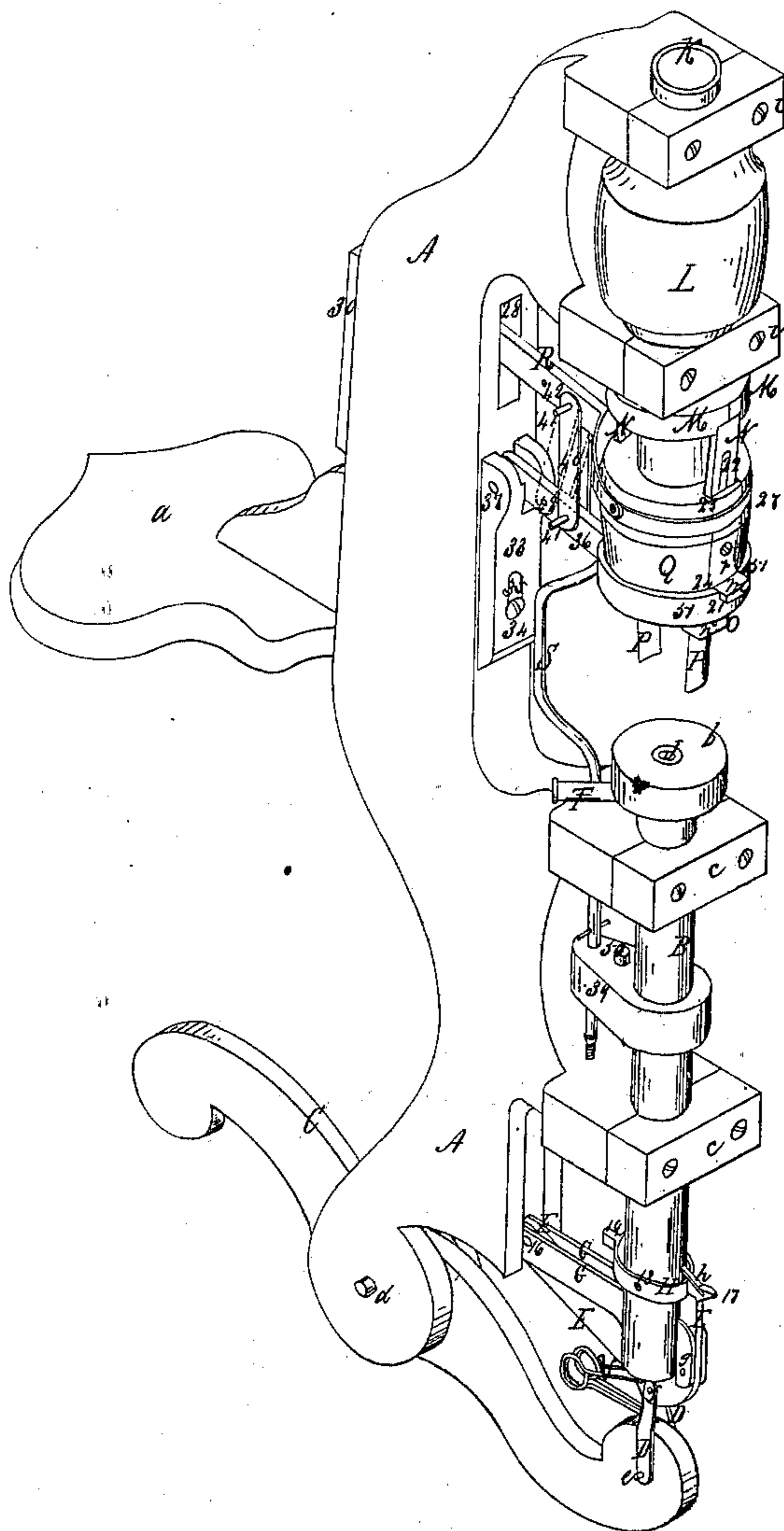


L. W. FELT.  
MACHINE FOR CUTTING CORKS.

No. 76,615.

Patented Apr. 14, 1868.

Fig. 1.



