

AIILOT'S BRICK MACHINE.

In the machine shown in the accompanying engraving, the apparatus for kneading and compressing the clay are united upon one and the same frame. This arrangement leads to a marked reduction in the first cost of the establishment, as well as in the cost of manual labor. Besides this, it affords every facility for setting up a plant within a very limited space.

The strength of the various parts of the machine is such as to permit it to work hard as well as soft material. When the latter has been properly prepared, it is introduced into the pug mill, which works it by means of cutters keyed to a vertical shaft. At the lower part of this apparatus there is a rectangular piston, which has a horizontal, backward, and forward motion, and which is so arranged as to force the clay alternately through each of the moulding boxes. The moulded clay is then received by a carriage provided with a steel wire frame that cuts it into bricks of the desired length.

As the alternating motion of the piston is very slow, the head workman has time to cut up one length of

Mr. Aillot's improved machine is already operating in several brick and tile works, where it is permitting of the manufacture of all sorts of products, such as tiles, floor slabs, hollow bricks, solid bricks of different shapes, drain pipe, etc. It is capable of turning out about from 8,000 to 10,000 pieces per day of ten hours. —*Revue Industrielle.*

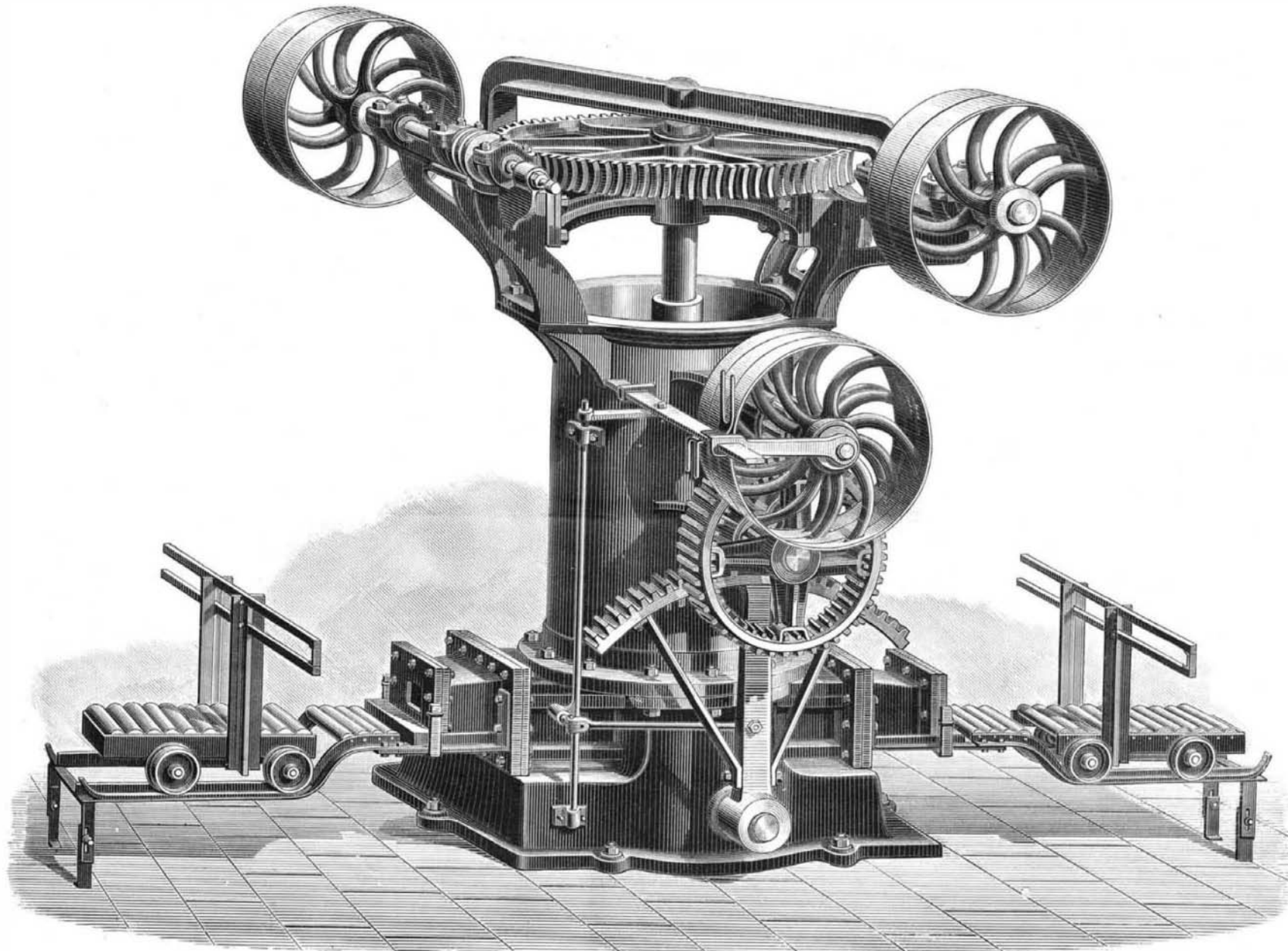
Hints about Paper Negatives.

