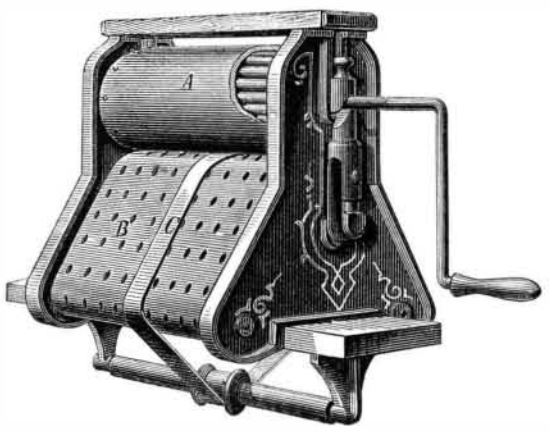
DENNEY'S IMPROVED WASHING MACHINE.

We illustrate herewith a new roller washing machine which is claimed to wash fabrics of any degree of fineness thoroughly and without injury. It is also adapted to the cleansing of garments, etc. The frame of the machine is made of cast iron, galvanized. The top roller, A, has longitudinal corrugations, and is covered with a sleeve of vulcanized rubber, which consists of a ply of cotton duck, having merely sufficient rubber on its under side to protect it from the action of the water, the requisite degree of elasticity being secured by the application of the greater thickness of rubber to the outer surface. The lower roller is provided with peculiarly shaped channels, differently spaced from the the corrugations on the top roller. There is thus created an abrading action when the machine is working, while a pressure is exerted by the top roller, which is held down by detachable springs. The endless apron, B, passes over the lower roller and down around small carrying rollers, as shown. The rubber cloth of which it is made is prepared with the greater amount of rubber on the upper surface, which fits it for contact with the most tender articles to be cleaned. The band is perforated so that the air and water contained in the channels of the under roller are utilized by being driven through the clothing. The inclination given to the band causes the clothes to adhere to it, so that they can be run through past the top roll, and thereby cleansed out to their extreme ends. The apron acts as a conveyer, also to carry a larger quantity of water along with the clothing



to the rolls while the water may be used much hotter than usual. The rubber conforms to the uneven thicknesses of the clothing. The machine is designed to be used in an ordinary washtub.

In order to prevent the finer articles from sticking to the endless apron, a small narrow band, C, is passed around the apron, which band is carried down around a lower roller, so as to pull off the articles as they descend into the water.

Patented by S. L. Denney, June 1, 1875, and May 9, 1876. For further particulars address the inventor at Gap, Lancaster county, Pa.

A Variety of Rare Chemicals for Twelve Cents.

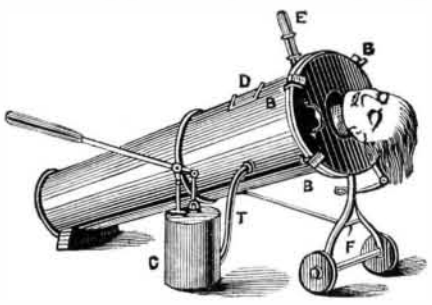
A writer to of one of our exchanges, who has been assiduously perusing our scientific dissection of a cigar, wants to know how, with such an array of rare chemicals as pyridine, lutidine, pyridine, etc. ("not to mention cabbagine and burdockic acid"), any one can expect to buy a good cigar for less than ten cents. This is a financial view of the subject which had not occurred to us, but a moment's consideration shows that it conceals a specious sophistry. Let us reply, Yankee fashion, by another question.

How can any one expect the cost of living to be further reduced when a pound of butyrolic acid, butyric acid, capric acid, caprilic acid, caproic acid, palmitic acid, myristic acid, vaccinic acid, stearic acid, oleic acid, oxide of lipyle, chlorine, sodium, potassium, phosphate of lime, phosphate of magnesia, casein, lactose, mucus, albumen, iron, glycerin, hircine, lacto-protein, lacto-albumen, besides bixin and orellin and hair (all of which, according to an actual assay of one of our metropolitan chemists, go to make the compound known as boarding house butter) is obtainable for 12 cents?

THE SPIROPHORE.

This apparatus was recently described to the Paris Academy by M. Woillez. It is for restoring asphyxiated persons, especially such as have been in danger of drowning, and new born infants. We are indebted to the *Journal de Pharmacie et de Chimie* for the annexed engraving of the apparatus. It consists of a cylinder of sheet iron closed at one end and open at the other. The case is large enough to receive the body to be treated, which is let down into it as far as the head, which remains outside. A tightly fitting diaphragm closes the aperture about the neck. A strong air pump, C, containing more than four and a half gallons of air, is situated outside of the case, and communicates with it by a thick tube, T. It is worked by means of a lever, the descent of which produces aspiration of the air confined about the body. The raising of the lever again restores the abstracted air to the case. A transparent piece of glass, D, on the upper part of the cylinder enables one to see the chest and abdomen of the patient, and a movable rod, E, sliding in a vertical tube, is made to rest on the sternum.

