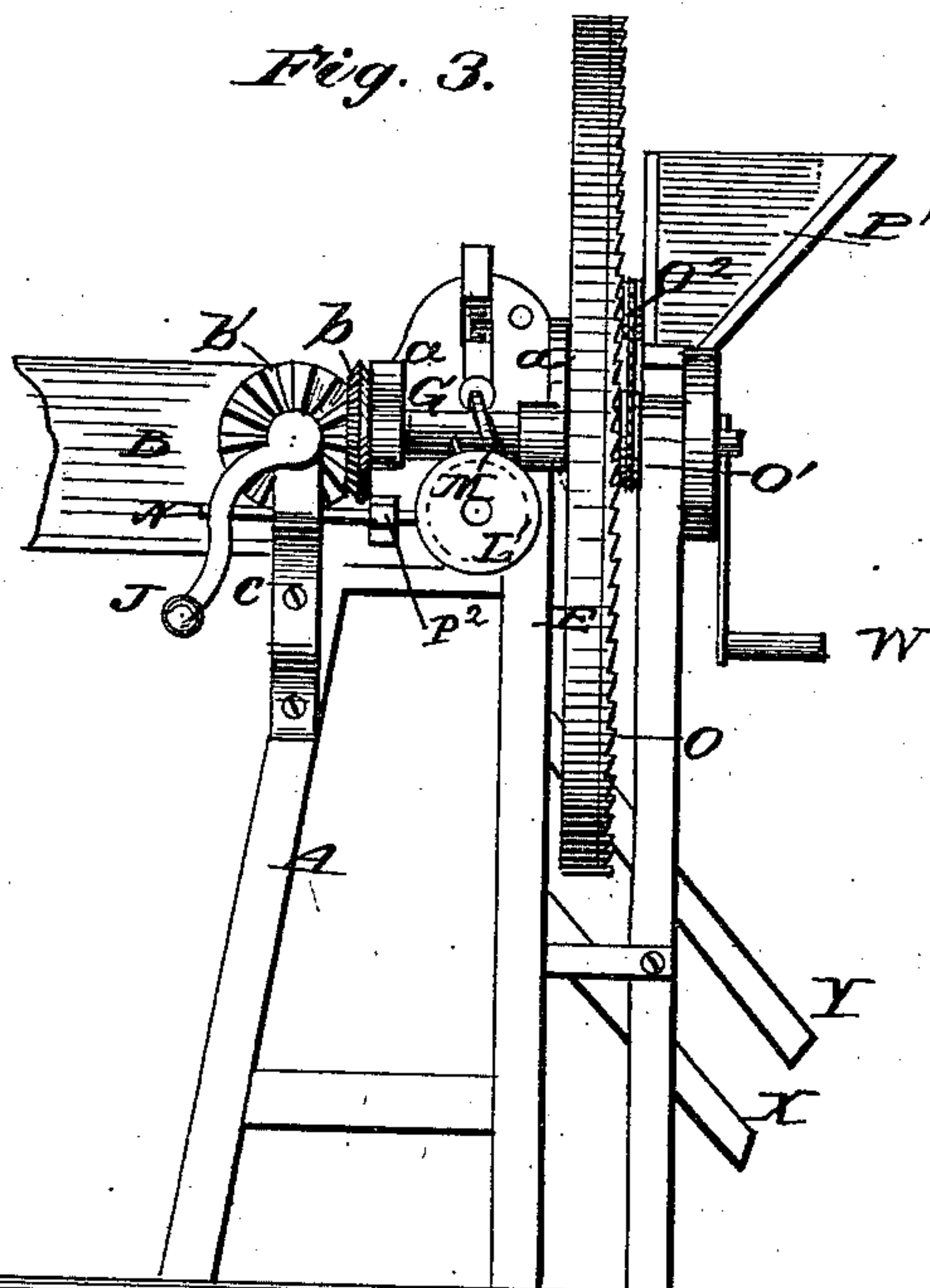
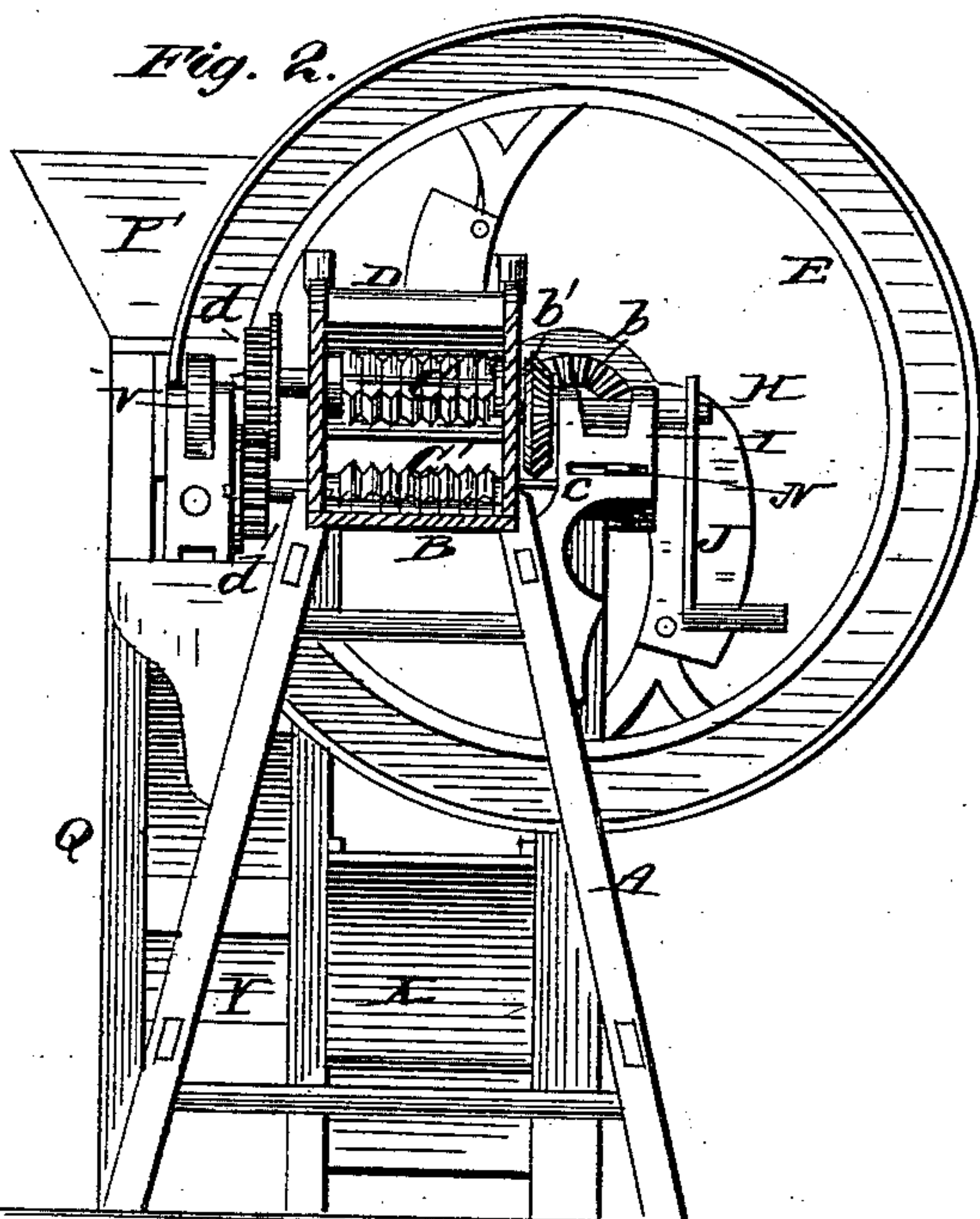