Witnesses  
W. J. Cambridge  
L. E. Patchell.

Inventor  
Luther W. Felt

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Fig. 2.

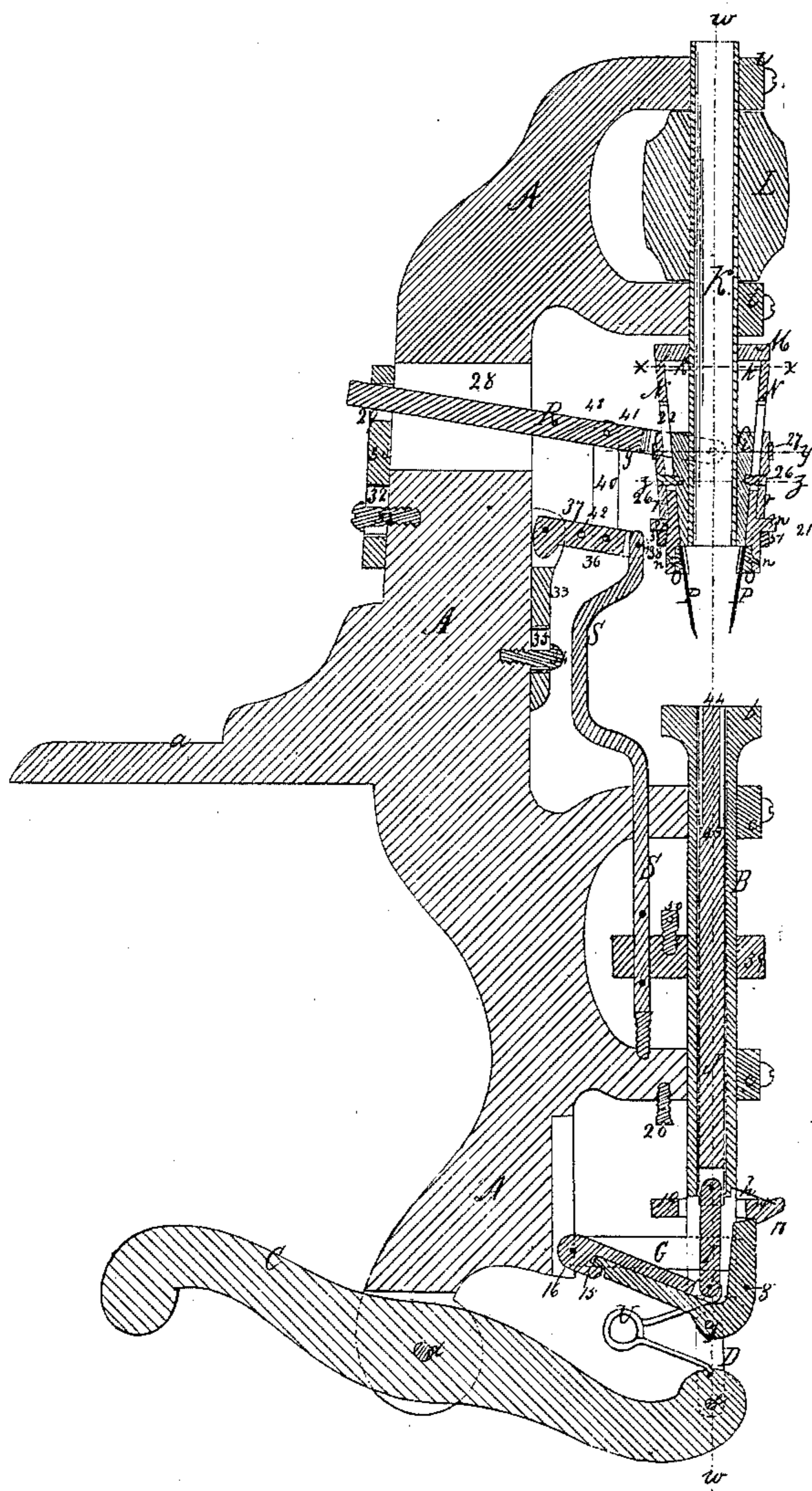


Fig. 10.

