

New Inventions.

Experiments with Water Wheels.

We have a letter before us of a respectable gentleman in Ga., to a mercantile gentleman of high standing in this city, wherein it is stated that experiments with a Morris Wheel of 12 inches diameter, with apertures of buckets 16 inches, and a Reuben Rich's wheel of the same diameter—and 18 inches aperture, the Morris wheel discharged a certain quantity of water from a point in a 5 by 10 feet cistern, when stationary, in 75 seconds; when running, in 20 seconds; while the Rich wheel took 137 seconds to discharge the same water, while stationary, and while running took 145 seconds, thus reversing the order of acting. An aperture in the cistern of 30 inches, discharged the same quantity of water let on to the wheels in 40 seconds. This test shows that the Rich wheel discharged something over 1-3rd its openings—the Morris two and a half times its openings. The Morris wheel, therefore discharged more than five times the water of the Rich, even with smaller apertures. We should like to know the value of power in them both, by the test of a dynameter. The Rich appears to be a great wheel. The experiments were made at Columbus, Ga.

American Inventions in England.

Within a short time, a number of valuable American inventions have been patented in England, and there would be more of them, if the British fees were reduced to a decent price. Whenever this is done, the fees for British citizens will be reduced here. It would be well if this were done, and something to back it up by securing the patent to the inventor alone. England would thus show that justice as well as interest ruled her councils.

We see by a recent number of the London Patent Journal, that Mr. A. S. Lyman, of this city, whose patent Steam and Water Gauge appeared in Vol. 4, page 308, Sci. Am., has secured a patent for the same in England. This Gauge is employed on the steamship Atlantic, and it is to be used on all the Collins' line of steamships.

Charcoal Melted.

The possibility of melting charcoal has at length been satisfactory proved by the experiments of M. Despretz, of Paris. Up to the present time, chemists have considered this an impossibility; M. Despretz, however, not only melts this refractory substance, but solders one piece to another, and even volatilizes it. The heat to effect this purpose is generated by a powerful galvanic battery; the light and heat involved is so great that, even in approaching it, only for an instant, there is danger of violent headache and pain in the eyes. To avoid this the operator conducts his experiments under the shade of thick blue glass. Platinum clippings, and other metals difficult to fuse, are readily converted into a solid mass. This will prove of great service in the arts, and we hope that he will be able to make diamonds so as to destroy all the attributable value of these baubles.

Paine's Hydro-Electric Light.

We learn by our Worcester exchanges that Mr. Paine is now exhibiting his *New Light* made from water decomposed by electricity. He employs the gas both for cooking, warming his house, and for illuminating it. The expense of the machine that does all this, is stated to be six dollars per annum, as interest on it. He invites all to witness the accomplishment of what he has asserted he could do through our columns, and the Aldermen of the city of Worcester have visited his house, and were both astonished and satisfied with what they saw.

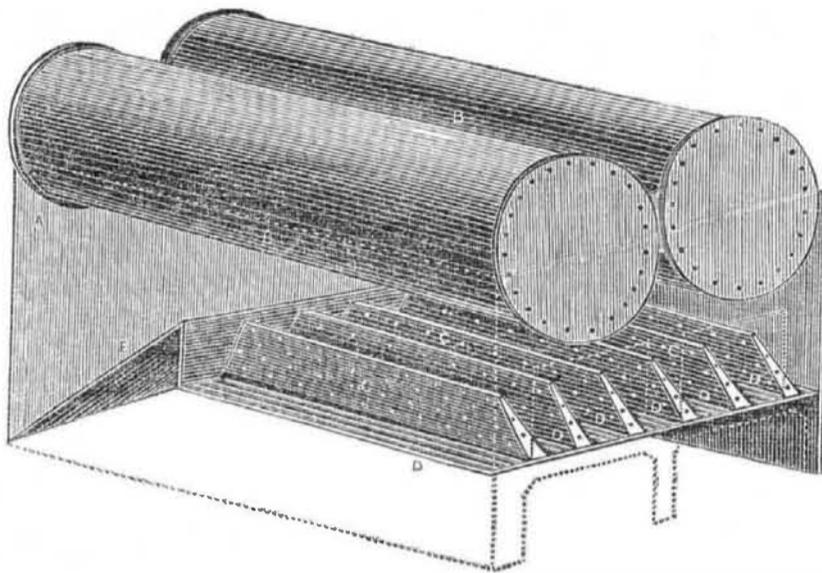
Since Mr. Paine published his last letter in the Scientific American, we have had many enquiries requesting more information about it, as there were some things stated which went to prove that water was not composed of hydrogen and oxygen, and that there were no such thing as two separate gases termed hydrogen and oxygen, but that water is composed of something (not known yet) in combination with positive and negative electricity. These are the inferences drawn from his last letter.

