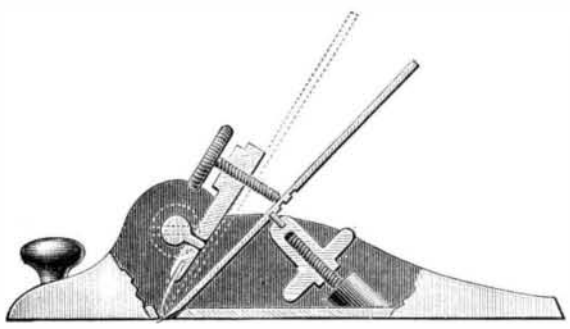
Wormwood as an Insectifuge.

In a communication to the French Academy (*Comptes Rendus*, p. 607), M. Poirot attributes to the wormwood (*Artemisia absinthium*) extraordinary properties as an insectifuge. He states that among the plants of this species that cover the vast plains of North America, he has never seen flies, ants, or any other kinds of insects; and to these he adds worms, scorpions, rattlesnakes, and other serpents. He proposes to use this property in the extinction of the phylloxera, as he believes this pest would not be able to go through the necessary metamorphoses in a soil manured with the leaves and stalks of the plant.

IMPROVED BENCH-PLANE.

The engraving shows a device by which the knife or "iron" of the plane is adjusted to various inclinations and secured in any position to suit the various degrees of hardness and grain of the different kinds of wood on which it may be used. The cap or back iron is adjusted to suit the required angle of the knife, and at the same time the back iron serves the double purpose of both holder and back-iron or cap as ordinarily used.

In planing soft wood the plane will be adjusted as shown in the engraving, but when it is desired to use it on hard wood, the thumb-screw above the iron is retracted, and the nut below the iron is unscrewed from the threaded stud until the iron touches the cap as shown in dotted lines, or the iron may be placed in any intermediate position. The nut upon which the back of the plane iron rests carries an eccentric pin which engages one of three or four slots in the back of the iron, and serves to regulate the distance the iron projects from the face of the plane.



STEERS' BENCH-PLANE.

A shaft extending across the plane has a pin which projects into a hole in the cap; by turning this shaft the cap is moved in one direction or the other as may be required.

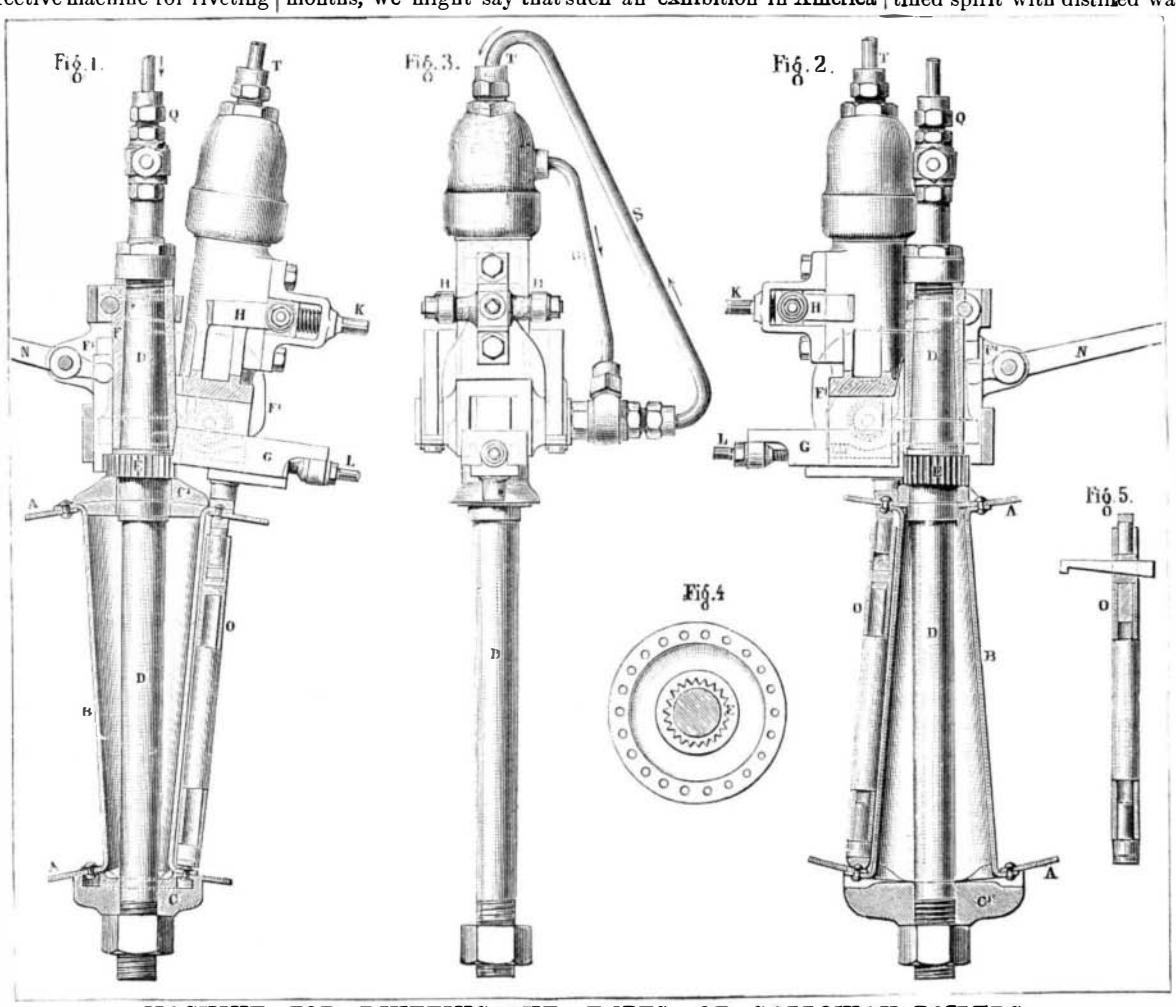
When all of the parts are in the required position they are made fast by turning the thumb-screw that bears upon the back of the iron.

