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THE
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Rail Road News.

Rules for Railway Travellers.

Never attempt to get out of a railway carriage while it is moving.

Never attempt to get in a railway carriage when it is in motion, no matter how slow the motion may seem to be.

Never sit in any unusual place or posture.

Never get out at the wrong side of a railway carriage.

Never pass from one side of the railway to the other, except when it is indispensibly necessary to do so, and then not without the utmost precaution.

Express trains are attended with more danger than ordinary trains. Those who desire security, should use them only when great speed is required.

Special trains, excursion trains, and all other exceptional trains or railways are to be avoided, being more unsafe than the ordinary and regular trains.

If the train in which you travel meet with an accident, by which it is stopped at a part of the line, or at a time where such stoppage is not regular, it is more advisable to quit the carriage than to stay in it.

Beware of yielding to the sudden impulse to spring from the carriage to recover your hat which has blown off, or a parcel dropped.

When you start on your journey, select, if you can, a carriage at or as near as possible to the centre of the train.

Do not attempt to hand any article into a train in motion.

When you can choose your time, travel by day rather than by night; and if not urgently pressed, do not travel in foggy weather.

[There is one reform that we should like to see adopted on all our railways, that is to have a board hung vertically in the inside at the end of each carriage, with the names of all the stopping places painted on it in rotation, and all these covered with a slide which would open, and show the name of each place before arriving at it. The conductor calls out the name of each stopping place as he arrives at it, but if the plan was adopted which we propose, he would just have to draw the slide after leaving one place to show the name of the next stopping place. This would allow passengers to prepare for their departure, would save calling out, and would afford a quiet security to passengers of not mistaking their stopping places.

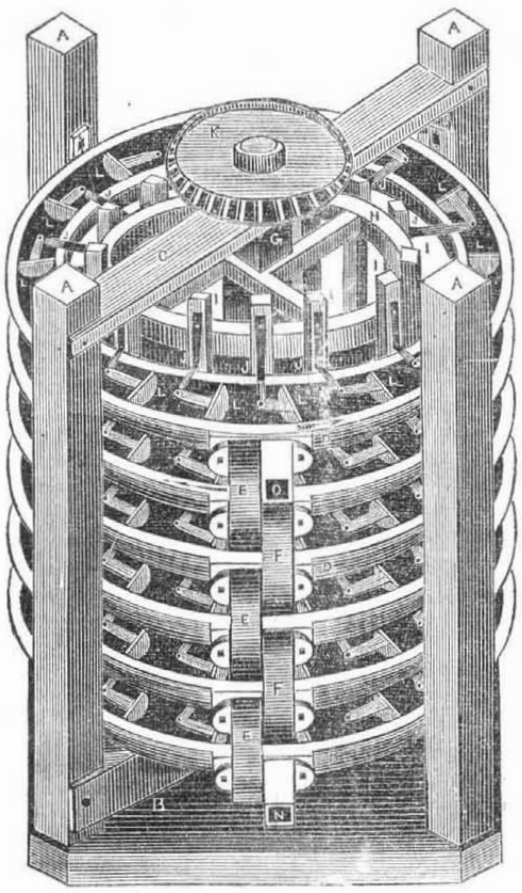
Strike on a British Railway.

Owing to a dispute between the drivers and firemen and their employers, on the North British Railway, sixty-six engine drivers, with their stokers, recently left. The cause of the dispute was a reduction of wages. Their places had been partially supplied with mechanics from the machine shops, but they did not answer very well.

Let hope guide the faithful, for they will have their reward.

It is only the just who can live by faith.

SNEAD?S IMPROVED GRAIN DRYER.

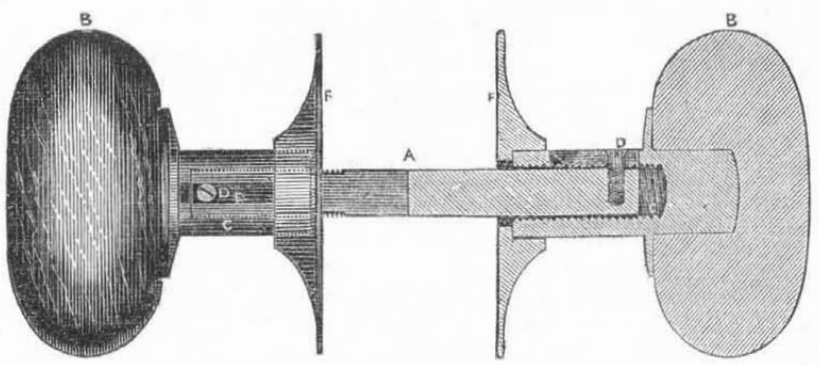


This apparatus is the invention of Mr. Chas. S. Snead, of Louisville, Ky., briefly noticed by us in the Scientific American two weeks ago, on page 244. The grand object of this invention is to produce a great number of changes in the grain, &c., shifting it in its different stages of drying from one drying surface to another, and passing it over a great amount of surface confined in a small space, and heated with steam, so that there never will be any danger of scorching. It will dry the grain slowly but perfectly, and will require no attention whatever, only to keep the hopper full.

Figure 1 is a perspective view. A A A A are the posts or uprights, but other contrivances may be used, as they are only to support the apparatus by flanges, P P. The apparatus principally consists of a series of circular concavo hollow rings, D D D. They are like pipes cut horizontally, but are cast double (hollow) and are steam tight. They are placed above one another a small distance apart.—The upper surface or concavo part of each circular pipe contains the grain, and forms the channel around which it is moved by a series of revolving rakes, L L, &c. These rakes are secured on shoulders, I, of arms J, radiating from the vertical shaft, G, which is supported in the steps B and C, and propelled by the cog wheel, K, or by any other similar motion to drive the shaft and move the rakes, which move round the grain. The grain falls from one pipe to another, after it has been carried over the surface, and it thus passes over the surfaces of all the pipes, one after another, and is discharged below, perfectly dry. Each pipe has an opening through it, to allow the grain to fall on to the pipe below. The pipes are heated by steam, which enters at the box, O, and comes out at the opening, N. E F are the metal boxes to carry the steam from one pipe to another.

To render the explanation more clear still, another cut, and the explanation of it, is placed on page 260.

IMPROVEMENT ON THE SHANKS OF DOOR KNOBS.



This improvement on the shanks of Door Knobs, is the invention of Mr. William L. Kirkham, of Brandford, Conn, and the improvement, although simple, is an excellent one, its simplicity being a just recommendation to its general applicability. This improvement is in the shank and collars of the two knobs, to enable one kind of shank to fit doors of different thickness. This engraving represents one knob, its collar and the shank perfect, and the other is a vertical section of the other knob, &c. A is the shank; it is of a square form with a screw, C, cut on each end, and passes through the door, in an opening for that purpose, and into the threads of the collars of the knobs, B B. F F are the circular flanges which are fastened by screws to each side of the door, and fit snugly on the inner ends of the collars of the knobs. Each collar has a slot, E, cast in it, and the shank has a hole in it near each end, to receive the small screws, D D. These screws pass through the slots into the shanks, to prevent the knobs from being screwed around and coming off.—Heretofore the collars of door knobs have been made with holes just to receive the nails, D, consequently shanks of different lengths had to be made for doors of different thickness.—By the simple slots in the collars, one length of shank will answer for doors of different hickness; therefore, in making these shanks, the manufacturer can go on and make any number of them, as every one is capable of accommodating itself to any door. This makes the improvement a valuable one, especially since it is a thing so universally employed.

Measures have been taken to secure a patent.

Useful Receipts.

Directions for Preparing Talbotype Paper.

IODIZING—100 grains nit. silv. dissolved in 3 oz. dist. wat.; wash the paper evenly with a brush or clean cotton; spread the paper on sheets of blotting paper, till quite dry. Then immerse it in a bath of iodide, potass. 1 oz. and a pint of water, leave it a very few seconds, not more than twenty; then immerse it in distilled water for some minutes, and afterwards pin up by a corner and dry; lastly, pin it up in the sun for at least an hour.

PREPARING FOR CAMERA—Wash with 1 part nit. silv. (proportion 50 grains to an ounce water): 6 parts sat. sol. of gallic acid, 2 parts acetic acid; take off superfluous moisture with clean white blotting paper.

TO BRING OUT PICTURE—1 part nit. sil. (50 grains to an ounce,) 3 parts, sat. sol. gallic acid; when finished wash in three clean waters; and to fix temporarily, wash bromide potass.; proportion of solution 10 grains to 1 oz. dis. wat.; after some minutes wash and dry.

FOR FINAL FIXING—Immerse in hot bath of 1 pt. sat. sol. hypo. sulph. soda, to 10 pts, water; a couple of minutes will bring out the iodine; lastly, wash with three different hot waters, two or three minutes in each.

COPYING PAPER—18 grains salt, dissolved in 1 pint dist. wat.; soak and dry the paper in a bath of this; then take 30 grains nit. sil. in 1 ounce dist. wat.; add enough strong ammoniac to make it turbid then clear it by adding more ammoniac; with this solution wash your paper with a brush, when dry it is fit for the copying press.

TO FIX—10 grains hyposulph. soda, 1 ounce dist. wat.; lay the copies in a bath of this after immersing them in 3 baths of warm water; and after the hyposulphate immerse them in three waters and then dry.

Bad Books.

Bad books are like ardent spirits; they furnish neither aliment nor medicine; they are poison. Both intoxicate—one the mind, the other the body. The thirst for each increases by being fed, and is never satisfied. Both ruin—one the intellect, and the other the health—and together, the soul. The makers and venders of each are equally guilty, and equally corrupters of the community; and the safeguard against each is the same—total abstinence from all that intoxicates mind or body.

Miscellaneous.

Correspondence of the Scientific American.

WASHINGTON CITY, April 30, 1850.

The Patent Committee of the Senate have made a report adverse to the petition of Tatham & Brothers, for an extension of a patent right, which they purchased for the manufacture of lead pipe. It appears that Tatham, when in England, became acquainted with the invention, and purchased from the inventor all his interest therein. On his return, he obtained a patent here, bearing date 29th March 1841, but granted for the term of 14 years from the 31st of August, 1837, that being the date of the foreign patent, in accordance with the statuary provisions in such cases; thus leaving the invention to be used by any one in the United States, for a period of nearly four years, free of cost, before the issuing of the patent. The Committee say, that in no instance has Congress extended a patent at the request and for the exclusive benefit of an assignee alone. That, they contend, would be impolitic and unjust in the extreme, inasmuch as an assignee is a mere trader and speculator upon the labor and inventions of others, and has therefore no more merit or claim on the government for its aid than a speculator in any thing else would have. The policy of the patent laws is to give protection to the meritorious inventor, and this being accomplished, the intention of the law is fulfilled. The Committee say that the petitioners have not thought proper to inform them what they paid for the invention, nor of the profits they have made out of it. These facts, for reasons best known to themselves, they have kept secret, but from facts which have come from other sources, there is no doubt but that an immense sum has been realized. In addition to this the patent has not yet expired, nor have they given any reason why their application was made to Congress instead of to the Patent Office.

The South is at last waking up to its true interest; a few days ago nearly the whole amount of the capital stock for a steam cotton factory at Sparta, Ga., amounting to $80,000, was taken up the same day. This spirit of enterprise is now rapidly spreading through Alabama and Tennessee.

