufficient to pay postage.

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 Volumes 1, 2 and 3—none.

Of Volume 4, about 20 Nos.; price 50 cts.

Of Volume 5, all but 4 numbers, price, in sheets, $1.

Of Volume 6, all; price in sheets, $2; bound, $2,75

Of Vol. 7, all back numbers at subscription price.

Patent Claims.

Persons desiring the claims 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 one dollar as fee for copying.

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 regulation of the Patent Office. Price 12 1-2 cts. per copy.

ADVERTISEMENTS.

Terms of Advertising.

4 lines, for each insertion,	-	-	50cts.
8 " " "	-	-	$1,00
12 " " "	-	-	$1,50
16 " " "	-	-	$2,00

Advertisements exceeding 16 lines cannot be admitted; neither can engravings be inserted in the advertising columns at any price.

☞ All advertisements must be paid for before inserting.

SCIENTIFIC MUSEUM.

Agricultural Science.

To Dissolve Bones.—Procure a stout earthen jar, of about thirty gallons capacity. Put 100 lbs. in the jar and moisten them with water for a day or two. Now dilute fifty pounds of vitriol with two or three times its bulk of water and pour one-third of it upon the bones. Stir them frequently, and on the morrow add another third of the acid and water. Stir them well, and if not dissolved sufficiently on the next day, add the remainder of the liquid. As soon as the bones are reduced, mix charcoal dust, dry peat, saw dust, loamy earth, or, if for immediate use, ashes or lime may be used as a dryer until the whole is in the form of powder, convenient for sowing by hand or drilling machine. You may apply this at the rate of three to ten bushels of the bones to the acre, sown broadcast and lightly plowed or harrowed in, so that the earth will absorb the gaseous portions of the gelatine of the bones, which is of great value, independent of the phosphate of lime; a substance greatly needed upon all the cultivated fields and pastures of all the old States of the Union.

Culture of Rhubarb.

Garden rhubarb is valuable as an early vegetable. For sauce and pastry, it is a good substitute for apples and other fruits, it being ready for use at a time when these fruits cannot easily be obtained. Its goodness, however, depends much on its being so cultivated as to secure a large and rapid growth. For this purpose, select a location to which the sun has a free access. Then from a space of sufficient length and width remove the earth to a depth of two and a half feet, and fill the trench with rich soil and manure. Let the latter be used plentifully, for rhubarb is a great consumer, and there is no danger of enriching it too much. The ground being thus prepared, the plants may be inserted, with their tops two or three inches below the surface.

Saving Manure.

The Michigan Farmer gives the practice of a Scotch farmer, in the saving and management of his manure, which we cannot but regard as eminently economical of its fertilizing qualities, and worthy of general adoption except in the depth of winter, when it may be delayed. To prevent dissipation by evaporation and washing, he draws it away as fast as it is thrown from the stable, piles it up in some convenient place on the farm, first placing a layer of the fresh manure, to a depth of 8 or 10 inches, then a layer of common soil about four inches thick, which presses the course down to about the same thickness, then another layer of manure, which in like manner is followed by another layer of earth, and so on till the pile is completed. In this way the volatile portions are preserved, and he asserts the manure is of double value to what it would have been lying in the yard.

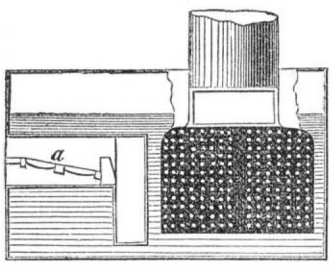
Currant Bushes.

Having noticed that currant bushes may as well be made trees as shrubs, I have concluded to tell you how I have seen it done. In the spring of 1831 my father commenced a garden, and among other things set cuttings; and as soon as they grew I picked off all the leaves except the top tuft, which I let grow. The cutting was about fourteen inches high, and during the summer the sprout from the top of this grew perhaps ten inches. The next spring I pinched off all the leaves to about half way up the first year's growth, so as to leave the lowest limbs about two feet from the ground. It branched well and became a nice little dwarf tree. When it came to bear fruit, it was more productive than any other bush in the garden, and the fruit larger, it was less infected with spiders, and other insects; hens could not pick off the fruit, and grass and weeds are more easily kept from about the roots—and it was an ornament instead of a blemish. Now I would propose that currant cuttings be set in rows about five feet apart each way; let them be long and straight ones, and trained into trees.—[Michigan Farmer.

On Boilers.---No. 25.

