

**The Industrial Uses of Sodium Silicate.**

About two months since we gave in these columns an outline of the manufacture of sodium silicate. We now propose to deal with some of the ways in which this article may be applied in use. Besides the principal use of silicate of soda in the manufacture of cheap soaps, there are many purposes for which its employment is found to be advantageous or even indispensable. It may be of interest to briefly enumerate a few of the more important ones; some are still kept secret by manufacturers. Silicate of soda, combining the properties of caustic alkali and soap, is well adapted to be used either by itself or in connection with other detergent materials for cleansing all kinds of articles where the action of caustic soda is too keen, or that of carbonate of soda or soap not strong enough. Thus it is found to be extremely useful in cleaning greasy materials. Several of the Continental railway companies, for instance, are able, by the use of silicate of soda, to recover their dirty cotton waste no less than about twelve times, while formerly (when caustic soda was employed) this could only be done two or three times. This fact proves that the strength of vegetable fiber is not impaired in any material degree by treatment with the agent in question.

Very favorable results have also been obtained with silicate of soda as a substitute for caustic soda in the manufacture of paper, especially in the bleaching of jute and hemp waste; it has furthermore been successfully employed in connection with the process of sizing and waterproofing paper (wall papers, etc.), as well as a substitute for china clay.

This silicate is also a fixing agent for alumina and other mordants on cotton, while it is said to be unequalled as a sizing for cotton thread in cotton mills for preparing stock for the loom.

Its use for rendering textile fabrics incombustible is well known, and has extended over a period of nearly thirty years.

Large quantities are consumed in the manufacture of artificial stones, of enamels, and paints. The so-called silicated paints contain silicate of soda as a principal ingredient.

It is found useful in building construction for rendering timber fireproof and walls waterproof or airtight. Its uses in chemical works are numerous. Thus it is employed for soaking bricks when it is desirable to prevent diffusion, for painting steam pipe coverings, and thereby dispensing with canvas covering.

Asbestos mixed with silicate of soda forms an excellent non-conducting material, especially adapted for jacketed pans, retorts, etc.

It may be used by itself or in connection with other materials as a cement for stone, glass, porcelain, marble, etc., and for attaching labels to metal surfaces. Certain kinds of cements owe their hardening properties to the presence of silicate of soda. Sellar's cement, for example, consists nearly entirely of barium sulphate and sodium silicate.

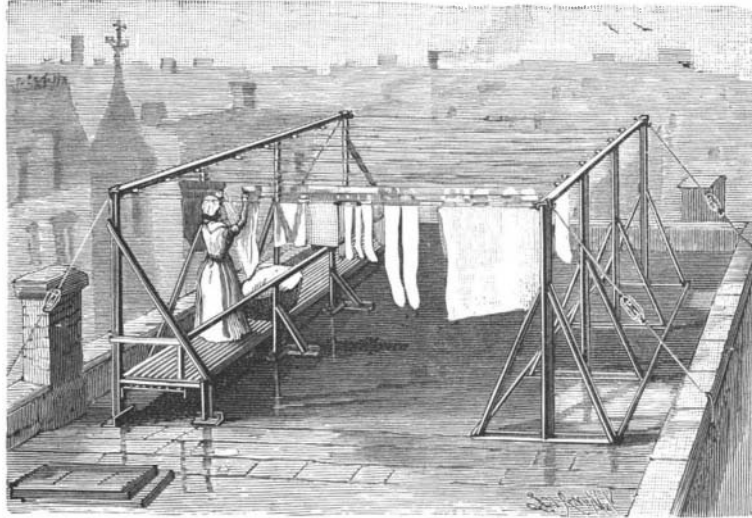
Silicate of soda is the only material from which pure hydrated silica may be prepared, such as is required in some processes for bleaching oils. For this hydrated silica probably many uses will be found as the result of further experiments.—*Chem. Tr. Jour.*