Brown's patent water gas, which has been for some weeks used at the National Hotel in this city, has recently been discontinued, and the gas of the Washington Company again introduced, for the reason, I believe, that it is to be furnished gratuitously.

The Secretary of the Treasury has received a letter from Mr. Appleton, from which it appears that the annual product of all the cotton mills in the U. S. is 25,000,000 of yards.

The nomination of Mr. Ewbank has not yet been taken up, nor does there now appear any probability of action upon it until the Compromise Committee shall have made their report.

You will perceive that the Judiciary Committee of the House have at last reported their bill for the protection of the rights of patentees, but owing to the retarded state of the whole of the public business, there is but little chance of definitive action upon it at the present Session. Five months have expired, and yet none of the appropriation bills are touched.

A writer in one of our city papers thinks the proposition of certain persons in the British Parliament to tax the articles sent to the World's Industrial Convention, an indication that from fear of foreign competition the whole affair will be quashed. This is a mistake, for however much they may fear Yankee ingenuity, the prejectors have gone too far to recede.

Henderson's telegraphic machine for taking the Yeas and Nays is an admirable contrivance, and would answer very well provided members were not in the habit of changing their votes after they have been given. At the recent election of Clerk, two-thirds of the members of the House changed their votes three times before the announcement of the result, and in which case none but the present plan would have served to prevent confusion.

For the information of visiters desirous of seeing the large copper rock which was brought from Lake Superior at such great expense during the Administration of President Tyler, I would state that it lies in the square of the War Department buildings, where it appears to have been long forgotten.

Mr. Roebling's publication on the practicability of an Atlantic Magnetic Telegraph has been read with a good deal of attention, and the Senate Committe, to whom a memorial on the subject has been referred, will avail themselves of the suggestions made. There have been so many wonderful things accomplished in our day that it is scarcely safe to laugh at any thing.

There is a good deal of talk in relation to Tippet's Cold Water Safety Engine. He has produced a one horse power model, the working of which he says exceeds his most sanguine hopes. Boilers are entirely dispensed with. The steam is raised by means of a small jet of cold water injected upon a large plug of iron fixed in the furnace, and of sufficient bulk to retain the heat that might be dissipated. By a simple contrivance, this steam enters the cylinders and moves the piston in a manner similar to a common engine. The amount of power is limited only by the strength of the materials. He claims that it is utterly impossible for any explosion of any extent to occur, for the simple reason that there is nothing in it larger than a cylinder to explode. He is about to construct a boat fitted up with one of these engines, as an experiment. *

Medical Discovery.

It has been ascertained that the true source of scorbutic disease, as it shows itself in our ships and prisons, is the want of potash in the blood; that salted meat contains little more than half the potash in fresh meats; and that, while an ounce of rice contains only five grains of potash, an ounee of potato contains 1,875 grains, which accounts for the great increase of the disease since the scarcity of the potato. In patients under this disease, the blood is found to be deficient in potash; and it has been ascertained by repeated experiments, that whatever be the diet, such patients speedly recover if a few grains (from twelve to twenty) of some salt of potash be given daily.—Lime juice is regularly ordered in the navy, as a specific for the disease, and the reason of its efficacy is not the acid, but the amount of potash being 846 grains in an ounce. On these facts, it seems possible to found a slight, but very salutary improvement in the navy. Let a portion of tartrate of potash be ordered regulary to be mixed with the lime-juice that is given out for use; and let arrangements be adopted for boiling the salt meat in steam. A large portion of salt will thus be eliminated, and the food made more wholesome. A similar course might be adopted in work-houses and prisons. If so simple a remedy is in our hands, it is criminal to neglect it.

[If the above is true, all that is required to prevent scurvy, is simply to use a little of the carbonate of potash in food, (with salt meat.) There is no use of lime juice, that would be a useless expense. We apprehend, however, that the scurvy is produced not for the want of potash, but the presence of too much of the chlorate of soda (salt) in the food.

Mineral Cave in Wisconsin.

The Madison, (Wis.) Argus publishes a statement showing that there is in that vicinity, a huge cave containing immense deposites of lead and copper. The quantity of mineral lead seen in a distance of three miles only, (cave distance—perhaps three hundred yards,) was computed at about 200,000 tons. The discovery created great excitement at Foxtown, near the cave, and preparations for the erection of smelting furnaces were immediately made.

[The above is something like a hoax. Since the discovery of gold in California, *wonderful* discoveries of the same metal have been made in Australia, and gold mines have been found in Massachusetts, New Jersey, Indiana, and almost every State in the Union. Some people would like to speculate in mineral lands, but the charms of California have no rival.

Interior of East Florida.

Alachua was the first county, says the Ancient City, which was laid off in the interior after the cession, and previous to its American occupation had never been settled, the Spanish and English settlements in Florida being principally confined to the coast. It has, however, from the time of De Soto's expedition to the present day, been covered with a large population, and was the favorite country of the Indian tribes. In 1812 it was the seat of the Seminole power, and occupied by their head chiefs, and continued so until they were driven out by the whites. In 1814 an attempt was made by a party from Georgia, under General Harris, to form a settlement in this section.—A goverment was actually organized, but in consequence of the continued hostility of the Indians and bad management, the settlement was broken up. Many tracts of land were surveyed at that time, the plots of which afterwards fell into the hands of the Spaniards, and probably served as the basis of nearly all the Spanish grants in the country. Alachua has always been a favorite agricultural county, and is said to boast of an unusual uniformity of seasons and general good crops. Its lands are well calculated for nearly every species of product—sugar, cotton, corn, and tabacco, thrive well. It is also healthy and pleasant.—Its numerous ponds and prairies diversify the landscape, and its great natural curiosity, the Alachua prairie, is well worthy of a visit. It was called by the Indians the Jug, from its peculiar formation. The Natural bridge of the Santa Fe, under which a large river runs for a mile in length, is a singular freak of nature, and the numerous sink-holes, caverns, and natural wells and springs make it a very peculiarly formed country. As a grazing and agricultural country it is well worthy of attention, and has already within its borders a numerous and enterprsing body of inhabitants.

Patent Information—Important to Persons Using Patented Machines.

We learn by the Washington Union, that the Supreme Court of the United States, sitting at Washington, on Friday last, in the case of Wilson, assignee of Woodworth, vs. Forsyth & Simpson, decided that a person in the lawful possession and use of a patented machine, when a patent is renewed or extended, is not merely entitled to the continued use of the thing patented, according to his interest therein, by virtue of the 18th section of the act of July, 1836, as decided by Wilson vs. Rousseau, and this case when formely before the court, in 1846, but has also the right to keep the machine in perfect repair, not, however, to the extent of destroying its identity, and that supplying new cutters and knives to Woodworth's planing machine, when the old ones become worn out, are lawful repairs, which may be made without infringing the patentee's extended right. The court also decided that the allegation of fraud against Uri Emmons, in obtaining an interest in the Woodworth patent in 1829, (F. & S. claiming in part under Emmons) was not maintained in this case.—The court affirmed the decree of the Circuit Court of the United States for Louisiana, dismissing complainant's (Wilson) bill—Judge Wayne delivering the opinion. The case was argued by M. Webster and Governor Seward for complainant, and Mr. H. D. Gilpin and J. D. Westcott for defendants.

Life of a Locomotive.

It is estimated in England that the life of a Locomotive is one hundred and fifty thousand miles.

If the value of an engine is $6,000, it costs four cents for every mile run. The usual railroad fare for passengers is about four cents a mile, so that a passenger at this rate would pay no more for his passage than the actual cost of the wear of the engine, if no other passengers were carried except himself, and no freight taken.

The Railway tolls on Coal in England may be judged from a notice in the London Mining Journal: The Clay Cross Company have contracted to deliver 45,000 tons of coal in London; and have agreed with the Midland, and London and North-western Railways for the carriage of them, at ½d. per ton per mile.

Works on Science and Art.

DICTONARY OF MECHANICS, ENGINE WORK AND ENGINEERING.—Part 8 of this work, published by Messrs. Appleton & Co., contains Machinery for Sawing, Derricks for Hoisting, Docks for ships, Dredging Machines and Dressing Machines.

THE JOURNAL OF AHE FRANKLIN INSTITUTE.—Number 4, Vol. 49, of this Journal is an excellent one. It contains a good article on American Engineering.

If we are correct in our data, No. 6 of Arnott's Gothic Architecture was issued in Oct. last, and we have now to announce, after a long, (and to each subscriber, perplexing) period, Nos. 7 and 8 combined. Publishers so responsible as Messrs. Appleton & Co., are justly subject to censure for such manifest indifference to the interests of those who look for the numbers with some reasonable regularity, and we feel bound to express it, in behalf of all who have subscribed for the work through this office. The publication is a good one, and is got up in a highly creditable manner. Four numbers more makes it complete.

Write Plain.

It makes no matter how coarse and clumsy the penmanship may be, if it is only plain and easily decyphered. No person should direct a letter whose hand-writing is not legible. Many sad mistakes have been made in directing letters to puzzle postmasters. There are no less than eleven thousand pounds is put into the British Dead Letter Office annually, because the backings of the letters cannot be decyphered. All that is required, is a little attention and a little care. Editors do not like to read the correspondence of a careless writer, and printers have two kinds of devils—the attendant, known as the "printer's" imp, and manuscript that would be disowned as the production of Beelzebub.

Georgia Turpentine.

The Savannah Republican, in an article upon the Turpentine business in Georgia, states that there are some fifteen or sixteen persons now engaged in its manufacture, whose united product will amount to not less than twenty thousand and eight hundred barrels during the present season. There are some eight or ten others who have recently embarked in the business whose labors will add very considerably to this amount. The distillation of crude turpentine is also rapidly increasing in that State; and the time is thought not to be very distant, when Georgia will be able to vie with North Carolina in the production of this article.

Salt at Syracuse.

About 2,000,000 gals. of salt brine are pumped up every day at Syracuse, and the wonder is how the water is impregnated and it is said to improve every year. Hundreds of acres of land are covered by evaporating vats, and constantly spreading over more. These are replenished with brine daily, and the salt gathered twice in a season. The boiling process is more laborious, though producing a finer grained and a less valuable quality of salt. Each furnace is set with from 20 to 30 large cauldron kettles, which are kept full and boiling night and day, and vary in the amount of a day's product from two to ten bushels of salt each.

"Spiritual Knockings."

These strange phenomena, at Rochester, Auburn and the late break out at Stratford, Conn., continue to command a large share of public attention, and although vouched for in the most positive terms by those who are known to us as men of the highest respectability, still thousands in the language of Shakspeare, "might not believe this without the sensible and true avouch of their own eyes." This is our case exactly.

A most terrific tornado has taken place in the Island of New Providence, W. I. It was the most destructive experienced for thirty years. The loss of life and property was fearful.

The steamboat "Belle of the West," was burned one mile below Warsaw' Ky., on the morning of the 23rd ult. About one hundred passengers lost their lives. What a heart-rending event.

For the Scientific American.

On Tides.

Having never seen any theory on the subject of tides, which come clearly within my comprehension, (as likely to produce the results we witness,) I therefore take the liberty of sending you a rough and undigested theory, which may probably have neither originality or merit.

