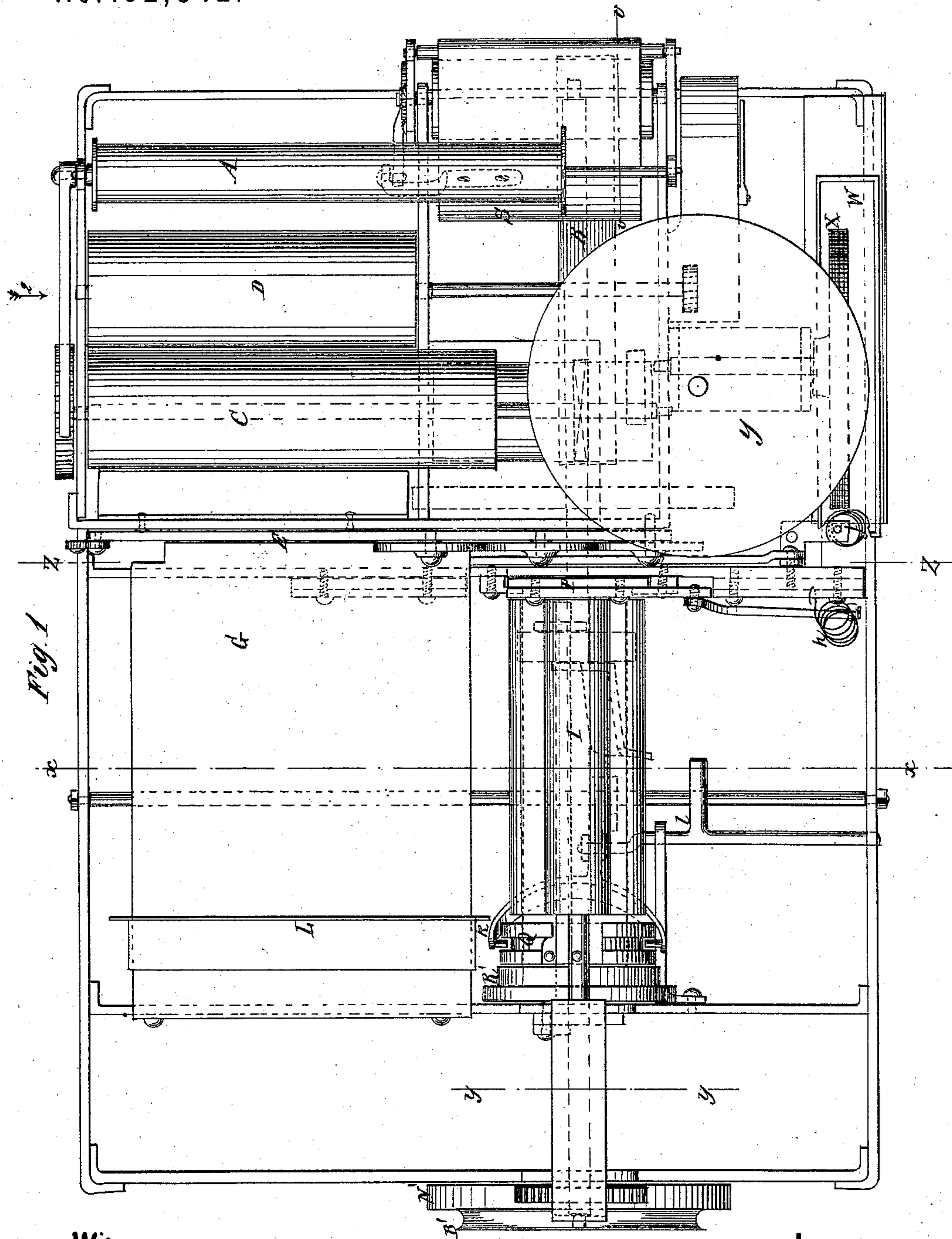


T. HOTCHKISS.
Paper Bag-Machines.

No. 152,842.

