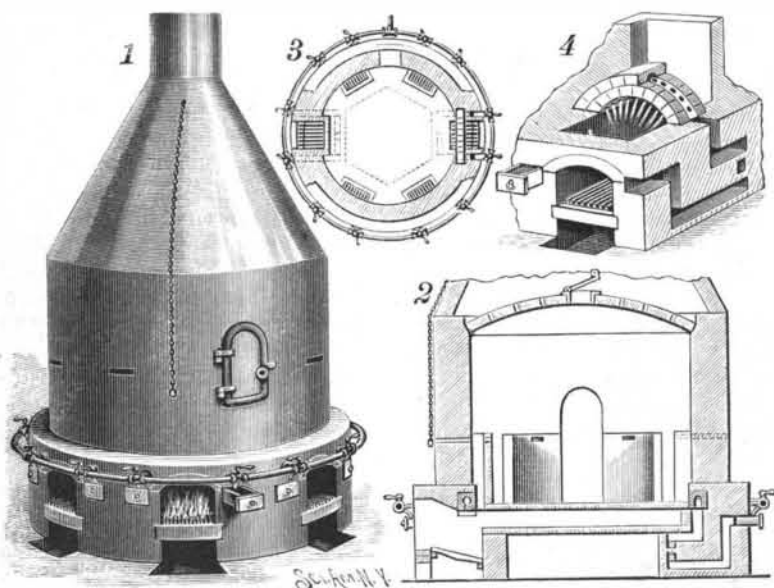


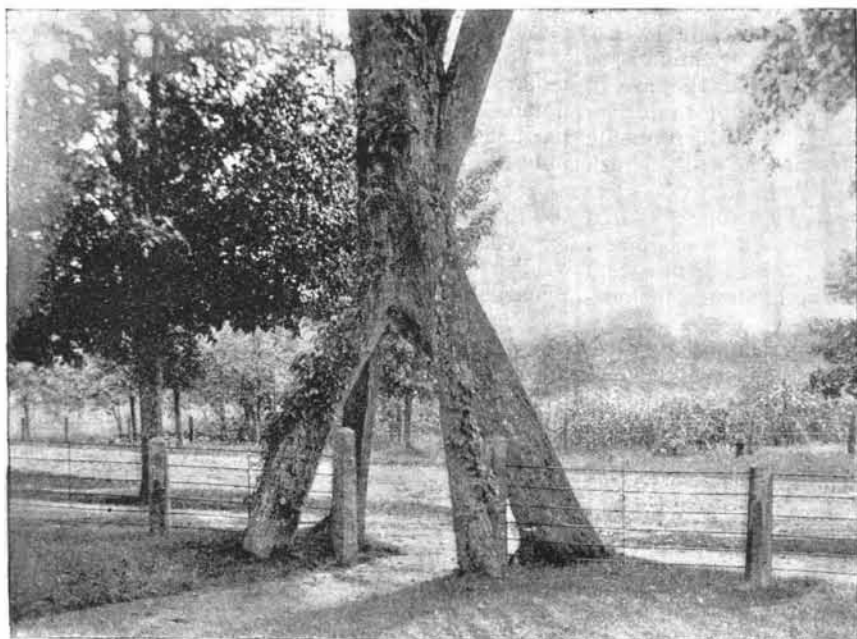
AN IMPROVED POTTERY KILN.

This kiln is designed not only to save fuel and preserve the brick, but also to afford heat better adapted for pottery ware than can be obtained with the ordinary construction, reducing the losses from cracked ware and eliminating crazing or crackling. It has been patented by Mr. John Hawthorn, of No. 554 Perry Street, Trenton, N. J. Fig. 1 is a view of the kiln in perspective, Figs. 2 and 3 representing it in



HAWTHORN'S POTTERY KILN.