Suppose you take a sledge and put a hammer on the opposite ends of the handle, and throw it, (giving them a rotatory motion,) they would revolve round the centre of gravity of the two bodies :—such we suppose to be the motion of the earth and the moon in their orbit round the sun; therefore the centre of gravity betwixt those two bodies would perform the regular circuit of their mutual orbit; and as these two bodies are thrown asunder exactly with the same force with which they attract each other, the waters which surround our globe would be disposed to separate in obedience to the centripetal and centrifugal force at 90° from the moon's zenith; and, if uninfluenced by the sun, would produce tides of equal height at all times on opposite sides of our globe. But as the tides are influenced by both sun and moon, the effect will be, at new moon, (she being within, and the earth beyond the circle of their joint orbit, and consequently moving with greater rapidity, thereby increasing the centrifugal force,) to raise a tide equal to that on the side next to the sun and moon; and at full moon, the earth being within the circle of their mutual orbit, consequently moving with less velocity, yet producing an equal tide from this attraction of sun and moon on opposite sides; at the quarters, when the earth and moon are both on the circle of their mutual orbit, the attraction and centrifugal force of the sun and moon counteract each other, and the tides we then have are entirely produced by superior lunar influence.

We do not suppose the mutual attraction, which holds the earth and moon together, and the centrifugal which keeps them asunder, can raise the water in opposition to gravity, but that they act laterally, moving the whole body of water, and as it requires an exertion of force for some time to overcome inertia, the swell of tide does not take place when the moon is in the zenith, but about two hours afterward, to illustrate this better, you can draw a boat of 100 tons at right angles to gravity, but cannot lift it in opposition.

Upon this theory the water is attracted and thrown from the poles of the earth without much opposition from gravity; hence the flattening of the poles and the high tides which we experience so far equatorial as 48 or 50 degrees. The inequality of tides in the same latitudes is owing to local causes—forms of coasts, inlets of water from polar regions, and depth of the ocean at particular places (as the whole body of water must obey the same law.) We find where inlets or bays mouth in a southern direction, that a great inequality of rise and fall is experienced. Suppose such a bay with deep water near its outlet, a small shift of position would empty the bay, which from its form could not be kept up by the moving of water from the North; in the above instance the inequality of surface would be occasioned by exertion and not by accumulation.

At the equator, the earth is revolving on its axis nearly 1000 miles per hour, therefore a swell of water cannot precede the virtual position of the moon, but must follow it, hence there would be a gradual moving of the ocean from the African to the American coast, and from its angular form the water would be deflected north-westwardly, along the shores of Brazil, Guiana, Venezuela, through the Carribbean Sea, betwixt Cuba, the point of East Florida and the Bahama Islands, forming the Gulf Stream, of which the Banks of Newfoundland are probably the deposite; thence crosses the Atlantic down the coast of Africa, and again up the Atlantic. The temperature of the Gulf Stream proves it to have arisen from an equatorial climate.

Capt. Wriley attributes the loss of the vessel which he commanded on Cape Bagadore, to the resistance of a strong current down the African coast.

WM. WILSON.

Williamsport, Pa.

Coal Saddle Theory.—New Discovery.

We learn by the Mining Journal, (Pottsville, Pa.), that a Mr. McGinnes, of that place, has discovered a way of determining where coal saddles are to be found; the theory of which is thus explained by our worthy exchange :—

"It has been taken for granted the large seams of white ash coal which are exposed at the Lehigh Summit, forming their great mine, extended under the whole of the Schuylkill coal field, although they appear and are worked only at the Northern edge of it. We conceived that it lay in the shape of a deep and narrow basin, coming up to the surface only at two points represented by the edge of the oblong basin; and as one of the edges which rises in the Sharp Mountain is shaken and disturbed, it has been considered unworkable.—The only white ash coal therefore, that we have considered available at present is that which comes up to the surface on the Northern (or Mine-hill and Broad-mountain) edge of the basin.

The great supposed depth to which we should have to sink through solid rocks (2500 to 5000 feet) to get at these big veins of coal in the intermediate three miles across the coal basin, would have involved an outlay of money that could not have been made to pay for its cost.

Now the discovery which we record proves, that instead of these big veins making but one curved line, extending at great depths under and across the coal, they form six or seven curved lines; the upper part of each curve (we call this the saddle) coming up so near the surface as to be easily and cheaply reached by a workable shaft. Thus making these big veins workable through the whole length and breadth of the Schuylkill coal field."

[Speaking of coals, reminds us of saying a few words about their quality. It is a mistaken idea to suppose that all coal from one district or one field, is the same in quality. In the same mine, in different parts of the same vein, the quality of the coal differs, but not in a very great degree, for it may be said, that the quality of coal in one mine, is of the same character. In the coal basins of England and Scotland, the quality of the coal is very various, even in one basin or coal field. The character of the "Hurlet" coal in the Clyde Basin, in Scotland, is totally different from that of the "Firework," a few miles distant; and the character of the "Farm" mine is different from the "Stonelaw" mine, which are not a mile distant from one another. This is the reason why there is a difference in the quality of the coal received here, from one region. Some people consider themselves imposed on, and receive one kind of coal for another, such as the Lehigh for the Lackawannah, &c. The reason of those differences in coal from the same region, is owing to the variation of the base or material of which the *carboniferous* strata is formed, and also the manner of the formation, for this affects the nature or quality of the products also.

Death of a Sculptor.

Thom, the sculptor, who died in this city on the 18th ult., was celebrated for his pieces of sculpture, "Tam O'Shanter" and "Old Mortality," the last production being the same that meets the eye of the visiters of Laurel Hill Cemetery on the Schuylkill, as they enter the front gate. Thom by birth was a Scotchman, and came to America some twelve or fourteen years ago, in pursuit of a fellow countryman, who brought over the sculptor's celebrated statuary on exhibition, but failed to remit to its proprietor the proceeds of the exhibitions. Mr. Thom, having discovered his false agent, and recovered a portion of the money obtained for the sculpture, concluded to remain in America. He first discovered the beautiful freestone quarry at Little Falls, N.J., of which Trinity Church in New York, is built, and was employed in doing the fine stone cutting for that building. He also produced copies of his celebrated works, from this freestone, and likewise a statue of Burns, and various ornamental pieces. With the profits of his labor he purchased a farm near Romapo, in Rockland County, N. Y., and erected a house after his own fancy, having quite a predilection for architecture. During the latter part of his life he seems to have abandoned a profession in which he might have attained the highest eminence. At one time he possessed considerable money, but it is said that he died poor and left his family in indigent circumstances. He was a man of a powerful frame, and was a most rapid workman, generally executing in a few days works that would take others as many weeks to accomplish.

Thom's "Old Mortality," presides as the frontispiece of Laurel Hill Cemetery, near Philadelphia, and his statutes, of "Tam O'Shanter" and "Souter Johnny," adorn the entrance of Mr. Colt's mansion, at Paterson, N. J. When the last two figures were exhibited in this city, John Graham, the blind poet, used to recite with great force that inimitable poem of Burn's, which formed the subject of the sculptor's study. Thom was retiring in his manners, plain and unvarnished, without any literary qualifications, unlike many of his countrymen of the same profession. We have heard that he produced a number of works in his own country, which have only a local not an artistic fame, such as statues of Wallace and Bruce, and one of McGavin, the "Protestant," now in the Glasgow Necropolis.

Antiquities of Ancient Chaldea.

Major Rawlinson has read some papers before the British Society of Antiquaries which have excited a great deal of interest. He appeared with large sculptured fragments, cylinders, statues, and vessels of various kinds, giving explanations of them. On the third occasion he produced, and hung round the walls and covered the tables of the meeting room with, inscriptions taken chiefly from the celebrated rock of Behistan—all in the wedge-form Persian or Babylonian character, including the tri-lingual record which forms the key of the whole. Major Rawlinson entered minutely into the subject, and showed his great acquirements in the unknown and apparently unintelligible chronicles.

Letters, the Times says, have been received from Bagdad, stating that Mr. Loftus, the geologist attached to the Commission which is now employed in the demarcation of the Turco-Persian line or frontier, had succeeded, on his passage from Bagdad to Bussorali, in visiting all the most remarkable ancient sites in Lower Chaldea. From that paper we borrow the following particulars. The ruins now called Werka (the Orchenoi of Strabo,) which represents the Ur of the Chaldees, whence took place the exodus of Abraham, were carefully examined by Mr. Loftus, and were found to be of great extent and of extraordinary interest. A vast number of ancient coffins of baked clay, highly glazed, and covered with figures of men in relief, were discovered in one spot, the coffins being about six feet in length, adapted to the shape of the human body, and with an oval ornamental lid, which closed the upper part; a moderately sized water-jar was also attached to each coffin. Gold ornaments and other Chaldean relics were said to be frequently found in them; but those which Mr. Loftus examined had been already rifled, and he had no leisure for excavation. Numerous bricks covered with cuneiform characters were, however, brought away from the ruins by M. Loftus; together with pieces of terra-cotta, moulded in the shape of a bull's horn, and bearing inscriptions, and several fragments of a hexagonal clay cylinder, inscribed with a long historical record, similar to that deposited in the British Museum, which was found by Mr. Ledyard at Nineveh.

Werka is still traditionally known in the country as the birthplace of Abraham, and its identity with Ur of the Chaldees is established beyond the reach of cavil. Th ruins have been observed at a distance by other travellers, but are unusally inaccessible, owing to the inundation of the surrounding country and the dangerous neighborhood of the Khezail Arabs.

Mr. Loftus is the first European who has ever succeeded in actually visiting this primeval seat of the Jewish race. At the ruins called Hammam, near the Hye Canal, Mr. Loftus obtained a statue of black basalt, bearing two cuneiform inscriptions; and at Umgheir beyond the Euphrates, he found another statue, representing one of the Chaldean gods —but it was too much mutilated to be worth moving. The commission to which Mr. Loftus belongs, in skirting Susiana, will traverse a country studded with Chaldean ruins; and discoveries, therefore, may be expected to be made which will be of the utmost importance in aiding the efforts of Major Rawlinson and others to unfold the early history of the East, through the interpretatien of the inscriptions of Nineveh and Babylon.

To Convert Iron into Steel by Cementation.

The iron is formed into bars of a convenient size, and then placed in a cementing furnace, with sufficient quanity of cement which is composed of coals of animal or vegetable substances, mixed with calcined bones, &c.,—The following are very excellent cement :—1st, one part of powdered charcoal, moderately powered, one part of bones, horn, hair, or skins of animals, burnt in close vessels to blackness, and powdered, and half a part of wood-ashes; mix them well together. The bars of iron to be converted into steel are placed upon a stratum of cement, and covered all over with the same, and the vessel which contains them, closely luted, must be exposed to a red heat for eight or ten hours, when the iron will be converted into steel.

Steel is prepared from bar iron by fusion, which consists of plunging a bar into melted iron, and keeping it there for some time, by which process it is converted into good steel.

All iron which becomes harder by suddenly quenching in cold water is called steel; and that steel which in quenching acquires the greatest degree of hardness in the lowest degree of heat, and retains the greatest strength in and after induration, ought to be considered as the best.

English Cast Steel.

The finest kind of steel, called English cast steel, is prepared by breaking to pieces bilstered steel, and then melting it in a crucible with a flux composed of carbonaceous and vitrifiable ingredients. The vitrifiable ingredient is used only in it as a fusible body, which flows over the surface of the metal in the crucibles, and prevents the access of the oxygen of the atmosphere. Broken glass is sometimes used for this purpose. When thoroughly fused it is cast into ingots, which by gentle heating and careful hammering are tilted into bars. By this process the steel becomes more highly carbonised in proportion to the quanity of flux, and in consequence is more brittle and fusible than before. Hence it surpasses all other steel in uniformity of texture, hardness, and closeness of grain, and is the material employed in all the finest articles of English cutlery.