Patented July 7, 1874.



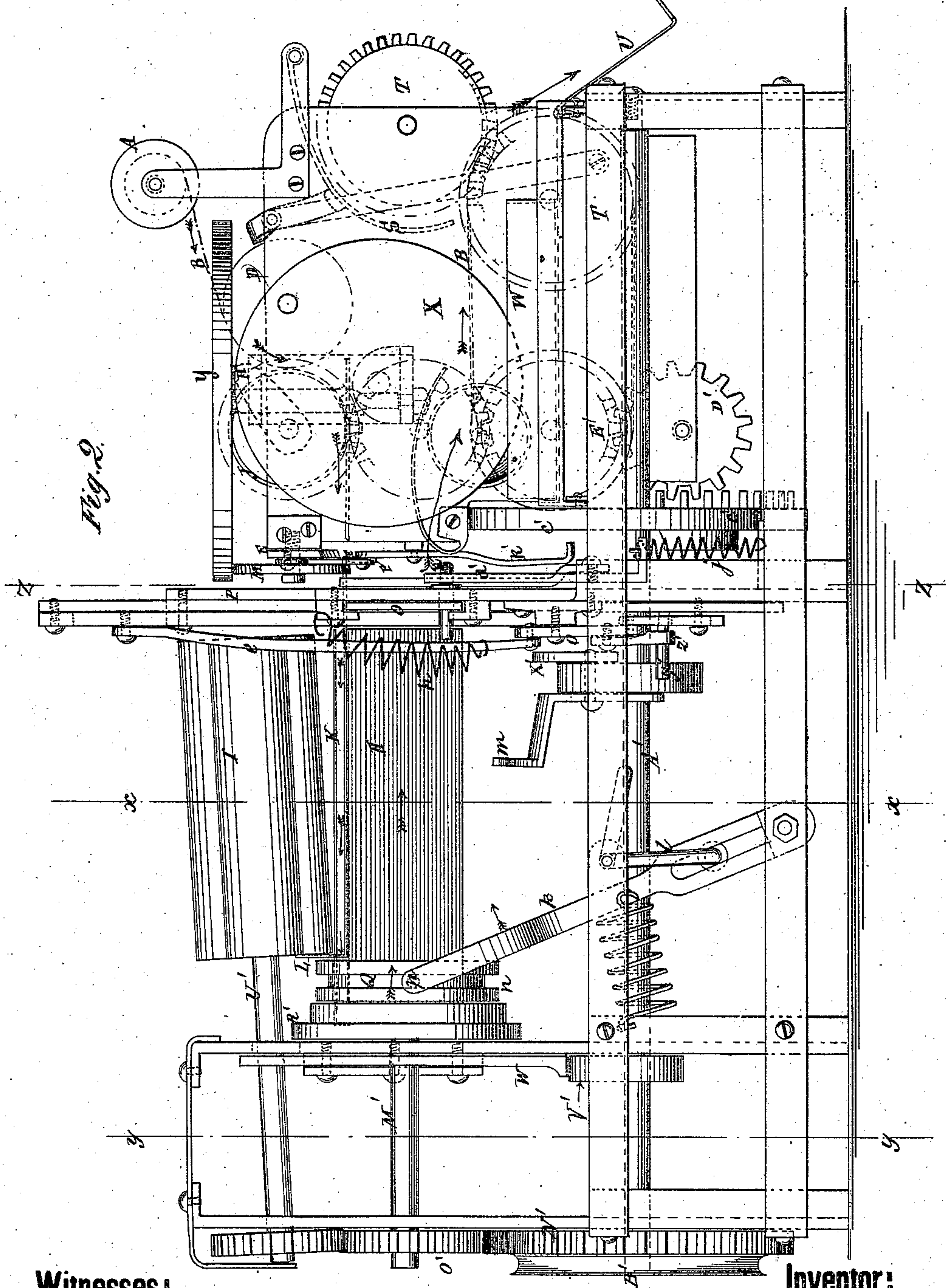
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