

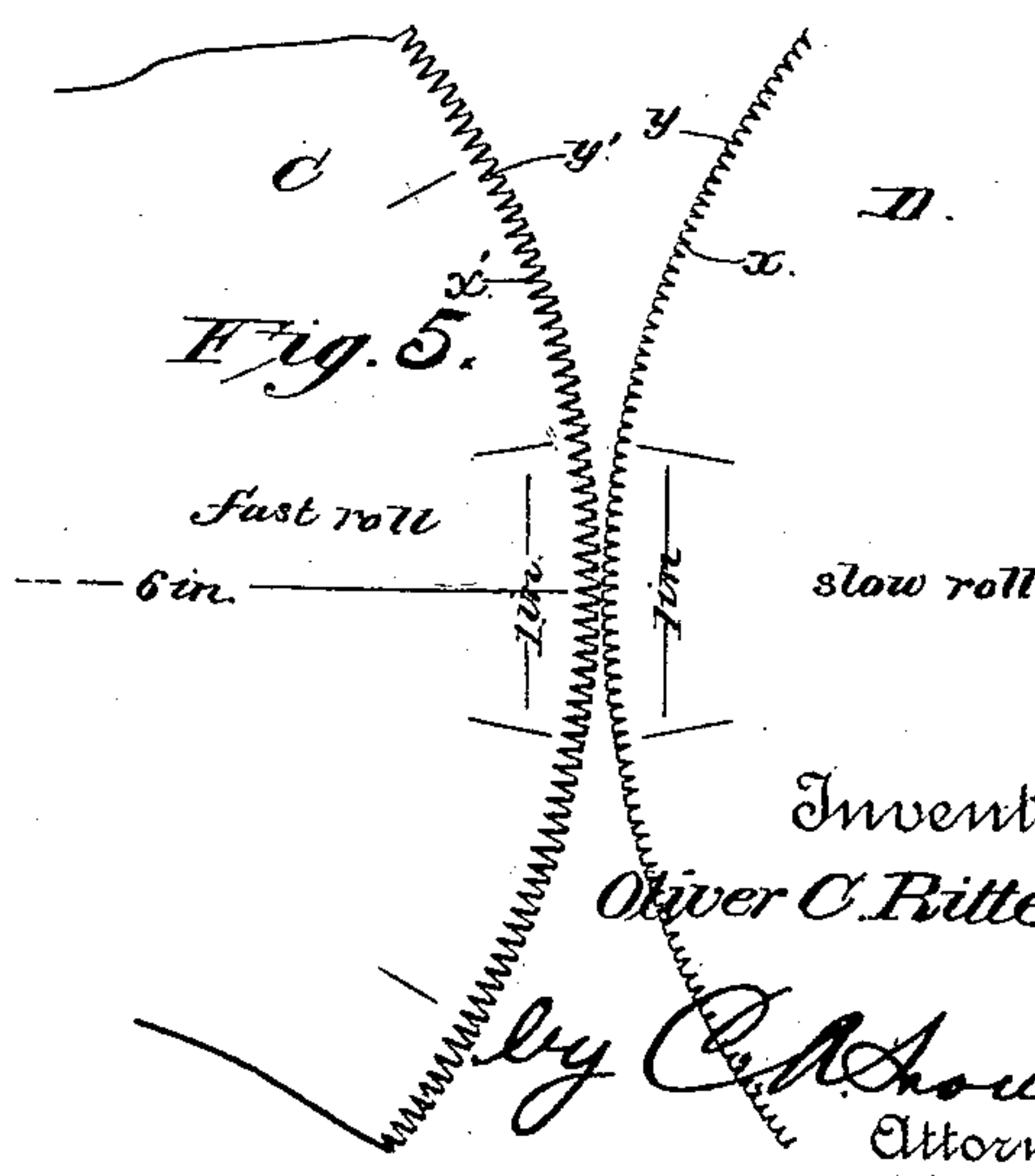