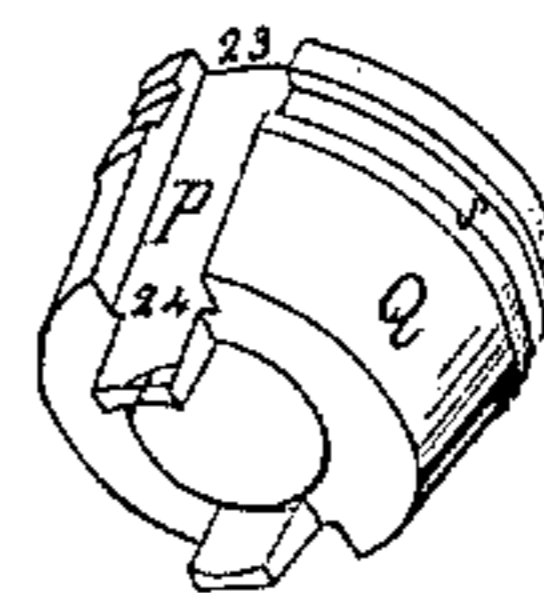


Fig. 11.



Fig. 12.

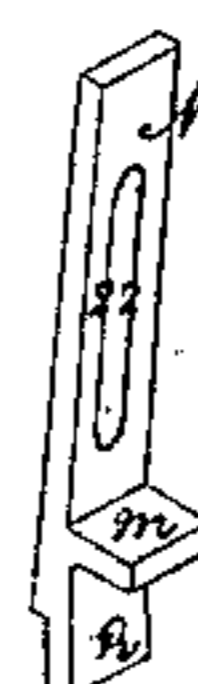
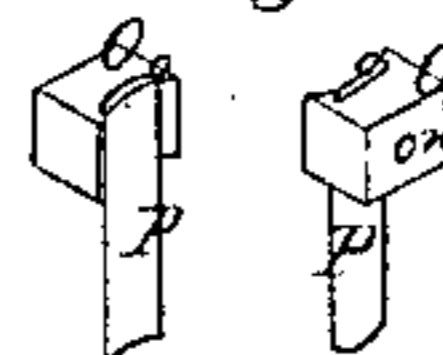


Fig. 13 Fig. 14.



Witnesses

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L. B. Patchell

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Fig. 3.

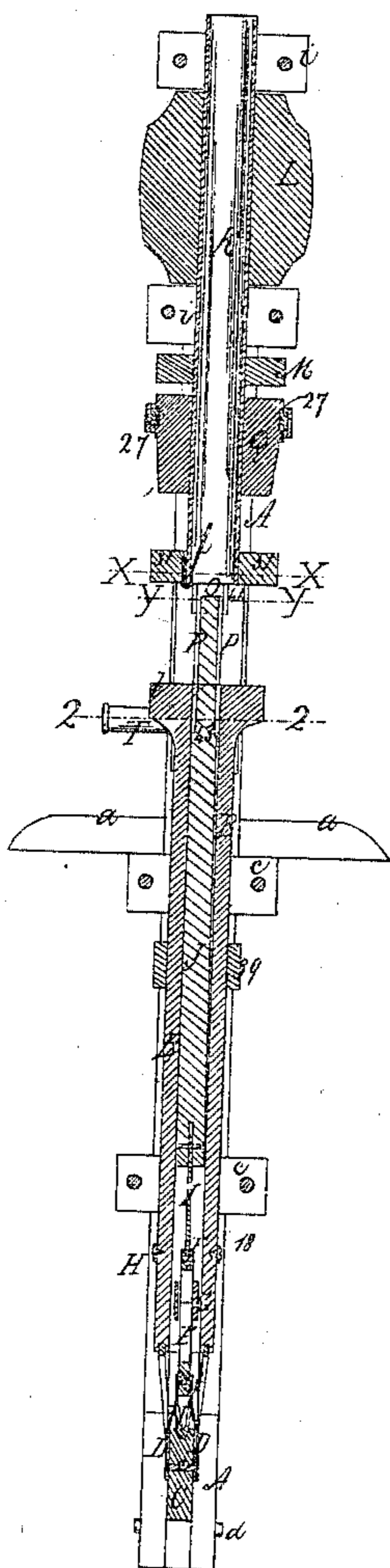


Fig. 4.