vertical section and plan, and Fig. 4 illustrating the arrangement of one of the fire boxes, showing one of its side flues to convey steam to form hydrocarbon gas at the rear of the fire box. From the rear ends of each fire box a flue leads in the usual way to the baking chamber, which also has a hollow floor connecting with fire boxes. The top of this chamber, as shown in Fig. 2, has perforations through which a portion of the smoke may pass, the main central smoke outlet being controlled by a damper from which a chain extends upward and hangs down within reach on the outside. On each side of every fire box is a horizontal opening to a zigzag flue in the wall of the furnace, each flue terminating at its inner end in the hollow bridge wall, where there are numerous jet openings into the rear end of the fire box. In the mouth of each horizontal opening is a removable pan or drawer in which water is placed to generate steam, the water being preferably supplied through a pipe encircling the furnace, and the cocks being so adjusted that the supply will continuously compensate for the evaporation. The side openings also admit air, which, with the steam generated in the pans, becomes highly heated in passing through the flues to the bridge walls, where the steam and air are ejected in jets into the rear end of the fire box, mingling with the gases of the coal at points near the flues



A NATURAL TREE GRAFT.

leading to the baking ovens. The combined action of the steam and air thus supplied to the fire is calculated to effect a great saving of fuel, while the hydrogen combined with the carbon of the coal produces a heat designed to act mildly on the pottery, thoroughly baking it, but leaving it perfectly smooth. The kiln is provided with the usual sight holes, so that the interior of the baking chamber may be observed as the baking proceeds.

PLAYING cards were first printed about 1350. It is estimated that the present annual output exceeds 7,000,000 a year.

The Romantic and Practical Use of the Phonograph.

The distinguished vocalist Mlle. Calve, it appears, has become quite expert in the use of the phonograph. Here is what a reporter of the New York Sun says:

When Mlle. Calve was driven to the station yesterday afternoon to take the train for Boston a large box accompanied her, inside of which was packed carefully her beloved phonograph. Never were there more inseparable companions than Mlle. Calve and her phonograph. Two hours of each day she devotes entirely to it. On Sundays, as soon as the French mail arrives, Calve shuts herself up in her room with her phonograph for nearly an entire day. The explanation is simple enough. Mlle. Calve is engaged to be married to Henri Cain, the Parisian painter. To a woman of her temperament letters are not only a bore, but positively aggravating. So when Calve left Paris, she and young Cain vowed to each other solemnly they would talk to each other for at least one hour each day. Every Friday night while Mlle. Calve has been here a box containing the phonograph strips which she had used during the week was dispatched to Paris. Next day, when the French ship got in, a similar box arrived from M. Cain. Every little detail of her daily life, the news of each of her operatic triumphs, even her very songs, were poured by Mlle.

Calve into the sympathetic ear of her phonograph. Recently, in speaking of her experiment, Mlle. Calve said:

"I would advise all long distance lovers to follow my example. It's such a comfort to hear the sound of your dear one's voice."

"Nothing to be Learned from Americans."

Mr. William H. Preece, of London, in a recent paper, describing his visit to the United States, refers to his former visit in 1877, stating that the results were the introduction in England "of the telephone, the practical application of quadruplex working, the adoption of sound reading in our telegraph offices, the disappearance of the Morse recorder and the more general assimilation of the methods of working in the two countries;" the chief result of his second trip, in 1884, "was the introduction of the multiplex system of working by Mr. Delany, now so much in use among us, and doing splendid service in many of our chief towns." Anything else? Yet some Englishmen claim, adds *The Electrical World*, that there is "nothing to be learned from Americans!"

A NATURAL TREE GRAFT.

We are indebted to Mr. B. B. Keyes, of Boston, Mass., for the photograph from which our engraving of this remarkable tree growth was made. The tree stands at the entrance to a residence on the road near Middleboro, Mass.

One opinion is that the trunk of the tree separates into several parts at the ground, the parts rising separately about 12 feet and then unite into one body, forming a sylvan archway, through which the path leads. Another theory is that there are separate trees which have become grafted together at the head of the arch. Whichever explanation is correct, the aspect of the tree is very curious, and it has long been a notable object.

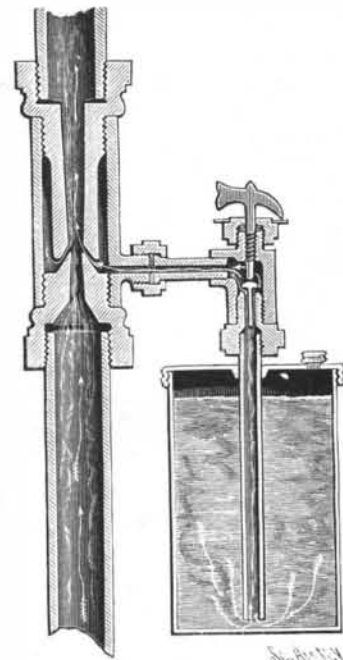
Magnesia Furnace Linings.