Improvement the Manufacture of Sugar.

As we have received some communications, lately, enquiring whether we know the whole of the Melsen process of making sugar, or not, we hereby publish all that we know about it: "As the cane is being crushed in the mill, a small quantity (we cannot tell the exact amount) of the sulphite of lime is intimately mixed with the juice, to prevent the atmos-

phere from affecting it, when the juice may be kept for some time, and submitted to the subsequent operations without any danger of fermentation. The juices may be evaporated by slow means, in shallow dishes in the atmosphere, and by filtration, the whole of the sugar is obtained, and of a superior quality, as there has been no fermentation.

MORSE'S AIR DISTRIBUTOR.



This apparatus is the invention of L. Morse & Brothers, of Athol, Mass., who are also the patentees. The patent was re-issued last year and its grand object is for burning saw dust and tan bark instead of wood, under steam boilers, thus making it exceedingly valuable for saw mills, tanneries, dye works, &c. The improvement is in a peculiarly constructed grate to supply the bark on saw dust with heated air on all sides, distributing the air to the materials to be burned in such a manner as to cause the substances spoken of to burn well, which otherwise they could not do, and to dispense with the burning of stabs in saw mills, and cord wood in tanneries. This figure is a perspective view with one side of the furnace removed to show the inside construction and arrangement. A is the back wall of the furnace. E is an inclined plate behind the ribs to the back of the furnace. The sides project below grate bars, and the ash pit holes are represented by dotted lines. B B, represents two cylindrical boilers. D D D, are the grate bars, but the novel features are hollow perforated chambers, C C C C, placed about eight inches apart on the grate bars, the whole breadth of the furnace, and of the same length as the grate bars, about 4 feet. They are about one foot in height, and are of a conical form from the base to the vertex at top. These hollow elongated conical chambers are distributors, and made of iron one inch thick and perforated with holes

Mortotype.

This is a name applied to a new application of Daguerreotype. It is the embedding of the likeness of the form and features of the departed upon the tombstone, and making it impervious to the ravages of time, by use of a peculiar kind of cement, which makes the pictures as durable as the marble itself. It is the invention of Mr. J. H. Whitihunt, a gentleman who has devoted a great portion of his life to improvements in the art of Daguerreotyping. [We copy the above from an exchange but cannot tell where Mr. Whitihunt resides nor any thing about his process. We expect that it is a real "Montotype."]

Curious Discovery.

The Pittsburgh Gazette, says:—An immense bed of a soft substance, with many of the peculiarities of soap stone, has been discovered about three miles beyond Brighton, on the line of the railroad. It is of about the consistency of tallow, though not as brittle, appears to have no grit, and can be shaved with a knife with as much ease as a piece of cheese. It is a dark drab color. The bed is five feet thick, and the contractor, in making his excavations, has found it a very troublesome substance. He cannot break it or blow it up, o

about four inches apart, and $\frac{3}{4}$ of an inch in size. There is about $\frac{1}{8}$ of an inch space between the bars, and the whole distributor is cast in one piece. By this engraving every person will get a distinct and perfect idea of what "Morse's Air Distributor" is in principle and construction, and will see how applicable it is for the purposes stated. The air passes up below through the grate bars, D, and also through the grate bars which form the bottom of the chambers, C, and passes through the perforations on both sides up to the top, and by the liberal supply of oxygen thus afforded, support the combustion perfectly. By the furnace being thus divided off, and such an abundant supply of oxygen provided, the burning of substances impossible to be accomplished in common furnaces, is hereby accomplished in a most beautiful manner, for the perforations of the chambers act like tubes to keep up a current of supply air, the very thing wanted to enter the bark and such kind of substances, to make them burn freely. We might produce a great number of certificates that we have seen, testifying to the value and utility of this invention, by parties who have been using it for a long time, some with saw dust, and some with tan bark, but the utility of it will be apparent to all. Messrs. Morse rely upon its merits for the sale of Patent Rights and all information may be obtained from them by letters (p p) addressed to Athol, Mass.

quarry it, on any of the ordinary processes.—He is trying to shave it off in thin slices with a plough.

