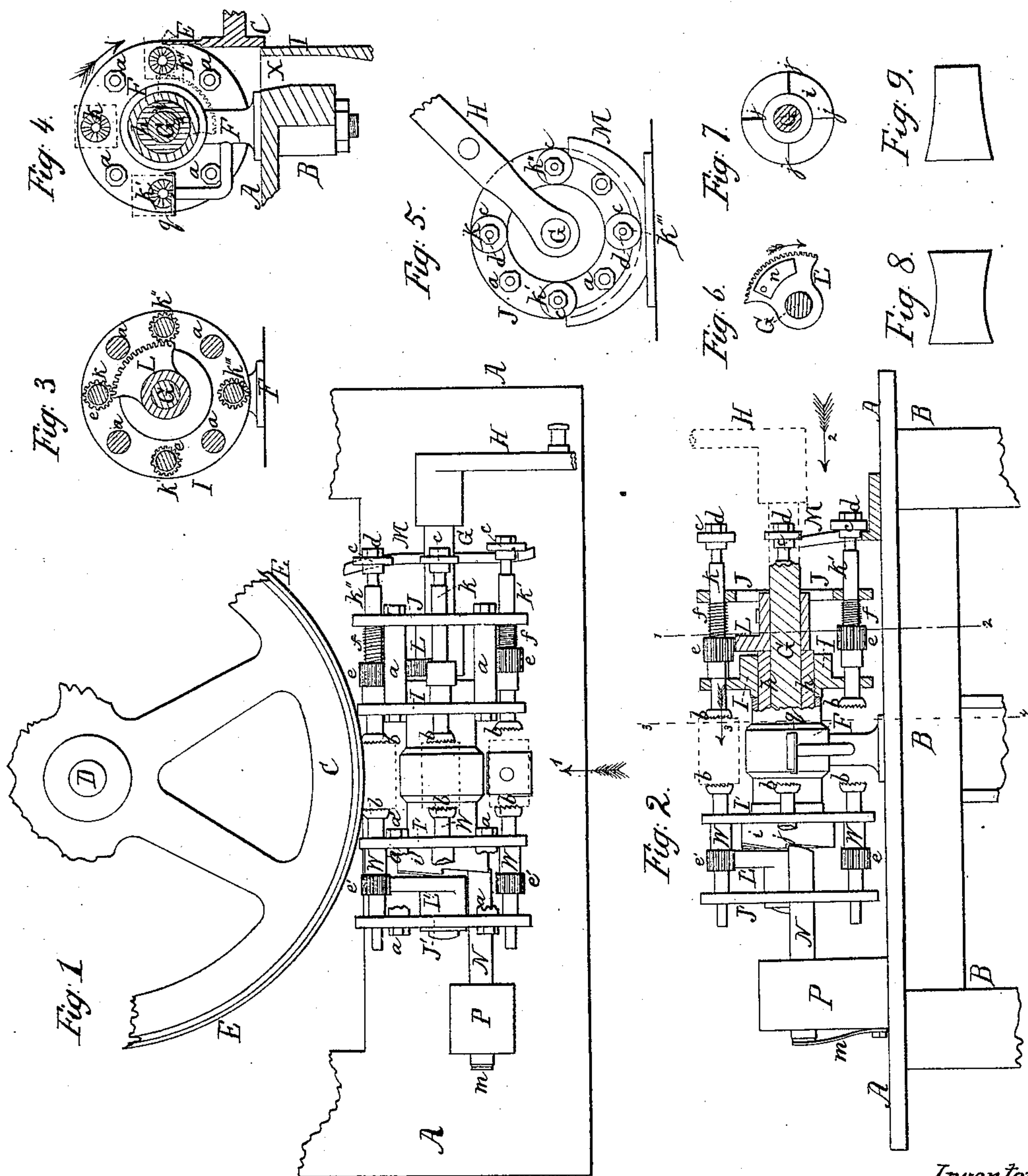


G. Lloyd,
Cork Machine.

N^o 40,144.

Patented Sep. 29, 1863.



Witnesses:
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UNITED STATES PATENT OFFICE.

GEORGE LLOYD, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
EDWARD BORIE AND ALEX. MACKIE, OF SAME PLACE.

