

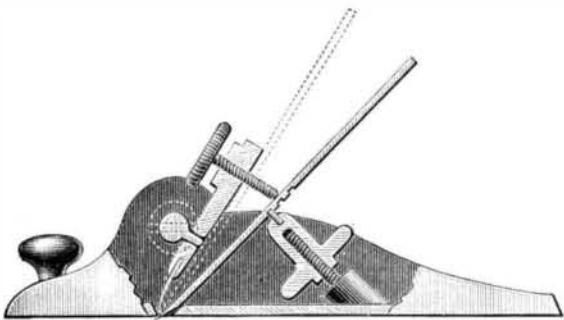
**Wormwood as an Insectifuge.**

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.

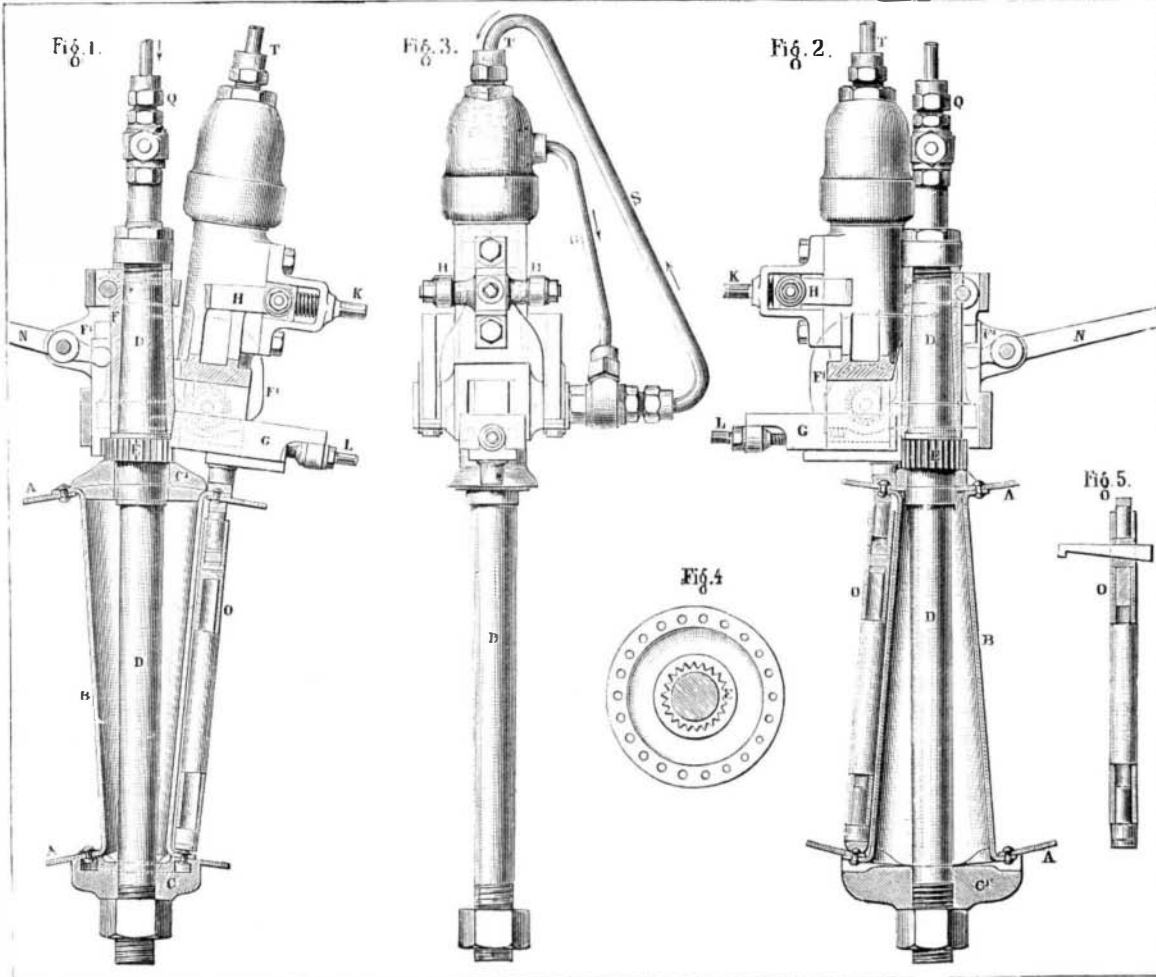
When all of the parts are in the required position they are made fast by turning the thumb-screw that bears upon the back of the iron.

