

**IMPROVED SELF-CLOSING FAUCET ATTACHMENT.**

The invention represented in our engraving is a simple attachment for barrels and similar receptacles, which is so constructed that a faucet may be inserted with ease and safety for drawing off the contents, thus obviating the use of corks and the destruction of barrel heads by the repeated driving in of the corks now commonly used in lager beer and other casks. The inventor claims that the device is particularly suitable for large butts or tanks in breweries, and that it has been successfully used in such establishments.

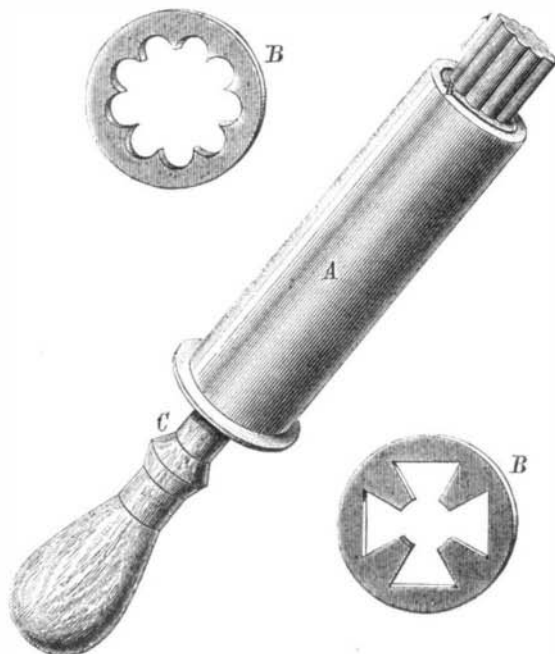
Our engraving represents the invention inserted in a cask, shown in section, to which the metal faucet tube, A, is applied by means of an outer screw thread with conical inclination. The head of the latter projects a little outside of the wood. At the inner end of this tube is a collar, B, which serves as a rest for the spiral spring, C. The latter is coiled about a tubular valve, D, in the rear portion of which are made apertures, E. The extremity of the valve is solid, of smaller diameter, and carries, by a nut, the soft rubber disk, F, and also the strainer, G. The strainer, it will be noticed, fits closely over the end of the tube, A. The effect of the spring, C, and the nut, is to press the disk, F, tightly against the tube, A, so that no liquid can escape therefrom. The object of the tube is also to hold a faucet, which is provided with suitable washers, and screws in as shown. When it is desired to draw off the liquid, the faucet is turned in far enough to strike the valve, D, forcing the same back, so that the disk, F, is carried toward the inside of the barrel, and the apertures, E, pass to the outside of the tube, A. The apparatus will then be in the position represented in the illustration. The liquid consequently enters through the openings, E, and the strainer, G, into the valve, and thence to the faucet, by which it may be drawn off at pleasure. The strainer, G, prevents any impurities from passing out, and may be cleaned by unscrewing the tube, A, from the barrel after the same has been emptied. By means of the hole and pin, H, through the end extension of the valve, D, the connection of parts is still further secured. On withdrawing the faucet the valve attachment closes upon the tube, A, and the barrel is ready for refilling. When the cask is shipped, the cavity in the tube may be closed and sealed.

The device is made of brass or malleable iron coated with tin, as desired, and of any size, from one quarter inch to three inches in the discharge passage. It can also be used with globe cock connections and hose for filling casks or for withdrawing the contents, as may be desired.

Patented through the Scientific American Patent Agency, September 30, 1873. For further particulars address Mr. R. McConnell, Box 1,037, Omaha, Neb.

**WATSON'S BUTTER FORMER.**

The object of this device is to produce ornamental forms in butter for table use with economy and dispatch. It consists of a tin tube, A, provided with a die, B, which slips into the same at its upper end; these, with the follower, C, which is merely a wooden plunger fitting the tube, constitute the



entire apparatus. In using it, the butter, in a moderately firm condition, is made into a roll, placed in the tube, and forced through the die by the plunger, C; it issues from the end in a long roll, having the configuration or shape of the die. It is afterwards cut into short pieces for individual use, arranged in a coil, or piled crosswise on plates, as taste may dictate. Butter so formed has an ornamental appearance that adds greatly to the attractions of the table.