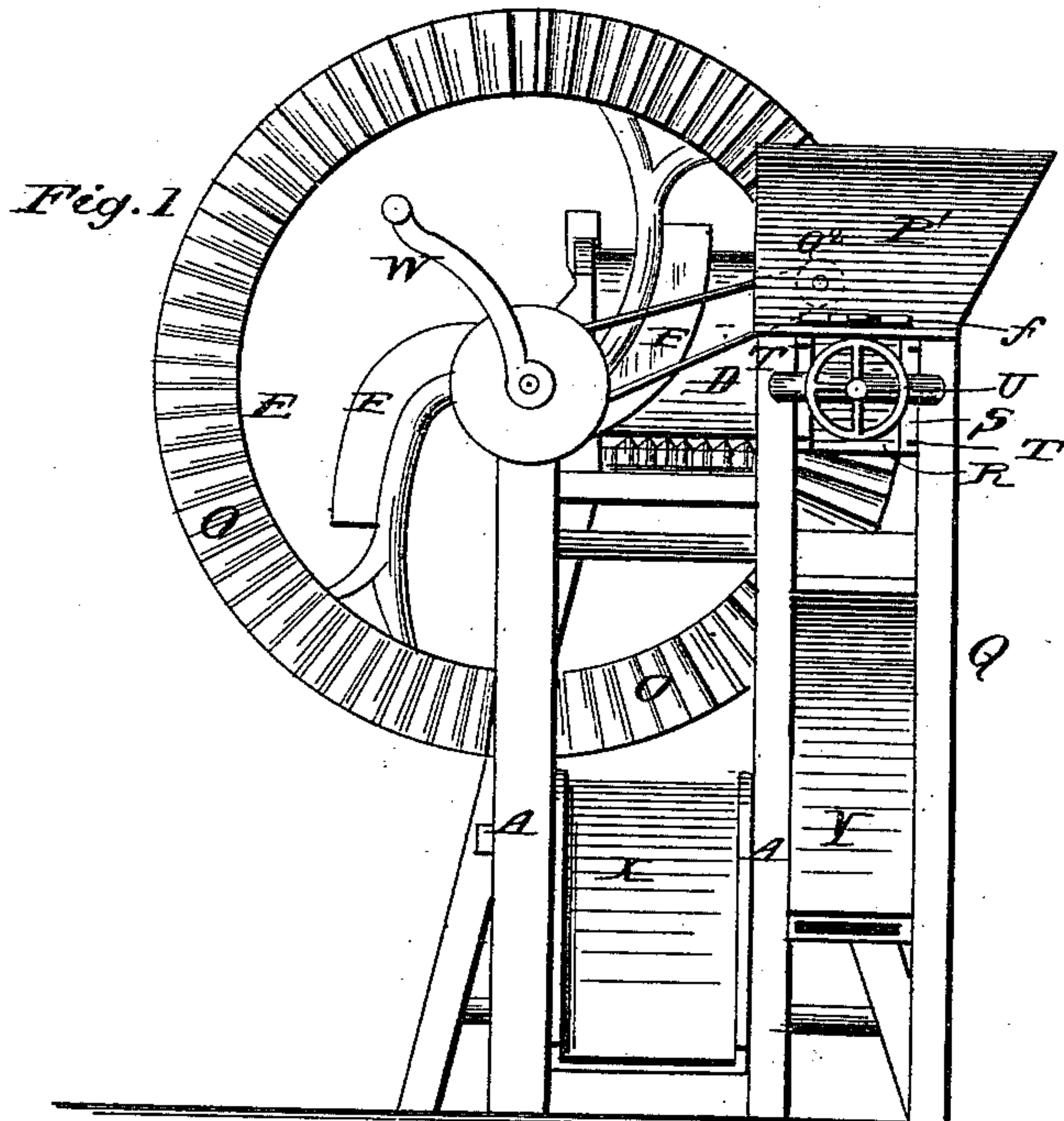


