

APPARATUS FOR HYDRATING LIME.

It is useless to dwell upon the advantages that are derived from the use of very pure milk of lime free from stones, in sugar works. For replacing manual labor and all the instruments that now serve for manufacturing this product, Mr. L. Wackerwie has devised an apparatus which does the work mechanically and economically, and which may be used indifferently for the preparation of lime in paste, in milk, or in powder.

In this apparatus, which is shown in the accompanying cut, three operations are performed, to wit: (1) the slaking of the lime; (2) the straining of the preceding product; and (3) the stirring of the milk or paste.

The hydrator, A, consists of a receptacle that contains an Archimedes screw, and is provided with injecting pipes which receive water through a cock connected with a conduit. The quick lime, with which the entire capacity of the hydrator has previously been filled, is slaked by means of the injected water, and, when reduced to a paste, is emptied into the lower cylinder, B, through the motion of a helix.

The straining cylinder allows the milk or paste to escape, but retains all the impurities, such as the unburned portions, the rubbish, and the debris of coke or coal. A propeller, which is placed in the interior of the cylinder, causes all these solid materia's to travel toward the exit end, where a plug moved by a lever permits of their being removed.

Those portions of the lime in powder, paste, or milk, that traverse the perforations in the cylinder fall into the lower trough, where they undergo a vigorous stirring in order to convert them into milk of a density that is determined by the needs of the works.

Nothing can flow through the blow-off cock adapted to the receiving trough but very uniform milk of lime, absolutely free from stones, since the few impurities that may have traversed the meshes of the cylinder deposit in the lower space protected from the action of the blades of the agitator. This deposit is afterward removed by means of a scraper.

The apparatus takes up but little space, and does not require much power to run it. One man suffices to feed and maneuver it. The discharge is considerable, and the milk of lime is always uniform. The unburned portions are eliminated automatically, and the real lime is entirely utilized.

If we compare these advantages with the inconveniences that attend the usual mode of preparing milk of lime in sugar works, it may be easily seen that the apparatus is called upon to render a genuine service.

Aside from its applications in sugar works and distilleries, the apparatus is adapted for manufacturing hydraulic lime, cements, and ceramic pastes. When it is desired to obtain lime in powder, the agitator is replaced by a helix which sends the product to a bagging apparatus.—*Revue Industrielle.*

An Electric Torpedo Boat.

A nondescript craft has been lying the last few days at the Delamater Works, foot of West 13th Street, this city. She is a torpedo boat, built of steel, 30 feet in length, 7 feet 6 inches in beam, and 6 feet deep. She is to be run by storage batteries and lit by electricity. The method of firing the torpedoes is thus outlined: She is to have a torpedo at each end, fastened to the deck by a detaching apparatus. They are to be connected by a chain and to have an electric wire attached to each. They are fitted with cork floats, which cause them to rise as soon as detached from the deck, and over the cork are powerful magnets which will cause them to adhere to the bilges of the ship to be destroyed. The boat is then steamed off to a safe distance, and there an electric current sent through the wires explodes the torpedoes. The boat will, it is calculated, go at the rate of about eight miles an hour. A partial trial

has been had with her in the North River. When complete she will be taken by Prof. J. H. L. Tuck, and made to give a submarine exhibition by exploding some old hulk or sunken canal boat. She carries compressed air, and has tubes that can be sent up from a depth of 20 feet under water, for a fresh supply.

COMBINED CALENDAR, PAPER WEIGHT, ETC.

A cylindrical cup, A, has a flat annular rim provided with thirty-one notches, C, marked from 1 to 31. Within the cup



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is placed a tubular section, D, open at the top and bottom, and provided with an annular rim plate, E, which projects into a recess formed on the top edge of a cup, F, within the tubular section. Twelve apertures, G, are arranged equidistant in the top edge of the cup. On the rim, E, is pivoted a latch, the end pin of which passes into one of the apertures, G, to lock the cup in place in relation to the tubular section; on the rim is also pivoted a latch which passes into one of the notches, C, to lock the tubular section in place in

To adjust the calendar the inner latch is raised, and by means of the handle the cup, F, is turned until the desired month shows in the recess. The outer latch is then raised, and the cup, F, and tubular section, D, are turned together until the correct initial day of the week on the rim, E, is opposite the correct numeral. The cavity in the cup serves as a pin holder, and the entire device, which may be of wood, metal, or glass, serves as a paper weight.

This invention has been patented by Mr. W. A. Haywood, of Savannah, Ga.

A Smoke Consuming Locomotive.

An engine of a novel type, designed by Charles B. Coventry, has recently been constructed by the Brooks Locomotive Works, for the Chicago Locomotive Improvement Company. The headlight is placed where the stack generally is, while the stack is at the rear of the boiler and close to the cab. The boiler is one of the largest manufactured (what is known as a 60 inch shell), and the smoke, gas, etc., traverse it twice, along the bottom and over back on top to the stack. This makes such a good combustion that the finer particles of fuel, the gas, and the smoke are almost entirely consumed, and when the engine is going at full speed, it is impossible to see any smoke. The smoke stack itself is very small, being not more than seven or eight inches in diameter. Among the advantages of this invention it is said it gets a steady, even draught, reduces the waste of fuel to a minimum, and throws no cinders, sparks, or fire. The locomotive is peculiar in appearance, but it is said that it does its work well. It weighs forty tons.

Old Guns.