Shingling and Manufacturing Iron.

The ore being fused in a reverberating furnace, is conveyed, whilst fluid, into an air-furnace, wher it is exposed to a strong heat, till a blush flame is observed on the furnace; it is then agitated on the surface till it loses its fusibility, and is collected into lumps called loops. These loops are then put into another air-furnace, brought to a white or welding heat, and then shingled into half-blooms or slabes. They are again exposed to the air furnace, and the half-blooms taken out and forged into anconies, bars, half-flats, and rods for wire, while the slabes are passed, when of a welding heat, through the grooved rollers. In this way of proceeding, it matters not whether the iron is prepared from cold or hot-short metal, nor is there any occasion for the use of finery, charcoal, coke, chafery, or hollow fire; or any blast by bellows or otherwise; or in use of fluxes, in any part of the process.

Welding Iron.

This consists in the skillful building of the iron to be welded, in the use of extraordinary large forge hammer, in employing a balling-furnace, instead of a hollow fire or chafery, and in passing the iron, reduced to a melting heat, through grooved mill-rollers of different shapes and sizes, as required.

Common Hardening.

Iron, by being heated red hot, and plunged into cold water, acquires a great degree of hardness. This proceeds from the coldness of the water, which contracts the paticles of the iron into less space.

New Inventions.

Improvement on Saddles.

Mr. George Fisher has invented a very excellent improvement on riding saddles, which will enable the equestrian to ride the "flying courser," with a great deal more ease and pleasure than with the old kind of saddles, and it will also be easier for the animal. The improvement consists in having the seat of the saddle portable, or capable of being detached from the pad, (the old ones are fastened,) and by constructing the inside of the seat on both sides, and the surface of the pad, in such a way that coiled or eliptical springs may be placed between the seat and the pad, thus preventing jolting and jarring, by graduating the irregularity of action, and enabling the rider to sit and enjoy a gentle and easy motion on horseback.

Measures have been taken to secure a patent.

Cast Iron Sills.

Experiments by P. W. Barlow, C. E., lead him to recommend the substitution of cast iron sills for wood, as the only means of preventing those irregularities which prove so destructive to the way and to the carriages, as well as wasteful of the locomotive power and mechanism. He finds it to be a mistake, that a partially soft elastic material such as wood is requisite to smooth and easy motion; the more rigid, and level, and polished the surface, the easier has he found the traction, and the better suited at least to railway transit. Cast iron sleepers in two halves, with half chairs fitting the rail, and bolted together so as to avoid the use of the key, is that construction to which experiment has led him to yield the preference, from the facility with which it is laid, from the perfect joint which it gives, and the security from breakage in the event of getting off the line. The point of the meeting of the plates is situated between the chairs, so that the bolts act under a spring which destroys all liability of loosening, to which he has found any tendency.

Cure for Smoky Chimneys.

A writer in the "Builder," (London), says, "my experience is corroborative of the efficacy of the system of contraction at the bottom of the flue and the reverse at the top. I have tried it for the last dozen of years, and it has always succeeded. The last cure which I effected on this principle was a drawing-room chimney of a detached cottage, where the draught down the chimney was so strong as to drive the flame as well as smoke into the room."

The plan adopted was to cut into the back of the chimney exactly above the fire place and insert two chimney pots, a small and large one, applying the small end of the least downwards nearest the fire, and the small end of the larger one on the top of the small one, to carry the smoke into where the flue was of the regular size.

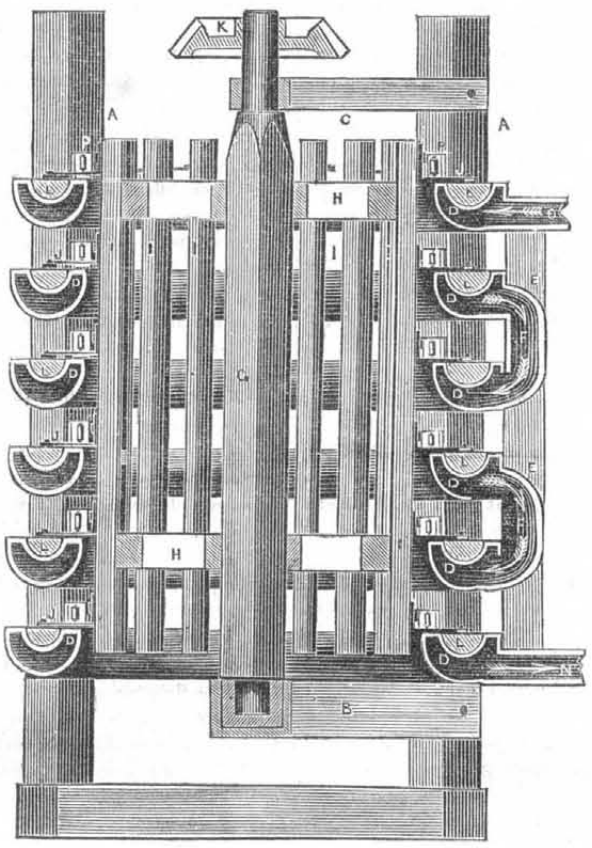
Transatlantic Telegraph.

John A. Roebling, Esq., Civil Engineer, of Trenton, N. J., considers the construction of a line of telegraph wire across the Atlantic entirely practicable, and the cost not to exceed $1,300,000, on which he thinks very large dividends may be expected, 25 per cent. at least. His design is to sink a strong wire rope upon the bottom of the ocean. The wire rope to be composed of twenty strands of No. 13 or 14 wire, perfectly separated from each other and isolated, so that they will form twenty different and distinct transmitting wires, by which twenty machines can be operated at each end and twenty messages despatched at one time. He says, that iron wire of No. 14 size, measuring 50 feet per lb., possesses sufficient conducting capacity for the transmission of telegraphic currents, provided it is perfectly insulated, a necessary condition, no matter what size of wire is employed. The wires being perfectly insulated and protected against the action of the sea water, quietly resting upon the bottom of the ocean, where nothing whatever can disturb them, their efficiency may at all times be depended on—they will remain free from those vexations interruptions which are constantly interferring with land telegraph operations.

Balloons for the Arctic Expedition.

A correspondent, "Americus," in last Saturday's Tribune, suggests the using of balloons, to be taken by the two American vessels which are to go in search of Sir John Franklin. He should have credited the idea to the recent expedition which left England for that purpose. It is publicly known that a great number of small balloons have been taken out, with materials for generating the gas. These balloons are to be sent up with papers in them stating where the expedition is, where stores may be found, &c. If Sir John is alive, and shut up in some inaccessible place, some of these balloons may reach him. The suggestion of Americus is no doubt a good one, and we hope it will be acted on by Mr. Grinnell's Expedition.

IMPROVED GRAIN DRYER.---Continued from First Pgae.



This engraving is a vertical section of fig. 1, showing the manner in which the steam is admitted, and how it passes into and around each drying pipe, and how it escapes. The form of the drying pipes, is also clearly represented. D D represents the hollow parts of the drying pipes, and the arrows indicate the course of the steam which enters at one side of the metal boxes, E, through the pipe, O, where there is a division plate in the hollow part of the pipe, then it passes all round and out at the other side of the division plate and down into the next pipe by the connecting metal box, F, and so on, passing around and heating all the pipes, and then passes out at the pipe, N. A A are the supports; P P are the flanges by which the pipes are secured by bolts to the supports. L L are the rakes, moving in the hollowed or concavo parts of the pipes; J J are the shoulders of the arms, I, on which the rakes are secured; G is the vertical shaft; B is the step on which the lower gudgeon of the shaft revolves, and C is the upper supporting step. The frame which revolves the sets of rakes for each pipe, is like a vertical reel revolving with the shaft and propelled by the cog-wheel, K. This reel has radiating arms, and circular felloes, H, to which the arms are secured, all constructed and arranged for convenience and economy to revolve the rakes. The hopper is not shown, neither the delivery of the grain from one pipe to another, but all these things will be perfectly understood. This machine has been in successful operation for a considerable time by Mr. Snead, heated by the exhaust steam from his engine, and it has been perfectly successful, accomplishing its work well, and with great economy and safety. Any number of drying pipes may be employed, and it will dry all kinds of grain and meal, to fit it for safe keeping and transport.

Measures have been taken to secure a patent.

Abstract of some British Patents recently granted.

Steam Plow—Mr. James Usher, of Edinburg, Scotland, has invented machinery for plowing, which principally consists of a series of rotary plows actuated by steam power.—He employs a locomotive boiler and engine placed in a frame above the wheels, the weight being so disposed as to be principally over the hind wheels. The fore wheels are fitted to a revolving frame, similar to an ordinary road carriage, to be turned round in a small compass. The plows can be elevated or depressed for deep or shallow plowing. The plows are placed so as to come into action successively, and a large spur wheel is employed to drive the plows on their shaft, they having a revolving motion, being circular, with one side each to turn over the furrows. A steam plow would not pay in America, except it may be on some of the rich southern plains, where an abundance of coal is to be found at a moderate price.

Improvements in the Manufacture of Steel.—John Holland, Esq., of Clapham, England, has discovered a singular way of converting iron into steel by employing the cocoons of silk worms, after the silk has been wound off, then drying it highly, but not carbonizing, grinding it into powder and using it to make the steel by the ordinary process of cementation.

Another Invention relating to the same subject.—Mr. J. M. Heath, of Hanwell, Eng., has taken out a patent for making steel, by converting iron into steel by a process of cementation, with manganese and carbon. The process is to obtain metalic iron from the purest ores, the magnetic being preferred. The metal thus obtained is reduced to a granular state and mixed with manganese and carbon, or corbonaceous matter, then heated to a welding heat in a suitable furnace, then formed into a bloom, and then made into slabs of a suitable size for the next operation, which is that usually employed to make iron into steel. The invention is in the preparation of the metal, to make it into blooms for that purpose. To 100 lbs. of granulated iron, 2 lbs. of chloride of manganese is used, and two gallons of coal tar. All these are mixed together and brought to the white heat spoken of.

Fire-Proof Paper.

Messrs. E. Cart, proprietors of one of the largest paper manufactories in Germany, at Newstadt, Elberswald, has invented an incombustible cartridge paper termed "stone paper," which is now being used there for the roofing of houses. It is strong, durable and cheap. A commission of the government have tested it, and reported that it is impermeable and fire-proof, and they recommend its use for cheap roofing.

Singular Clock.

Joseph Cusson a farmer at Arguillon, France and only 25 years of age and with a very limited education, has but a short time ago completed a most wonderful piece of mechanism in the form of a clock. It is provided with several dials, which mark the hours, minutes, seconds, the days of the week, those of the month, the months of the years and centuries; the rising and setting of the sun, the rising and setting of the moon, &c., the *tout ensemble* moving with a regularity and precision truly remarkable.

