2 Sheets--Sheet 1.

J. GREENWOOD.

Machine for Chamfering and Crozing Barrels.

No. 167,166. Patented Aug. 31, 1875.

Fig. 1.

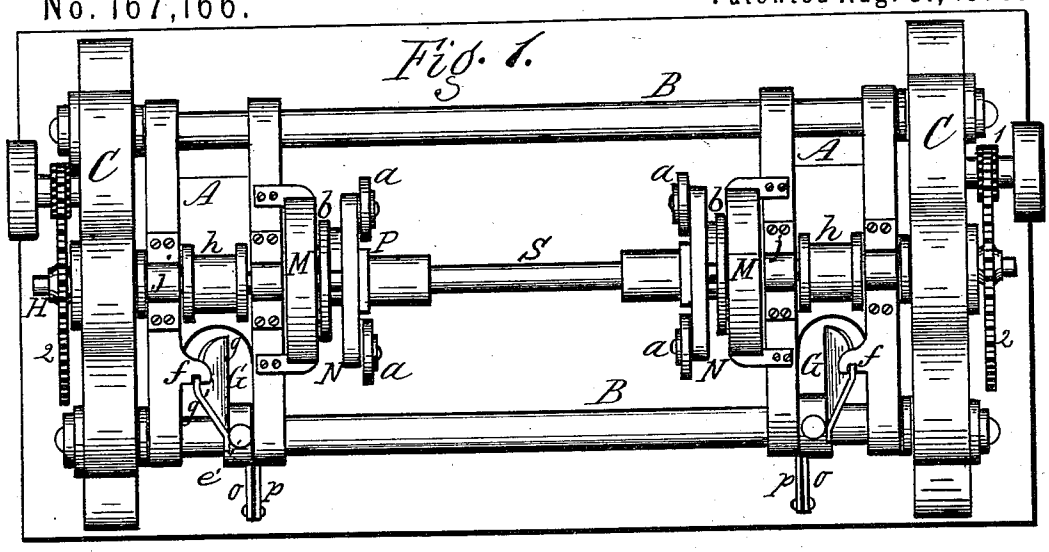
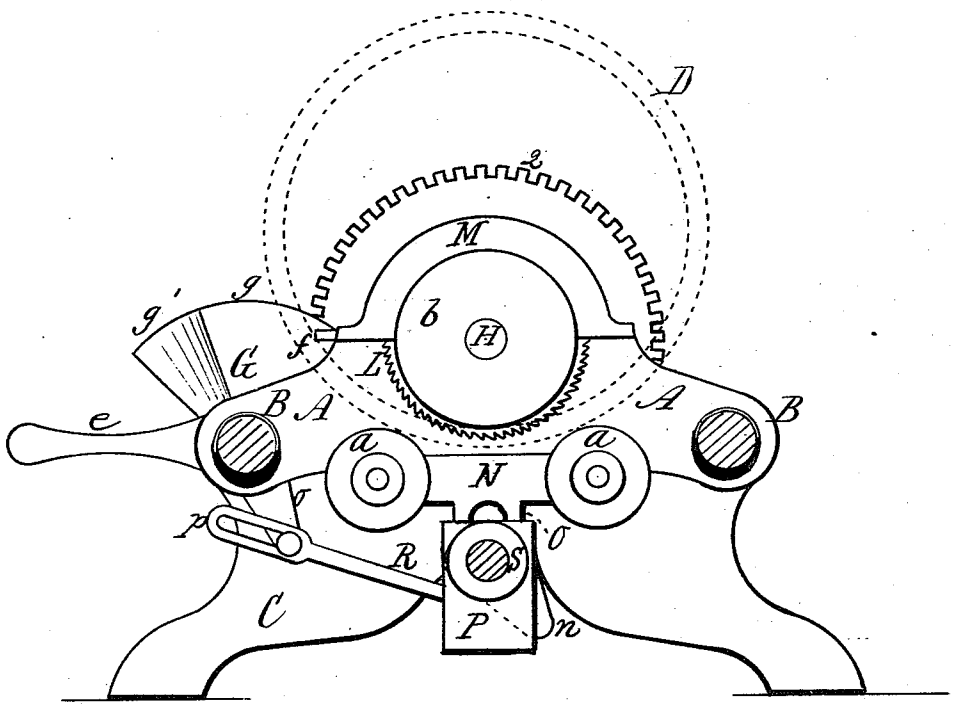


Fig. 2.