T. CLARKE.  
Combined Grinding-Mill and Feed-Cutter.  
No. 212,192. Patented Feb. 11, 1879.



Witnesses  
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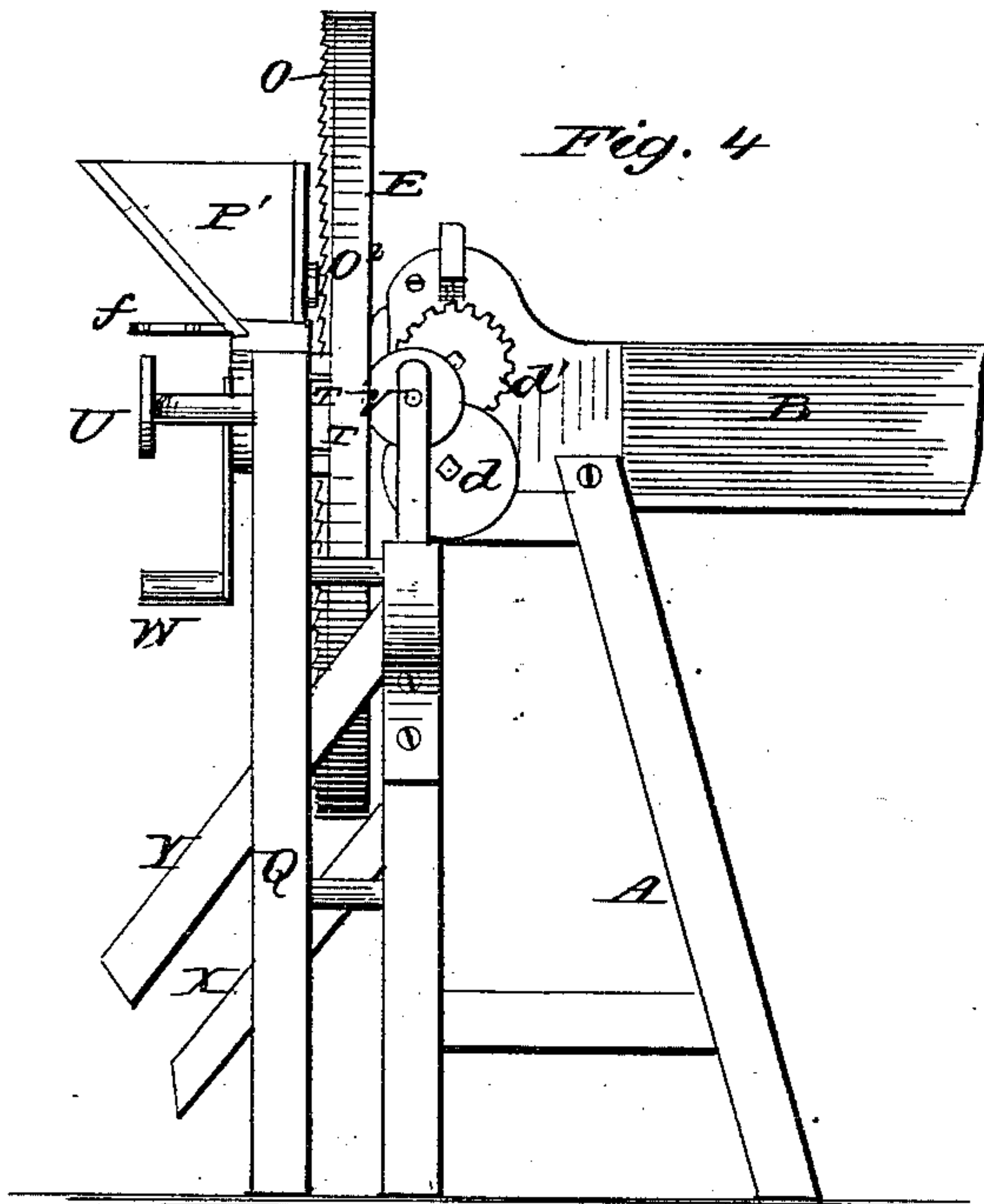