The wheel works being admirably arranged behind a glass front, which is interposed for the purpose of protecting the delicate machinery from dust the visitor is enabled to examine the whole at a glance, and to satisfy himself of the wonderful perfection of each part of the apparatus, as well as of the regularity of its movements. Below the wheels and dials, upon a surface about a yard in length, ranges a beautiful gallery, with cells in the middle and a tower at each end. When the hour is about to strike, the door of one of the cells is seen to open, and Time, armed with his scythe, comes forth, followed by our Saviour, who, with whip in hand, pursues and drives the grim messenger before him, forces him into a cell, and secures the door. At the first stroke of the clock, a small cock, perched upon a cross surmounting one of the little towers, flaps its wings and streches out its neck, as if about to crow. The striking of the clock having ceased. Time and the Saviour return to their respective cells, into which they enter and close the doors.

Three times a day, namely, at six o'clock in the morning, at noon, at six o'clock in the evening, by means of an ingenious piece of mechanism, the sound of the Angelus is heard. The Holy Virgin, leaving her cell, appears for a moment on the gallery, and then enters a chapel; at the same instant an angel is seen to descend, flapping its wings, from one of the minature towers, and entering the chapel, places itself near the Virgin, towards whom it inclines, as if about to address her with the sublime salution of which we read in the scripture. Mary becomes agitated; she trembles, and the beholder may perceive her holy fear. This touching scene takes place during the three first strokes of the Angelus. The angel twice ascends, and as often repeats the same movements and the same salutations just described.

The whole of the wheel-works are composed either of wood or brass. What an amount of patience, to fashion and impart to them that degree of finish and nicety of action so necessary in a work of this description! During the day, this peasant industriously labored in the fields, while at night, by the pale glimmer of a candle in one corner of his small inconvenient garret, he completed his wonderful clock. The obstacles which he must continually have had to contend against, would have effectually disheartened a less determined or ethusiastic mind. At every step a difficulty presented itself; but difficulties neither disturbed his patience nor shook his courage; he planned, reflected, and success crowned his efforts.

What greatly enchances the merits of young Cusson, is having done all himself; with his own hands he made the turning-lathe, the greater part of the tools with which he wrought, as well as the wood and brass wheels and their appendages, &c. And his work is so exquisitely fashioned and so beautifully finished, that it would be an ornament to the most elegant saloon or drawing room.

Marine Night Signals.

At a recent meeting of the Scottish Royal Society of Arts, R. Rettie, C. E., read a paper on the necessity of employing one universal system of marine night signals to prevent collisions at sea, and to show night signals of distress. There can be no doubt of the necessity and utility of such signals.

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NEW YORK, MAY 4, 1850.

Navigating the Atmosphere.

The first complete work upon this subject, is one now on our table, by John Wise, a veteran æronaut, of Lancaster, Pennsylvania. Hitherto we have had scraps of information from Encyclopædias and Magazines, relating to the art, but here we have *a Book* on the subject, written by one who has made many ærial voyages, and who relates his own adventures. It embraces a full history of the subject, commencing with the ancient artificial flying pigeon of Archylus, the Greek, and ending with the most recent experiments.

The subject of navigating the air has occupied the attention of many eminent men in almost every age of the world's history, but it was not until a recent period that any success was promised to an art which warmed the imagination of Bacon, and engaged the attention of the sober Bishop of Chester. In 1782 there lived at ancient Avignon, in France, two brothers, young men, named Stephen and Joseph Montgolfier, who, being of an ingenious turn of mind, conceived the project of sending up small balloons inflated with rarified air, and by many experiments they discovered that as they enlarged their balloons, their ascending power became greater, and from this they went on increasing their size, until they constructed one of a capacity of 23,000 cubic feet, and with it they sent up some animals in a basket. The voyage was successful, and this induced them to construct one of gigantic dimensions, viz, 74 feet high and 48 in diameter. With this balloon a brave and cool Frenchman, named M. Pilatre de Rozier, volunteered to make a voyage two or three hundred feet high, the balloon being secured by long cords to the earth. He made several ascents, and on the 21st May, 1783, he, along with the Marquis d'Arlandes, made the first free ascent into the ærial regions, rising to the height of 3,000 feet, and made a successful excursion over Paris, and finally landed a few miles from where they started. This formed an epoch in the history of ærial navigation, and the fame of the Montgolfiers soon spread over Europe and reached America. Although hydrogen gas was discovered long before the Montgolfiers made their balloon, and its utility to the purposes of ærial navigation had been previously suggested, yet it was never really applied for that purpose, except for experiment in the lecture room; but no sooner was the success of the Mongolfier balloon spread abroad, than the virtues of hydrogen became apparent, and it was firmly believed by many at that time, that balloons would soon be as common as crows. Napoleon frightened many an English matron, when he threatened to cross the channel with his Boulogne army in balloons. But his "paper walls," never ventured to baffle Old England's "wooden walls;" nor does it appear that we are any nearer to "*a system*" of ærial navigation at the present day, than they were then. It is the opinion of Mr. Wise, however, that *ballooning* is about half a century ahead of the age, and if the spirit of mechanical progress keeps pace with the onward march of intellect, he says, "our children will travel to any part of the globe without the inconvenience of smoke, sparks and sea sickness, and at the rate of one hundred miles per hour."

It would indeed be a glorious thing if we could career through the regions above at such a rate, but our dreams are far more moderate than those of friend Wise. We would be content with ten miles an hour, only let us have the wings, an independent pair. Then, when like Jeremiah of old, we were troubled in mind and sighed for the wings of a dove to fly away and begone, "to a lodge in some vast wilderness," all that we would have to do, would be to mount and be off, "over mountain and sea." Such things would be very pleasant—everybody would be rejoiced if such things could be done, and many strong arguments may be used respecting the probability of such things being yet accomplished, but not, in our opinion, safely, conveniently nor economically, by any "ærial vessel" that we have ever yet seen, the opinion of æronauts to the contrary notwithstanding.

The "revoloidal spindle," of Robjohn, which was in the course of construction at Hoboken, and which was to be propelled with two small steam engines, some time this summer, has been sadly damaged by the late tornado. If this be the means of preventing the balloon from enjoying her ærial flight by steam, we will regret it exceedingly.

Mr. Wise has made a great number of successful ærial voyages, and his book is one of the most valuable ever published—and is of great service to science as a historical and scientific work on the construction of balloons, and the manner of navigating them. There is one prominent and useful fact brought to light, viz., that ballooning *is a conservator of health*,—ærial navigation cured Mr. Wise of disease of the lungs and chronic dispepsia, and he is confident that it would be of great benefit to invalids. This we believe is a new idea, but a correct one—and one agreeing with science and reason, but as these things trouble us not personally, we have a longing eye but weak faith, to mount the ærial ship, cleaving our way through "the blue ethereal sky," at the rate of 100 miles per hour, laughing at your lazy locomotives and steamboats crawling away below, as things good enough for a more benighted age.

Parker's Water Wheel.

As we have received a great number of communications on this subject, lately, we hereby present the opinions expressed by Judge Grier in the Circuit Court, U. S., Phila., as delivered on the 13th of last March in the case of Oliver A. P. Parker, assignee of Zebulon Parker vs. Joseph Brant, and divers other defendants:—

"I take this occasion to say, that the Court has no doubt, of the validity of the complainant's patent. That question has been fully settled here, by a trial at law, of extraordinary duration, and closeness of research. The report of the case of Parker vs. Hulme, by my brother Kane, who presided at the trial, and information derived from the affidavits and printed works, which have been read on both sides, during the present hearing, as well as the acquaintance with the subject which I derived while engaged in the trial of another case growing out of this patent, leaves no doubt on my mind, that the complainant's patent is not only valid, but of the greatest importance to the country.

I may add, on the part of both of us, that we approached the question without any previous leaning in favor of the rights asserted by Mr. Parker as an inventor, and that it was only upon a more than usually close scrutiny of the facts, that we came to the conclusion which we now express.

Indeed, it is a subject of regret that the public has been so tardy in acknowledging the merits of the Messrs. Parker as inventors.—Their improvement, as described in the patent before us, is not less ingenious and profound than useful. In France, M. Fourneyron received the highest honors, and most liberal rewards, for introducing into use this very improvement after it had been invented in this country by the Messrs. Parker. And it was not until the circulation of Fourneyron's paper, on Turbines in this country, that the public attention was fairly called to the valuable improvement of the Messrs. Parker.

Of the infringement by the defendants, the Court has no doubt. The wheels which they use are direct and positive violations of the complainant's right, as appear by the affidavits on behalf of the defendants, and the models which they themselves have submitted to the Court. In point of fact, the complainant has established his right to the injunction which he prays. But I do not wish to establish the precedent in this Court, that a party who relies upon the verdict of a Jury and the judgment of a Court of law, for the establishment of his title, as the foundation of his claim to be quieted in the possession and enjoyment of it, and for protecting him against infringements by others, shall omit, as the complainant has here omitted to aver in his bill, that such proceedings at law have taken place.—Without such averment, the ground of the Court's action may be misunderstood, and the defendant may not be properly apprised, beforehand, of the case which he has to meet.—In these cases, we are the more ready to lay hold of omission, as we feel a reluctance to stop two hundred mills from grinding a bushel of grain or sawing a board, without giving the defendants a chance of making a settlement or compromise. On the other hand, it is by no means our intention to compel this complainant, to re-litigate his patent already established at law, against a combination of two hundred wealthy mill owners, in this district, who are, as these defendants alledge, using machines, of which the model above described, is the representation. By an amendment of this bill, the complainant may overcome his present technical difficulty.

No ground has been shown for the imputation, that an attempt has been made by this complainant, "to levy black mail," as it is called. Indeed, his course towards these defendants, as well as other persons, appears to have been one of great liberality and forbearance; and I advise these defendants to settle with him. If they do not, damages may be found against them, to the extent of their profits from the use of this patented improvement; at all events, amounting to the whole profits of their mills, since the time of filing these bills. This might be no more than equitable.

On default of settlement by defendants, the Court will order the injunctions to isssue, on the first Monday of April next; the complainant, in the meantime, so amending his bill, as to alledge the establishments here at law, of his title to an exclusive right in this improvement, and filing the affidavit of the surviving patentee, which has been read to us in the course of the hearing.

In all this, I am authorized to say, that my brother Kane fully concurs with me.

[Remarks.—One correspondent requests of us to know "when Parker's patent expires." We will give all the information in our possession on the subject. On the 19th Oct., 1829, a patent was granted to Zebulon and Austin Parker, for their improvement on water-wheels—which consists, 1st, in placing several wheels (always an even number) on one shaft, and conducting the water to them through spouts, which wind between concentric cylinders, producing thereby a whirling or vortical motion of the water, in the same direction with that of the wheels. 2nd, In a contrivance for introducing the water into a single horizontal wheel with a similar motion, together with an improvement in the construction of the wheel itself. 3rd, In a contrivance for applying the same principle to common wheels now in use.

Zebulon Parker subsequently came into possession of his deceased brother Austin's rights by deed, in 1839, with an improvement on the wheel, which consisted "in making the buckets at both ends as thin they can safely be made, and the rim no wider than is sufficient to cover them."

The patent of 1829 was renewed for seven years, consequently it will be in force until the 19th day of October, 1850 (this year,) and will have a retrospective effect upon all against whom suits for damages have been instituted.