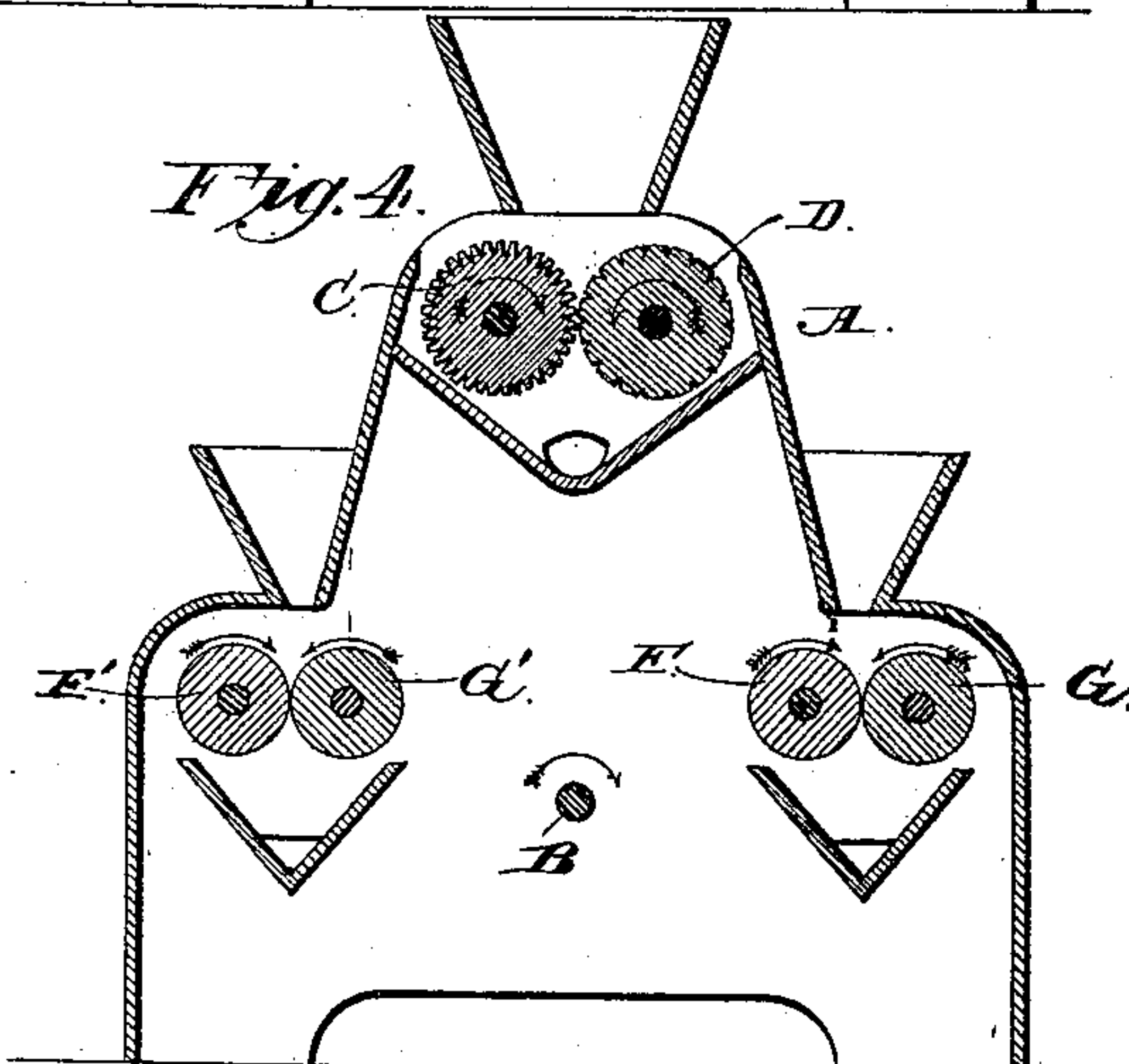