M. Woillez states that he has made several experiments with the apparatus, the general results of which are as follows: When a human body is inclosed as described, and the lever quickly lowered, a vacuum is produced round the body, and immediately the external air penetrates into the chest, the walls of which are seen to rise as in normal life. The ribs separate, the sternum is pushed up 0·393 inch at least (indicated by the movable rod which rests on it). Further, the epigastrum, and even the abdomen below, present an inspiratory projection, which shows that the enlargement of the chest is effected during this artificial inspiration not merely by the raising of the ribs and the sternum, but also



by the descent of the diaphragm. All returns to the former position when the lever is raised again. These compiete respiratory movements may be repeated fifteen to eighteen times in a minute, as in a living man.

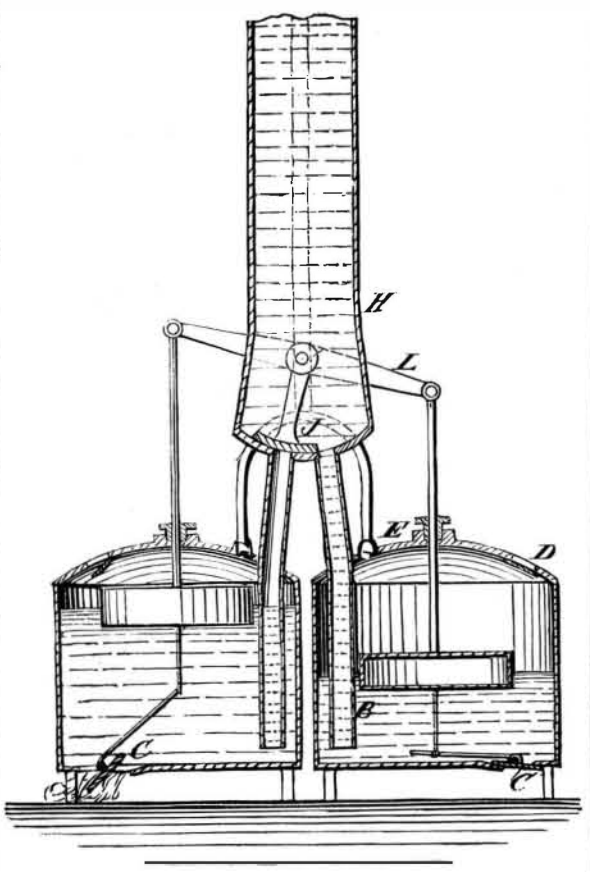
By means of a tube fixed into the windpipe of the body, and communicating with a graduated reservoir of air over a vessel of water, M. Woillez has measured the quantity of air which thus penetrates into the chest at each pressure of the lever. He finds that this is, on an average, 1¾ pints; whereas the physiological average is only $\frac{7}{10}$ pint. More than 22 gallons of air can be made to traverse the lungs of the asphyxiated person in ten minutes.

It is easy, then, to see the advantages presented by this apparatus for treatment of the asphyxiated, especially drowning persons and new born infants. In all cases of asphyxia by vitiated or insufficient air, or by certain poisonings, in paralysis of the respiratory muscles, in most dysphoric affections, in asphyxia by bronchial mucosities, and that due to inhalations of chloroform, and lastly, in determining some cases of apparent death, the spirophore may be used to produce an efficacious artificial respiration.

This respiration is without danger to the lungs, which are not liable to rupture, however strong the action of the lever. This innocuity is due to the fact that the force of penetration of the air into the lungs is never superior in this case (as also in the case of normal life) to the weight of the atmosphere.

A NOVEL AIR COMPRESSOR.

The annexed engraving represents a new machine for compressing air by water pressure. Two cylinders, placed side by side, have an inlet pipe, B, and an outlet valve, C, for water; there is also an inlet, D, and outlet, B, for air, and each cylinder contains a float, F. The pipes for admitting water extend from near the bottom of the cylinders, to cut off the air, into the curved bottom of a penstock, H, in which is a rock valve, J, for alternately opening and closing the passages to the respective cylinders. The stem of this valve extends out through the penstock in a suitable stuffing box, and connects with a rocking beam, L, one end of which is connected to the float, F, of one of the cylinders by a rod, M, and the other is connected to the other float by a similar



rod. The valves, at C, are so connected to the floats that, when they are raised by the water to the required hight, the floats open them to let the water escape and reverse the machine. By the filling of the cylinders with water the air is forced out through outlet, E, into the receiver; and by the escape of the water the cylinders fill with air again, to be again expelled into the receiver. This device was patented October 24, 1876, through the Scientific American Patent Agency, by Mr. Henry H. Sawtell, of Randolph, N. Y.