Fig. 4

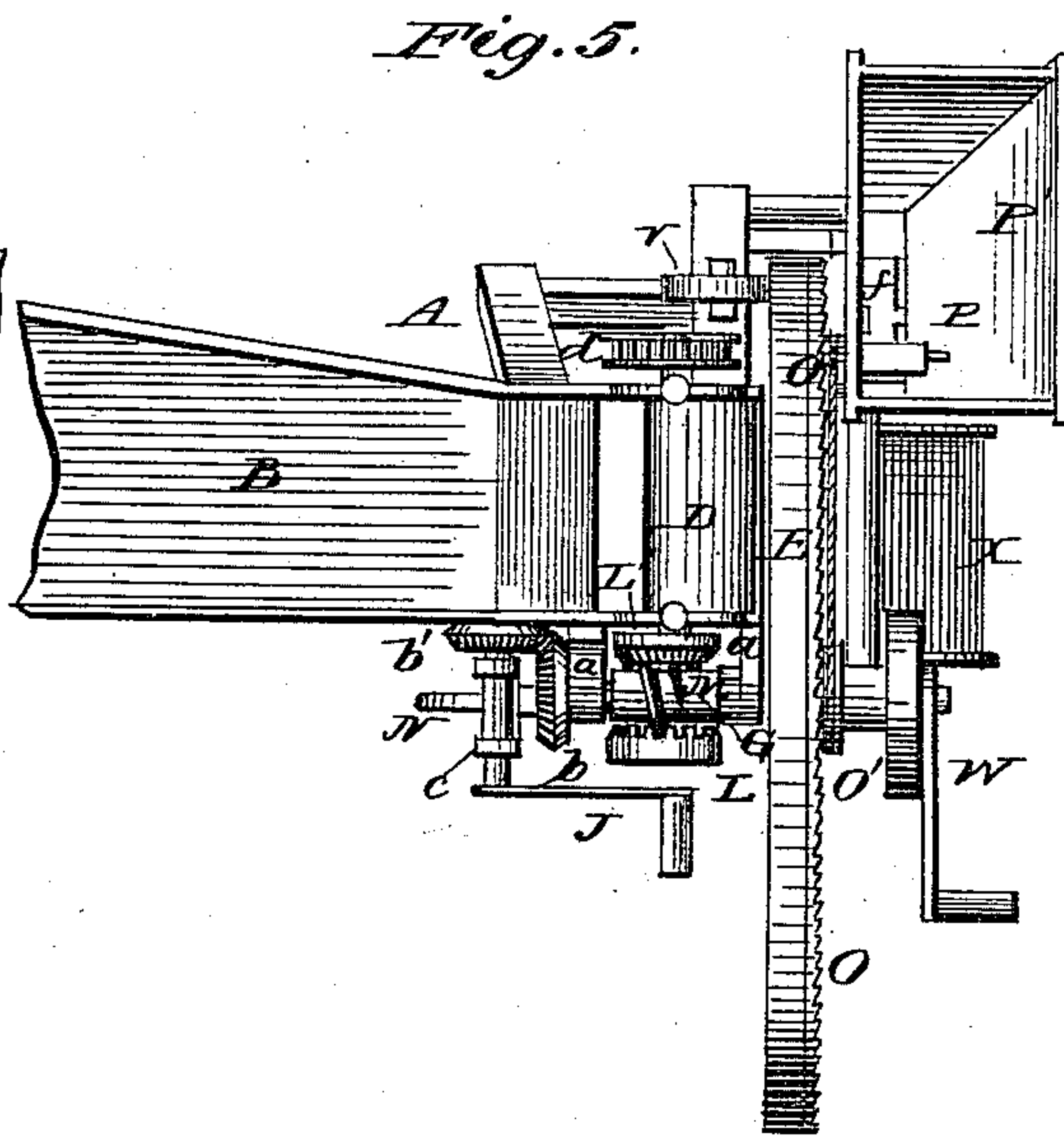


Fig. 5.