This invention has been patented by Mr. William Steers, of Sherbrooke, Canada.

MACHINE FOR RIVETING THE TUBES OF GALLOWAY BOILERS.

Messrs. Galloway & Beckwith, of Manchester, England, have constructed a simple and effective machine for riveting the conical tubes of the Galloway boiler.

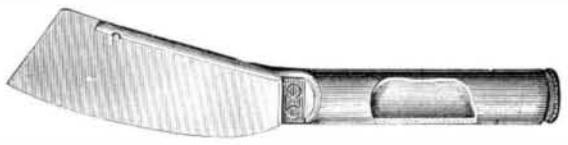
In the engravings, from *Annales Industrielles*, the walls of the boiler are indicated by A, and the tubes to be riveted thereto by B. Through the cast iron blocks, C and C′, at the ends of the tube, the shaft, D, passes, held at the top by gear wheel, E, at the bottom by a nut. The conical extension of the shaft, D′, is surrounded by a cast iron sleeve. By the lever, N, the sleeve can be locked in any desired position. A hydraulic riveter is pivoted between the jaws, F and F′, at the lower end of the sleeve, the upper end of the riveter being held by the rods, H, pivoted at the upper end of the sleeve. The inclination of the riveter can be varied at will by means of the screw, K. Since the die must be adjusted to the diameter of the tube to be riveted it is not attached to the piston, but slides in the box, G, and is held in any desired position by the screw, L. The die rest, O, carries a die at each end, and is placed in proper position by a workman within the boiler, the lower die being set over a rivet at the bottom of the tube, and the upper so as to hold the head of a rivet to be completed. The water reaches the piston, J, after passing through the rotating joint, Q, and the tubes, R and S.



MACHINE FOR RIVETING THE TUBES OF GALLOWAY BOILERS.

TOBACCO-LEAF CUTTING KNIFE.

The principal objection to the ordinary cigarmaker's knife is that after using it for a short time a gummy substance collects on the blade near its cutting edge, and unless this is frequently removed, the wrapper-leaf, while being trimmed, is liable to adhere to the blade, and the leaf is often torn in cutting, and rendered useless as a wrapper. The common way of removing this gum is by drawing the blade horizontally between the lips. This method is not only inconvenient and unpleasant, but its necessarily frequent repetition is a great waste of time and no doubt injurious to the health.



TOBACCO-LEAF CUTTING KNIFE.

The invention consists of the ordinary cigarmaker's knife-blade, attached to a hollow metallic handle closed at the end by a movable cap; the handle and a small tube extends from the handle along the back of the blade to within a short distance of the end. Near the end of the tube there is a small opening on each side of the blade.

The handle is filled with water and then closed by the cap The simple motion of the knife, when in the act of cutting, will force sufficient water from the small perforations in the tube to keep the blade wet, and thus prevent the accumulation of sufficient gum to interfere with the cutting. The blade in this manner is kept in order as long as any water remains in the handle.

This invention was lately patented by Mr. S. M. Dougherty, of Lancaster, Pa.

Manufacture of Wrapping Paper.