So far as the development of paper negatives is concerned, there is nothing special in which the manipulations vary from those in connection with glass plates. The exposed paper is first soaked thoroughly in water until flat, and then, lying film side uppermost, the water is poured off, leaving the paper adherent to the bottom of the dish. If the developer be now poured gently into the dish, the negative will retain its position during the whole operation, and there will then be less chance of air-bells forming, or of the paper becoming doubled, and causing unequal action. If it be necessary to examine the negative by transmitted light, it is better, after having done so, to pour the developer

of afterward; therefore our advice is to take a little care at first in drying properly.

One plan is to take a piece of glass very slightly larger than the damp negative, and tip its edges to the depth of three-sixteenths of an inch with strong glue or gelatine; then lay down the negative smoothly with the plain paper surface in contact with the glass. In drying, the edges will adhere, and the center portion will be stretched, smoothly and uniformly, literally as "tight as a drum." The point of a penknife passed round the edges will release the negative in a condition of the most perfect flatness.

But the best process of all, though perhaps a little more troublesome, is undoubtedly the following: A sheet of glass is cleaned, polished with talc, and collodionized; the damp negative is then cemented to the collodion surface with gelatine in the ordinary way by squeegeeing the two in contact, and allowed to dry. When dry, the negative and collodion film are stripped from the glass, the surface resembling an enameled print. The great advantage of the collodion surface lies in the fact that, should the negative acci-



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clay while another is forming in the opposite moulding box.

It is especially in the mode of performing this work that Mr. Aillot's apparatus differs from all similar ones. In fact, the mechanism appears to us to have been simplified in a very ingenious manner.

In order to understand the transmission and the transformation of the rotary motion, it is necessary to suppose that the axis of the endless screw which drives the toothed wheel of the pug mill is turned on its supports in such a way that the pulleys appear in the foreground. A special transmission, carrying an independent un gearing movement, actuates the small intermediate shafts that are arranged to the right and left of the summit of the pug mill. These gearings are afterward connected with the shaft that carries the first pinion of the train of gearings. This shaft is provided with three pulleys, the central one of which is loose, while the other two are fast, revolve in opposite directions, and work in succession in such a way as to give the piston its alternating motion.

The machine is reversed automatically by a very simple combination of the levers of a double acting un gearing mechanism. When the toothed sector that controls the piston reaches the end of its travel, a horizontal rod, bolted to a spoke of the wheel, displaces, through the intermedium of a vertical shaft and lever, the double-forked shifting bar. It follows that one of the driving belts will then be upon the loose pulley, while the other will be actuating the piston.

out of the dish, and carefully lay down the negative before repouring on the solution, as, if it be attempted to float or immerse the tissue in the limited space of the developing dish, the chances are strongly in favor of inequality of action.

So far as the solutions are concerned, the instructions of the manufacturers of the paper should be followed. We have used both ferrous-oxalate and pyro development, but strongly prefer the latter. With due care in washing there is not the slightest fear of staining the paper, and in this respect we think pyro has a distinct advantage over the iron salt. If from prolonged development there should be a slight stain, it is best removed by a short immersion, after careful washing, in a strong solution of bisulphite of soda; only in cases where it is absolutely necessary, in order to prevent softening of the film, do we recommend the employment of alum.

The next operation, and one of the utmost importance, is the drying, as, if this be not properly done, the negative will be perfectly useless, until it has been rewetted and again dried; if, indeed, as may easily happen, the first drying has not irretrievably spoiled it. If left to dry alone, the negatives will, of course, "cockle" and curl up into all sorts of shapes, from the difference in contractility of the paper and the gelatine film; the latter, too, will sometimes crack during the operation. If any attempt be made to straighten such a negative, the probability is that it will be torn or broken, or that creases will be formed which it is impossible to get rid

of, and it will not adhere to the print, as would otherwise inevitably be the case.