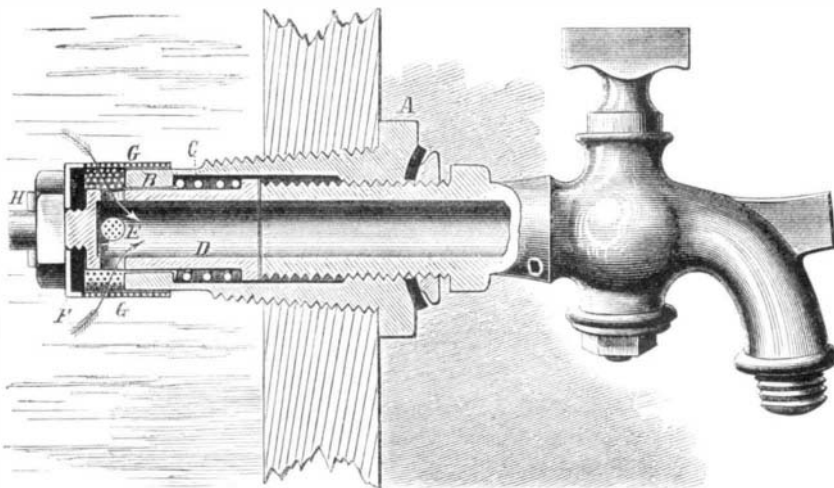
Patent pending through the Scientific American Patent Agency. For further information, address Egbert P. Watson, 43 Cliff street, New York.

**The Thermal and Mechanical Properties of Air.**

Professor R. H. Thurston, of the Stevens Institute, has recently forwarded to us a copy of a valuable chart which he has lately prepared, which graphically exhibits the ther-

mal and mechanical properties of air. One hundred cubic feet of the gas, at 60° Fahr. temperature, is taken as unity, and curves are constructed exhibiting the changes of temperature, pressure, and volume. The curves, three in number, indicate respectively temperature and pressure, the no transmission of heat or adiabatic line, and uniform temperature and varying pressure or isothermal line. By the aid of suitable scales, the coincident volume for any given pressure may be quickly read off; or conversely, the pressure corresponding to the change of volume already known may be noted. The temperature, similarly, due to any given degree of compression, can be easily found.

The work, we think, will prove both useful and acceptable to students of science as a means of saving many long calculations. It is handsomely photo-lithographed. The drawing, which, we understand, was performed under Pro-

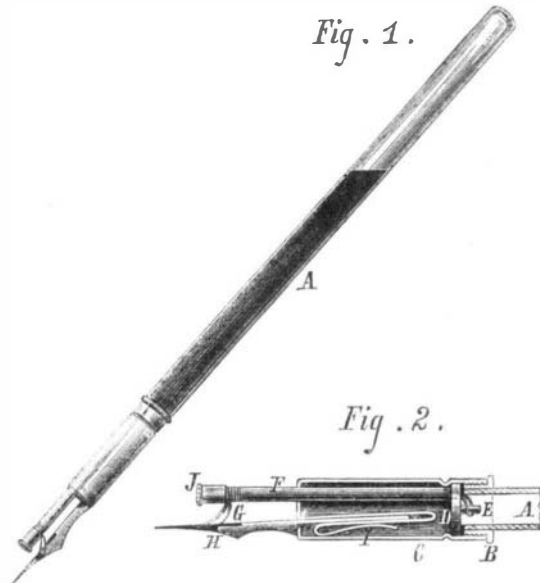


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fessor Thurston's direction by one of the students of the above institution, is admirably accurate, and deserves more than a passing word of praise.

**FONT PEN WITH A CAPILLARY FEEDER.**

This is an ingenious little device, which will, doubtless, meet with a ready welcome from all whose daily duties necessitate a large amount of writing. It is a penholder in which any form of pen may be used, and which contains a



large supply of ink in its glass handle. The fluid is fed to the pen by capillary attraction, so that the latter is kept constantly supplied as long as the contents of the reservoir last. The apparatus is made of neat and convenient form, and of metal or rubber that will not corrode with ink or be injured when washed in water.

In our illustrations, Fig. 1 shows the device complete, and Fig. 2, a section of the apparatus for feeding and holding the pen. A is the extremity of the glass handle or reservoir, which is provided with a ground neck and a screw ring, B, which engages with the tube, C, and is packed with a rubber ring. D is a disk plate, fitting (movably) in the tube, C, and against the end of the holder, and carrying a pin, E. Around the latter is shown the loop of a doubled thread which passes down through the tube, F, its ends protruding at G, to touch the pen, H. The shank of the pen is firmly held in a bent spring, I.

To use the invention, the glass handle is unscrewed and filled with ink, and then re-attached to the tube, A. This may be done easily and without spilling the fluid. The ink moistening the ends of the pen and the thread, writing can be at once proceeded with, as the ink, as drawn by capillary attraction down along the latter, exudes from its ends, G, and so constantly supplies the pen. The quantity of ink allowed to escape is regulated by the cap, J, which screws over a slotted opening in the tube, F. The ends of the thread, G, emerge through a slot, and, by screwing the cap up tighter, may be compressed to retard or close the passage of the fluid as desired. After being written with, the pen is laid aside, and never leaks, although the cap may remain open.