CORK-CUTTING MACHINE.

Specification forming part of Letters Patent No. 40,144, dated September 29, 1863.

To all whom it may concern:

Be it known that I, GEORGE LLOYD, of Philadelphia, Pennsylvania, have invented an Improved Cork-Cutting Machine; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists of certain novel mechanism, fully described hereinafter, for cutting corks, the corks being applied to the machine in the form of oblong blocks, and discharged from the machine completely cut to a peculiar shape, described hereinafter.

In order to enable others skilled in this class of machinery to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a plan view of part of my improved cork-cutting machine; Fig. 2, a front view looking in the direction of the arrow 1, Fig. 1; Fig. 3, a transverse section on the line 1 2, Fig. 2; Fig. 4, a transverse section on the line 3 4, Fig. 2; Fig. 5, an end view looking in the direction of the arrow 2, Fig. 2; Figs. 6 and 7, detached views of parts of the machine, and Figs. 8 and 9 views of corks cut by the machine.

Similar letters refer to similar parts throughout the several views.

A is a table or platform supported on a suitable frame, B, and in this table is an opening within which a horizontal pulley, C, is arranged to revolve freely, the pulley being secured to a vertical shaft, D, which is caused to revolve at a rapid rate by means of a belt or any suitable system of gearing in bearings on the frame B. To the rim of this pulley are secured curved blades E, of properly-tempered steel, the blades being beveled from the inside and reduced to a sharp cutting-edge, and the whole forming an annular vertical knife. In front of this knife and to the table A is secured a standard, F, in which the tubular shaft *h* turns freely, another shaft, G, passing through and turning freely in the tubular shaft. The outer end of the shaft G is furnished with an arm, H, to which a vibrating motion is imparted by any suitable mechanism

actuated by the same prime mover from which the rotary knife derives its movement. A disk, I, is secured to the tubular shaft *h*, and is connected by means of suitable bolts, *a*, to an annular plate, J. Four spindles, K, K', K'', and K''', situated at equal distances apart from each other, are arranged to turn and to slide horizontally in the disk I and annular plate J, each spindle having at one end a head, *b*, with inclined teeth on its surface, and at the opposite end a roller, *c*, maintained in its proper position by a suitable nut, *d*. Each spindle is also provided with a pinion, *e*, and a spiral spring, *f*, which, being confined between the said pinion and the annular plate J, tends to force the spindle in the direction of the arrow 3, Fig. 2. The teeth of the pinion *e* of each spindle are adapted to those of a segment, L, which is secured to the shaft G.

To the table A is secured a plate, M, curved and inclined in the manner best observed on reference to Figs. 1, 2, and 5, for a purpose fully explained hereinafter. A disk, I', situated at the opposite side of the standard F, is secured to the tubular shaft *h*, and this disk is connected by bolts *a a* to an annular plate, J', four spindles, W, similar to those described above, being arranged to turn, but not to slide, in the said disk and plate, and each spindle being furnished with a pinion, *e'*, having teeth adapted to those on the segment L', which is secured to the shaft G.

In the face of the hub *i* of the disk I' are cut four inclined recesses, forming four abrupt shoulders, *j*, (see Fig. 7,) against each of which in succession bears the end of a spring-catch, *n*, secured to the back of the segment L', and shown in Fig. 6, so that when the segment is moved in the direction of the arrow, Fig. 6, it must carry with it not only the disk I', but the tubular shaft *h*, and everything attached to the same. When the segment L' is moved in a direction contrary to that pointed out by the arrow, the end of the spring-catch *n* will pass freely over the shoulders *j* on the hub *i*, which, together with the tubular shaft *h*, is held by the end of a bar, N, arranged to slide in a block, P, secured to the table A, the end of the bar being acted on by the spring *m*.

The strips of cork to be cut by my improved machine are applied in the form of oblong blocks of uniform or nearly uniform dimen-

sions, the pieces being placed in a suitable position to be applied to the machine by an attendant who is seated in front of the table A, so as to look in the direction of the arrow 1, Fig. 1. It should be understood that the motion of the shaft G is one-fourth of a revolution in one direction, and one-fourth of a revolution in the contrary direction.

