IMPROVED KEG AND BARREL MACHINERY.

In our last issue, we published five engravings of the improved barrel-making machinery introduced by Messrs. E. & B. Holmes, of 59 Chicago street, Buffalo, N. Y. We now resume the subject, continuing it to its close, and illustrating four other machines, which complete the series.

Fig. 6 is a stave equalizer, with reel feed and conveyer. This is adapted to sawing off staves to uniform lengths as required, and will equalize staves of different lengths for making casks of all sizes, from the smallest kegs to barrels. It has a continuous reel feed and conveyer; also two circular saws upon the same mandrel, which can be adjusted and placed at different distances from each other. The stave is placed upon the feeder and is presented to the saws, which cut off both ends. The reel then carries it to, and drops it upon, the conveyer, which delivers it wherever desired.

In Fig. 7 is shown a machine for dressing and jointing headings of all lengths and sizes for casks, from small kegs to hogsheads. One or both sides of the material can be finished as desired. The machine is constructed with a heavy iron frame, upon which is mounted a large iron wheel. On the wheel are placed cutters for dressing and jointing the heading. The inner set of cutters is for dressing the heading, and the outer for jointing. There is also a sliding clamp located upon the frame, in which the piece of heading is placed and clamped, and passed up to the cutters, which dress it and take it out of wind. The piece of heading is then taken from the clamp and placed upon the jointing rest, and brought in contact with the cutters, which give a smooth and perfect surface to its edge.

Fig. 8 is a machine for jointing staves for kegs and small casks. This is so constructed that the operator can instantly change the curve or bilge of the stave, through a foot lever, by which the operator raises or lowers the clamp or rest upon which the stave is placed. The clamp is fastened by an eccentric at any point desired. The stave is placed upon the holder, and is passed up to and against a concave disk, in which are cutters which make a perfect joint upon the edge of the stave. The machine is made with or without the casing, which, in connection with the revolving disk, forms a fan, to remove the shavings and dust to the fuel room or where desired.

In Fig. 9 is represented a machine for bending and rendering flexible wooden hoops. By the operation of this device all the stubborn and unyielding portions of the hoop are rendered flexible. The hoop is put into this greatly improved condition without breakage, thus saving a large amount of valuable stock; and the work of the cooper is greatly expedited. The machine is made with an iron frame in which are placed three iron turned or finished pulleys. A strong belt is so placed upon the pulleys as to drive them all when one is put in motion. The hoop is entered between the belt and the middle pulley, which is carried around the pulley and held close to it by the belt, which prevents its breaking. Hoops are passed through this machine very rapidly.

Lack of space precludes our presenting more than the brief description here given of these valuable machines. We are informed that the manufacturers are the only parties in the United States, or in the world, who make and furnish full and complete apparatus for making all kinds of barrels and kegs. A fine representation of all varieties of their machinery will be found in section 37, columns 50. 51, 52, of the machinery department of the Centennial Exposition.

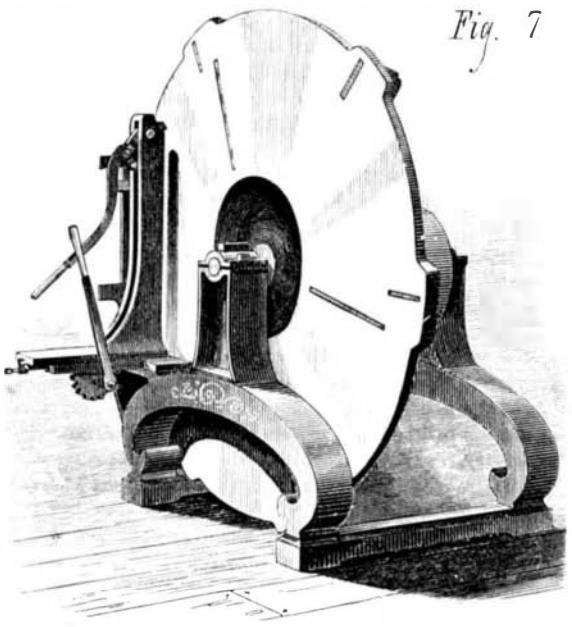

Fig. 7.—BARREL HEAD DRESSING AND JOINTING MACHINE.

For further particulars, address the inventors and manufacturers as above.

NICKEL deposits, from which ore containing 30 per cent of pure nickel has been obtained, have recently been discovered at Ouallou, New Caledonia.

SCIENTIFIC AND PRACTICAL INFORMATION.

HOW WE TAKE COLD.