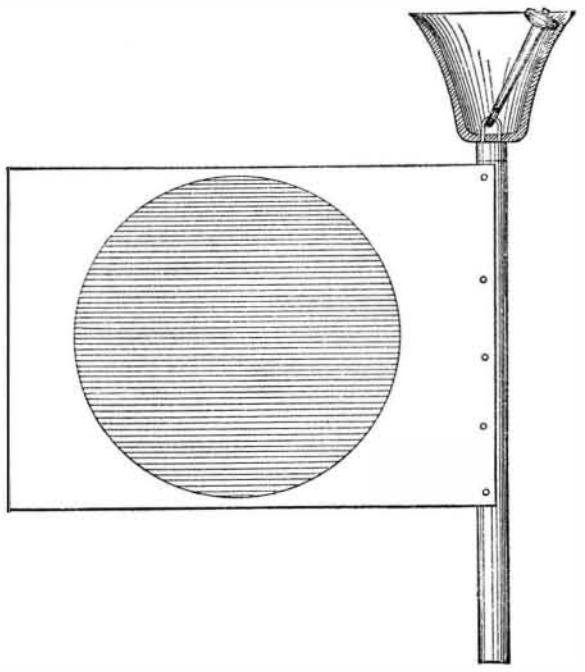
Spontaneous Combustion of Sawdust.

Sawdust is a dangerous material wherewith to fill spittoons, nor is it a wholly safe substance to strew upon floors. Several cases have recently been noted where conflagrations have been caused by cigar stumps igniting the sawdust, which smoldered slowly in the receptacles, unperceived, and finally set fire to the adjoining woodwork. Sawdust, moreover, when slightly impregnated with oil or grease, is very prone to spontaneous combustion. We published, not very long since, an instance where the sawdust sifted down through cracks in the floor boards, and accumulated between the beams, where it absorbed spilled oil. It eventually burst into flames which nearly destroyed the entire edifice.

A SOUNDING HAND SIGNAL FOR RAILROADS.

To the end of the handle, to which the ordinary signal flag is attached, a bell, C, a rattle, or other sounding device is fastened, so that it may sound when the flag is waved, and thus call to it the attention of those who may be looking the other way, and who might not observe the signal. Instead of a flag, a lantern or other sight signal may be used, so as to give a sight and a sound signal at the same time.

This device might be useful in foggy weather, when locomotive engineers may not be able to discern the color of a



flag, or when the latter is altogether, at short distances, obscured by the fog.

Patented through the Scientific American Patent Agency, September 19, 1876, by Mr. S. Brown, of Philadelphia, Pa.

Removing Nuts from Clips and Bolts.

The London (England) *Carriage Builders' Gazette*, in answer to a writer who asks as to the best means of getting off the nuts of bolts and clips, and of driving up bolts and clips, without destroying the screws, gives the following reply:

When the clips twist ever so slightly in trying to unscrew the nuts, cease to try until you have enlarged the nut by holding it for a minute or two with a pair of red hot tongs. If the clip has an extra point on it, file it round and oil it; then try. If still firm, cut the nut in halves with a chisel, having another long chisel or iron bar held against the opposite side of the nut to take the force of the blows of the hammer. Be sure to use a light bolt hammer, which is more effective than a heavy hammer—it is better to cut off twenty nuts than to break a clip. For driving up bolts so as not to bruise or burr up the screw, unscrew the nut one turn only, or enough to cover the point of the bolt; then drive the bolt back by striking the nut; if immovable, get somebody to hold a heavy hammer on the nut while you strike forcibly the iron on each side of the head; if set fast, apply the end of a hot iron bar to the side of the head of the bolt to expand the iron. If you cannot start the bolt for the want of room to strike a fair blow on the bolt point, get somebody to hold the edge of a long piece of heavy tire iron on the bolt point: them with a heavy hammer strike the bar as near the bearing as you can get at. Sometimes if the bolt is through a scroll iron, and where the spring is in the way of the hammer, a peculiar shaped drift pin has to be used—it is someting like a tuning fork; the fork being put on the driving bar at right angles, the bar is struck to drive the drift pin up the bolt hole.

The Supposed Planet Vulcan.

Astronomer Royal Airy gives M. Weber's observation—on which it will be remembered the recent predictions by Leverrier of a transit of the supposed planet were founded—its *coup de grace* by producing two photographs of the sun, taken on April 4, Weber's date, showing the imaginary planet to be a sun spot beyond question. It appears as a nucleus, without penumbra and surrounded by a small group of faculæ.

In accordance with a long-established rule, all subscriptions terminating with this volume will be discontinued at that time. We trust that all our subscribers will not only renew, but that they may find it convenient to induce some of their neighbors to become subscribers. We shall in the future, as in the past, give our readers full measure and running over, in return for their money.