Fig. 6.

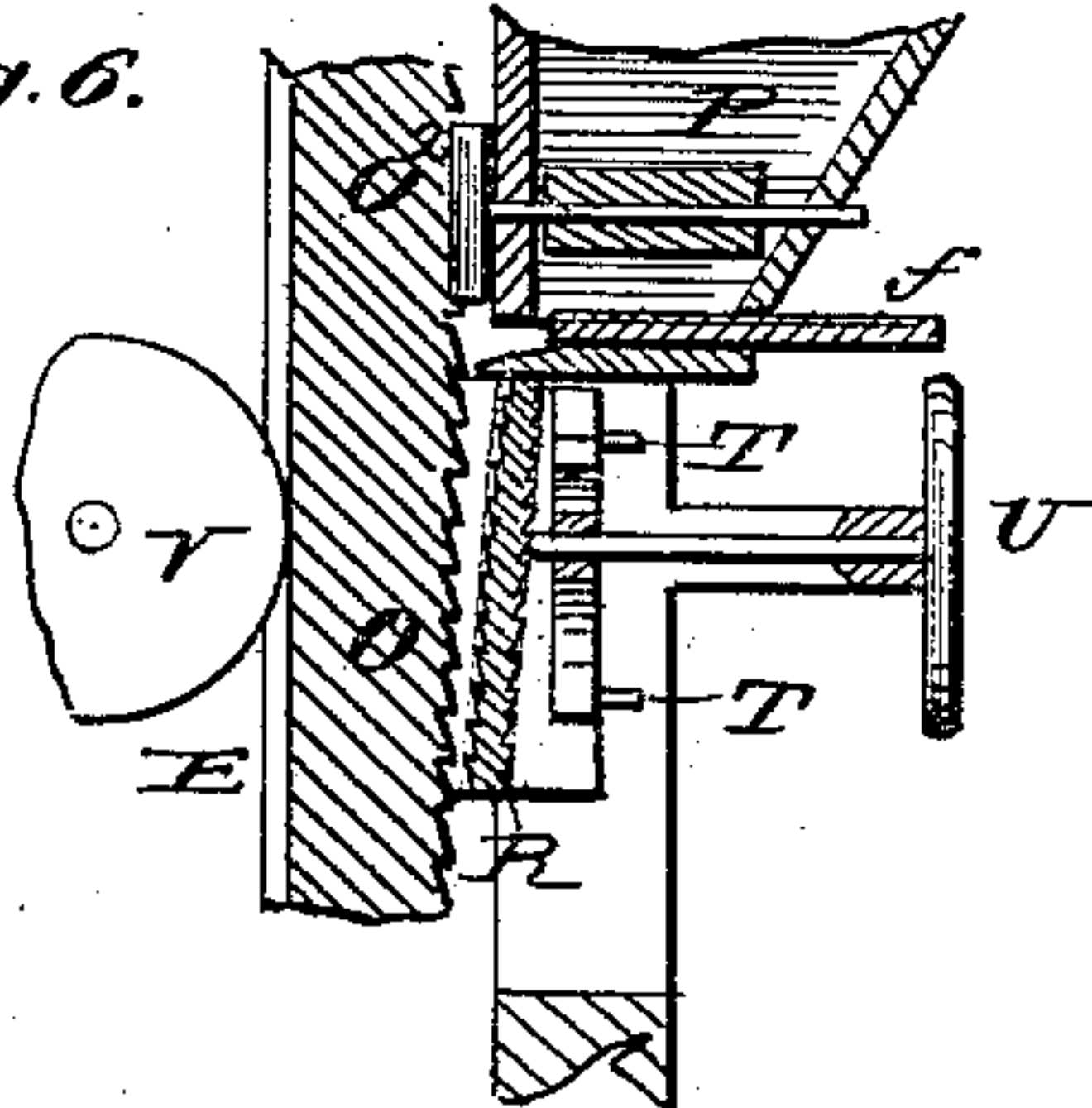


Fig. 7.