The only remaining question is that of waxing, or rendering the paper translucent. We do not recommend it, as with many samples of paper it rather increases than diminishes the grain or texture. If it be resorted to, the best material, in our opinion, is solid paraffine or "paraffine wax," as this does not become yellow on exposure to light and air. The application is made in the usual way by laying the negative face downward on a hot plate and rubbing the back with a lump of the solid wax, the surplus being removed with a pad of flannel. It will be just as well to give the front or gelatine side of the negative a rub with the waxed pad, as, if it perform no other function, it will act as a slight protection against damp; but if applied to the face of the negative only, the wax will not penetrate through the gelatine film to the paper.—*British Journal.*

Some Curious Hail Stones.

A Minnesota correspondent writes us of a hail storm experienced over a narrow district in that State, on September 14, where the hail stones falling reached a size of 9 to 11½ inches in circumference. On being broken open, the interior was like frozen snow, but surrounded by different rings of clear ice, as though they had, in formation, been suspended some time in the upper air, and during this period had passed through clouds of greatly varying temperature.

The Coast Whale Fishery.

Whale fishing off the New England coast by small steamers is getting to be quite a business. During the past two months four steamers have been engaged in this work, viz., Fannie Sprague, Mabel Bird, Hurricane, and Josephine.

They cruise off the Maine and Massachusetts shores, as far south as Cape Cod. A bomb-lance, fired from a gun held at the shoulder, is used for killing the whales. Up to date about forty whales have been captured.

As the men become expert in the manner of capture, the whales become shy and keep more in deep water. After being killed they usually sink, and it is doubtful if the business, as at present conducted, will last if the whales are driven off from near shore, it being difficult to recover them in over 40 fathoms of water.

The whales captured the past few weeks average 60 feet long, and weigh about 25 tons each; they yield about 20 barrels of oil, 2 barrels of meat, 5 tons of dry chum, and 2 tons of bone, about \$400 being realized from each whale, on the average.

Double Rails.

According to the Joliet (Ill.) *Nws*, the Joliet Steel Co. now roll steel rails in 2-rail lengths, thus saving two crop ends on every two rails, as well as securing a larger product than by the old method of rolling single rails. The company intend to roll 4-rail lengths after a while. The rails are passed through the rolls by machinery.

LOCKS OF THE MANCHESTER SHIP CANAL.

At Latchford, some 15 miles from the Manchester dock, it is intended to construct a dock for the accommodation of Warrington; and there are to be coal docks at Irlam and Barton. The canal locks at these places are of compound design; at Latchford there will be a group of three locks of different sizes, placed side by side. The largest will hold several ships at once, but they will have intermediate gates to allow a part of the lock to be used without waste of water. Hundreds of vessels may thus pass these locks in a day. The Irlam and Barton locks are to be similar in design, but without tidal gates. The gates and sluices will be worked by hydraulic power, but steam power will also be provided. In other respects, the locks on the Manchester Ship Canal will be constructed very similar to each other, so that in illustrating one of these locks from the engineers' designs, a very good representation of the various locks on the canal route is afforded to the reader, so that we need only add that in its course the canal will ascend five of these locks.—*Engineering Review*.

A NEW STEAMBOAT.

The annexed cut represents the model of a new steamboat constructed by Mr. Emil Adam, of Prague, Austria, and with which astonishing results were obtained.