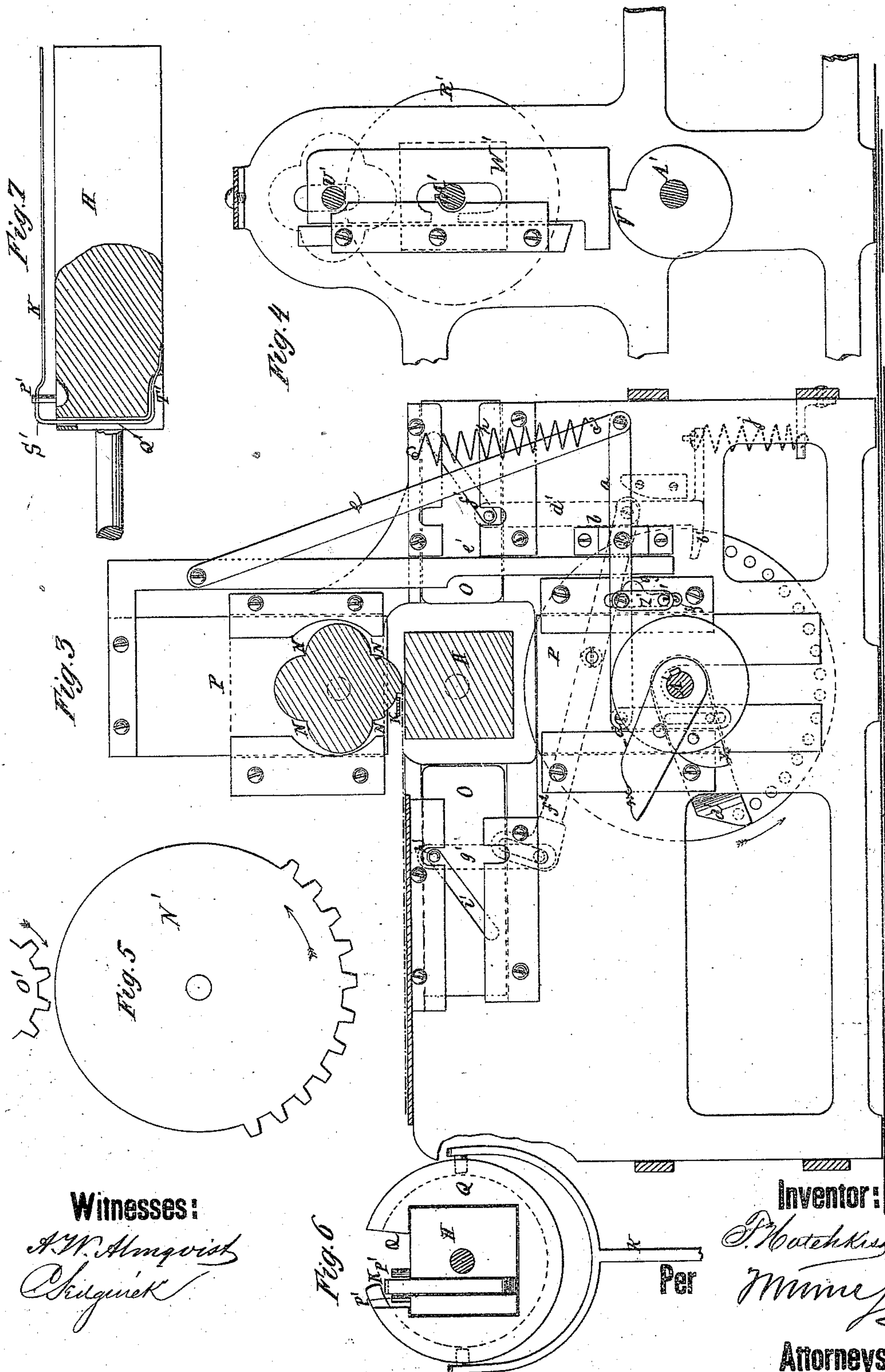
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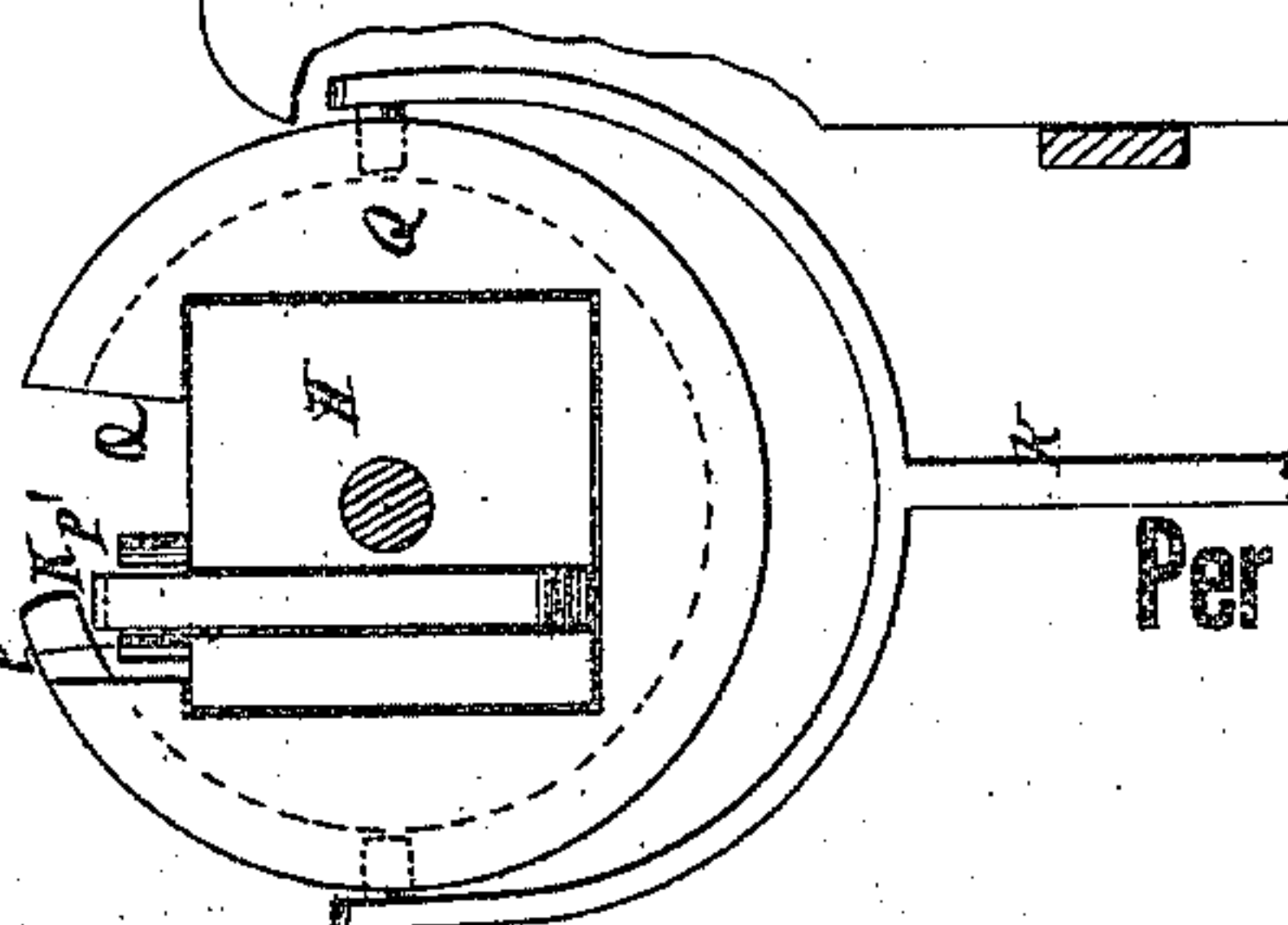
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Fig. 6



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Fig. 9.