**New Double Deck Screw Ferry Boats.**

Two new screw ferry boats have been built by the Harlan & Hollingsworth Company, of Wilmington, Del., for the Central Railroad of New Jersey, to ply on the Hudson River between New York and Jersey City. The new boats are called the Easton and Mauch Chunk. The boats are of the same dimensions, namely, 158 feet long, 32 feet moulded beam and 54 feet beam over guards, 14 feet 4 inches depth of hold, and 9 feet draught. Plates are steel, frames iron. Their motive power consists of two 7 foot propeller wheels, one in each end, driven by two compound engines, arranged one forward of the other and working on a continuous shaft, cranks being placed at right angles. The high pressure cylinders are 16 inches diameter, low pressure 30 inches, with 22 inches stroke. There are two steel boilers of the straight through type, 19 feet long and 8 feet diameter; each boiler has two corrugated steel furnaces, and is built for working pressure of 100 pounds steam, independent feed and circulating pumps. The lower saloons, 100 feet long, are furnished with oak, in panels, with French plate glass mirrors every 10 feet. The upper saloon, finished with butternut panels, is 80 feet long, and is reached by two easy stairways leading from the lower cabins.

**A ROOF CLOTHES-DRYING DEVICE.**

A frame for supporting clothes lines on the roofs of houses, one of inexpensive construction, conveniently adjustable, and which will be strongly held in place on the roof without the use of nails or screws, is shown in the engraving, and has been patented by Mr. Leo Oppenheimer, of No. 325 East Tenth Street, New York City. The side frames supporting the lines may be of any suitable construction, and they are adjusted toward or from each other, according to the tautness or slack of the lines, by means of cross rods connecting

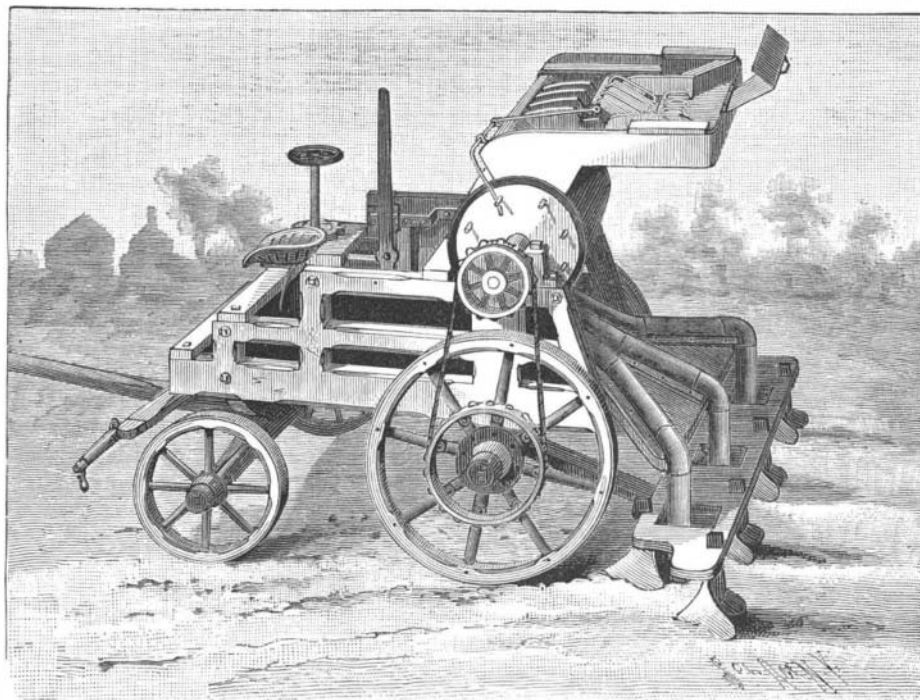


OPPENHEIMER'S ROOF DRYING FRAME.

the ends of the top rails, each of the rods having a turnbuckle, by means of which the rods may be readily lengthened or shortened. Similar rods also extend downwardly and outwardly from the ends of the rails to hooks on the edge of the coping or other fastening on the top of the wall of the building, these rods likewise having turnbuckles, for lengthening and shortening the rods to adjust the frames and hold them securely down on the roof. By means of this improvement the frames may be readily held in the desired position, and the roof is not injured by perforations likely to cause leakage.