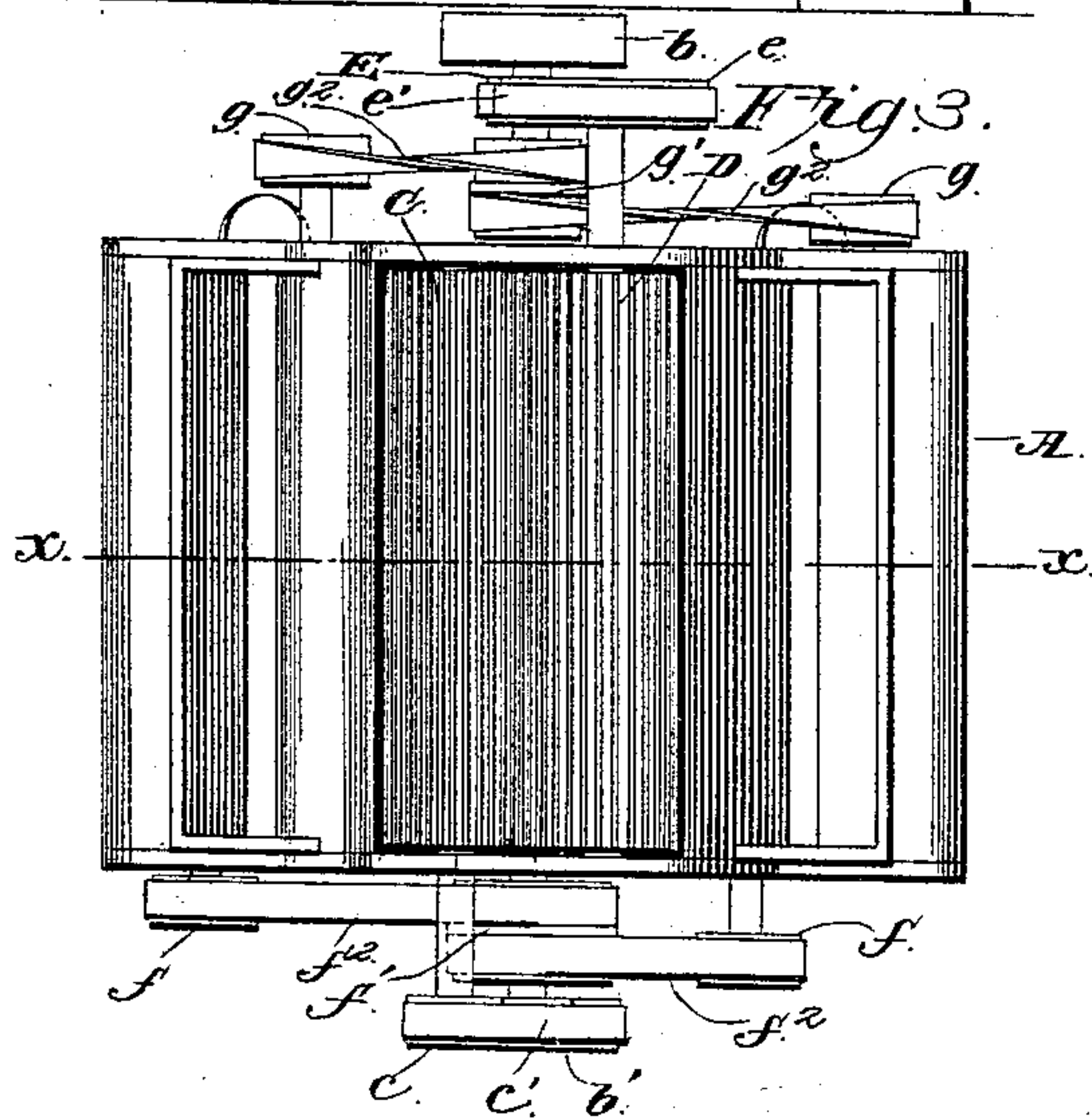