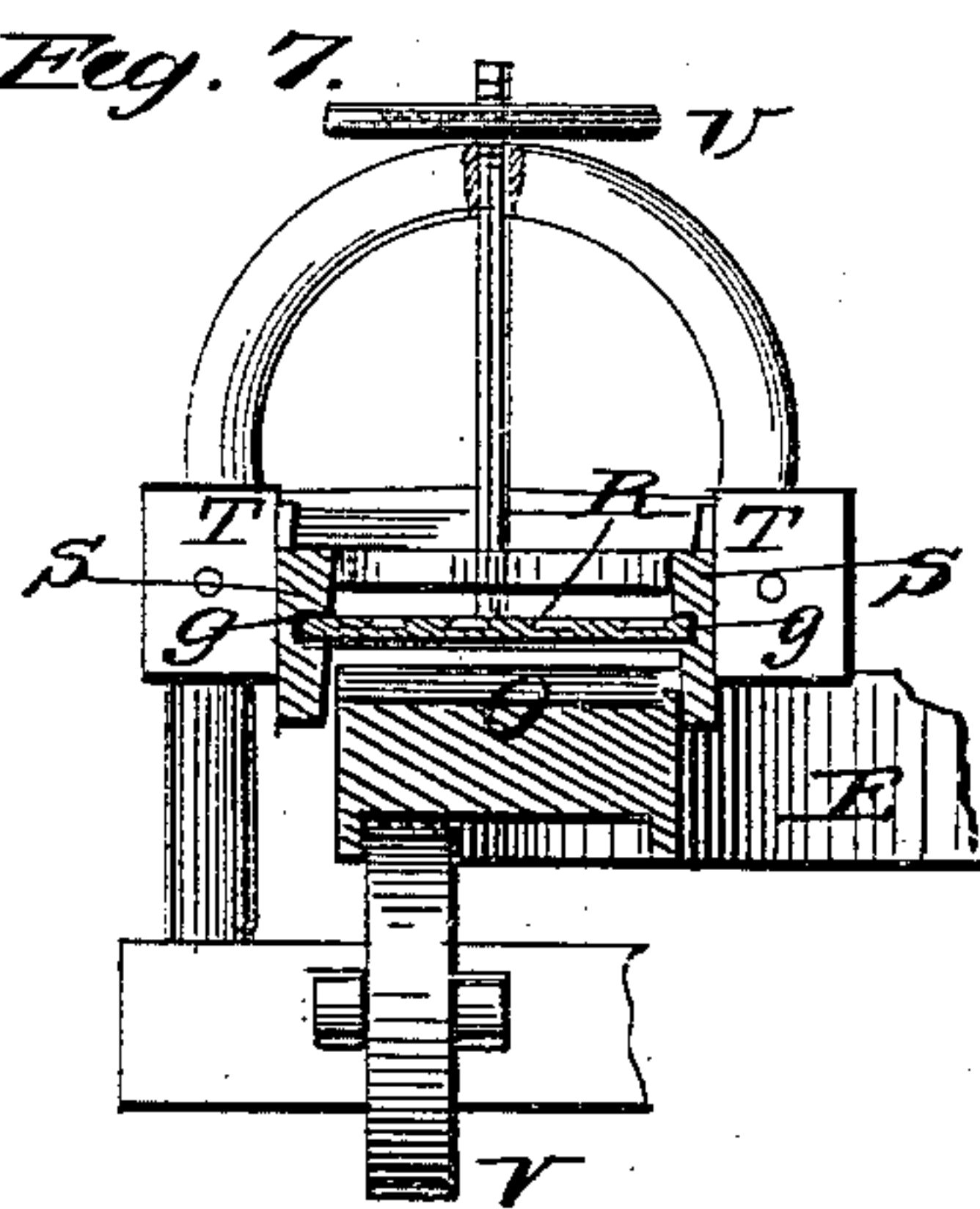