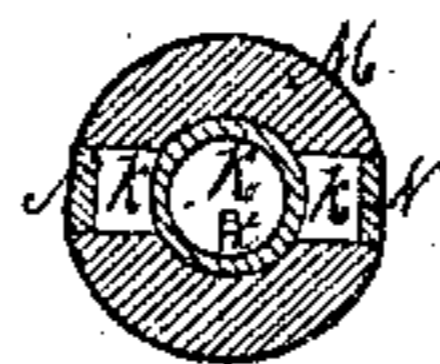


Fig. 5.

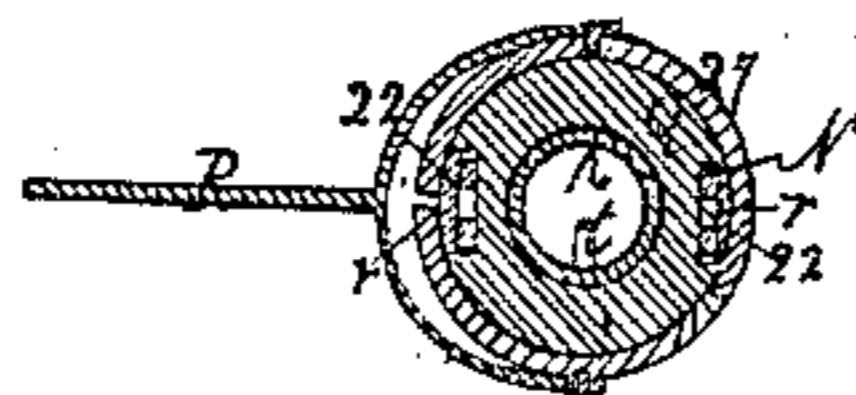


Fig. 6.

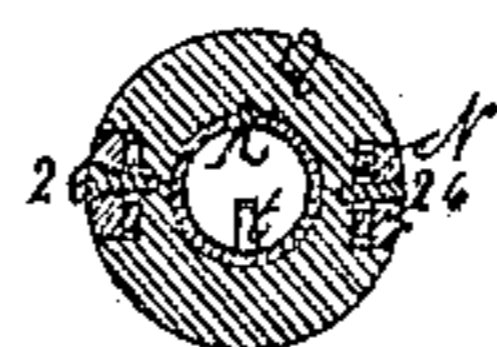


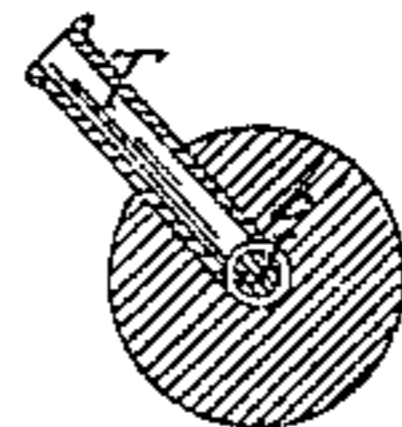
Fig. 7.



Fig. 8.



Fig. 9.



# United States Patent Office.

LUTHER W. FELT, OF KEENE, NEW HAMPSHIRE.

*Letters Patent No. 76,615, dated April 14, 1868.*

## IMPROVEMENT IN MACHINES FOR CUTTING CORKS.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, LUTHER W. FELT, of Keene, in the county of Cheshire, and State of New Hampshire, have invented certain Improvements in Machines for Cutting Corks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of a cork-cutting machine, with my improvements applied thereto.

Figure 2 is a central vertical section through the same.

Figure 3 is a vertical section, on the line *ww* of fig. 2, the position of some of the parts being changed

Figure 4 is a horizontal section, on the line *xx* of fig. 2.

Figure 5 is a horizontal section, on the line *yy* of fig. 2.