As seen in the drawings, Figs. 1, 4, and 5, the shaft G is about completing its movement in the direction of the arrow 4, Fig. 4, the disks I and I' carrying the whole of the spindles in the same direction, and the roller *c* of the spindle K' is about leaving the inclined plate M. When the several parts are in this position, the attendant places a block of cork on a small tray, *q*, attached to the standard F, a flange on the tray determining the position which the block of cork should occupy, so as to be within the range of the heads *b* of the spindles, as the latter are carried round with the disks I and I'. When the shaft G has reached the limit of its movement in the direction of the arrow 4, Fig. 4, the roller *c* of the spindle K' has escaped from the control of the inclined plate M, and has been forced by the action of its spiral spring *f* against the end of the block of cork, which is thus firmly grasped between the notched head *b* of the spindle K' and that of one of the spindles W, and the bar N acted on by the spring *m* has taken its place in one of the inclined recesses *j* of the hub *i*, so as to prevent the turning back of the tubular shaft *h* and the several spindles when the shaft G is turned in a direction contrary to that pointed out by the arrow 4. In the meantime the block of cork grasped between the serrated head of the spindle K'' and that of one of the spindles W has been brought into a proper position to be acted on by the vertical blades E of the revolving knife, (see Fig. 4,) the cutting effect of which had commenced when the shaft G had reached the limit of its movement in the direction of the arrow 4, and when the segments L and L' had reached the position shown by dotted lines, Fig. 4. The shaft G is now moved back in a contrary direction to that pointed out by the arrow 4, and to the extent of one-fourth of a complete revolution. During this movement the tubular shaft remains stationary, owing to the retaining-bar N; but the segments L and L' will turn, and, gearing into the pinion *e*, will impart a rotary motion to the spindle K'', as well as to the cork, and to the opposite spindle, which, with the said spindle K'', serves to confine the cork, the latter being thus turned and cut to the desired shape by the revolving blades E. The segments L and L', when the shaft G has reached the limit of its backward movement, occupy the position shown in Fig. 3, one of the segments being in gear with the pinion on the shaft K, and the other in gear with the pinion of that spindle W which coincides with the said spindle K, so that when

these spindles with the cork between them have, by another movement of the shaft G in the direction of the arrow 4, been brought to the position previously occupied by the spindle K'', the segments will be in a proper position to impart the desired revolving motion to the cork held by the said spindle K and its coinciding spindle W. The shaft G having been moved to its limit in a direction contrary to that pointed out by the arrow 4 is again ready for a reverse motion, which, owing to the spring-catch at the rear of the *h* and the whole of the spindles. The first segment L', carries with it the tubular shaft movement in this direction causes the roller *c* of the spindle K'' to be brought under the control of the plate M, the shape of which is such as to force the spindle outward, thereby releasing the cut cork and permitting the same to fall through an opening, *x*, in the table, and thence into any suitable receptacle. It will now be seen that as the arm H vibrates the block of cork is first seized between the ends of two spindles, carried by the latter to a proper position to be acted on by the revolving knife, there turned round so that the cork can be cut to the desired shape, and finally discharged in a completed state. The cut cork will correspond in form to the circumference of the revolving knife, as seen in Fig. 8, or the position of the revolving knife may be so altered in respect to that of the spindles which carry the blocks of cork that the latter when cut shall be of the form shown by Fig. 9. In either case the cork possesses the advantage of being more self-retaining within the neck of a bottle than corks of the usual shape.

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

1. The annular revolving knife E, when the same is applied to the cutting of corks, substantially as described.

2. In combination with the said annular knife, any desired number of spindles K and W, whereby the blocks of cork are held and turned, as described, for the purpose specified.

3. The disk I and I' on the tubular spindle *h*, the plates J and J', attached to the disk, the segments L and L', secured to the shaft G, which passes through the said tubular spindle *h*, the whole being arranged for carrying and operating any convenient number of spindles K with cog-wheels *e*, substantially as set forth.

4. The spindles K, each being provided with a roller, *c*, or its equivalent, and a spiral spring, *f*, in combination with the bent plate M, or its equivalent.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE LLOYD.

Witnesses:

CHARLES E. FOSTER,
JOHN WHITE.