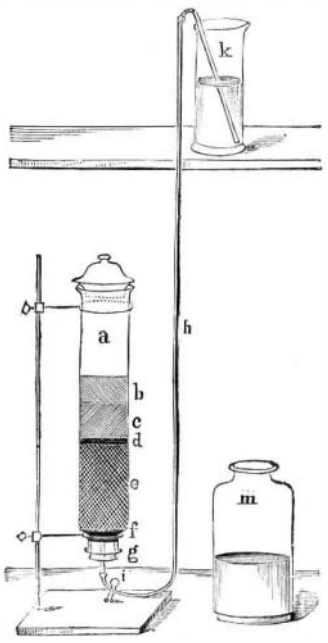
Nearly three thousand tons of wrapping paper were made in the month of October by the fifty-one mills included in the report of the Western Wrapping Paper Manufacturers' Association—an increase of one hundred and sixty-eight tons over the previous month's work. The amount on hand at the end of the month, however, was *less* than that of the month preceding—a fact which shows a healthy and active trade.

Electric Exhibition in New York.

The Operator, a paper devoted to telegraphic matters, suggests to American scientists, in view of the forthcoming exhibition of electricity in Paris, that arrangements be made for a similar exhibition in this country, at an early day, subsequent to the Paris Exhibition. America has, long ago, taken the lead in electrical research and invention, and such an exhibition in this city, the metropolis where Morse lived and died, or in Philadelphia, the home and final resting place of the immortal Ben Franklin, would be peculiarly appropriate, and, we believe, profitable. The quadruplex, the telephone, the phonograph, the microphone, and the photophone have all been invented, or have come into use, since the Centennial Exhibition, only four years ago, and, with the wonderful possibilities of even the next twelve months, we might say that such an exhibition in America would be not only a patriotic expedient, but an absolute necessity for the proper appreciation of the progress of electrical science.

IMPROVED APPARATUS FOR UPWARD PERCOLATION

Mr. William Elborne, in a paper entitled "The Recovery of Residual Tinctures from Marcs by Upward Displacement with Water," in pointing out the various processes heretofore proposed for the preparation of tinctures, draws attention to the objections which have been raised against the displacement of the residual tincture in the marc by pouring water upon it. He says: "It will be convenient to allude to these objections, as the result will show that they tend favorably in support of the process which I am about to bring forward: First, the specific gravity of water being higher than that of rectified or proof spirit, it naturally permeates down into the spirit, which at the same time has a tendency to rise into the water, thus materially assisting the diffusion or mixing of the two liquids; secondly, vegetable tissues, possessing a greater affinity for water than for spirit, the latter is readily liberated from them and rendered free to rise in the water. Having mentioned the disadvantages of this process, I arrive at that which forms the leading feature of this paper, namely, upward displacement or the removal of the residual tincture retained in a marc by means of water (the heavier liquid) rising from below.



ELBORNE'S APPARATUS FOR UPWARD DISPLACEMENT.

Working on this principle, the objections above mentioned are inapplicable, and the results are fairly satisfactory. One impediment, however, is the slight diffusion which takes place at the line of contact, but this may be partially remedied by using a modification of the menstruum. Of the group of tinctures prepared by maceration and percolation, the following proof spirit tinctures were made: Tr. aurantii, calumbæ, cinchonæ, cinnamomi, lupuli, rhei; and with rectified spirit: Tr. aconiti, and zingiberis (fortior). The quantity prepared of each was one pint, and in those made with proof spirit, spec. grav. 0·920, I used spirit having the spec. grav. 0·915, made by diluting the requisite quantity of rectified spirit with distilled water to 19 ounces instead of 20, and adding 2½ drachms extra of rectified spirit, thus allowing for the contraction of volumes, and for use of the mixture immediately. My mode of procedure is to powder the ingredients and macerate them with the whole of the spirit, spec. grav. 0·915, for the specified time with occasional agitation; the supernatant liquid is then drawn off, the dregs stirred up and transferred to a cylindrical percolator, and allowed to drop until the liquid passes clear and bright; the receiver is then attached, and both the turbid and supernatant liquids returned to the percolator. Instead of tying a piece of muslin over the bottom of the percolator, as is usually done, a cork is inserted with a hole bored through the center capable of admitting a piece of ordinary glass tube, above which is put an inch layer of coarsely pounded glass to prevent the orifice becoming choked. Percolation being complete, another half inch layer of glass is placed on the top of the marc to prevent the floating of solid particles. Having removed the receiver and supported the percolator on a retort stand, the open end of a piece of glass tube two inches long is inserted in the cork, the other end of the tube being previously drawn out in the flame so as to leave only a capillary opening. To this end

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