

E. CONROY.
Machine for Forming Plugs.
No. 234,966. **Patented Nov. 30, 1880.**

Fig. 1.

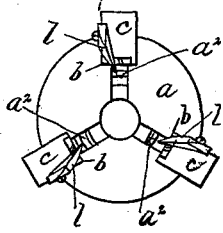


Fig. 2.

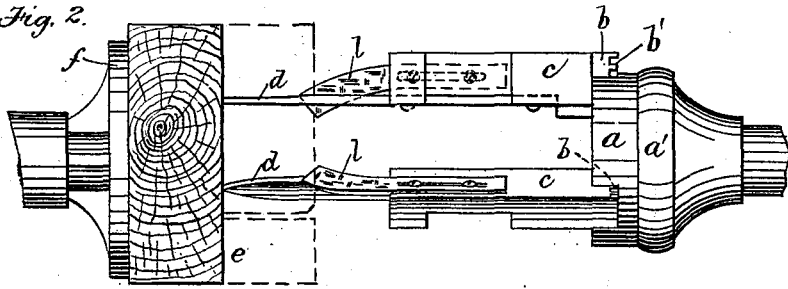


Fig. 3.

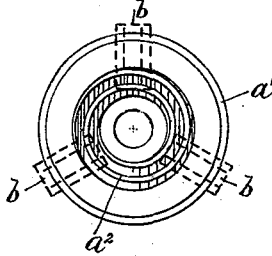


Fig. 4.

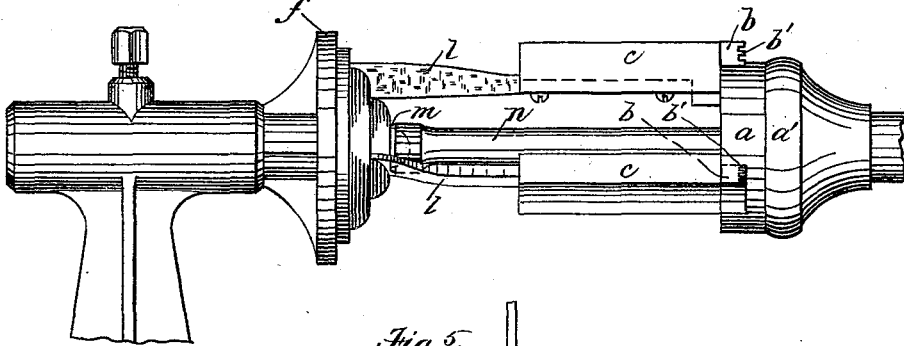
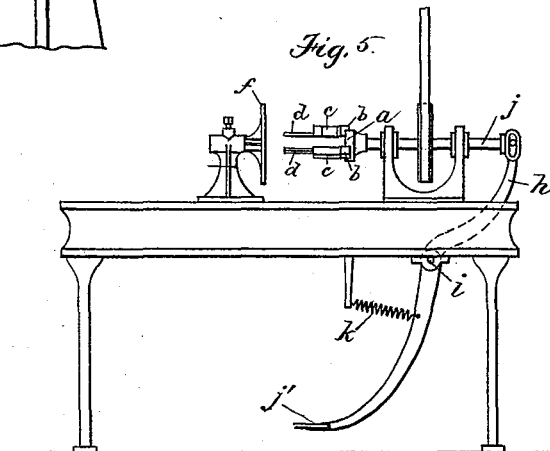


Fig. 5.



Witnesses.