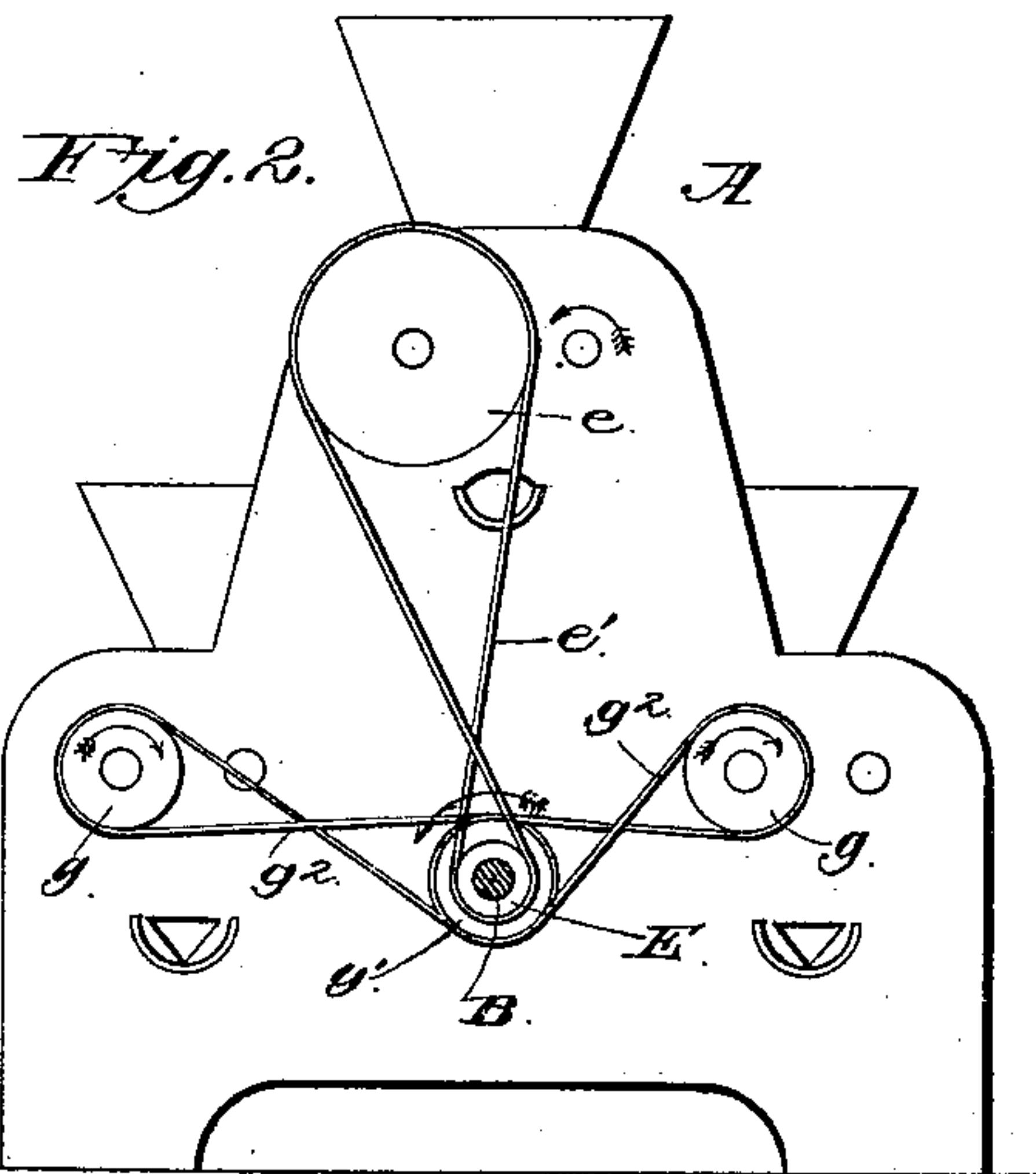