Figure 6 is a horizontal section, on the line *zz* of fig. 2.

Figures 7, 8, and 9, are horizontal sections, on the lines *XX*, *YY*, and *ZZ* of fig. 4.

Figures 10, 11, 12, 13, and 14, details to be referred to.

My invention particularly relates to certain improvements in machines for cutting corks, for which Letters Patent of the United States were granted to me on the twenty-fifth day of June, A. D, 1867. To simplify the construction of the parts, and to operate them with greater facility, and in a more reliable manner, is the object of my present invention, which consists in giving the required degree of taper to the cork to be cut, by regulating the amount of vertical play of a collar upon the revolving shaft to which the cutters are attached; and my invention also consists in a series of adjustable levers for regulating the amount of vertical play of this collar; my invention also consists in blocks of varying sizes, for securing the cutters to the cutter-bars, one set of blocks being removed, and another substituted therefor, when a cork of a different diameter is required. My invention also consists in an improved arrangement for disconnecting the collar, so that it may not have any vertical play when it is desired to cut a "straight" or cylindrical-shaped cork. My invention furthermore consists in introducing a current of cold air up through the centre of the table upon which the cork to be cut is placed, and directing the current, immediately after the cork is cut, upon and around the lower edges of the cutters, in order to prevent their becoming heated while cutting. And again, my invention consists in a "spring-catch," which liberates the mechanism for throwing up the rod which passes the finished corks, (immediately after being cut,) up the hollow shaft, and in an improved spring for holding the corks after being passed up therein, and also in certain other details to be explained hereafter.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, *A* is the framework of the machine, which is secured in a vertical position immovably to the work-bench or table, by screws passing through its flat portion *a*. *B* is a hollow cylindrical post, which is enlarged at its upper end to form a table or bed, *b*, upon which to place the cork to be cut. This post is made to slide vertically within bearings *c c*, by operating a lever, *C*, pivoted at *d* to the lower end of the framework, the bottom of the post being connected with the outer end of the lever *C*, by mechanism now to be described.

*D D* are a pair of flat connecting-bars or levers, the lower ends of which embrace the end of the lever *C*, and are pivoted thereto at *e*, while the upper ends of these bars are pivoted at *f* to the sides of a bent lever, *E*, of the form seen in fig. 2, which is rocked between side-pieces or guides *G*, to which it is pivoted at *g*. One end of this lever *E* rests loosely in a recess or socket, 15, in a lever, *F*, whose fulcrum is at 16. The other end of the lever *E* extends up against a notch or projection, 17, formed in one end of a collar or spring-catch, *H*, which surrounds the post, and is pivoted to it at 18, so as to vibrate freely thereon; a spring, *h*, being employed to press this end of the collar down, so as to cause its projection 17 to fall over and retain the upper end of the lever *E* until the hollow post *B* is thrown up sufficiently to bring the other end, 19, of the collar in contact with the under side of a pin, 20, screwed into the bottom of the lower bearing *c*, when the end of the collar bearing the projection 17 is thrown up against the resistance of the spring *h*, and the upper end of the lever *E* is liberated. The post *B*, with its table *b*, having been raised to the horizontal plane in which the edges of the

cutters revolve, is now prevented from rising further by a stop, 50, striking the under side of the upper bearing *c*, when, by continuing to press the lever C, the lever E is free to swing on its pivot *g*, and its end resting in the socket 15 is elevated, raising the outer end of the lever F, to which is pivoted the lower end of a short lever, I, the upper end of which is connected to the bottom of a cylindrical rod, J, passing up into the interior of the hollow post B, by which means the rod is thrown up, (for a purpose presently to be explained,) into the position seen in fig. 3.

K is a hollow vertical shaft, which is made to revolve in bearings *i i*, by power applied to a pulley, L. M is a circular plate or stop, secured immovably to the hollow shaft, and provided with grooves *k*, (see figs. 2 and 4,) in which the upper ends of cutter-bars N are made to move laterally, (in a manner hereafter to be described.) To the lower end of the hollow shaft is fixed a circular plate or stop, 51, provided with apertures *l l*, fig. 7, in which the lower ends of the cutter-bars N are allowed to move laterally, the width of these apertures being greater than the thickness of the cutter-bars, to admit of this movement.