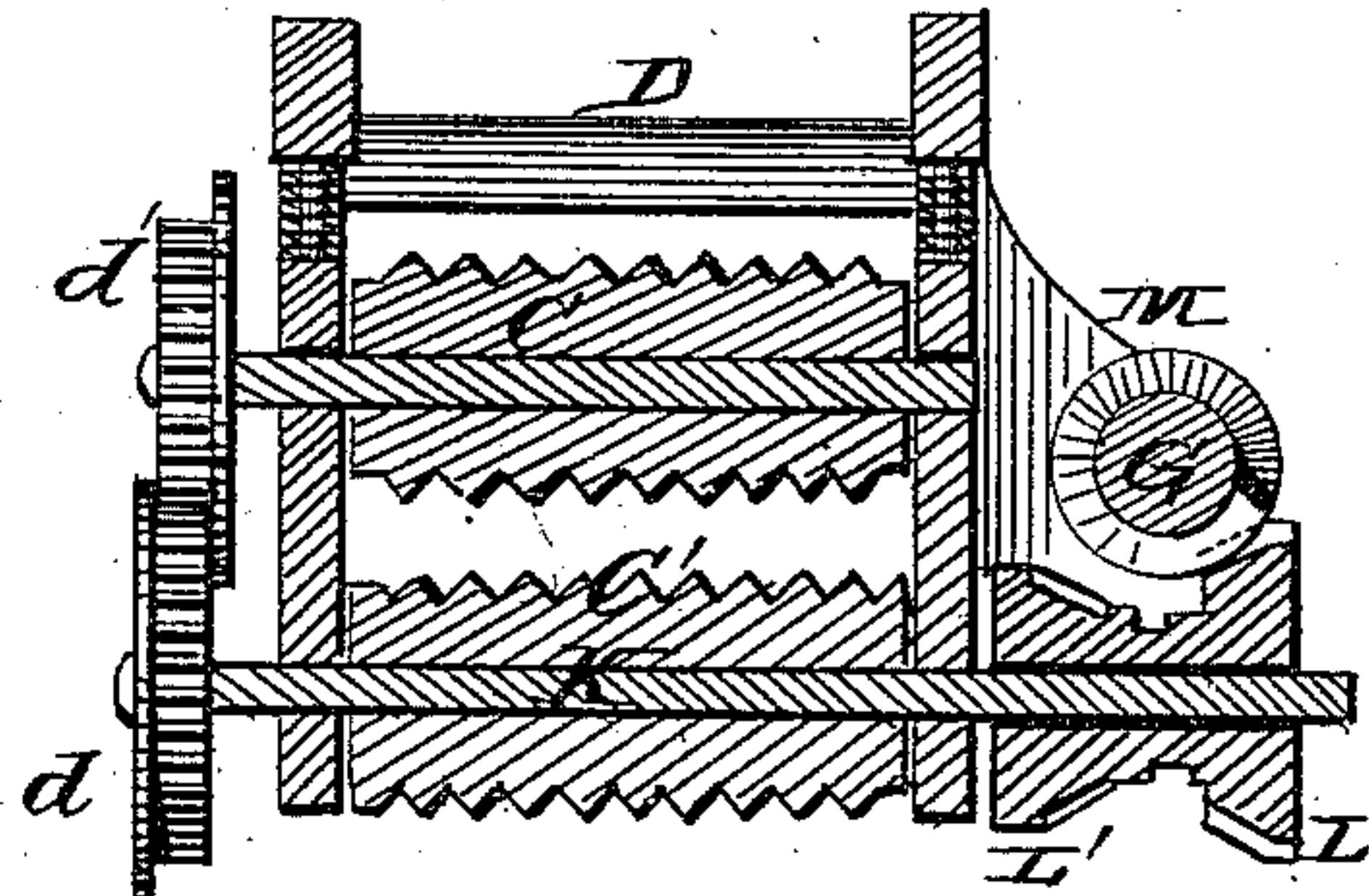