We have received a number of letters, pro and con, about Parker's patent. It is not for us to takes sides with one party or the other, nor are our columns open for a mere paper war. We say, if Parker is the real and true inventor, his rights should be sustained to the fullest extent. If he is not, let this be proven fairly at a court of law, and let justice have its free course. Many have wrong opinions about patent rights. They suppose, that if they get a *patent* for an improvement, they may use the principle of another and a previous patent, with impunity. But the *law* will not allow this. No doubt there are many using water wheels that would be considered infringements on Parker's patent; and they are using them unconscious of wronging anybody. Perhaps many of them have been deluded by some plausible half patentee to purchase a right that belonged to another. We sympathise with such men, and the law is always favorably inclined towards them. There is not a week passes over our heads but we receive more than one communication about applying for patents on re-action water wheels. With but a few exceptions, we have advised the applicants not to apply for patents. Why? Because there are no less than thirty patents that have been issued for improvements on re-action water wheels, and it is our opinion that there are many conflicting claims among the number.

New Gunpowder.--Caution.

We learn by the Savannah Republican, Ga., that our friend Carruthers has been making some of the new gunpowder, described on page 228, No. 29, Sci. Am. It seems that while Mr. Carruther's boy was preparing about two ounces, it exploded in the mortar. We were particularly cautious in describing it, and those cautions we presume, were not observed.

Since we penned the above, we have received some of the powder from Mr. Carruthers, with the notices of it from our excellent exchange. We perceive that the credit of the discovery is given to Mr. James Napier, of Swansea, England, copied as a foreign extract. We should be happy to award any credit to an old acquaintance like Mr. Napier, who was in our country a few years ago, but the discovery was made by the gentleman referred to in the article (Sci. Am.) mentioned above. We would here state again, that the powder should not be used in steel nor Stubb & Twist barrels of firearms.

Pittsburg, April 20, 1850.

Messrs. Editors:—I have read with much interest a series of articles, published some time since in your truly valuable journal, entitled "Important Discovery that may lead to improvements of Great Value." The writer was apparently a man of information, and I have been watching, anxiously, for a more explicit description from him of the *form* of least resistance, and the application of "his reasoning to a familiar example." I do not, for one, like to be treated with so much theory as he presents; give us a clearer view of the matter, if possible, and see whether "Improvements of Great Value" will not be made by some of our scientific mechanics. "I. J. K." should make your journal the medium through which to enlighten the scientific community, as it is the only one to which we can look with any degree of accuracy, for a criticism, if his theory is predicated in error.

Yours, truly, Citrion.

[Our correspondent has called to mind a matter that we had overlooked, and we shall refer to the subject at some future time, for the purpose of showing the theory to be wrong—as we believe it to be.—Ed.

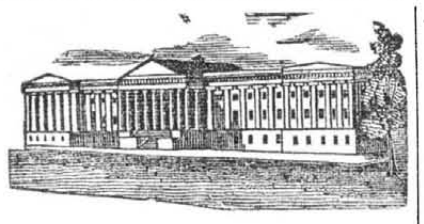
Consumption of Smoke.

In reference to an article in our last week's number, about the prize offered for the consumption of smoke in Cincinnati, we see by the "Gazette" that there is a smoke *consumer* there, named "Burkhardt's Consumer," which is highly spoken of. It is in use in the Covington Factory, in that city, also at West's Flouring mills, and some other places. Mr. Burkhardt insures its successful operation, or makes no charge. The smoke nuisance is an intolerable one in places like Cincinnati and Pittsburg, where bituminous coal is principally used. This is a subject which has exercised the genius of many distinguished men. Watt invented a smoke consumer, and there are not a few described in Hebert's "History of the Steam Engine."

The "American Mechanic," Athens, Geo., should have remembered that the article, "To Prevent Dampness in Walls" was taken from the editorial columns of the "Sci. Am." of the 6th ult. This would have prevented our cotemporary in Nassau street from being led into an error as to the source of its origin.—We are not particular that articles taken from our paper should always be credited, but we do dislike to have them given to others.

Useful Sleigh.

A sleigh manufactured of gutta percha, convertible at pleasure into a boat, is to be sent out with the English Arctic expedition on the first of May.



☞ Our weekly list of Patents and Designs contains every new Patent, Re-issue and Design emanating from the Department, and is prepared officially, expressly for the Scientific American, and for no other paper in the city, consequently other journals are obliged to wait the issue of the "Sci. Am." in order to profit by the expense to which we are subject, and of course must be one week behind. Those publishers who copy from this department in our columns, will, in justice to us, give proper credit for the same.

LIST OF PATENT CLAIMS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending April 23, 1850.

To Wm. Abendroth, of Port Chester, N. Y., for improvement in cooking stoves.

I claim causing the heat and products of combustion to enter the flue over the oven on one side, and carrying the same across the top of the oven, down the other side thereof in a broad sheet, thence under the oven, and thence up in a broad flue to the smoke pipe, substantially as described.

To John Andrews, of Woburn, Mass., for improvement in Churns.

I claim the combination of the external chambers, their plungers and discharging passages, with the middle or air chamber; the whole being constructed, applied and used, substantially as specified.

And in combination with the above I claim the air entering passages, &c., applied and used as specified.

To A. M. Asay, of Philadelphia, Pa., for improvement in Dentists' Chairs.

I claim the manner in which I arrange the operating parts within the frame work and under the seat in combination with the seat so made as to move up and down within the frame work and appear like an entire seat, as herein set forth.

To D. H. Chamberlain, of Boston, Mass., (Assignor to T. J. Whittemore, of Cambridge, Mass., for improved method of attaching cylinder in revolving fire-arms.

I claim the improved mode of attaching the cylinder of barrels to the stock; viz, by means of the cylindrical tube, in combination with the flanch and stud or their equivalents, whereby I dispense with the usual spindle and hole for its reception in the centre of the cylinder of barrels, being thus enabled to enlarge the bore of the barrels in a cylinder of equal sze.

To G. Fletcher, Sr., of Greensburgh, Ind., for improvement in machines for drilling stone.

What I claim is the combination of the lever, with the cranks and pitmen which operate it, for the purpose of rotating the drill periodically by impingement against the cogs of the pinion, at its greatest elevation, returning to position when the pinion is removed from its range, the whole arranged and operated substantially in the manner and for the purpose set forth.

To O. Edes, of Plymouth, Mass., for submerged rocker for separating ores.

What I claim is the combination of the rocking frame, the pans, the levers, and the bars, attached, and adjusted to the box, or to a platform or boat, in the manner and for the purpose substantially as herein described.

[The model of this invention worked admirably.

To J. W. Hoffman, of the District of Southwark, Pa., for improvement in Safety Lamps.

I claim the sliding tubes, in combination with the screw, the said screw being furnished with the opening, through which to fill the lamp, substantially in the manner and for the purpose described.

To H. Jackson, of Evansville, Ind., for improvement in Double Cooking Stoves.

I claim the construction of a double cooking stove, having two compartments, and a smoke flue, passing round one compartment first and then arround the other, in such manner that one shall be heated in a much higher degree than the other, arranged and constructed substantially as herein described and for the purposes set forth.

[As stoves are not yet perfect, this one we are positive is a step towards that point. It is an excellent arrangement.]

To H. Lariergan, of Boston, Mass., for improved arch-truss for bridges.

What I claim is the so combining or arranging them with respect to each other, and with the radial suspension rods, and on the cord or beam to which they are applied, that they and their suspension rods, may overlap one another, and have the feet or parts of each which rest on the cord, upheld by the crown, and suspension rods of the central part of an adjacent arch, all substantially as above specified.

To W. R. Nichols & B. C. Boyes, of Philadelphia, Pa., for improvement in coal-stirrers for furnace-grates.

What I claim is, first, the rake frame having numerous vertically moving fingers constructed and operating to stir and clean the fire only by a vertical movement, said fingers being distributed beneath the grate, substantially in the manner and for the purpose described.

Second, we claim in combination with the passages round the rim of the grate admitting warm air above the fire, the vertically moving rake-teeth which open passages for the free escape of combustible gases to be burned by said warm air, thereby maintaining a copious volume of flame, all around the interior of the fire-box, as set forth.

To S. R. Parkhurst, of New York, N. Y., for improvement in Cotton Gins.

What I claim is, first, the making card cylinders with gutta Percha, or other similar substance, filled in among the teeth, to form a regular surface, and stiffen the teeth, whether such cylinders, so fitted or used for this or any other purpose, for which they are available.

Second, I claim the application of one or more card cylinders with gutta percha or other similar substance, between the teeth, in connection with an equal number of smooth cylinders, to card cotton from the seed, substantially as described.

Third, I claim the application of the wire gauze drum and roller beneath; first, for the purpose of allowing the blast to drive the dust and chaff from the cotton; and second, for the purpose of leading the cleaned cotton out in a sheet, or batt, whether this roller and drum be applied to act with the card, or with the common saw gin.

To J. Ruck, of New York, N.Y., for improvement in Pianofortes.

I claim the manner of constructing the tuning block substantially as herein described, of the arched slab and the back piece, with the wedge or piece, and the diagonal bolts or keys, whereby it is made capable of withstanding the great strain of the strings.

And I also claim the metal plate, carrying the ribs projecting from and forming part of it, the plate being attached to the upper surface of the tuning block, each of the strings of the instrument passing over and resting on a rib, and passing through a hole in the rib immediately behind, whereby the strings obtain a solid bearing on the tuning block, which will make them produce a full round, clear tone.

[This is the second patent on pianos Mr. Ruck has taken out in a few weeks. His improved pianos are of no ordinary character.]

To N. Sawyer, of Baltimore, Md., for improvement in Brick Presses.

What I claim is, first, the combination of the grated disk and hopper, constructed and arranged substantially in the manner and for the purpose described, and in combination with the revolving moulds.

Secondly, I do not claim the mould as herein described, or the manner of holding the brick firmly while being cut off, these claims having already been granted to me in my Patent of September 27th, 1844; but what I claim is the arrangement of the mould (whether conical or otherwise, as before patented,) in a revolving cylinder, with pistons revolving with them, and working under a stationary cam, as herein described, in combination with stationary cutters, or cutters revolving on their own axes, working in a groove near the lower ends of the moulds, in the manner and for the purpose herein specified.

Thirdly, I claim the apparatus for trimming the bricks, consisting of a stationary cutter and a piece in front thereof, to press up against the brick as the clay is cut.

Lastly, I claim the combination of adjustable headed pistons, with stationary cam, as herein full specified.

To B. M. Smith, of Ridgeway, N. Y., for improved arrangement of propellers and chimneys for canal boats.

What I claim is the employment in combination of two propellers arranged in a recess at the stern of a boat, each being on a separate shaft, one above the other, and one of the propellers being placed back of the other, substantially as herein described, whereby a greater amount of paddle surface can be obtained within a case and with a given width of stern than by any other known plan.

And I also claim in combination with the propellers arranged with a part of one of them above the water line and enclosed in the recess at the stern of the boat, substantially as herein specified, the employment of a fan for exhausting the products of the combustion into the recess in which the propellers work, substantially in the manner and for the purpose specified.

To H. G. Thompson, of New York, N. Y., for lathe for turning a peculiar species of curve.

What I claim is the method substantially as herein set forth, of turning the periphery of steam wheels, or other articles, with regularly curved projections and depressions from a true circle, by combining with the mandrel of a lathe, or (what is equivalent thereto,) the shaft of the steam wheel, a cutter, which, in addition to the usual longitudinal motion parallel with the axis receivers, a reciprocating motion towards and from the axis by means of a cog-wheel, pinion and crank, or their equivalent, as herein described.

To D. Ulam, of Mount Pleasant, Pa., for improvement in Smut Machines.