Witnesses.
Edwin. B. Scott.
Jacob Ignatius

Inventor.
John Greenwood,
per R. F. Osgood,
Atty.

2 Sheets--Sheet 2.

J. GREENWOOD.

Machine for Chamfering and Crozing Barrels.

No. 167,166. Patented Aug. 31, 1875.

Fig. 3.

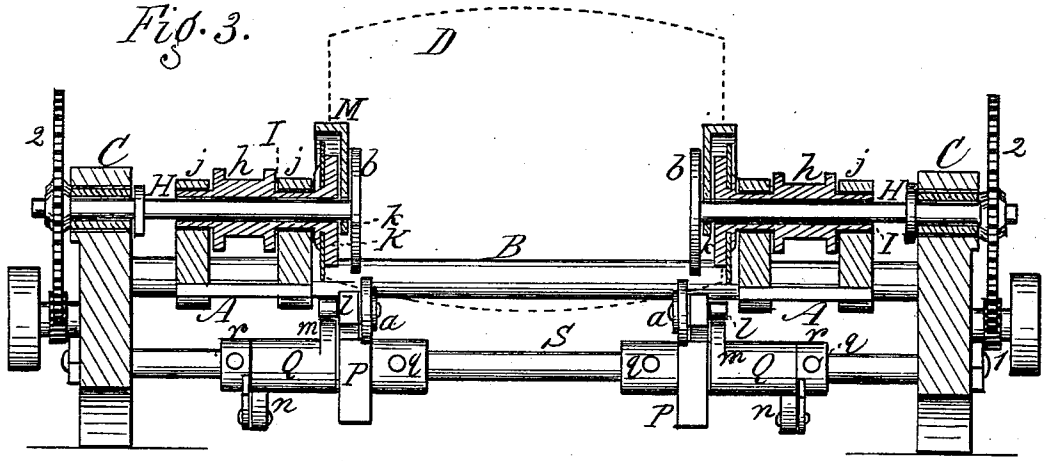


Fig. 4

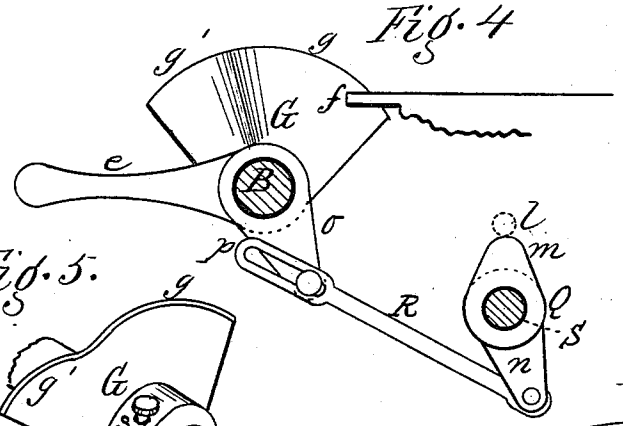


Fig. 5.

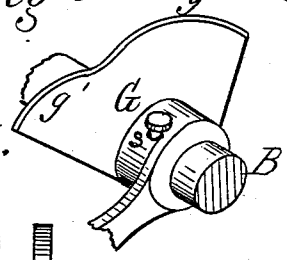


Fig. 6.