Fig. 8.



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# UNITED STATES PATENT OFFICE.

THOMAS CLARKE, OF TRURO, NOVA SCOTIA, CANADA.

IMPROVEMENT IN COMBINED GRINDING-MILL AND FEED-CUTTER.

Specification forming part of Letters Patent No. **212,192**, dated February 11, 1879; application filed September 23, 1878.

*To all whom it may concern:*

Be it known that I, THOMAS CLARKE, of Truro, in the Province of Nova Scotia and Dominion of Canada, have invented certain new and useful Improvements in Combined Feed-Cutter and Grinding-Mill; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a front elevation. Fig. 2 is a rear elevation. Fig. 3 is a side elevation. Fig. 4 is a side elevation of the opposite side from that shown in Fig. 3. Fig. 5 is a plan view. Fig. 6 is a vertical sectional view taken through the grinding-mill, showing the reversible grinding-plate. Fig. 7 is a horizontal section taken through the grinding-mill, showing the reversible grinding-plate in plan section; and Fig. 8 is a vertical cross-section taken through the feed-rollers, showing the alternating mechanism for cutting the feed longer or shorter in the hay or straw cutter, or for stopping the feed-rollers.

This invention has relation to combined grinding-mills and hay or feed cutters; and it consists in the improvements in the construction of the same, hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings similar letters of reference indicate corresponding parts in the several figures.

The frame A of the hay-cutter supports the usual feed-box B and the feeding-rollers C C', the fronts of which are protected by a box or shield, D. The fly-wheel E, that carries the knives F upon its arms, is mounted upon a shaft, G, that is supported in bearings a a, projecting from the straight side of the feed-box B, as shown. The shaft G has on its rear end the miter-gear b, which engages with a miter-gear, b', upon the end of a shaft, H, supported in bearings I, fixed to the frame A. The end of the shaft H is provided with a crank, J. The shaft K of the lower feeding-roller, C', is provided with a sleeve having two crown-wheels, L L', the one L' having a greater number of teeth than the one L.

Upon the shaft G, between the bearings a a, is a worm, M. The crown-wheels L L' are cast upon the same sleeve, (with sufficient space between to enable the worm M to revolve clear of either,) which is moved to the right or left upon the shaft H by a lever, N, having its fulcrum in the bracket-pin P<sup>2</sup>, projecting from the front journal-bracket, a, so that by operating the lever N the gear L will engage with the worm M to operate the feeding-rollers C C' slowly, they being connected by gear-wheels d d' upon the opposite ends of their shafts to cut the feed short for horses and young cattle, while when the lever N is thrown in the opposite direction the gear L', having a lesser number of teeth, will engage with the worm M, and will cause the feeding-rollers C C' to revolve more rapidly, and thus feed the hay to the knives so that it will be cut longer, for feeding grown cattle, and this, too, without stopping the machine. When the lever is placed in the center both crown-wheels are thrown out of engagement, and the feed is thus instantly stopped.

The front face, O, of the rim of fly-wheel E is furrowed after the style of the faces of mill-stones. Upon the shaft G is provided a pulley, O<sup>1</sup>, which is connected with a pulley, O<sup>2</sup>, upon the shaft of the agitator P within the hopper P<sup>1</sup>, the pulley O<sup>2</sup> being outside of the hopper, and between the rear face of the hopper and the front face of the rim of the fly-wheel E.

The hopper P<sup>1</sup> is provided with a slide, f, to regulate the feed. Beneath this hopper, and supported in the frame Q of the grinding-mill, is a reversible grinding-plate, R, which is removably set in inclined vertical grooves g in a frame, S, so that the top of the said reversible plate R will be farther from the furrowed face of the grinding fly-wheel E than the bottom of said plate is located, which furnishes a force-feed for the mill.

The frame S works on horizontal ways T, and is operated by a screw and hand-wheel, U, to regulate the degree of fineness or coarseness to which the grain shall be reduced in grinding. In the rear of the rim of the fly-wheel E a friction-presser or guide-roller, V, is provided to cause the grinding-face of the rim of the wheel E to pass in a true line in front of the grinding-plate R. The fly-wheel



E is provided with a crank, W, in order that two men may work upon the mill at one time, or that either of the cranks shown may be employed to drive the machine. Suitable spouts X and Y are provided to conduct the feed and meal from the machines separately. Spices, grain, or any article that needs to be crushed may be ground in the mill, while two lengths of feed may be cut in the hay-cutter, and no adjusting-screws are employed to regulate the length of the feed, the single lever shown serving to cause the length to be changed or the feeding-gear of feed-cutter stopped without stopping the machine, as already explained.

The reversible grinding-plate R is furrowed on one side similarly to the furrowed rim of the wheel E, while the other side of said reversible grinding-plate is serrated like a rasp, for the purpose of regulating this plate to different kinds of grain or spices.

The sleeve carrying the crown-wheels L L'

slides upon a feather upon the shaft H, so that they revolve with it.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent of the United States, is—

1. The combination of the feed-roller C', having the crown-wheels L L' adjustably sleeved upon its shaft, with the lever N, worm M, and the roller C, said rollers being connected by suitable gear, for the purposes set forth.

2. The combination of the reversible grinding-plate R with the adjustable frame S and the adjusting-shaft U, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

THOMAS CLARKE.

Witnesses:

JAMES CHRISTIE,  
FRANK LAWSON.