J. H. Pieson.
H. G. Madlin.

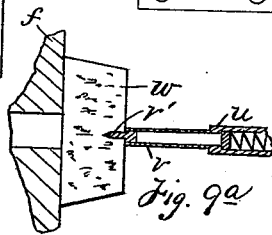
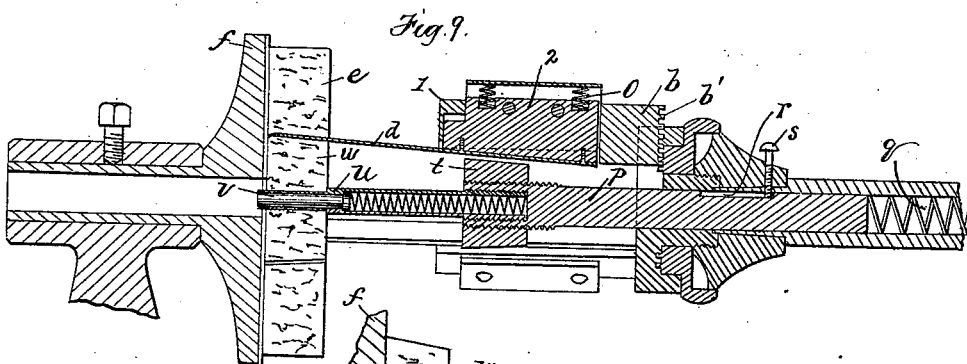
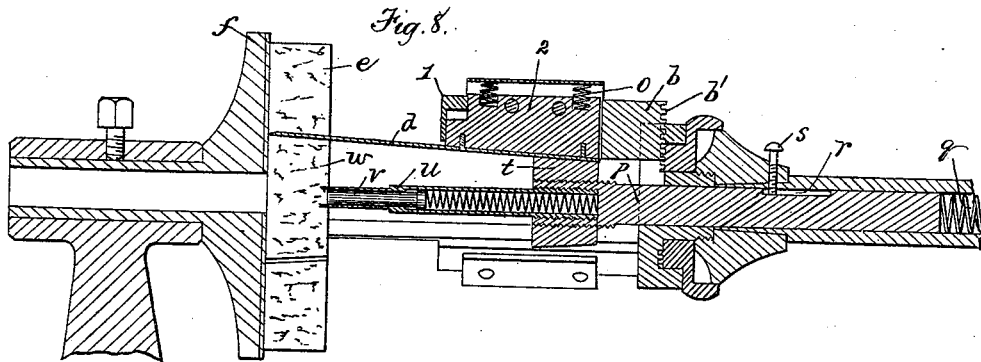
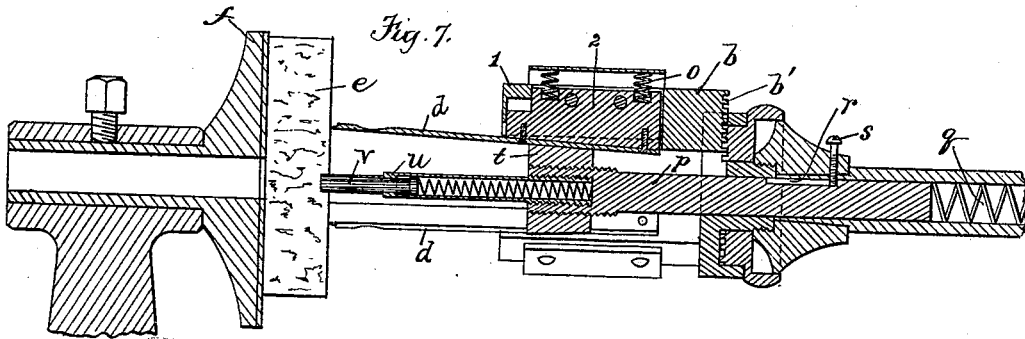
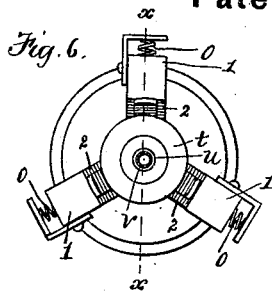
Inventor.

Edmund Conroy
by Wright & Brown
Attys.

(No Model.)

2 Sheets—Sheet 2.

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Witnesses.
J. H. Pison
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Inventor.
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UNITED STATES PATENT OFFICE.

EDWARD CONROY, OF BOSTON, MASSACHUSETTS, ASSIGNOR OF TWO-THIRDS
TO ROBERT M. LILLEY, OF SAME PLACE.

MACHINE FOR FORMING PLUGS.

SPECIFICATION forming part of Letters Patent No. 234,966, dated November 30, 1880.

Application filed April 15, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDWARD CONROY, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Machines for Forming Plugs, Rosettes, Corks, &c., of which the following is a specification.

This invention has for its object to provide means for rapidly forming plugs, rosettes, corks, and other cylindrical bodies from wood or other material, and insuring uniformity of size and shape in all the articles of a given kind so long as it is desired to produce articles of a uniform size.

This invention also has for its object to provide means for forming a tapering cork and for cutting a hole in the cork, so that the core removed from the cork in forming the hole may be utilized as a small cork.

To these ends the invention consists, chiefly, in a lathe-chuck having a series of radially-adjustable jaws, each jaw carrying a cutting tool or tools adapted to operate, as hereinafter described, on a piece of wood, cork, or other material held at right angles to the axis of the chuck.

