E. J. GRANGER.

Machine for Compressing Barrels.

No. 165,163. Patented July 6, 1875.

Fig. 1.

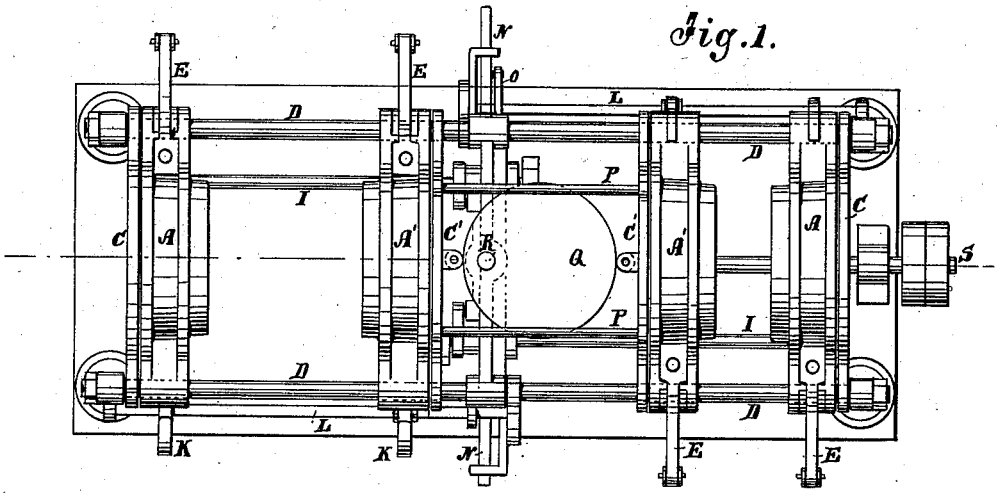


Fig. 2.

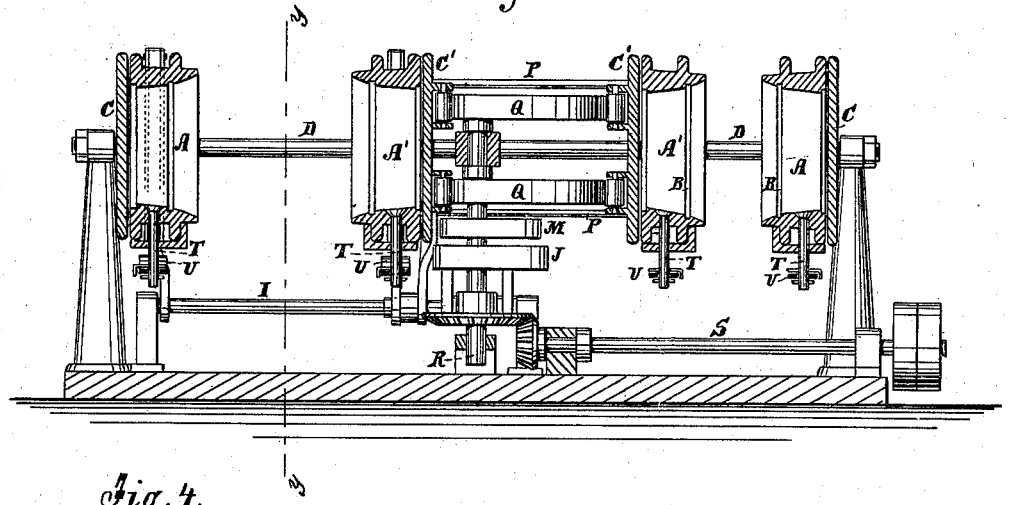


Fig. 4.

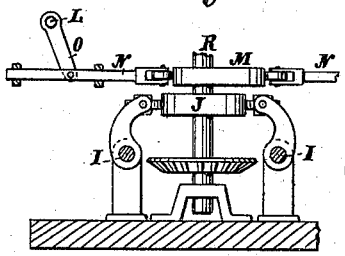
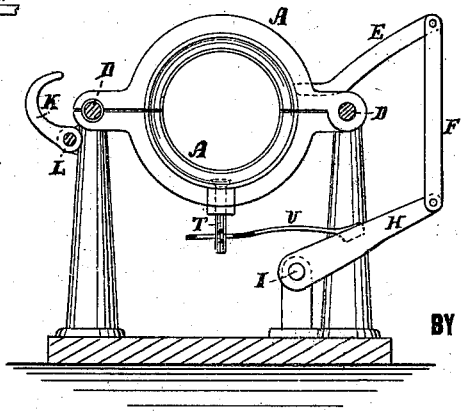


Fig. 3.