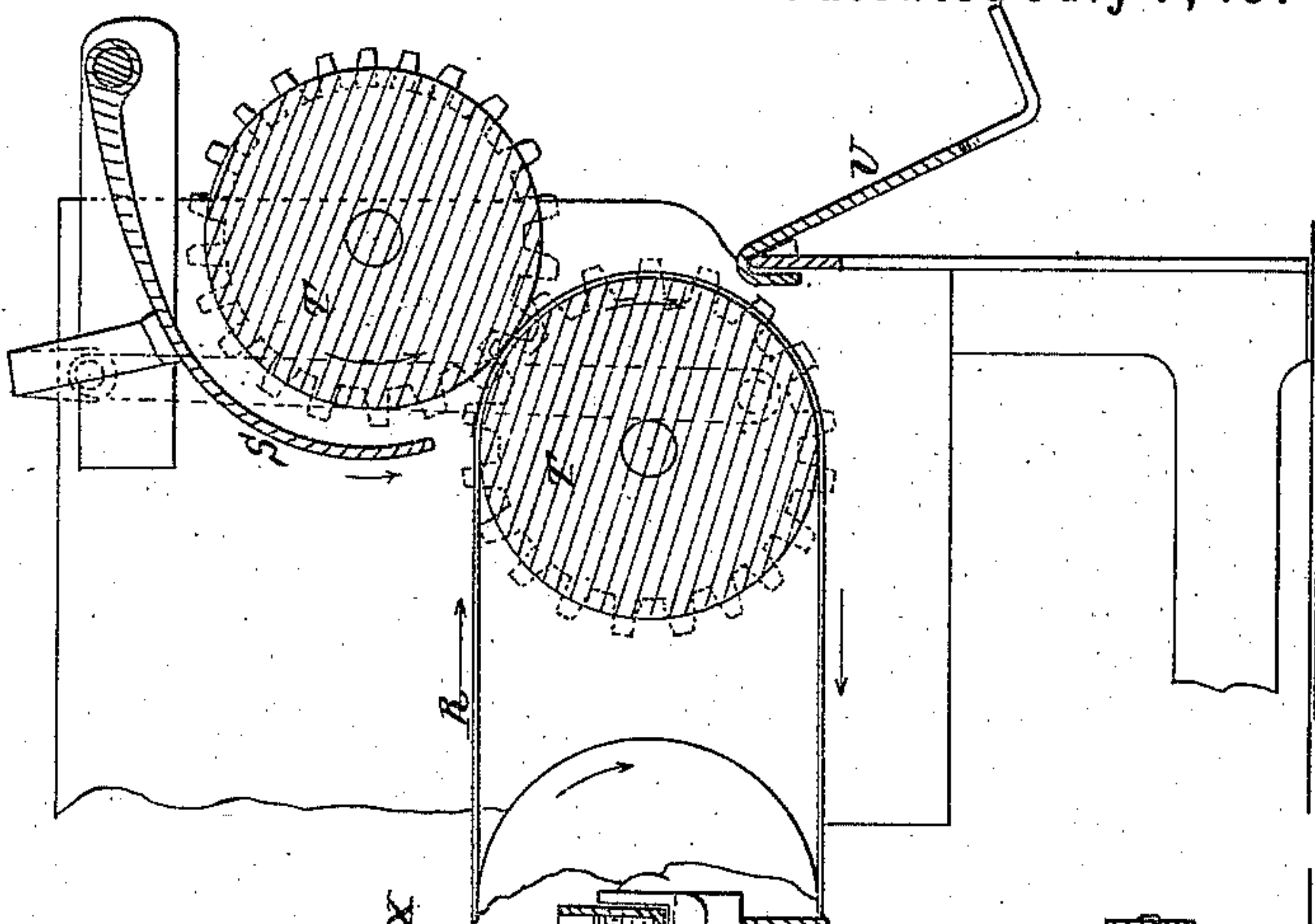