What I claim is the peculiar construction of the rubber pieces, substantially as described and represented, whereby all parts of their surfaces may be successively appropriated to the rubbing action, each plate being susceptible of four changes before it becomes necessary to replace it by a fresh rubber.

To S. Whitman, of New Albany, Ind., for improvement in Brick Presses.

What I claim is the clearers as used in connection with the two plungers, for the purpose of delivering the brick and preventing the plunger from becoming foul at their passing ends and the clearer itself being kept clean and polished by the action of the plunger upon its lower surface.

To E. F. Whiton, of West Stafford, Conn., for improvement in instruments for measuring cloth.

I claim the manner herein described of measuring cloth or other fabrics by causing the material to pass over and give rotary motion to the roller, carrying on its axis the endless screw gear, gearing into the teeth of, and giving motion to, the traveller wheel, carrying an indicator, pointing out the distance travelled by the periphery of the roller, on the graduated adjustable index plate, or by any other mechanical combination substantially the same.

[This measuring apparatus is also a registering machine.]

To D. Wolf, of North Lebanon, for improvement in adjustable shares of corn plows.

What I claim is increasing or diminishing the angle of the plows with the central line of draft, by shifting the screws to the holes in the plows, and the screws to other holes in the beams, without changing the position of the shanks and braces, by which more or less earth may be thrown toward the row of plants under culture, as described.

To Peter Yates, of Milwaukie, Wis., for improvements in changing a reciprocating motion into a rotary.

Having thus described the construction, and operation of the parts employed, and the effects they produce, or may be made to produce. I do not herein claim to have invented any one of the parts used, irrespective of the manner, in which I have described and shown them to be employed for specific purposes, nor do I claim herein, any of the parts claimed in my patent of the twenty-fifth of April, 1843.

But I claim as new, and of my own invention the application of the levers, catch blocks, with the bevels and springs, or their equivalents to interlock and unlock with the crank arms.

And I claim, also, making the governing bar adjustable in combination with the levers, in such a manner as to give either a direct or reversed motion to the pulleys; and I claim the above applications severally, and in combination, in the whole and in the parts, the apparatus being constructed and operated in the manner and for the purpose herein described and represented.

[Now, since "Pulley," has made so much talk about his wonderful invention, and secured a patent for it, we hope he will "speak in deeds," for he has used steam enough in talking about it prospectively, to drive a locomotive at the rate of two hundred miles an hour. We predict, before a *fair* trial is made, that his springs "to interlock and unlock," will prove with pulleys and "crank-arms," (*ah! crank arms,*) a miserable substitute for the simple, incomparable crank.

More about the Exibition of the Industry of all Nations.

The commissioners for the exhibition of the industry of all nations, to be held in London. have fixed the time for opening, as we learn from an official communication, on the 1st of May, 1851. All articles intended for exhibition must be sent to the commissioners before the 1st of March 1851, as after this time none will be received. Attention will be given to the reception of articles after the 1st of January, 1851. By grant of Her Majesty, the exhibition will be held on the south side of Hyde Park, where a building is to be erected that will cover from sixteen to twenty acres.

"The productions of all nations will be exhibited together, under one general classification.

The building will be provided free from rent, and fire-proof.

Exhibitors will deliver their objects at their own charge and risk at the building in the Park, but no charges will be made while they remain there.

Colonial and foreign productions will be admitted duty free for the exhibition, but not for internal consumption. Such articles will be considered as bonded goods, and the Commissioners of the Exhibition will make suitable arrangements for their reception."

The commissioners desire the extension of local organizations in all districts from which it is proposed to send articles, and it is their wish that these committees will, as early as possible, procure an inventory or specification of articles proposed to be exhibited from their districts, and of the space required for their exhibition, that the Commissioners may determine as soon as possible the proportions of the building.

"Subscriptions should be paid to the treasurers of the local committees, and by them transferred to the general fund at the Bank of England, in the names of Messrs. A. K. Barclay, W. Cotton. Sir J. W. Lubbock, Bart.; S. M. Peto, Esq., M. P., and Baron L. de Rothschild, M. P.

Any surplus left after giving every facility to the exhibitors, and increasing the pivileges of the public as spectators, will be applied to purposes strictly connected with the ends of the Exhibition, or for the establishment of future similar exhibitions.

The Commissioners are in communication with the Foreign Office in Downing-st. as to the means of informing foreign governments of the arrangements in progress.

The Commissoners will afford every information in their power on any point respecting which local committees may address inquiries to the secretaries of the commission.

(Signed) J. Scott Russell.

Stafford H. Northcote.

At the New Place, Westminister, Feb. 21, 1850."

Temperence includes all the virtues and excludes all the vices.

TO CORRESPONDENTS.

"W. D. L., of Ind."—We are unable to furnish you any information upon the subject referred to. Geo. Page of Baltimore has an improved augur for boring wells of any size or depth. Perhaps you had better address him.

"J. T., of Ala."—We do not know of any second-hand lathe such as you speak of for sale. You had better furnish a correct description of such a one as you want, and we will hand it to some builder and get the price. No one can tell about it from your letter.

"S. J., of N. H."—A model of your invention must first be furnished before an application can be made for a patent, as the drawings are made from it. You would have to make two applications. Patents are granted for 14 years.

"N. A., of Richland, N. Y., J. H. P., of Alexandria, Va., J. T. P., of Tuscumbia, Ala., J. G., of Greenvill, Miss."—Have each a bound volume 4 in this office, and will be forwarded as they may direct. They cannot be sent by mail.

"A. J. S., Geo., J. M. S., of Miss., D. T. of N. Y."—Have bound books in this office which cannot be sent by mail. Please advise us how they shall be forwarded.

"J. O. H., of Mass."—We do not think your churn possesses any novelty. The same principle has been applied for within a short time, but it has been familiar to us for a long time. You could not in our opinion obtain a patent for it.

"J. T., of Va."—Arnott's Architect complete will contain 12 Nos., 8 of which are now ready. Your numbers were sent on the 28th inst.

"J. W., of Wisconsin."—There is no premium offered for a perpetual motion. A magnetic engine would not be considered a perpetual motion—far from it. We cannot tell exactly how much has been propelled by such an engine, very little has been done up to this time to determine the power of magnetism.

"J. C., & G. F. F., of N. H."—Your specifications and drawings have been withdrawn from the Patent Office and will receive attention in a few days.

"A. E. E., of Ala."—The price of the Physical Atlas is $55. Geography $1,25 and Mantell's Wonders of Geology $4,75.

"S. H. P. of Arkansas."—The foundation of the grant of letters patent was established April 10 1790, three years after the signing of the constitution. The Secretary of State, the Secretary of War, and the Attorney General, were constituted a board, any two of whom could grant letters patent; citizens, aliens, and foreigners were placed upon equal terms. No oath was required, and no examination, was had as at present. This law was repealed by the act of Feb. 21, 1793, under this act patents were only granted to citizens—this remained in force until 1800, when patents were granted to aliens, who had resided here two years.

"Z. H., of Mass."—It is possible that a combination of the two principles which you propose, under your particular form of arrangement, might be patentable. A great many patents exist on water wheels, and we could not decide upon the patentability of a new one, unless we had very correct drawings or a model.

"J. D., of Ohio."—We do not believe that you can accomplish what you propose, and would advise you not to spend any money on the project.

"H. W. G., of N. C."—We will endeavor to collect verbally all the information you want and give it by letter. Your were right about the jarring, injuring the fermenting. Is your fermenting room kept at a proper and even temperature always? The climate may have some effect which practice alone on your part will remedy.

"G. D., of Ind."—We received positive assurance from an Englishman, who had used the mixture that it would *destroy rats*,—there must be something wrong somewhere.

"J. T., of Phila."—The composition you speak of would not answer at all for separating gold. Quicksilver is the cheapest and the best, because there is no loss.

"M. M. H., of N. Y."—We do not think that your augur will answer so well as a jumper for boring rocks. M. G. N. Millerstown, of Pa., received a patent on the 28th of August, 1849, but not Doane. His claim is for the cutter with bevelled edges, and with a compound longitudinal and rotary motion very different from yours.

"B. A, W., of N. Y."—The springs for fastening the plane iron is not new, but it is public property and useful. We cannot see the advantages of your mortising machine as represented, and we do not think it could be patented.

"W. T., of Schenectady."—Your ideas about explosions are perfectly correct and sound.—We could not judge whether the two claims could be embraced in one patent or not, without a more particular description. If we saw the tools we could judge clearly of the matter.

"L. K., of Va."—Get an engraving published in the Sci. Am. It will be of great advantage to you, every inventor should do this.

"Dr. B. McK., of Ala."—The Barkometer costs $3 in this city; we can send it to you if desired.

"A. M. B., of Ohio."—We should require a more elaborate drawing and description of your "Mill Dam," before we should care to express an opinion. It is better for you that we should have a clear view of the matter before rendering advice upon a point that may be of great importance.

"S. S. S., of N. Y."—Please to send us a drawing of your plan of straining bed cords, we do not understand it.

"C. J. A., of Pa."—We think you have hit upon an excellent plan, and you had better send forward the model with as little delay as possible. The other matter is scarcely worthy of your attention just now.

"A. D. S., of N. Y."—Your ideas about atmospheric pressure are not correct. Hydrostatic pressure is equal upon all sides, and greatest on the bottom, according to depth. If you be more careful in coming to conclusions, you will come out right for the common principles.

"J. E., of C. W."—We will try and do yours justice in a short time.

W. S. K., of Conn.; J. G. G., of Boston; A. L. J., of Ohio; O. L. S., of Miss.—

Your specifications and drawings have been forwarded to the Patent Office, and the fees paid.

Money received on account of Patent Office business, since April 24, 1850:—

E. B. F., of N. Y., $20; K. E. C., of Ky., $80; S. A. G., of Conn., $15; C. E. A., of Mass., $20; A. J. P., of ———, $30.

Astronomical.

During the late fine weather in England, Lord Ross has been able to make use of his splendid telescope to great advantage, and has added three new nebulæ to his former important discoveries.

Back Volumes Scientific American.

We are no longer able to supply back Volumes of the Scientific American, *complete*, of 1, 2, 3 and 4. Our readers will please bear this in mind. Of Vols. 3 and 4 we can furnish sets of about 40 numbers each (not consecutive,) for one dollar per set; of Vols. 2 and 3, sets of about 50 Nos. (containing both Vols.) at the same price (one dollar). We have parcels done up ready for mailing of all the different Vols. referred to above, and on receipt of $1, either of the sets ordered will be immediately forwarded by mail.

Notice

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

Scientific Museum.

Late Eruption of Mount Vesuvius.