Tunnelling through the Alps.

To complete the line of Railroad from Boulogne, in France, to Venice, in Italy, the snow-capped Alps would have to be pierced with a tunnel through their rocky sides. After five years study on the subject, the Chevalier Henry Maux, has reported on the project—its feasibility and practicability. The Sardinian Government has taken up the scheme, and in all likelihood it will be attempted if not completed. It is expected that it will take five years to finish, and will be about seven miles long.

Improved Bench Hook for Carpenters and Workers in Wood.

Mr. W. V. Kean, of Worcester, Mass., has invented a very excellent and new improvement on the above mentioned tool, for which he has taken measures to secure a patent, and which will certainly come into general use. The improvement consists in having the hook made on the top of a screw bolt, with four edges or sides, one for pattern makers and the others with edges suitable for wood of different hardness. Each edge can be changed at pleasure by a spring, and the surface of the hook

is so arranged in the cylinder in which it turns, that whatever edge is turned to the wood, the back has a downward inclination. If the plane, therefore, passes over, no harm is done. This tool is set with its cap flush in the bench, with screws, and can easily be put in and taken out. It gives us pleasure to record every improvement in tools that have a wide spread application.

Preparation for Coating Ships.

We see by a patent recently granted in London, to Adam Yule, Dundee, mariner, and John Cuarter, of Lloyds London, that there is still a great variety of opinions respecting the best coating for ships, and many no doubt appreciate the benefits of any material that would supersede metal sheathing, as a matter of economy. The two gentlemen spoken of above, believe no doubt that they have discovered the very thing desired for this purpose. It is made of ten quarts of bullock's gal, mixed with 30 pounds of plumbago in powder mixed along with some salt water to form a paint to be applied with a brush to the outside of the vessel.

Another composition is to mix 30 pounds of plumbago with 3 lbs. of arsenic, along with naphtha or pitch, and apply it to the outside of a vessel with a brush. Another composition is 1 lb. of arsenic, 3 lbs. of plumbago mixed with tallow in a heated state and applied with a brush. Whether all or any of these are first rate compositions for coating vessels to prevent marine deposits, we cannot tell.—We give them for what they are worth, only, this much we can say, if they are not good compositions the patentees have paid for the whistle. Experiments can be easily tried, and, from a knowledge of the nature of the materials, we should judge that there is merit in any one of them to demand a trial. It has always been a desirable object, to discover some composition that would effectually protect iron ships from the injurious effect of sea water and a sea atmosphere. Our Philadelphia Line of Coal Iron Steamers, were early ruined for want of a good protective coating. Red lead has always been considered the best substance and it no doubt is for that purpose, but then it must be put on aright, or it will not answer. The way to do this is to clean the iron well before the paint is put on, then make the paint (red lead) very thin and give it three successive coats, being careful to let every one be perfectly dry before the other is put on. Three pieces of iron were sunk in the sea for two years, one was coated as we have described, and the other two with other compositions, and when they were taken up, the piece coated with the red lead was uninjured while the other two pieces were honey-combed. Red lead is the best paint for using on all kinds of iron exposed to the weather. The first coat may be of red lead and the top coat may be of some more attractive colour.

New Process of Smelting Iron Ore.

Sir F. Knowles, in the London Mining Journal, proposes an entirely new process for smelting the ore and saving fuel, the loss by the common modes being made by him at 81 per cent. His plan is to crush the ore and put it in gas-proof reverberatory ovens. The fuel is to be decomposed in a separate chamber and the vapour of carbon passed into the heated mass of ore; so that the oxygen of the ore, uniting with the carbon, will leave the pure metal only behind when the ore is an oxide of iron. When it is a carbonate of iron he would mix the richer ores and allow their oxygen to combine with the carbon of the leaner ore, thus saving fuel. After the necessary chemical effect is secured by the exchange and combination of the gases, then the ore is expected to be reduced at once under a strong blast in shallow hearths, any needful flux being used at this last process.

Shingle Machine.

We are informed that Mr. S. D. Paxton, of Fairfield, Va., has taken measures to secure letters patent for improvements in machines for cutting shingles, which promise to be valuable. We are not at liberty to describe the nature of the invention. Mr. Paxton being now engaged in experiments for the purpose of perfecting it.