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

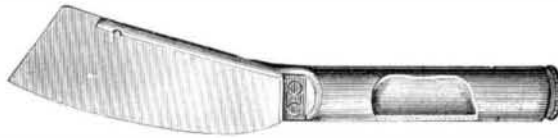
**MACHINE FOR RIVETING THE TUBES OF GALLOWAY BOILERS.**

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.**

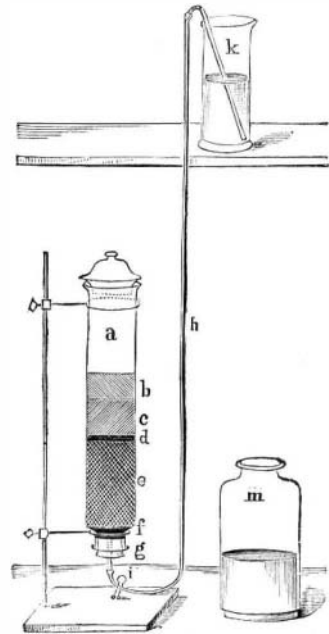
Nearly three thousand tons of wrapping paper were made in the month of October by the fifty-one mills included in the report of the Western Wrapping Paper Manufacturers' Association—an increase of one hundred and sixty-eight tons over the previous month's work. The amount on hand at the end of the month, 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

**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

attached about a yard of India-rubber tubing communicating with a vessel placed above, containing distilled water, the pressure of a column of water being thus obtained. The India-rubber tube being filled with water and adjusted to the percolator, the wire clamp attached to the lower portion of the tube is removed, when a slow and steady flow of water commences; after the lapse of an hour and a half, sufficient displacement will have been effected, the water having risen considerably above the marc, and with it will have been removed the retained tincture, which forms a dense stratum upon its surface. On dipping a glass rod to this upper stratum and applying it to a flame, the discolored tincture burns nearly as readily as the percolated portion, indicating its comparative strength of spirit. Nevertheless, diffusion will have taken place to a slight extent, and is perceptible by the gradual shading off of the highly colored tincture into the water beneath it. To finish the tincture, its measure was brought up to 19½ ounces, the addition of the requisite quantity of surface liquid on the percolator, the product filtered, and made up to a pint with proof spirit. Thus having measured the product percolation, I know exactly how much surface liquid draw off to bring the measure up to 19½ ounces, which is done by means of a glass siphon, and having mixed the two products, filtered by the automatic method through thin 3-inch paper, and made up to a pint with proof spirit, have produced a tincture prepared at a comparatively small loss.—*Pharm. Journal*.

#### Large Yields of Grapes.

The vineyards of the Napa Valley, California, averaged the last year about eight tons of grapes to the acre. In one instance three acres of Malvoisies yielded ten tons to the acre. The grapes were sold for \$25 a ton. Twenty-eight acres in San Joaquin County produced 300 tons of grapes, two sorts, Mission and Black Prince, the average price which was \$27 a ton. Choice grapes grown on mountain sides brought \$30 a ton. In both these cases the vines are old. A yield of ten tons to the acre from three-year-old Sultana vines is reported in one instance in Solano County. The Sultana is a seedless grape, in high repute for winemaking.

ANOTHER BRUSSELS EXHIBITION.—It is stated that in consequence of the great success of the Belgian National Exhibition, two projects are now under discussion—one for holding at Brussels in 1883 or 1884 a Universal International Exhibition, and the other for organizing a Universal International Educational Exhibition.

#### NOVEL STEAM BOILER.

The special feature of the new boiler shown in the accompanying engraving consists in the transverse water tube in the fire box. Its obvious effect is to aid materially the raising of steam of high pressure in a short time. The boiler may be set vertical or inclined, the latter position being preferred. This boiler is the invention of H. Berchtold, of Zurich, Switzerland. The illustration is from the *Allgemeine Zeitschrift für Textil-Industrie*.

#### MECHANICAL INVENTIONS.

Mr. John F. Garatt, of Spencer, N. Y., has patented an improved windmill, so constructed as to adjust itself to the force of the wind, the automatic adjustment being effected by two weights at diametrically opposite sides of the wheel which are acted on by centrifugal force.

Mr. Gavin Telfer, of Detroit, Mich., has patented a combined hammer and screw-driver which is simple and convenient. It consists of a hammer containing an adjustable screw-driver in the lower end of its hollow handle.