On the 6th day of last February, (1850) old Vesuvius, after many internal mutterings, which lasted about two weeks, began to send up sheets of lurid flame, and on the 7th the lava made its appearance, running down the mountains on the side of Torre Annunziata. The lava at a white heat bent its way in the direction of Pompeii, and during the night the scene was grand and terrible. On the nights of the 8th and 9th, the roaring and bellowing of the crater was appalling to the citizens of Naples. On the night of the 9th, about four hundred of the natives and foreigners (Americans, English, &c.) left in a special train for the place mentioned above, and then with guides to Bosco Reale to view the advancing lava. The government had previously sent forward strong bodies of troops, to preserve order and protect property. The sight that met the eye at that place was sublime. The lava presented a front of a mile and a half, and kept advancing slowly, devouring every thing in its way. From the villages and cottages the peasantry were flying from the devouring element, and the women and children rent the air with shrieks to San Gennaro, their patron saint. It was in vain—the lava drove them from their homes penniless. Above Bosco Reale, the lava (about 9 o'clock P. M.) took complete possession of a wood, and the trees fell in columns like the ranks of soldiers before a withering artillery. Some large trees offered their ponderous trunks to breast the hissing stream, but the resistance was but momentary, for the fiery fluid first consumed the lower parts, then they would explode and leap into the air, to be consumed to ashes on their descent. The large trees gave out hundreds of jets of steam from different places and those trees, which contained a great quantity of sap, were those which generally exploded, while those which were dry at their trunks, soon consumed there, then they bowed their heads and lay down in dignity on their fiery beds. At about 3 o'clock on the morning of the tenth, the eruption was at its height. The sky was clear, cold and starry, affording a contrast to the red rolling mountain. The roarings of the mountain were like the broadsides of a three-decker, and the ground beneath the feet of visitors trembled and groaned in awful convulsions. There was a strong stone farm house situated a short distance from the village; when the lava came to it a stout resistance was offered, and it commenced to rise like water in the lock of a canal, pouring in through the windows and destroying it in a short time. The proprietor of it, together with his servants, instead of laboring to save as many of their effects as possible, yelled and tore their hair, preferring to howl to San Grennaro.

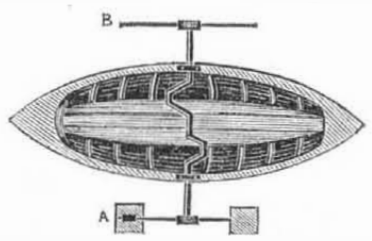
The lava next attacked a small church of Franciscan friars, embosomed in the wood. The edifice was solid, and seemed to breast bravely the stream, but as conscious of its irresistible power, the lava dashed to the attack, despite the chants of the friars and their heartfelt sorrow. The friars and parishioners were filled with grief to see the sacrilegious lava insinuate itself into the crypt and undermining its base; when it soon tottered and fell into the burning sea, the bells shrieking a doleful dirge as the belfry toppled into the sulphurous surges. Sometimes green flames would shoot athwart the advancing stream, then they would become deep blue, playing fearfully and grand, as the lurid sea of "Dante's Infernio." The crater threw up some huge and hissing rocks, one of which, several tons in weight, struck a brave but rash Polish officer, fracturing his thigh, and he being at a distance from any other person, bled to death. One of the most afflicting accidents was the death of Charles Carrol Bayard, U. S. Navy, and belonging to the squadron at Naples. With that daring peculiar to young Americans, he approached too near the crater, and received a mass of calcareous matter on the shoulder, which stripped the flesh to the bone down to the elbow. There was no fracture, but so long a time elapsed before he received proper medical treatment, that all the skill exerted to save his life afterwards proved unavailing. He was only twenty-two years of age, amiable, handsome, and a general favorite. He held the position of the Commodore's naval aid-de-camp, and only a few nights before he was at a ball the gayest of the gay, his fine manly form making him "the observed of all observers." Many accidents occurred, but the two mentioned created the greatest sensation, and it will be long before the terrible events of this eruption are forgotten.

History of Propellers and Steam Navigation.

[Continued from page 256.]

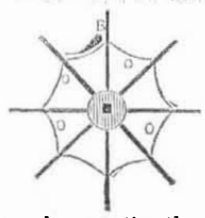
MR. EWBANK'S (COMMISSIONER OF PATENTS) EXPERIMENTS.

FIG. 38.



Since part of the Report of the Commissioner of Patents was published, that part of it which relates to the "propulsion of steamers" has been visited by the most scourging criticism of "heroes great and heroes small." It is a dangerous thing for some to get elevated in this world, for there are a great many people who have a strong penchant of bringing themselves into notice by attacking those who are somewhat conspicuous. That this is true of the Report spoken of, no one can doubt, for the same matter has been in print for a twelvemonth in the Franklin Journal, and not one has lifted up his voice and barked at it, until now. Owing to so much being said about this part of the Report, we hereby commence to publish the main features of it, a little out of our regular course, but is necessary at this time, and we shall reserve our

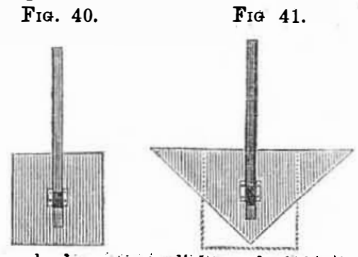
FIG. 39.



personal remarks respecting the merits of the *ideas* suggested in it for another and terminating article on the subject. The experiments referred to, were conducted on Harlem River, New York, in 1845 and 1848.

"For this purpose, the boat, fig. 38, was employed. It was 12½ feet long, and 3½ feet across the middle. A wrought iron shaft, 1 inch square, with a crank, extended across the gunwales, and turned in bearings bolted to them. Each end of the shaft stretched 14 inches over the side of the boat, which prevented the wheels, that were secured on each extremity, from throwing as much water into the vessel as if they had been nearer; and afforded a better opportunity of observing the action of the blades. A person seated at one end of boat, readily turned the wheels in either direction, by alternately pushing from and pulling towards him, two upright rods, which moved in joints at the bottom of the boat, and were connected to the cranks by horizontal rods or pitmen.

FIG. 40. FIG 41.



The wheels were very light, and of the simplest construction. One is figured at B. Eight slender arms, of 5-16 square iron, with their inner ends cast in the central piece, extended 20 inches from the centre, and thus made a 40-inch wheel. To stiffen them, and transmit any strain upon one to the whole, they were braced tightly together by the wire, O O O, fig. 39, which was wound round each arm, and retained by slight notches at the corners. The various blades or paddles were cut out of stout sheet iron. Square sockets, to slide over the arms, were rivetted to the paddles, by which means they were readily adjusted and secured at uniform distance from the axes. All were of the same area—49 inches.

To test the qualities of the boat, and get her into working trim, blades, 7 inches square, fig. 4, were fixed on the arms of both wheels, and several excursions up and down the river, made with them. Their dip was 7 inches, or rather more, for their upper edges were half an inch below the surface. They were next removed from one wheel, and left on the other, as the standard by which to compare the effects of different shaped ones. They were distinguished as No. 1. Nearly all the rest were formed from them: *i. e.* by removing portions from one part, and adding them to others, as will be seen in the following diagrams. In this way there was no danger of making, through mistake, one set of blades, of larger, or of less, superficial surface, than others—since no calculation of their areas was required.

In all the figures, the paddles are supposed to sweep through the water in the position as represented, the lowest sides being those which descend lowest in the fluid.

Fig. 41 is formed by cutting off the lower angles of fig. 40, and transferring the pieces to the upper ones, making a right-angled triangle, with sides 10 inches, and hypothenuse 14. (By mistake the upper corners were cut away, so as to leave the area of these blades 48 square inches, instead of 49.) Eight of these were fixed on the wheel, (see B, fig, 31,) to compete with the same number of fig. 40, on A, both having 7½ inches dip.

It will be obvious that, as both sets were attached to the same shaft, if one proved more efficient than the other, the boat would be turned from a straight course, and be inclined, more or less abruptly, to the weaker, or less efficient set. The result was, that those marked fig. 40 overcame fig. 41, and though only in a small degree, yet quite sufficient to establish their superior effect on the vessel's progress.—As we were not always out of the influence of tides and slight breezes, each experiment embraced excursions in various directions on the river. Once or twice the boat went straight as an arrow, but eventually, the square paddles got the better of the triangular ones. These dipped into the water with little noise, and threw it off behind from their points.

Most of the experiments were made in smooth water, and, except slight currents—aqueous and ærial—under the most favorable circumstances. Two persons occupied the boat, and the greatest care was exercised in preserving the shaft in a horizontal position. When results were doubtful, the experiments were repeated, and, generally, several times.

Antique Gold Mask.

At a late meeting of the Asiatic Society, London, the Director exhibited a golden mask which has been entrusted to him by the Court of Directors of the East India Company. The mask was found in an ancient coffin on the banks of the Euphrates, by Captain Lynch, one of the officers engaged in the Expedition which surveyed that river some years ago. It is formed of a thin sheet of pure gold, is of little size, and was apparently moulded from the face of the deceased occupant of the coffin in which it was found. The grave appeared to have been rifled at some former period; but the fear of pollution, and perhaps a superstitious respect for the dead body, had prevented the discovery of this curious relic, which was in close contact with it. The character of the face bears a considerable resemblance to that of the Assyrian portraits which are sculptured on the Ninevite monuments recently discovered; and the very few details we could gather respecting the accompainments of the coffin, would seem to favor the belief that the mask is really the portrait of an illustrious Assyrian, buried more than twenty-six centuries ago.

Strange Event.

A short time ago while the British brig Alcyone, from Glasgow, was off Cape Cod, while the men were aloft reefing the foretopsail, in the middle of a snow storm, a ball of fire larger than an 18 pound shot, struck the mainmast, and without any unusual noise, such as an explosion, the mast was split in four pieces and went overboard with all the yards and rigging attached. The Alcyone had previously lost her mizzen.

LITERARY NOTICES.

SPECIMENS OF THE STONE, IRON, AND TIMBER BRIDGES &c., &c. OF THE U. S. RAILROADS. By GEORGE DUGGAN, Architect, and C. E.—Part IV. of this excellent work is now ready and for sale. It contains four drawings of the details of timber and iron work of the Staracca Viaduct, on the New York and Erie Railroad; also drawings of the details of timber and iron work in the Cascade Bridge, on the same road, near Lanesboro. A full specification in good letter press, accompanies the drawings. It should receive a wide-spread circulation.

The American Railway Guide and Pocket Companion for the United States, containing correct tables for time of starting from all stations, distances, fares, etc., on all the Railway lines in the United States, together with a complete railway map; also the principal steamboat and stage lines running in connection with the roads. Published monthly by C. Dinsmore, 123 Fulton st., Pathfinder Office. We have taken pains to examine this work faithfully, and we can vouch for its accuracy. No person who travels should be without it, as it is certainly one of the most convenient and useful publications extant.

"The Gardener and Complete Florist." Dewitt & Davenport, publishers.—This book is sold for the small sum of 25 cents, bound, and contains an account of every vegetable production cultivated for the table, with directions for planting and raising ing flowers. It is worth to every young lady a cart load of novels, and should be studied in place of fictitious works. We do not imagine, however, that this short paragraph will take the novel writer's occupation from him.

No. 14 of Messrs. Phillips, Sampson & Co.'s splendid edition of Shakspeare's Dramatic Works have been issued. It comprises the Comedy of "Winter's Tale," with a beautiful picture of Perdita. Dewitt & Davenport, Tribune Buildings, have all the numbers for sale at 25 cents each.

"Moneypenny, or the Heart of the World." A Romance of the present day, by Cornelius Mathews. Dewitt & Davenport, publishers; price 50 cents.—This is spoken of as being a highly interesting novel. We shall not read it, however, to form an opinion, thinking that we can better employ our time.

The North Western Journal of Education and Science, is a neat monthly magazine published at Madison, Wis., by O. M. Conover, Ed.

The Western Journal, published at St. Louis, by Turner & Risk, is a most excellent monthly periodical, conducted with spirit and ably edited.