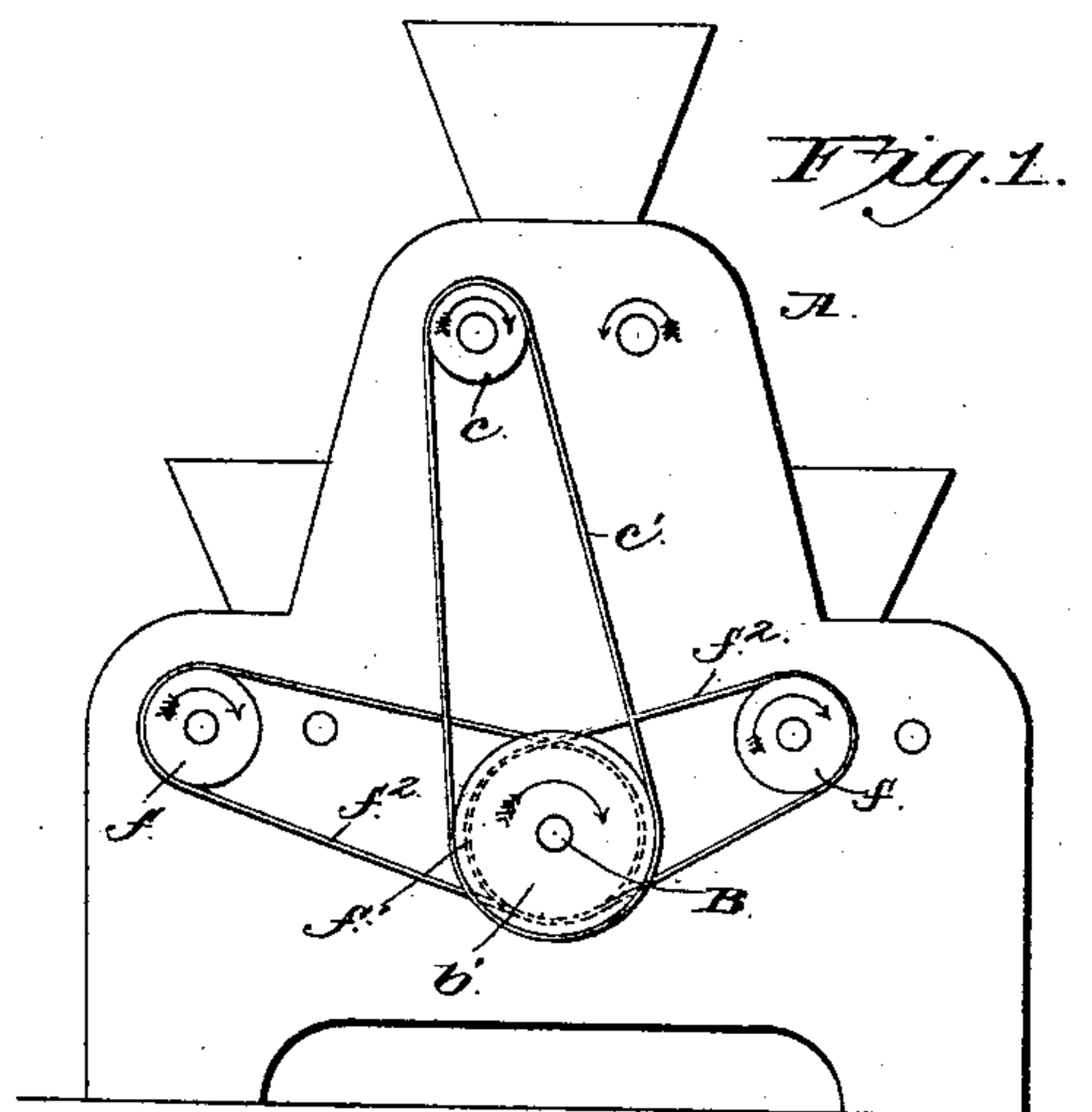
(No Model.)