An improved sash lift and automatic sash lock, which locks the sash automatically as soon as the same has been lowered to rest on the sill, but unlocks it as soon as pressure is applied to the lift for the purpose of raising the sash, has been patented by Mr. William W. Sweetland, of Edwardsburg, Mich.

An automatic attachment to lathes for cutting rubber and other rings has been patented by Mr. Joseph T. Ridgway, of Trenton, N. J. The object of this invention is to make the lathe work more quickly and accurately by substituting automatic mechanism for mechanism operated by hand, thereby increasing and improving the product of the lathe and diminishing the cost of the product.

An improved water and steam wheel has been patented by Mr. Thomas R. Simmons, of Houma, La. The inventor uses a wheel that consists of a hub provided with wings that extend to an outer inclosing cylinder, the wheel being fitted to a shaft contained in a chamber through which the fluid passes.

Messrs. T. H. Scott, A. G. De Pontee, and H. E. Wyman, Crown Point Center, N. Y., have patented a machine for cutting wood fiber for paper pulp. The invention consists of a novel knife and the combination thereof with a revolving head for cutting wood fiber to be used in making paper pulp.

An improved electric alarm, which is designed to be set off to give a continuous warning by the breaking of an electric circuit, has been patented by Mr. Lambert F. Fouts, of Greenfield, Iowa.

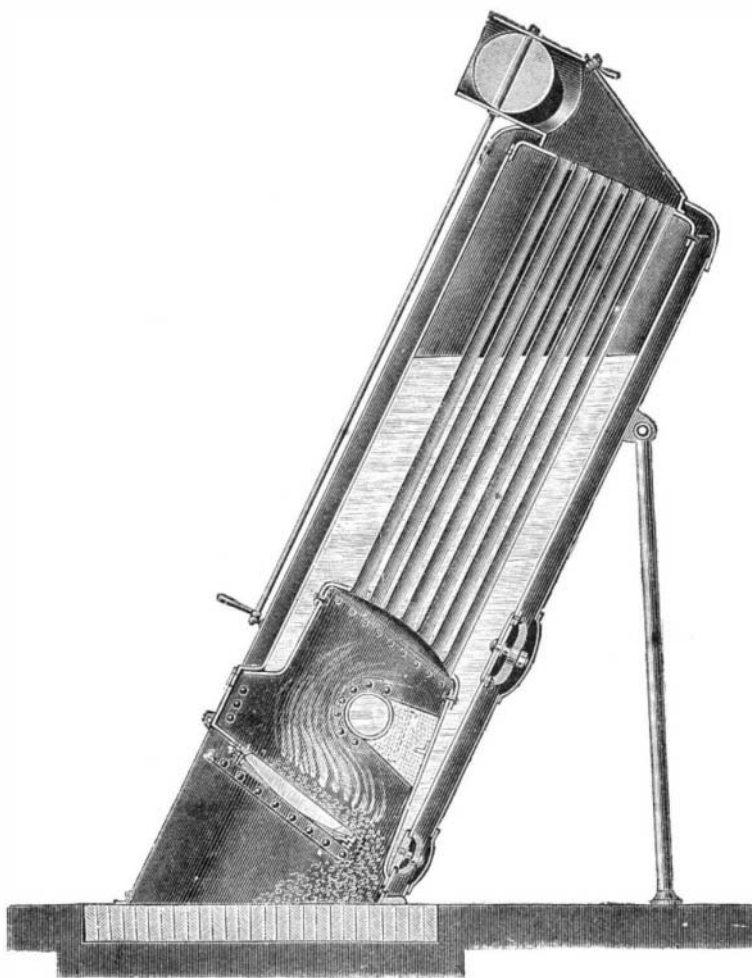
#### BOTTLE COCK FOR EFFERVESCENT LIQUIDS.

In using aerated water, champagne, or other effervescing liquids, especially in sick rooms where small quantities are



#### IMPROVED BOTTLE COCK FOR EFFERVESCENT LIQUIDS.

required in frequently repeated doses, it is undesirable to open a fresh bottle every time, and quite impossible to preserve for any length of time the briskness of an opened bottle. To meet such cases the simple apparatus shown in the annexed engraving has been devised. It consists of a hollow corkscrew mounted upon a little stand, and so arranged that the outlet may be opened by a slight pressure on a lever. The corkscrew is passed through the cork and the



#### NOVEL STEAM BOILER.

bottle inverted on the stand. The pressure of the gas in the bottle insures the delivery of the liquid, and none of the gas can escape until the liquid is all drawn off. Thus the effervescent quality of the wine or water is preserved to the end no matter how slowly the liquid may be used. Obviously the device is also serviceable in saving the trouble and waste incident to the common method of uncorking bottled liquids of this character.