The invention also consists in the provision of means for automatically moving the cutters while they are in operation, whereby they are caused to form a tapering cork or other article.

The invention also consists in the provision of means for perforating a cork or other article while it is being formed, all of which I will now proceed to describe.

Of the accompanying drawings, forming part of this specification, Figure 1 represents an end view of a chuck for cutting plugs embodying my invention. Fig. 2 represents a side elevation of the same. Fig. 3 represents an end view of the scroll of the chuck. Fig. 4 represents a side view of a modified form for cutting rosettes. Fig. 5 represents a view of a lathe, on a reduced scale, embodying my invention. Fig. 6 represents an end view, showing a modification of my invention for cutting tapering corks. Figs. 7, 8, and 9 represent sections on line *x x*, Fig. 6, showing different parts of the operation. Fig. 9^a shows a modification.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention I provide a lathe-chuck, *a*, having jaws *b b b*, which are radially adjustable—that is, toward and from the center of the chuck.

I prefer to employ a so-called “universal” or “scroll” chuck having a rotary plate, *a'*, provided with a scroll, *a²*, engaging with rack-teeth *b'* formed on the jaws *b*, the latter sliding out or in when the plate *a'* is rotated through radial slots in the face of the chuck.

A chuck constructed as described, with jaws adapted to co-operate in grasping a drill or other rotary tool placed between them, is well known, and is no part of my invention.

I modify the construction of the chuck by providing each jaw with an extension or tool-holder, *c*, which is rigidly attached to or is formed in the same piece with the jaw. To each of those tool-holders I attach a scoring or cutting tool, *d*, which extends longitudinally of the holder and is substantially parallel with the axial center of the chuck. The points of the cutters *d* are equidistant from the axial center of the chuck, and when the latter occupies its usual position in a lathe and is rotated said points are adapted to enter and form a circular incision or score in a piece, *e*, of wood or other material held at right angles to the axis of the chuck against the tail-stock *f* of the latter, either the chuck or the tail-stock—preferably the former—being moved to force the cutters into the material until it is entirely cut through, a cylindrical body or plug being thus separated from the piece *e*.

When the chuck is made movable to force the cutters into the material I provide a lever, *h*, pivoted at *i* to the frame of the lathe, and connected by suitable means to the arbor *j* of the chuck, so that when turned on its pivot it will move the arbor and chuck in one direction or the other, according to the direction in which the lever is moved.

The lever is provided with a treadle, *j'*, at its lower end, so that the operator can move the chuck toward the tail-stock by depressing the treadle. When the lever is released a spring *k* forces the lever back to its original position and withdraws the chuck from the tail-stock.

It will be seen that with the described mech-

anism cylindrical bodies or plugs of uniform size can be rapidly produced, the chuck being rotated at a high rate of speed, so that only a momentary depression of the treadle is required for the operation of cutting each plug. The plugs produced are especially designed to be driven into auger-holes on ships to cover the heads of bolts, &c.; hence it is important that they should be of uniform size. By adjusting the jaws plugs of any desired size may be produced.

The scoring-cutters, being equidistant from the axial center of the chuck, may be readily and perfectly sharpened by placing a cylindrical emery-stick between them.

I prefer to provide each tool-holder with a secondary cutter, *l*, so arranged with reference to the cutter *d* that it will chamfer or bevel the end of the plug produced, and thus enable the plug to be driven more easily into its auger-hole. If desired, however, the cutters *l* may be formed with curved edges or ends, as shown in Fig. 4, adapted to cut away a large portion or the whole of the end of the plug and form ornamental annular beads and grooves thereon. When the cutters *l* are formed as last described the plugs cut by the scoring-cutters *d* are made into rosettes for ornamenting furniture, &c., and are produced much more rapidly than by the old method of turning in a lathe with a tool held by the operator. A central rotating cutting-tool, *m*, may also be employed to finish the center of the rosette, said tool being on the end of a spindle, *n*, which is in line with and rotates with the arbor of the chuck, and is adapted to form a boss or other finish on the center of the rosette.