**AN IMPROVED POTATO PLANTER.**

In the machine shown in the illustration, the seed potatoes are automatically fed from a hopper to a feed device, thence to pockets and chutes by which they are conducted to the furrows, which are made in the ground as the machine advances, and covered after the potatoes have been dropped in them. The improvement has been patented by Mr. Nathan Sturdy, of No. 4834 Halstead Street, Chicago, Ill. Within a casing surmounted by a hopper is a drum, preferably of sheet metal, upon a shaft revolved by the movement of one of the axles, the drum having on one head a series of pins, and containing a corresponding num-



STURDY'S POTATO PLANTER.

ber of chambers in its peripheral surface. Each drum chamber is also divided into three pockets, and the hopper is divided into corresponding registering compartments, each partition having at its rear upper edge a recess adapted to receive a feed device, consisting of a pivoted table adapted to receive the seed potatoes. The table has skeleton transverse partitions which allow the escape of dirt, and are close enough together to insure the delivery of the potatoes endwise through the hopper. Upon a platform at the rear of the hopper are partitions forming a chamber in which the potatoes to be planted are placed, the platform being

somewhat inclined and having ribs guiding the potatoes in their delivery to the feed table. The latter is rocked, as the drum is revolved on the movement of the machine, by a lever extending within the path of the pins on the drum head, the feed table when in one position receiving the potatoes, and as it rocks delivering them to the pockets of the drum, from which they are discharged through the chutes supported upon the rear platform to the furrows. The plows and covering blades are supported upon a head having near each end a forwardly extending tongue pivotally secured upon the rear axle. The tongues are connected at their forward ends by a cross-bar, connected by a link to a bell crank lever, the other arm of the lever being connected with a rack engaged by a pinion on a shaft having a hand wheel in convenient reach of the driver. By means of this wheel, or by an upright hand lever, the covering blades and plows may be raised and lowered as desired, the machine when in operation planting three rows of potatoes at the same time.

**Are Americans a Practical People?**

The notion prevails in this country that we are a very practical people. We take credit to ourselves for being sensible, shrewd, and at least mindful of our own interests. This quality gets a harsher name from our foreign critics. They say that we are materialistic, grasping, and in fact sordid, as the thing we most care for is money, and that which we are most alive about is our material interests. They admit that we are "smart," but say that we are mentally commonplace and unimaginative. The critics are mistaken, and our own estimate of ourselves is more complacent than correct. We are a very imaginative people, and in many ways the most unpractical. The old stage conception of Uncle Sam as a good-natured rustic sitting in a rocking chair, whittling, was not altogether out of the way. Whittling is not a remunerative occupation, as a rule, although this quaint waiter on Providence, who seemed to imagine that if he sat at ease, all good things would in the course of time pass his way, occasionally did whittle out an invention that would save him from labor. He answered the gibes of his critics by pointing out the fact that the chair he sat in was a self-rocker—a little invention of his own. He was a man of vague dreams and imaginations.

No; brought to the test in the commercial struggle of the modern world for supremacy, the American is not practical. In rivalry with other active nations he shows himself a bungler, and lacking in practical wisdom and foresight. An inventor, yes; but lacking practical shrewdness. He is very ingenious. He has gone on doubling in the past few years the great world staples of corn, cotton, and iron, and he seems confidently to expect that Providence will market them for him; especially as he has cheapened the cost of all these products, it would only be fair for Providence to attend to the selling part. He knows that one per cent of the arable land in the cotton States will produce all the cotton the world can use, and he knows that the product of cotton and iron and grain increases in an enormously greater ratio than the population, and yet he neglects many of the most obvious means to profit by this bounty of nature and of his situation. He looks on and brags about his greatness, while his industrial and commercial rivals occupy the markets of the world. Now that he is in rivalry with them for a fair share in so plain a prize, his conduct shows him to be the most unpractical of men.—*Charles Dudley Warner, in Harper's Magazine for April.*

**Ruthenium Red.**

The color discovered by M. Joly in his researches on the ruthenium ammoniacal compounds rivals the most brilliant coal tar pigments by its tinctorial intensity. The author has observed that ruthenium red is the best reagent for the pectic compounds, which are always associated with cellulose in young tissues and in old tissues which have not been modified by foreign matters. It is the only reagent for the transformation products of the pectic compounds, *i. e.*, the majority of gums and mucilages.—*Louis Mangin.*

An omnibus has been started in Glasgow furnished with pneumatic tires, which are protected from injury by sharp stones or glass by canvas and wire-wove netting. There is no jolting or jarring, and the noise is reduced to a minimum.