#### RECENT INVENTIONS.

Mr. William C. Beattie, of Taunton, Mass., has patented an improvement in butter dishes, which is applicable to all kinds of analogous covered dishes, such as pickle casters, jewel cases, sugar dishes, baking dishes, etc. The object of the invention is to provide a neat and tasteful means for raising and suspending the cover in elevated position above the dish.

In an improved boot heel, patented by Messrs. Riley D. Plunkett and Jason P. Rollins, of Little Rock, Ark., the heel is made detachable and attachable. Both the sole and heel have heel plates, which connect by dovetail tongue and groove, and are maintained in mutual engagement by a single screw.

An improved gatherer and ruffler for sewing machines has been patented by Mr. James B. Farrar, of Wilmington, N. C. It gathers a piece of fabric either at its edges or throughout its entire surface, or will gather or shirr a piece of fabric on a ground work, or gather one piece of fabric to another, and at the same time attach a ribbon, tape, or braid, at the seam, all in a single operation.

#### Egyptian Obelisks.

There are thirty of them at the present time scattered over Europe. Rome has eleven, four of which are higher than our New York obelisk. The highest of the Roman obelisks, which is also the highest in Europe, stands before the Church of St. John Lateran. The obelisk in the piazza of St. Peter's is 82 feet 9 inches high. Both of these were mounted on high pedestals. The pedestal of the St. John Lateran obelisk is 44 feet high, making the entire height of obelisk and pedestal 150 feet. The pedestal of the St. Peter's obelisk is a trifle less than 50 feet high, making the whole height of the monument 132 feet 2 inches.

#### The Egyptian Obelisk now in New York.

At a recent meeting of the New York branch of the United States Naval Institute, held at the Brooklyn Navy Yard, Lieutenant Commander Goringe described the means employed to remove the obelisk from its site in Alexandria to the United States. His remarks were illustrated by models. The obelisk was buried, he said, to a height of nine feet above the pedestal in a mass of debris and sand. The age of obelisks can be determined with considerable accuracy by the depth of the surrounding accumulations. There were two plans to choose from in removing the obelisk from its upright position. One was by securing the segment of a huge wheel to the obelisk, with two guys fastened to the shaft behind. Then the obelisk would be tilted so as to throw the weight on the guys, and excavations being carried on under the base it would slowly turn over. This was the simplest plan, but as the nature of the ground was unknown, and as rocks would very likely render the excavation difficult or impossible, the idea was adopted of mounting the obelisk like a cannon upon a kind of gun carriage. This carriage was made in Trenton and taken to Egypt in pieces. The obelisk was carefully incased in timber, and four derricks were erected. The iron plates of the trunnions, weighing six tons each, were hoisted into place on the sides of the obelisk and bolted together by bars running across, being also supported by rods running up and down. Then the carriage was placed underneath, and the trunnions just fitted into the rests on the carriage. The different parts were securely fastened by bolts, then the obelisk was lifted bodily and turned over of its own weight. Trusses were placed on each side, with steel bands running to the heel and end of the shaft, in order to keep the obelisk from breaking in two when suspended by the middle. It was top-heavy, the part above the trunnions weighing four tons more than that below, and therefore came down upon the high cradle prepared for it with a tremendous crash. Some of the timbers were broken, but special preparation had been made for this, and a kind of cushion of timbers was ready to receive the shaft.

Stacks of timbers were placed under the obelisk. When it was recumbent it was lifted by hydraulic jacks, and the timbers were taken out one by one until it was lowered to the level of the pedestal. A deep pit or canal had been dug underneath, and a huge box or caisson was in readiness large enough to float the obelisk out to sea. Here a mishap occurred which has been wrongly said to have been maliciously caused. The caisson had to go 210 feet to reach the sea. It went 20 feet and then stopped. For the remainder of the way it had to be pushed by a pressure of 120 tons inch by inch to the sea. Afterward it was found that between the ways and the cradle were several pieces of iron and stones, which probably found their way in accidentally. The sea was very rough, and once the obelisk was sunk, but it was finally towed seven miles and put in a dry dock. It was laid diagonally to the keel of the ship, in the side of which a large port had been opened. By the aid of a kind of railway formed of 6 inch channel iron and 5½ inch cannon balls the obelisk was moved forward, being turned when half way into the ship so as to go parallel with the keel, and