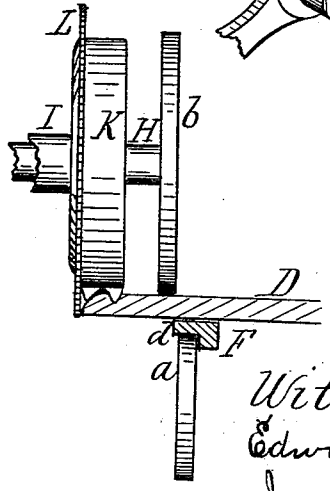
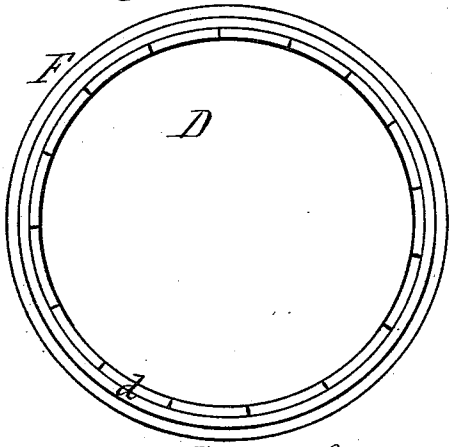


Fig. 7.



Witnesses.
Edwin. B. Scott.
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Inventor.
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UNITED STATES PATENT OFFICE.

JOHN GREENWOOD, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN MACHINES FOR CHAMFERING AND CROZING BARRELS.

Specification forming part of Letters Patent No. **167,166**, dated August 31, 1875; application filed March 16, 1875.

To all whom it may concern:

Be it known that I, JOHN GREENWOOD, of the city of Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Machines for Chamfering and Crozing Barrels; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan. Fig. 2 is a cross-section. Fig. 3 is a longitudinal section. Figs. 4, 5, 6, and 7 are detail views.

My improvement belongs to that class in which the barrel is mounted upon rollers in the machine and revolved, while the cutters, which rest therein, croze and chamfer the ends. My invention consists in the combination of parts, as hereinafter set forth.

In this machine two carriages, A A, holding the cutters, are mounted upon longitudinal shafts B B, which have their bearings in the end standards C C. These shafts are fixed longitudinally, but turn axially. The carriages are movable upon the shafts to an extent sufficient to allow the cutters to be brought up to place within the ends of the barrel to do their work.

The barrel D is placed upon four rollers, *a a a a*, two at each end, which form the supports, and when the carriages are brought up to place the rollers are raised, so that two interior rollers, *b b*, bear upon the inner surface of the barrel. The interior rollers receive positive motion, and impart the same to the barrel, which thus revolves beneath the cutters, while the bottom rollers *a a* act only as supporting-rollers.

In order to keep the barrel in place, I prefer to place upon the same hoops F F, Figs. 6 and 7, similar to truss-hoops, with right-angled flanges *d d*, which rest upon the lower rollers. The barrel, by this means, will always run true, and can have no end movement. Simple hoops may be used on the inner side of the rollers with the same effect—the rollers running upon the staves. When the carriages A A are thrown backward, they clear the ends of the barrel, and the latter can be lifted off.

The end motion to the carriages is given by means of cams G G on one of the shafts B. The edges of the cams rest in notched bearings or lugs *f f* of the carriages, Figs. 1 and 4, and are formed in two sections or segments, *g g'*. The segment *g* is at right angles to the axis of the cam, and gives no motion to the carriage. The segment *g'* projects laterally a distance equal to the throw of the carriage, and serves to give the end motion to the same, both forward and backward. The cams are operated by a handle, *e*. On the carriages are mounted shafts H H, which give the rotary motion to the interior rollers *b b*. These shafts may be driven by gears 1 2, or by any other means. Outside, and upon these shafts, rest hollow shafts I I, having their bearings in the boxes *j j* of the carriages. These hollow shafts carry the cutter-heads K K and saws L L, which croze, chamfer, and square the ends of the barrel, and they are driven by the pulleys *h h*. The shafts H I and their connecting parts slide bodily forward and back with the carriages, and the projecting outer ends of the interior shafts H slide loosely through the hub of the gear 2, to allow the movement. The connection with said hub preserves the rotary movement of the shaft by a spline or feather. The cutter-heads and saws are covered by hoods or caps M M, bolted on top the carriages, and projecting down sufficiently to form bearings *k k* for the inner ends of the interior shafts H H, as shown in Fig. 3. The cutter-heads are provided with the ordinary knives for producing the croze and chamfer; and the saws, standing outside, simply square off the ends of the barrel.