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ELIHU J. GRANGER, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINES FOR COMPRESSING BARRELS.

Specification forming part of Letters Patent No. **165,163**, dated July 6, 1875; application filed June 2, 1875.

To all whom it may concern:

Be it known that I, ELIHU J. GRANGER, of Brooklyn, Kings county, New York, have invented certain Improvements in Machines for Compressing Barrels, of which the following is a specification:

My improvements relate to barrel forming and hooping machines, substantially similar in principle to that shown and described in Arcalous Wyckoff's patent, dated December 19, 1865; and my invention consists in organizing a double machine by establishing two stationary dies, one at either end of a substantial frame, acting in conjunction with two movable dies arranged between the two stationary dies, and having a reciprocating motion simultaneously imparted to them from a single cam-shaft in the center of the machine.

My invention also embraces a device for dislodging the barrels from the dies when the compressing and hooping operation has been completed, which is applicable as well to the original machine as to my double machine.

The accompanying drawings are as follows:

Figure 1 is a top view of my double machine. Fig. 2 is a longitudinal vertical section through the center of the machine. Fig. 3 is a transverse section through the line *y y* on Fig. 2, and Fig. 4 is a portion of the cam-shaft and its connections.

Referring to the drawings, the stationary dies A A and the reciprocating dies A′ A′ are each composed of two jaws, which, when closed, exhibit a flaring cavity corresponding to the tapering shape of the barrel. The jaws are each provided with the internal recesses B, for containing the barrel-hoops. In operating the machine, the barrel-staves are temporarily set up and confined at the middle by a truss-hoop, the barrel-heads are temporarily set in the croze, and the staves, thus held in the cylindriform position, are presented to the dies in suitable position for each end of the cylinder to enter the opposite dies; and as the movable die approaches the stationary die, the ends of the barrel-cylinder are driven through the hoops in the recesses, and are compressed, so that the croze will engage the entire peripheries of the heads. The reciprocating movement of the movable dies is effected by cams working against the plates C C′, and forcing the dies along the guiding-rods D, on which they are mounted. The dies are each composed of two jaws, the upper one of which opens automatically for the discharge of the finished barrels. The upper jaws are opened and closed by means of the arm E, link F, and arm H, and a rock-shaft, I, which latter derives its motion from the cam J. When closed, the upper jaws are clamped to the lower jaws by the hooks K upon the rock-shaft L, which hooks are brought over on the jaws at the proper time by the cam M, slide N, and arm O. In my machine the movable dies derive their motion from the cams Q Q upon the vertical cam-shaft in the center of the machine. The two cams A′ A′ are moved back and forth simultaneously in the same directions. While, therefore, a barrel is being compressed, hooped, and headed in one part of my machine, the movable jaw on the other side is being drawn away from the stationary die on the opposite end, to make room for the introduction of another barrel into the other part of the machine. The guide-rods D for the movable dies extend across from one stationary die to the other, and the movable dies are linked to each other by the rods P. The vertical cam-shaft R carries the cams Q Q, for working the dies, and the cam J to work the rock-shafts I I′ alternately, as required in the alternate forming of a barrel on either side of the middle of the machine. The cam-shaft also carries the cam M, which governs the movement of the clamps K, alternately operating the clamps on the opposite sides of the machine. All the motions of the machine are derived from the cam-shaft, which is geared to the horizontal driving-shaft S. To start the finished barrels out of the lower jaws of the dies readily, I arrange a pusher, T, in each, with a spring-arm, V, attached to the arm H, for working it, so that when the arm H raises the upper jaws of the die, it will also operate the pusher T, and detach the barrel from the lower jaws, in which it might otherwise stick fast. When the arms close the dies, the pushers drop down out of the way of the barrel-cylinder.

I claim as my invention—

1. The combination of two stationary barrel-compressing dies with two movable barrel-

compressing dies, and a cam or cams for simultaneously imparting a reciprocating rectilinear motion to the said movable dies, the one movable die acting in conjunction with its opposed stationary die, to compress and hoop a barrel, while the other movable die is being withdrawn from its opposed stationary die, for the purpose of permitting another barrel-cylinder to be placed in position to be operated upon, the whole constructed substantially as described.

2. In combination with barrel-compressing dies, substantially such as described, the pushers T, for facilitating the dislodgment of the barrel from the dies at the conclusion of the compressing and forming operation, substantially as set forth.

E. J. GRANGER.

Witnesses:
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