O. C. RITTER.

ROLLER MILL.

No. 389,247.

Patented Sept. 11, 1888.



Witnesses

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Inventor,  
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# UNITED STATES PATENT OFFICE.

OLIVER C. RITTER, OF NORTH SPRINGFIELD, MISSOURI.

## ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 389,247, dated September 11, 1888.

Application filed April 29, 1887. Serial No. 237,916. (No model.)

*To all whom it may concern:*

Be it known that I, OLIVER C. RITTER, a citizen of the United States, residing at North Springfield, in the county of Greene and State of Missouri, have invented certain new and useful Improvements in Roller-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, which will enable others skilled in the art to apply and use the same.

The invention relates to improvements in roller-mills, the objects being to make a broad bran and to grind the flour by a short process of milling; and it consists in the construction and novel combination of parts hereinafter described, illustrated in the drawings, and pointed out in the appended claims.

In the accompanying drawings, Figure 1 represents a side view of one side of a machine embodying the invention. Fig. 2 represents a view of the opposite side thereof. Fig. 3 represents a plan view of the same, the hopper for the grooved rolls being removed. Fig. 4 represents a section transverse to the rolls on the line  $xx$  of Fig. 3. Fig. 5 is a detail view of an arc of both the fast and slow rolls, showing the number of grooves to an inch in each.

Referring to the drawings by letter, A designates the main frame of the machine, having the driving-shaft B journaled in the sides. The said shaft is provided on one of its extended ends with a pulley,  $b$ , to receive motion from any suitable source by means of a belt.

C and D designate a pair of grooved rolls, respectively fast and slow, the roll C rotating about five times to one rotation of the roll D. To accomplish this a pulley,  $b'$ , is secured on the driving-shaft, and a pulley,  $c$ , of half the diameter of the pulley  $b'$ , secured on the shaft of the fast roll C, and the said pulleys connected by a belt,  $c'$ . A pulley, E, is secured on the driving-shaft on the opposite side of the main frame from the pulley  $b'$ , and a pulley,  $e$ , of two and one-half times the diameter of the pulley E, is secured on the shaft of the slow roll D, and the said pulleys connected by the crossed belt  $e'$ . The fast roll will then rotate twice as fast as the driving-shaft, which will rotate two and a half times as fast as the slow roll. Consequently the fast roll will rotate five times as fast as the slow roll. The

identical differential speeds of the pulleys is not absolutely necessary; but it should never be below four and a half rotations of the fast roll to one of the slow roll, else the tendency of the feed to choke between the rolls will not be obviated. Each of the said rolls is grooved longitudinally from end to end. The slow roll should have about twenty parallel grooves and the fast roll eighteen per inch. The grooves  $x$  of the slow roll are much shallower than those,  $x'$ , of the fast roll, and the former has much more face-surface  $y$  than groove-surface, whereas the fast roll has deeper grooves and more groove-surface than face surface  $y$ . By making the grooves  $x$  of the slow roll shallow the bran-surface cannot be forced therein by the spring-pressure of the fast roll too deeply to receive the flaying action of the fast roll, and is thus better cleaned.

By the use of the deeper grooves  $x'$  on the fast rolls more middlings are produced, as has been determined by a series of experiments with variously-grooved rolls journaled in the frame and having feed-hoppers above them, which rolls may further grind or finish the flour passed through the grooved rolls.

F G and F' G' are two pairs of smooth rolls. The fast rolls F F' of the said pairs are rotated by the pulleys  $f f$  on the ends of their shafts, and the belts  $f''$ , connecting the same with the long pulley  $f'$  on the main shaft. The slow pulleys are rotated similarly by the pulleys  $g g$ , long pulley  $g'$ , and crossed belts  $g''$ , similarly arranged, but at the opposite side of the machine. The fast rolls of said pairs are arranged to rotate with from two to three times the speed of the slow rolls thereof.

The pair of corrugated rolls and the two pairs of smooth rolls are fed through suitable hoppers, and have suitable discharge-spouts attached to their casings, as shown in the drawings.

It has been found by experiment that rolls of the described construction will produce exceedingly large bran that will be easily separated from the flour.

Having thus described my invention, I claim—

1. In a roller-mill, the combination of the slow roll D, having more face-surface than groove-surface, and provided with the shallow V-shaped grooves  $x$ , which are straight

longitudinally and have their sides equally wide and inclined at equal angles, and the fast roll C, having more groove-surface than face-surface and provided with the V-shaped deep 5 grooves  $x'$ , which are straight longitudinally and have their sides of equal width and inclined at equal angles, substantially as specified.

2. In a roller-mill, the combination of the 10 slow roll D, provided from end to end with the longitudinal straight shallow grooves  $x$  and having more face-surface  $y$  than groove-sur-

face, the fast roll C, provided from end to end with the grooves  $x'$ , deeper than the longitudinal straight grooves  $x$ , and having less 15 face-surface  $y$  than groove-surface, and mechanism, substantially as described, whereby the fast roll C is rotated about five times to one rotation of the slow roll, substantially as specified.

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Witnesses:

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