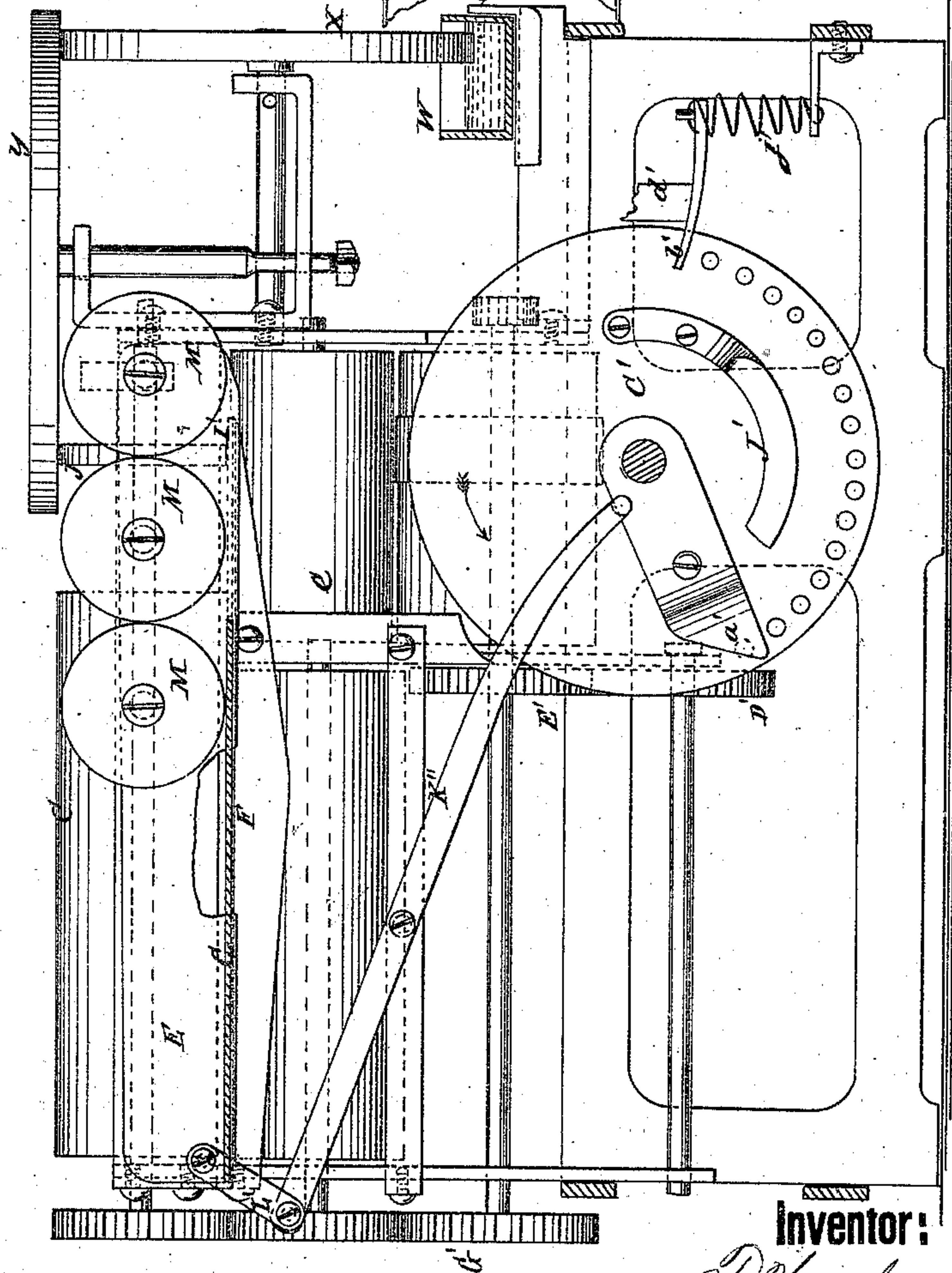


Fig. 8.