We are informed that, when once filled with ink, the pen will be always ready for service during days or even weeks. If any variety of good writing fluid be used, no trouble need be experienced from dust or drying. Almost any sort of pen

may be employed, and inserted and charged as readily as in the common holder. The invention, as a whole, appears quite efficient and useful, and, we should imagine, would prove a saleable addition to the stock of any stationer.

Patented through the Scientific American Patent Agency, February 10, 1874. For further particulars, address the Font Pen Office, No. 7 Murray street, New York city. [See advertisement in the present number of the SCIENTIFIC AMERICAN.]

**The Prevention of the Sweating of Leather.**

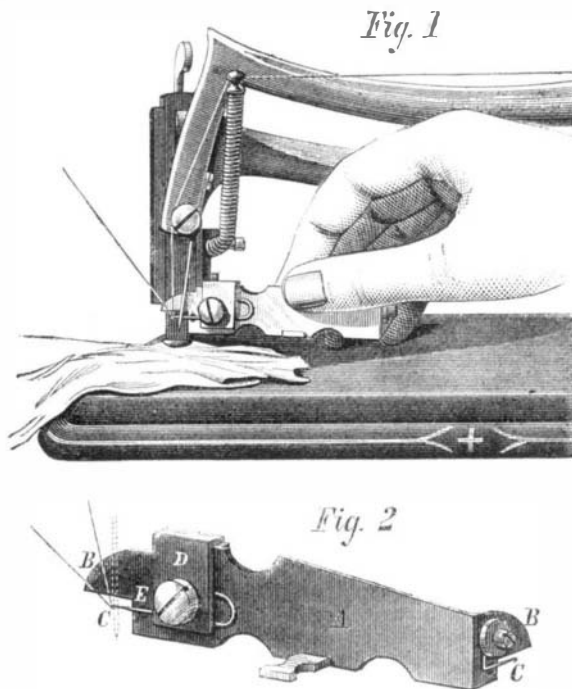
A correspondent of the *Deutsche Gerber Zeitung* reminds leather dressers of the evils arising from the use of impure oil. He refers to the nefarious practice of dishonest dealers in oil of mixing resin (which is 50 per cent cheaper) with the pure fish oil. The consequence is that the leather, after laying some time, begins to show resinous spots, sometimes so numerous as to cover the whole surface of a hide. Though pointed out some years ago, it was again observed in the leather exhibited at Vienna. The same correspondent suggests as a remedy the application of spirit of sal ammoniac to the leather, which, though it must be repeatedly used, he asserts to be effective. According to a communication of Dr. Lahrmann, in a later number of the same journal, the causes of this exudation must not alone be sought in the bad quality of the oil, but are to be partially attributed to the action of oxygen on the oil, the exudation being more frequent if the leather is freely exposed to the air. He recommends the use of fish oil which has been used and has already undergone the prolonged chemical changes to which fresh oil is not subjected, and which, if they take place in the leather itself, eventually involve the decay of the

latter. He further strongly deprecates mixing fresh oil with the fish oil, advising the use of the latter alone.

**SCHOFIELD'S IMPROVED NEEDLE THREADER.**

This is an ingenious and useful little invention which will doubtless save many trials of the patience as well as of the eyes. The inventor states that it will prove especially useful in threading medium and very fine needles, and that persons totally unskilled in its use can, after an hour's practice, readily draw the end of the thread through the eye as rapidly as twenty-five times in a minute.

Our engravings show its mode of operation so clearly that but little description is needed. The body, A, Fig. 2, is of thin sheet metal, and has a lateral foot to hold the instrument in an upright position. The projecting guide piece, B, is passed up and down along the side of the needle until the hook, C, which is placed in the same direction as, but slightly to the side of, the guide, strikes the eye and passes through it. The hook is of steel and made of various sizes, some small enough to be used with the finest needles. Its rear portion is bent in U shape, and is held in a groove in the handle by means of plate, D, and screw. The projecting portion of the handle beside the hook carries a small set screw, the extremity of which is represented at E, Fig. 2. This bears against



the hook and regulates the distance of the same from the guide, B, to be adjusted for needles of different thicknesses. At the other end of the handle a hook and needle guide are placed in similar manner, but at right angles to the body, so that needles may be threaded from the sides, back, or front, as desired.

A child, it is stated, may learn to use this device in a few moments, while its use cannot but result in a considerable saving of time and trouble. The mode of holding it in the hand is clearly shown in Fig. 1.

Patented through the Scientific American Patent Agency, September 23, 1873. For further particulars regarding sale of rights, or for samples (a handle and a dozen hooks will be mailed for \$1.50), address the inventor, Mr. Thomas Schofield, Grass Valley, Nevada county, Cal.