The apparatus described without the secondary cutters may be modified so as to cut tapering cork stoppers from a slab or block of cork. To this end I make each tool-holder in two parts, 1 and 2, the part 1 being a socket or frame rigidly attached to its jaw, and the part 2 being a block adapted to move in said frame toward and from the axial line of the chuck and pressed inward by springs *o*, and adapted to be inclined with relation to the axial line of the chuck. I also provide a rod or plunger, *p*, which is inserted in a socket in the arbor of the chuck and projects toward the tail-stock in line with said arbor, the outer end of said plunger bearing against the material *e* to be cut. The plunger *p* is backed by a spring, *g*, which forces it toward the tail-stock, and is provided with a longitudinal slot, *r*, into which projects a pin or screw, *s*, attached to the chuck, or to a collar thereof. Said slot and screw enable the plunger to slide independently of the chuck to a certain extent and cause the plunger to rotate with the chuck. The plunger is provided with a tapering collar or pattern, *t*, which has the same taper as the corks to be produced, and is arranged to afford a bearing for the shanks of the cutters and hold the latter in inclined positions, as shown in Figs. 7, 8, and 9.

When the chuck is in operation its move-

ment toward the tail-stock causes the plunger to be forced backwardly against the pressure of its spring by the material *e*, against which it bears. The pattern *t* is thus moved backwardly and caused to gradually force the cutters outwardly, and thus increase the distance between their cutting ends and cause them to give the desired taper to the cork.

It is often desirable to produce perforated or shell corks, and to this end I make the end of the plunger in the form of a punch, *u*, adapted to cut into the cork and remove a cylindrical core or small cork therefrom. The punch is caused to enter the cork partly by the rotation of the plunger with the chuck and partly by the force of the spring *g*; but the punch does not commence to operate until the cutters *d* have nearly completed their operation, the punch and plunger being resisted and pressed back by the cork, so as to give the requisite movement to the pattern, as above described, until the spring *g* is compressed sufficiently to overcome the initial resistance of the surface of the cork to the punch. When the punch once effects an entrance into the cork its progress under the pressure of the spring *g* is rapid, so that it completes its work at the same moment that the cutters *d* sever the cork.

The punch is provided with a spring-plunger, *v*, to eject the cores removed by it from the corks. The punch is so formed that the cores removed have smooth surfaces, and are useful as stoppers for small vials, &c.

If desired, the spring-plunger may be provided with a drill, *v'*, to bore a hole in a plug or button, *w*, formed by the cutters *d*, said plug serving as a nut or head to a wire handle inserted through a cork and preventing said handle from being withdrawn.

The drill is prevented from entering the plug or button too deeply by a shoulder on the plunger. The plug or button can be formed by the operation already described.

In case the end of the cork last cut should be irregularly tapered in consequence of the movement of the pattern with the punch while the latter is perforating the cork, such irregularly-tapered end can be removed, if desired; but as it will usually be at the larger end of the cork the irregularity will not be detrimental.

It will be understood that in all cases when it is not desired to perforate the cork the plunger will have a suitable flat head to bear against the end of the cork and prevent the forward movement of the plunger and pattern.

The pattern *t* is removably attached to the plunger by being screwed into a threaded portion of the plunger. The pattern may therefore be removed and reversed, so as to cause the cutters to incline inwardly from their rear ends to their points and cause the points of the cutters to approach each other or contract as the pattern is moved, thereby enabling the cutting of a cork to be commenced at the larger end.

When the pattern is arranged as in Figs. 7,

8, and 9 the cutters expand and the cutting of the cork is commenced at the smaller end.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

5 1. The combination of a universal or scroll chuck having the simultaneously-moving radially-adjustable jaws, tool-holders attached to said jaws, and thin scoring-cutters attached
10 to the tool-holders, adapted to score or cut a narrow annular incision in a piece of wood or cork, whereby a cylindrical plug or stopper of any desired size may be formed with a minimum waste of material in the form of cuttings
15 or shavings.

2. The combination of a chuck having radially-movable jaws, a series of cutters connected to said jaws and pressed inwardly toward the axial center of the chuck by springs,
20 and a plunger in line with the axial center of

the chuck, forced by a spring against the material to be cut by the cutters, and provided with a tapering pattern, forming a support for the shanks of the cutters and moving the cutters radially while they are in operation, where-
25 by the cutters are caused to form a tapering cylinder or cork, as set forth.

3. In combination with a chuck and its radially-yielding cutters, the spring-impelled plunger adapted to rotate with the chuck, and
30 provided with the punch adapted to perforate a cork formed by the cutters, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 12th day of April,
35 A. D. 1880.

EDWARD CONROY.

Witnesses:

H. G. WADLIN,

CARROLL D. WRIGHT.