It is one of the facts best known to Science that, when a part of the outer surface of the body has been exposed long to cold, the greatest risk is run in trying suddenly to re-induce warmth. To become thoroughly chilled and then to pass into a very warm atmosphere, such as is found near a fire, results in a dangerous reaction which, a few hours later, may cause pneumonia or bronchitis, or both diseases. The capillaries of the lungs become engorged, and the circulation becomes static, so that there must be a reaction of heat inflammation before recovery can occur. Common colds, says a contemporary, are taken in the same way: the exposed mucous surfaces of the nose and throat are subjected to a chill,

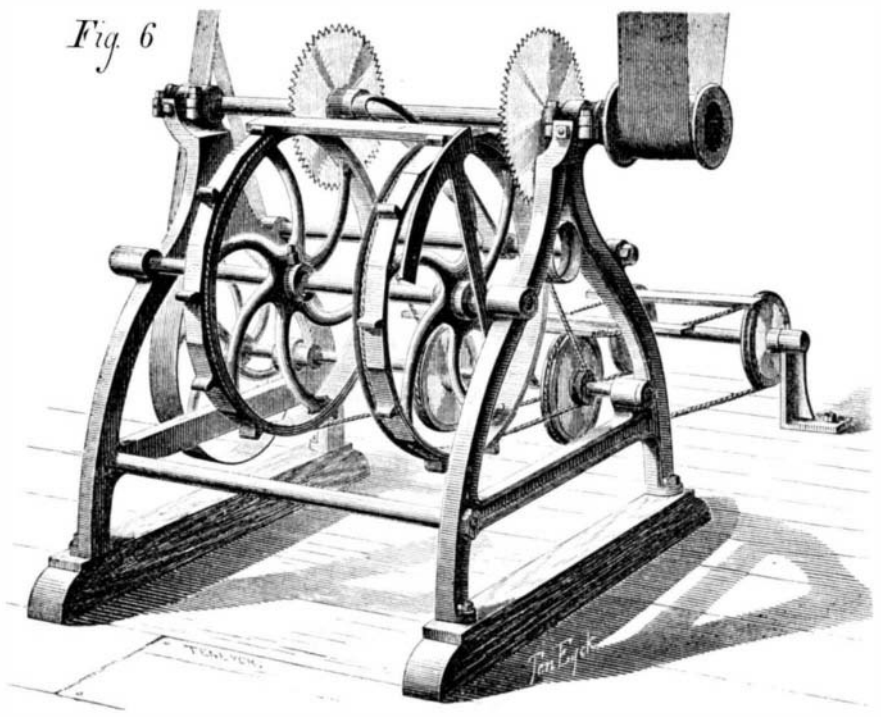

Fig. 6.—BARREL STAVE EQUALIZER AND CONVEYER.

then they are subjected to heat; then there follows congestion, reaction of heat, pouring out of fluid matter, and the other local phenomena of catarrh.

LOISEAU'S PATENT FUEL.

We have already chronicled the excellent success which Mr. E. F. Loiseau has encountered in introducing his patented process for the manufacture of fuel from the hitherto

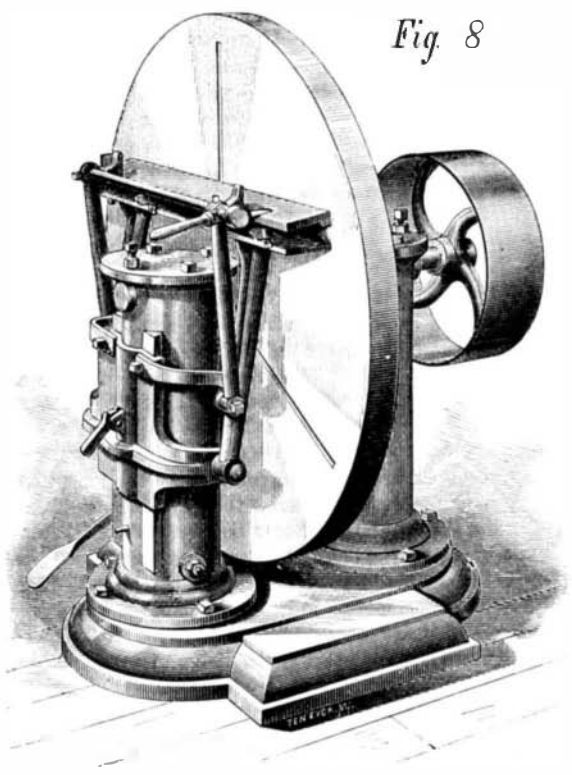

Fig. 8.—KEG STAVE JOINTING MACHINE.

wasted coal slack. Preparations are now in progress for making the the fuel on an extended scale, and supplying it for public use. A factory located at Port Richmond, Pa., has a set of Mr. Loiseau's machines capable of making 150 tuns per day, and admitting of the sale of the material at one dollar per tun less than the price of stove coal. Contracts have been entered into for immense quantities of coal slack, so that before very long we may expect to see the enormous heaps of that refuse, which now simply encumber the ground in the vicinity of the breakers in the coal districts, disappear. For several months past the Philadelphia and Reading Railroad Company has been experimenting upon the fuel, and it is found to yield more heat and produce more steam than similar quantities of large coal.