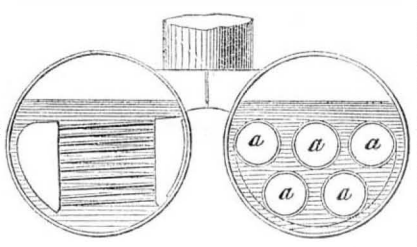
Marine Boilers.—Figures 51 and 52 are a side elevation and a transverse section of a boiler by Messrs. Penn & Son, of London, for the Hydra, a naval steam vessel, and which were illustrated in the "London Artisan" o last April. The shell is 9 feet 10 inches in diameter, and 16 feet 8 inches long. The number of tubes are 398 of 2 3-8 inches diameter, and 5 feet 3 inches long; furnaces 2 feet 8 inches diameter. The furnaces, *a a*, as well as the shell, are cylindrical, and the small diameter of the furnaces enable them to resist a very high pressure. The furnaces being arranged in two tiers, allow of a large area of fire-grate being obtained in a narrow width of shell. The position of the tubes across the boiler makes them as accessible as in an ordinary boiler.

Fig. 51.



One great drawback to the economy of Marine Steam Boilers, is the use of salt water; this contains about one-thirty-third of its own weight of salt, consequently every ninety-nine gallons of water that is evaporated leaves three gallons of salt—ninety-six have expanded into steam, and three have been resolved into solid matter. If there were not some plan to relieve the boiler of this salt, it would soon choke up—be filled with salt. This really did take place with the first steamboat which made a sea voyage. It would be a great saving of fuel if fresh water could be used at sea, and many plans have been tried to employ it, by cooling the steam in a condenser, and using it over again as feed water in the boiler. Of course the condensation must be effected by the application of cold water on the outside, instead of in the inside of the condenser, which is the common plan. Hall's condenser had a very high reputation at one time, but all machines and apparatus for any purpose are valuable only according to their general economy, which can only be found out by use; we are not able to give the reason why Hall's Condenser is not now used.

Fig. 51



The plan in general use for relieving marine boilers of salt, is "blowing off." This, to be economically performed, must be accomplished when the water in the boiler has been saturated to a certain density—not before nor after. This point of density is indicated by an instrument attached to the boiler and named a "Salinometer." The one invented by W. Sewall, Jr., and described on page 120, Vol. 6, Scientific American, is the one most highly recommended in our country. Charles W. Copeland, at one time Chief Engineer U. S. Navy, is the inventor of an excellent blow-off apparatus for boilers. It is constructed on the principle of making the supply of feed water regulate the amount of blow-off. His blow-off was applied to the boilers of the war steamship Mississippi, but whether it has been applied to any of our merchant steamships or not, we cannot tell. It is intended as a substitute for blowing-off by hand; the constant-blow, which is a small open tube to drain off the requisite saturated quantity; and it is also a substitute for brine pumps; the latter, however, have not been much used.

The Food of Man.

A number of experiments have recently been made in Glasgow Prison, Scotland, on various persons, to test the effects of different kinds of food on them. It was found that ten persons gained four pounds of flesh each in two months, eating for breakfast eight ounces of oatmeal made into a porridge, with a pint of buttermilk; for dinner, three pounds of boiled potatoes, with salt; for supper, five ounces of oatmeal porridge, with one-half pint of buttermilk, which cost twopence three farthings per day. Ten others gained three and a half pounds of flesh, eating six pounds of boiled potatoes daily, taking nothing with them but salt. Ten others eat the same amount of porridge and buttermilk, without the potatoes, as the first ten, but for dinner had soup; they lost one and a quarter pounds of flesh each; and twenty others, who had less potatoes, but a half pound of meat for dinner, diminished in size likewise From this, it would appear that potatoes were better diet than smaller quantities of animal food, at least for persons in confinement.

On the the Topical Use of Chloroform.

To obviate the volatile character of chloroform when employed topically, Dr. R auch combines it with olive oil and some liquor ammoniæ, forming an emulsive liniment.—This is less expensive, relieves sooner, and is not so volatile as chloroform. The ingredients were first employed in equal parts; but were afterwards used in other proportions, according as to whether a counter-irritant effect (when more ammonia and chloroform must be added) were desired or not. It is applied on a woolen cloth, so folded that the inner layer is saturated with the liniment, and the other kept dry, so as to prevent evaporation. When first applied, it feels cool, then smarts and burns so for ten minutes as hardly to be borne; and an agreeable coolness, with relief of pain, succeeds. When it causes too much irritation or vesication, it should be removed, or applied to another locality. The skin is made red by it, and often vesicated; and if a mere rubefacient is required, it should be applied by friction, or the cloth should remain on only for a short time. When a speedy vesicant effect is required, it is more useful than a sinapism or blister, and is easier of application, especially in children, who often fall asleep during its application. Dr. Rauch found it of great use, combined with other means, in cholera; and in relieving the painful effections of the abdomen in childeren, it is preferable to any anodyne. In the case of superficial burns, a compound of equal parts of chloroform, olive oil, and lime water, has been found highly useful.—[Amer. Jour. Med. Sci.

The Chances of Life.