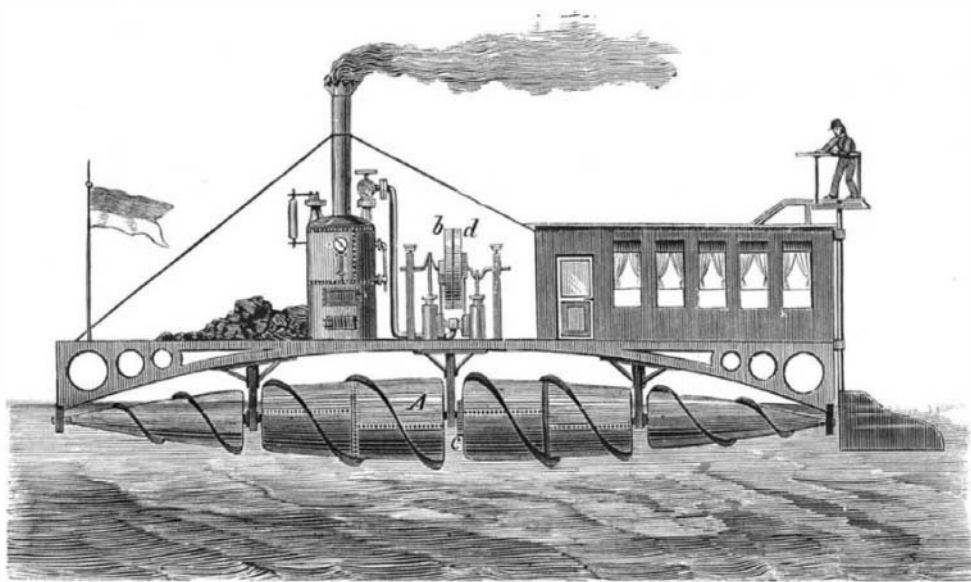


Fig. 1.—A NEW STEAMBOAT—SIDE VIEW.

According to the *Erfindungen und Erfahrungen*, from which we copy, the inventor set out to reduce the resistance of the water as much as possible, and for this purpose constructed the hull of his vessel of two hollow cylinders, which are tapered from the middle toward

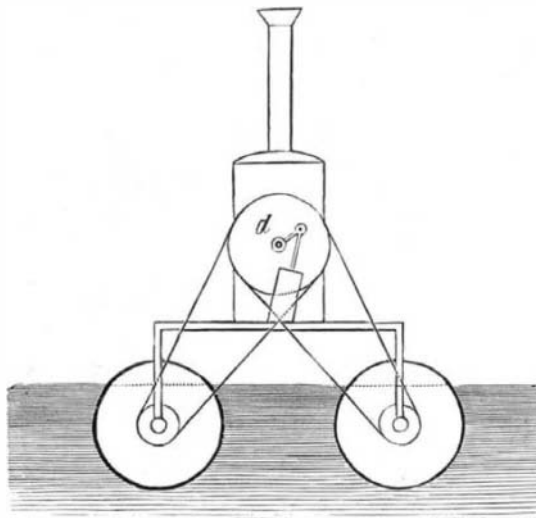


Fig. 2.—END VIEW.

both ends, whereby a shape resembling that of a cigar was obtained.

Each cylinder is provided on its outer surface with a screw thread, formed of metal plates riveted on the cylinder, the line of inclination of the thread being

about 45° to the longitudinal axis of the cylinder. Annular recesses or breaks are formed in the cylinders at suitable intervals for the bearings supporting the frame of the vessel. The cylinders are rotated by a suitable engine, of any desired construction, on the deck or platform of the vessel. The water in which the cylinders revolve acts as a nut for the screw threads, whereby a rapid motion in either direction is obtained; especially as the frame, decks, etc., are entirely above the surface of the water, and thus offer little or no resistance.

Fig. 1 is a side view of the vessel, and Fig. 2 is an end view of the same, the latter figure showing the belts for transmitting power to the screw cylinders. In the vessel shown, the two cylinders act the same as the two vessels forming a catamaran.