Magnesia is claimed to be capable of standing far higher temperatures than other kinds of brick, the principal difficulty in using it being the excessive shrinkage to which it is liable when heated—a cube of magnesia of ten-inch edge, in the raw state, is said to shrink to one of six-inch edge, when sufficiently calcined—and, such being the case, furnace linings made of this material are liable to crack badly; as a remedy for this state of things, the magnesia is caused to undergo its maximum possible contraction before being placed in the furnace, though for this an excessively high temperature is required. M. Lencauchez claims to have overcome these difficulties, and has exhibited a number of perfectly solid bricks of magnesia, which were as dense as granite, and had been thoroughly shrunk. The composition

of these bricks is 96.25 to 98.25 magnesia, 1.50 to 3.00 lime, 0.75 to 1.25 alumina and iron oxide, 1.50 to 2.50 silica.

A DISINFECTANT MIXING APPARATUS.

This improvement, patented by Mr. Benjamin C. Graves, of Mount Vernon, N. Y., provides means for automatically mixing a disinfectant with a stream of water flowing through a pipe, hose, hydrant, etc., under pressure. In the hose or pipe is arranged an ejector with a tapering nozzle, and connected with a pipe carrying a regulating valve, the latter pipe being extended into a receptacle containing the disinfectant. The arrows indicate the direction of flow of water and the disinfectant in the mixing operation. The regulating valve has a limiting stop, whereby greater or less quantities of the disinfectant may be allowed to pass to the ejector, the stop having a pointer indicating on a dial, to facilitate exact adjustment. The ejector is preferably made with a cone-shaped nozzle fitting into a similarly shaped mouth of a pipe connected by a shell with the nozzle and forming a side chamber, although a different form of ejector is provided for, if desired. The flowing of the water under pressure through the hose or pipe creates a suction which automatically draws in the disinfectant, insecticide or other substance, in measured quantities, according to the adjustment of the regulating valve, in such manner as to insure a thorough mixing. Further information relative to this improvement may be obtained of Josiah Smith, Nos. 175 and 177 North Tenth Street, Brooklyn, N. Y.

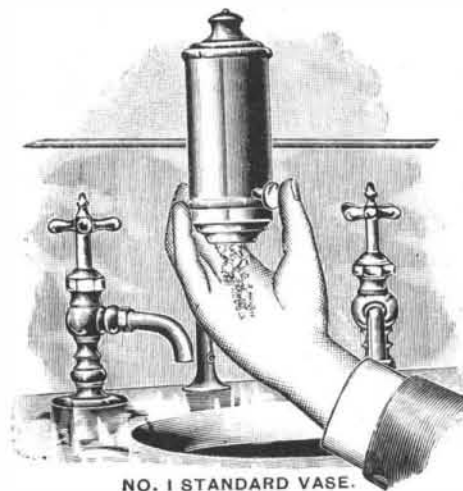


GRAVES' DISINFECTING APPARATUS.

THE SANITARY SOAP VASE.

Instead of using soap for toilet purposes by taking a piece or cake in the hand, and applying in the ordinary way, with water, the device shown in the illustration affords a ready way of using soap, in a manner to be more economical and cleanly, and from which it is styled the "Sanitary" soap vase. It is known that skin diseases are not infrequently propagated by using soap which has been used by others having skin affections—a danger which this device affords effective protection against, while preventing uncleanly appearance of the wash basin, clogging of the waste pipes, etc., there being discharged from the vase, upon pressure of the button, only enough floured soap for one using.

The vase is attached to a suitable standard, to be placed on a washstand or elsewhere, as desired, or it is provided with a bracket, whereby it may be hung on



a wall over bathtubs or in other convenient locations. The manufacturer also makes a special floured soap, styled the "Althea," for use in the vase. It is manufactured by W. R. Rannie, Rochester, N. Y.

THE Indians of Guiana have a curious system of numeration. They count by the hand and its four fingers. Thus, when they reach five, instead of saying so, they call it a "hand." Six is, therefore, a "hand and first finger;" seven, a "hand and second finger." Ten is "two hands;" but twenty, instead of being "four hands," is a "man." Forty is "two men," and thus they go on by twenties. Forty-six is expressed as "two men, a hand and first finger."