Among the interesting facts developed by the recent census, are some in relation to the laws that govern life and death. They are based upon returns from the State of Maryland, and a comparison with previous ones. The calculation it is unnecessary to explain, but the result is a table from which we gather the following illustrations:—

10,268 infants are born on the same day and enter upon life simultaneously. Of these, 1,243 never reach the anniversary of their birth. 9,025 commence the second year, but the proportion of deaths still continues so great, that at the end of the third only 8,183, or about four-fifths of the original number, survive. But during the fourth year, the system seems to acquire more strength, and the number of deaths rapidly decreases. It goes on decreasing until twenty-one, the commencement of maturity and the period of highest health. 7,134 enter upon the activities and responsibilities of life—more than two-thirds of the original number. Thirty-five come to the meridian of manhood; 6,302 have reached it. Twenty years more, and the ranks are thinned. Only 4,727, or less than half of those who entered life fifty-five years ago, are left. And now death comes more frequently. Every year the ratio of mortality steadily increases, and at seventy there are not a thousand survivors. A scattered few live on to the close of the century, and at the age of one hundred and six years the drama is ended. The last man is dead.

A New Comet.

On the nineteenth instant a telescope comet was discovered early in the morning, by P. Bond, at the Cambridge Observatory, Mass. This is the twelfth seen by him before intelligence of others seeing them had reached this country.

LITERARY NOTICES.

Paper Hanger's Companion—This is a very useful little book, by James Arrowsmith published by H. C. Baird, of Philadelphia, and for sale by J. S Taylor, 142 Nassau street, this city; it gives directions how to make the different kinds of pastes, and how to select and hang all the different kinds of paper; and it gives some very judicious counsel to decorators of houses. This little volume is one of the "Practical Series," full of tried and practical knowledge.

Machinery of the Nineteenth Century—Part III. of this noble work, by G. D. Dempsey, C. E., of London, has arrived, and is now for sale by H. Bailliere, of 290 Broadway; it contains drawings of Barrett, Exall & Andrews' Four Horse-power Portable Steam Engine, also their Hay Machine; Simpson & Shipton's Patent Reciprocating Marine Engines; Hick & Son's Drilling Machine, and Lloyd's Centrifugal Machinery for blowing, &c. This is one of the most useful works in the world: the author of it is an eminent enginer, and with a rare opportunity of examining the machinery of "All nations in the Crystal Palace," he is now giving to the world his knowledge of modern improved machinery of all kinds. The Drawings are large and to scale, suitable for working. The price of each part is $1,50.

French Literary Review—This is the title of a well printed weekly, edited and published by Messrs. Richard & Mouton; it is designed to impart a knowledge of the French language in a pleasant and easy manner, during hours of recreation, particularly to those who may have no opportunity of availing themselves of the aid of a teacher; it contains tables compiled with great care and labor, showing both the pronunciation and grammatical construction of the language. Besides the tables and exercises, each number contains some biographical sketch of some eminent French writer, with choice selections from their writings, accompanied by an English translation. The Editors have long been successful teachers in this city, and they endeavor, in this work, to impart such information, in an attractive manner, as will meet the varied difficulties of learners, which their long experience has taught them was required. It is in quarto form, 16 pp.; price $5 a-year; to be had at at the office of publication, 115 Chambers street, New York.

Boston Museum—This favorite literary weekly, we notice, has changed proprietors, Chas. A. V. Putnam retiring and Ossian E. Dodge, assuming the responsibilities of proprietorship. Mr. Dodge is well known throughout the Eastern States as a popular vocalist and delineator of humorous characters, besides, his letters, published in the Museum during the last year, over the nom-de-plume of "Quails," have made him favorably conspicuous. While we regret the loss of friend Putnam from the literary arena, we welcome Mr. Dodge in his new sphere with a shake of the right ☞. By the way, the "Museum" commences a new volume in about two week's, thus presenting a favorable opportunity for new subscribers. Terms $2 per annum. Address Ossian E. Dodge, Boston, Mass.

Health Almanac—We have had the Religious, Temperance, Farmers', Whig, Phrenological, Comic, and other Almanacs in infinite variety of form and almost every title that could be thought of heretofore, but here comes a new one, with a new title, seeking patronage. Health Almanac, what a title! still, its name implies its character, for it tells where the Graefenburg Company's medicines may be found, and they purport to cure nearly all maladies with which mankind is afflicted. The Almanac is tastefully illustrated, and contains many valuable receipts worth preserving by every housewife. Copies, with a loop attached for hanging them up (how convenient), may be had gratis (how cheap!) by personal application to the Graefenburg Co., office 214 Broadway.

Sartain's Magazine—We are indebted to Dewitt & Davenport for the monthly visits of this popular magazine, also for Graham's and Peterson's, the June numbers of which have been received.