The interior rollers *b b* may be smoothed, ribbed, provided with a packing, or otherwise arranged to produce the necessary frictional contact, to give rotary motion to the barrel.

The supporting-rollers *a a a a* are mounted on cross-heads N N, which have vertical standards O O, sliding up and down in ways P P. In inserting the barrel these rollers are depressed; but when it is inserted they are raised, carrying the barrel with them up against the interior rollers *b b*, between which two sets of rollers the barrel is clamped to receive motion.

The rollers *a a* are elevated by the following means: *l l*, Figs. 3 and 4, are friction-rollers

or studs on the back of the cross-heads N N. Beneath these rest eccentrics *m m* of cams Q Q. At the opposite end of the cams are crank-arms *n n*. To these crank-arms are jointed connecting-rods R R, extending to corresponding crank-arms *o o* of the cams G G. The upper ends of the connecting-rods have loops *p p*, which slide over the crank-pins. The parts are so arranged and timed that the first movement of the cams G is to carry the carriages forward in position to bring the cutters and interior rollers within the barrel, and then to raise the rollers *a a* with the barrel thereon, which is done through the medium of the cranks *o o*, connecting-rods R R, and cams Q Q. In the reverse action the rollers *a a* are first lowered, with the barrel thereon, and the carriages then drawn back. This reverse action is allowed by the dead motion of the loops *p p*. The cams Q Q turn on a fixed shaft or bearing, S. The ways P P, cross-heads N N, and cams Q Q are adjusted forward and backward on the shaft S, and clamped in position by means of set-screws *q q* and collars *r r*, Fig. 3, and the cams G G are correspondingly adjusted on the shafts B B and clamped in position by set-screws *s s*, by which means the machine is adapted to barrels of greater or less length.

In this machine I avoid the necessity of placing the ends of the barrel in separate clamps or rings in the machine, which saves much labor and trouble, not only in inserting and removing the barrel, but also in operating the machine. I also combine the operating parts with the carriages in a compact and effective manner. The shafts H, that run the interior rollers *b b*, rest within the hollow shafts I, that run the cutters and saws, the two running in the same bearings *j j*. This avoids the necessity of separate shafts and bearings and saves space, and it also brings the cutting-point in line with the frictional hold upon the barrel.

I do not claim, broadly, crozing and chamfering barrels by revolving the barrel over cutters resting therein; neither do I claim, broadly, mounting the barrel between two opposing sets of rollers; neither do I claim, broadly, making the lower set of supporting-rollers adjustable; but

What I claim as new is—

1. In a machine for crozing and chamfering barrels, the combination, with the adjustable supporting-rollers *a a*, of the interior driving-rollers *b b*, situated upon the same axis with the cutters, and close thereto, and serving to give the revolving motion to the barrel from the inside, as herein shown and described.

2. The interior driving-rollers *b b*, cutter-heads K K, saws L L, and shafts H I, resting one within the other, on the same axial line, combined with the adjustable supporting-rollers *a a* and movable carriages A A, in the manner and for the purpose specified.

3. In a machine for crozing and chamfering barrels, the combination, with the carriages A A and cams G G, of the shafts B B, fixed longitudinally, but turning axially, and serving the double purpose of ways for the carriages and the bearing for the cams, and allowing the adjustment of said parts for different-sized barrels, as herein described.

4. The combination, with the shaft B and carriage A, of the cam G, constructed with the segments *g g'*, resting in the lug *f* of the carriage, as shown and described.

5. The combination, with the cam G and cross-head N, of the crank *o*, connecting-rod R, and cam Q, with arms *n m*, as and for the purpose specified.

6. The combination, with the saw L and cutter-head K, of the cap M, covering the said parts, and serving as a bearing to the inner shaft H, as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN GREENWOOD.

Witnesses:

R. F. OSGOOD,

EDWIN B. SCOTT.