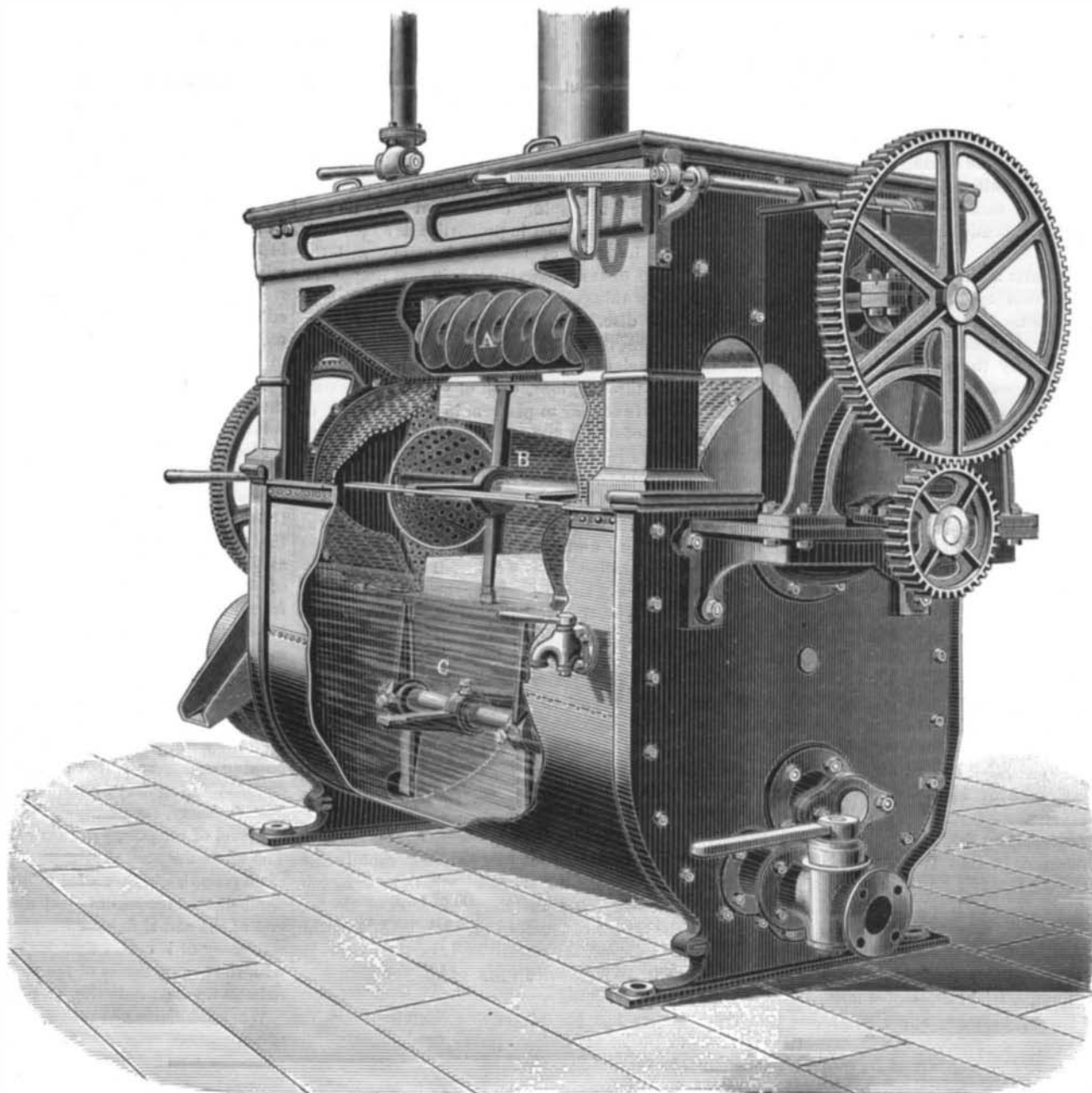
About 120 old style muzzle loading 58 caliber Springfield rifles are now dismantled at our armory daily, and such parts as fit the new breech loading model are reused. The guns thus taken to pieces are part of the 500,000 old style rifles made at the armory during the war, and stored there unused after 1865. The dismantling began in 1868, when it was found that the whole gun could be sold in the market for only \$1.50, while the parts which could be used in the new model, together with the sale of the remainder as scrap iron to shot gun makers, would net the government about \$4.00. The parts sold are mainly the stock and barrel and

scrap material, and most of these parts go to manufacturers of cheap shot guns. The Whitney Company, of New Haven, and the Remington Company, of Iliou, N. Y., are large buyers. The 50 caliber rifles, which were first made in 1866, of which only 50,000 were manufactured, were never stored, but went at once into active service, and have been mainly worn out in it. There are now stored at the armory about 50,000 of the 58 caliber model, and 158,000 dismantled barrels and 128,000 stocks. About 50,000 "cleaned and repaired" 58 model rifles are also stored, but will not be dismantled, as they are mainly contract guns and have seen such rough service in the field as to make it inadvisable to use their parts in new rifles.—*Springfield Republican.*

Too Much Water.

As a passenger train on the Painesville and Youngstown Railroad was at Youngstown, O., and just as it was pulling away from a water tank, a valve in the latter broke, sending an 8 inch stream of water against the train, breaking all the windows and deluging the coaches. Many of the passengers, with their clothing thoroughly water soaked, leaped from the train, rolling down an embankment, and some were bruised. Several ladies in the train had their dresses ruined.

THE Municipal Council of Paris has decided that one of the new streets of the Thirteenth Arrondissement shall be named Giffard, in commemoration of the inventor of the injector.



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relation to the cup In the inner edge of the rim a recess is formed. On the top of the rim the initials of the days of the week are produced; and on the top edge of the cup, and below the rim, the names of the months are produced. The cup, F, is joined to the cup, A, by the pivot, M, secured to the inner cup and provided on its lower end with a handle turning in a recess in the under side of cup, A.