We published some time ago complete illustrations, with descriptions, of Mr. Loiseau's very ingenious machinery. The beauty of the process is its continuity: 95 per cent anthracite slack, 5 per cent clay, and some adhesive material enter one end of the series of apparatus, and the compound never stops moving until it emerges at the other end in the shape of neatly molded hard lumps, covered with a waterproof varnish, and ready for instant use.

A SUBMARINE RAILWAY.

One of the most remarkable and at the same time impracticable plans, which have been suggested for rapid and agreeable transit across the English Channel, has recently been exhibited at the Palais de l'Industrie in Paris, by its inventor, Dr. La Combe. He calls his project "the submarine boat," but the boat is really a portion of a huge carriage which is to run upon a railroad laid on the sea bottom. There is no tunnel, nor anything thereunto resembling. The road bed is of *béton*, which is to be laid by divers, and on this are fastened three galvanized iron rails. The outer ones are for the wheels of the carriage, and the inner one is raised so as to be embraced by rollers, centrally attached to the latter in order to prevent rolling and derailment.

The boat, at all points watertight, is secured to the heavy carriage, and the whole is driven by a screw actuated by compressed air transported in suitable reservoirs. The latter also supply fresh atmosphere for respiration within the boat, and a machine is provided for removing any excess, as well as the vitiated air. The interior is illuminated by the electric light, the current being led to the vessel by a wire from Dover; said wire also serves for telegraphic purposes.

The inventor proposes to arrange guard rails so as to keep the track always clear, and he provides a double-doored chamber in the vessel, so that, in case of necessity, a diver can emerge to examine the line. Should by any possibility the vessel stop, a buoy is immediately sent to the surface of the water, carrying an air tube, so that the supply of air may not fall short; and in case of grave accident, the vessel can be altogether cut loose from the carriage, when it will rise to the surface and float. A series of buoys on the surface will mark the line of the road. Dr. La Combe thinks that his project is practicable, and believes that his vessel could make the journey of twenty-one miles in about half an hour.

PURIFICATION OF SULPHURIC ACID.

The method generally employed, consisting in removing the arsenic by sulphuretted hydrogen, is tedious and costly. Professor Thorn, of Pesth, says the *Moniteur Industriel Belge*, has devised a more simple process. The acid coming from the lead chambers and marking 50° B is carried in a lead vessel at a temperature of from 189° to 212° Fah., and a quantity of sulphate of soda dissolved in water, corresponding to the quantity of arsenic contained in the acid, is added. The sulphide of arsenic is thereby formed in yellow flocculent masses, which aggregate and float upon the surface. On withdrawing the acid, the sulphide remains on the bottom of the vessel, whence it is removed. The operation is easily carried on, and but very little sulphurous acid is produced. The purified acid contains from 3 to 4 per cent of sulphate of soda, which offers, in the majority of applications, no inconvenience. In experiments made at Pesth, acid at 50° B contained 0 098 per cent of arsenic, on leaving the chambers, and 0 004 per cent after purification.

ARTIFICIAL MEERSCHAUM, HORN, AND CORAL.

A new way has been found of making excellent imitations

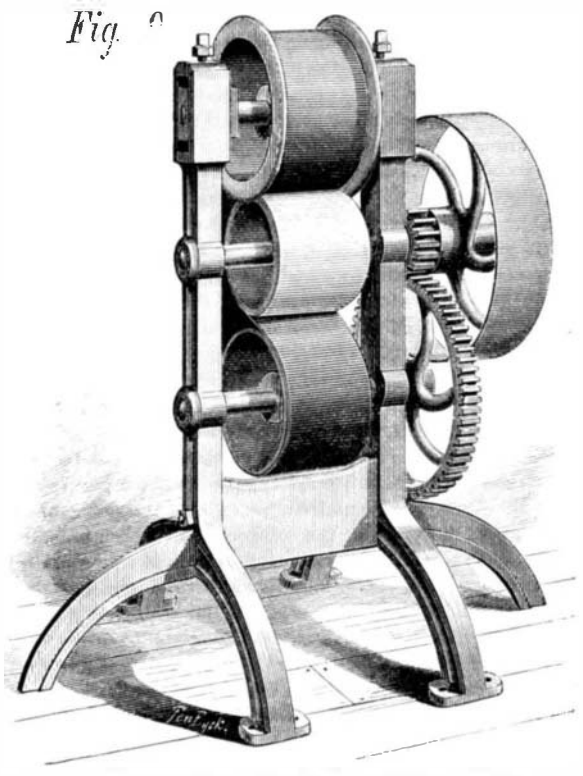

Fig. 9.—MACHINE FOR BENDING WOODEN HOOPS.

of meerschaum, horn, and coral, out of potatoes and carrots. To make the false meerschaum, the potatoes are peeled and macerated for 36 hours in water acidulated with 8 per cent sulphuric acid. They are then dried on blotting paper, and