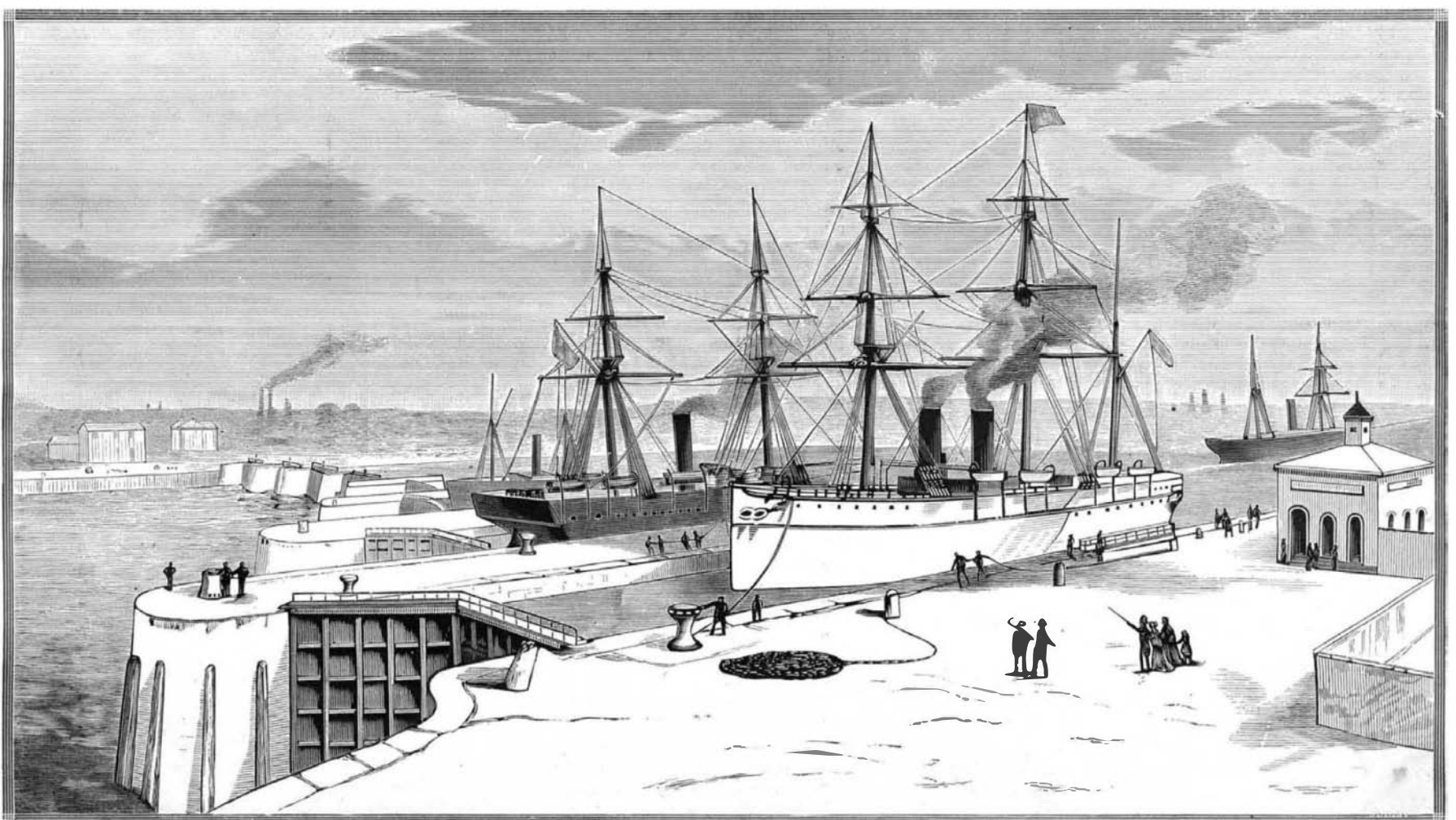
If desired, a third cylinder may be provided, or the number may be still further increased.

Walnut Hair Dye.

The juice of the walnut rind has been used from time immemorial as a hair dye. Bernschen and Semper have recently communicated to the Berlin Chemical Society a method of preserving it for use in the shape of a hydroglucoside, prepared as follows: The rinds of the ripe nut are digested in sulphuric ether until their coloring matter is extracted. A solution of chromic acid in water is added to the ether solution, and the mixture thoroughly agitated. The ether is then distilled off, and the residue purified by solution, first in hot ether, and afterward in a mixture of chloroform and petroleum ether, from which latter it is obtained in a crystalline form as hydrogen glucoside. This substance colors the hair and skin exactly as does the juice of the fresh rind.—*National Druggist*.

Car Coupler Company.

The Hilliard Car Coupling Co., says the *Kansas City Times*, has filed articles of association in the county recorder's office. The capital stock of the company is \$600,000, divided into 6,000 shares of the par value of \$100 each. The names of the incorporators and the number of shares held by each are as follows: Thomas J. Hilliard, 1,950 shares; Charles Schryver, 900 shares; William Peake, 1,125 shares; Charles A. Peake, 300 shares; T. K. Hanna, 300 shares; R. H. Drennon, 300 shares; W. C. Duvall, 375 shares; Waldo Suckow, 75 shares; F. C. Adams, 75 shares; H. M. Tilotson, 300 shares; O. L. Woodgate, 150 shares; and J. A. Scott, of Rich Hill, 150 shares. The object of the company is to exercise all rights and privileges under the letters patent granted to Thomas Hilliard in 1882 for improvement in car couplings. The corporation is to continue fifty years.



LOCKS OF THE MANCHESTER SHIP CANAL.