Near the lower end of each of the cutter-bars is formed an enlargement or flat projection, *m*, which rests upon a shelf, 21, formed by cutting away a portion of the upper surface of the circular stop 51, and serves as a guide to prevent the cutter-bar from descending, while it is being moved laterally in its aperture *l*.

To the lower end of each cutter-bar, at *n*, is screwed a block, O, (figs. 13 and 14,) provided with a groove, *o*, for the reception of the upper end of a cutter, P, the screw either pressing against the back of the cutter or extending through to its inner side, for securely holding it in place when adjusted.

Around the hollow shaft K is loosely fitted a sleeve or collar, Q, the exterior of which is of the form shown, while its interior is cut away at points diametrically opposite, forming openings *p p*, (see fig. 10,) through which pass the cutter-bars, which are provided with slots 22 22. The sides of the openings *p p* are inclined from 23 to 24, down toward the axis of the machine, and this same inclination is prolonged by the surface of the wedge-shaped portions *q* of the collar Q, at its bottom. *r r* are blocks, provided with raised edges 25 25, (see fig. 11,) and are screwed at 26 26 to the collar Q, the screws passing through the slots 22 22, in the cutter-bars, by which construction, when a tapering cork is required to be cut, the collar Q may be slid upward on the hollow shaft K, and the cutter-bars and cutters be drawn in or contracted, the amount of vertical motion of the collar determining the degree of taper to be given the cork. The mechanism employed for producing this vertical motion of the collar Q will now be described. Within the upper part of the collar is cut a circular groove, *s*, (fig. 10,) into which is loosely fitted a ring, 27, to which is pivoted the yoke or bifurcated portions of a straight bar, R, the inner end of which passes through a slot, 28, in the framework, and rests loosely in a slot, 29, in an adjustable cleat or gauge, 30, secured thereto by a screw, 31, passing through a slot, 32, (fig. 2.) 33 is another cleat or gauge, made adjustable vertically on the side of the framework, to which it is secured by a screw, 34, passing through a slot, 35.

One end of a short lever, 36, is pivoted at 37 to the cleat or gauge 33, the other end of this lever 36 being pivoted at 38 to the top of a rod, S, the lower end of which passes through a hole formed in a stud or arm, 39, projecting from the upright post B.

The straight bar R and the short lever 36 are connected by a coupling or link, 40, each end of which is provided with a hole for the reception of a pin, 41, which also fits into holes 42, made in the bar R and lever 36, by which means the link 40 may be connected therewith at different points, so as to increase or reduce the leverage, and thereby raise the collar Q more or less in a vertical direction upon the hollow shaft K, which determines the degree of taper or inclination to be given the cork to be cut.

In figs. 1 and 2 the parts are represented in the position for giving the collar Q the greatest amount of vertical motion, and as the cutters are gradually drawn together, or contracted more and more as the collar rises, when it has come in contact with the stop M, the smaller end of the cork has been formed, and the greatest degree of inclination given. When a cork of the same diameter at its top, but of different inclination, is required, it is simply necessary to remove the pins 41, and slide the link 40 along into the position seen in red, fig. 1, when the length of leverage is reduced, and consequently the amount of vertical play of the collar Q. When a cylindrical cork is required, the bevelling or inclined cutters may be taken out of the grooves in the block O, by removing the screws at *n n*, and taking off the blocks O, and straight or vertical cutters substituted therefor, when the rod S being disconnected, the collar Q will have no vertical play on the hollow shaft K. When cylindrical corks of varying diameters are required, the collar Q, after being disconnected from the rod S, may be clamped to the hollow shaft K, at the desired height for producing the degree of contraction of the cutters necessary for obtaining the diameter of cork required, or the cutters may be inserted in blocks O of different widths, to obtain the diameter of cork desired, the slab of cork being brought up on the table to be acted upon by the revolving cutters, which remain at the same distance apart throughout the operation of cutting the cork, from its upper surface to its lower surface, resting on the table, which is brought up just as high as the lower edges of the cutters.

As the cutters become worn away, and require to be sharpened, it is simply necessary to apply a hone to the exterior surface of their edges.

The cylindrical rod J is made of smaller diameter from 43 to 44, forming a space between it and the interior of the hollow post B, in order to allow a current of cold air, (created by a fan or otherwise,) to be introduced through a tube, T, fig. 9, up the hollow post B, and against the edges of the cutters at the moment they have finished cutting the cork, by which means they are prevented from heating, and the objections incident to the use of oil thereby avoided.

In my patent of June 25, 1867, is described a tube for conducting a current of cold air to the cutters while in operation. This tube was not, however, in the right position to effect the desired end, but by conveying the air up through the table, and under and around the cutters at the moment the cork has been cut, (and simul-

taneously with the removal of the finished cork up from the edges of the cutters,) the current is concentrated to the point desired, and the cutters are constantly kept cool. *t* is a bent spring, of the form shown in fig. 3, one end being confined between the outside of the bottom of the hollow shaft K and the stop 51, the other end of the spring passing into the hollow shaft K, and being pressed back by the entrance of a cork, when carried into the shaft by the elevation of the central rod or lifter J. As soon as another cork is passed up into the hollow shaft, the cork above is pressed by it beyond the top of the spring, which is thus retracted sufficiently to prevent its dropping out of the hollow shaft.

U is a coiled spring, of the form seen in figs. 1 and 2, the opposite ends of which are respectively secured to the bottom of the hollow post B, and to the upper end of the lever C beneath it. The office of this spring is to return the central rod J to its normal position after it has risen to throw a cork up into the hollow shaft K, the compression of the spring, after the table has risen, serving to bring the levers connected with the bottom of the rod into the position seen in section, fig. 3, thus raising it; when, on discontinuing the pressure at the outer end of the lever C, the retraction of the spring causes it to return the levers into the position seen in figs. 1 and 2, and draw the top of the rod J into the hollow post K.

#### *Operation.*

The diameter to be given the head of a tapering cork being determined, the cutters are set a distance apart corresponding thereto, and pressure being applied to the lever C, the table, with the cork thereon, is brought up to the edges of the cutters, which are then revolved. After the table has risen a short distance, the rod S is lifted, carrying with it the collar Q. During the ascent of this collar on the hollow shaft, and the consequent contraction of the cutters, the material has been passing upward and been cut by the cutters, until the upper surface of the table has reached their lower edges. The cork has now been cut through, when, by continuing the application of pressure on the lever C, the lever E, through the connections above described, is liberated from the "spring-catch" H, and the central rod J is quickly brought up against the bottom of the finished cork, which is thus separated from the slab of cork on the table, and delivered within the hollow shaft K, where it is retained by the spring-stop *t*, until forced further up by the entrance of the next cork, which is cut, as before explained, by continuing the operation.

#### *Claims.*

What I claim as my invention, and desire to secure by Letters Patent, is—

1. Giving the required degree of taper to the cork to be cut, by regulating the amount of vertical play of the collar Q upon the revolving shaft K, substantially as described.
2. I also claim regulating the amount of vertical play of the collar Q, and consequently the degree of taper to be given the cork, by the rod S, in combination with the post B, lever 36, link 40, and yoked bar R with its ring 27, operating substantially in the manner set forth.
3. I also claim the blocks O O, made removable for regulating the diameter of the cork to be cut, substantially as set forth.
4. I also claim the grooved blocks O O, in combination with the cutters P P, substantially as and for the purpose set forth.
5. I also claim introducing a current of cold air within the centre of the table *b*, so as to impinge upon the edges of the cutters immediately after a cork has been cut, substantially as described.
6. I also claim the "spring-catch" H, operated by mechanism, substantially as described, to allow of the rod J being thrown up, as and for the purpose set forth.

LUTHER W. FELT.

Witnesses:

N. W. STEARNS,

L. E. BATCHELLER.