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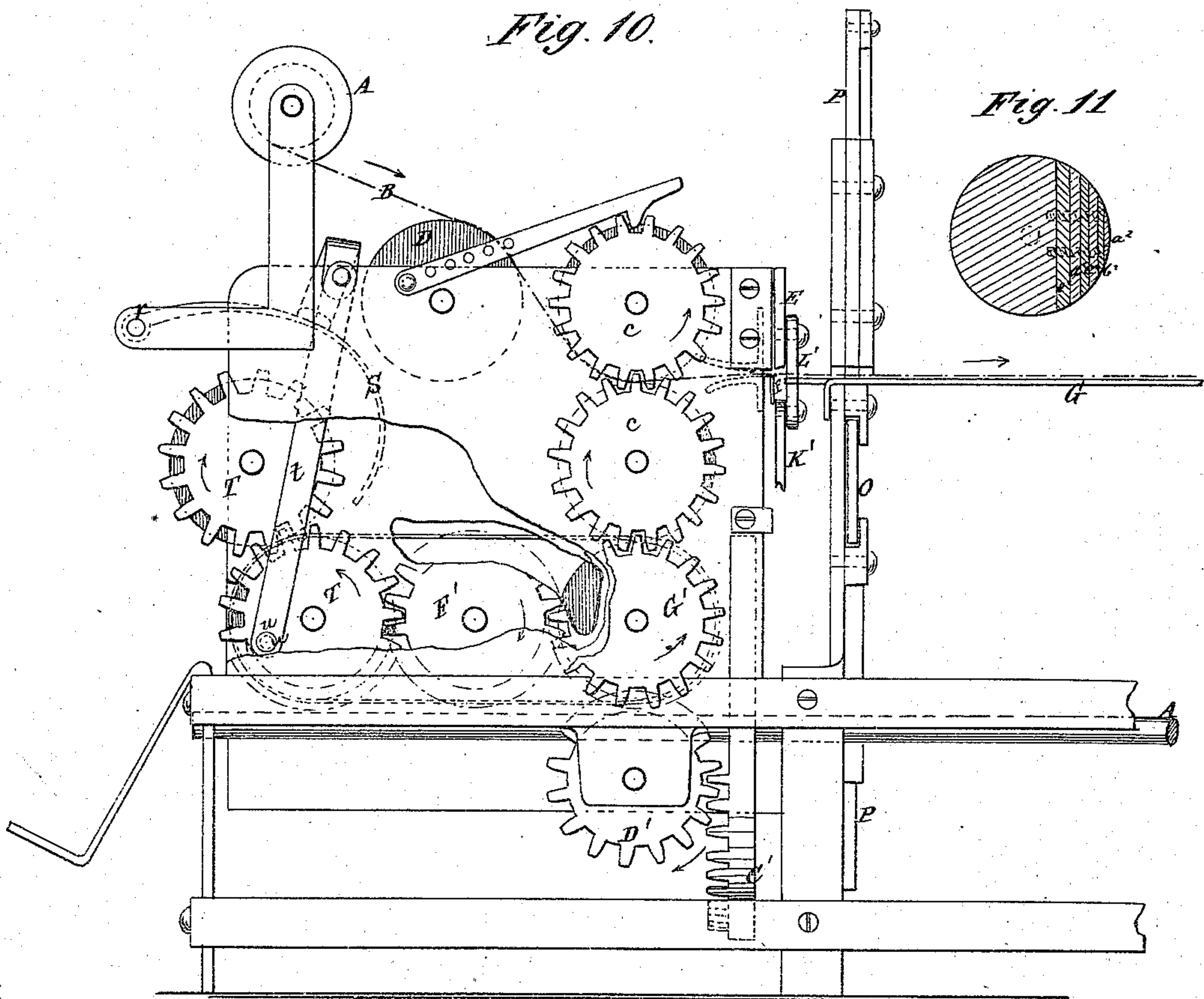
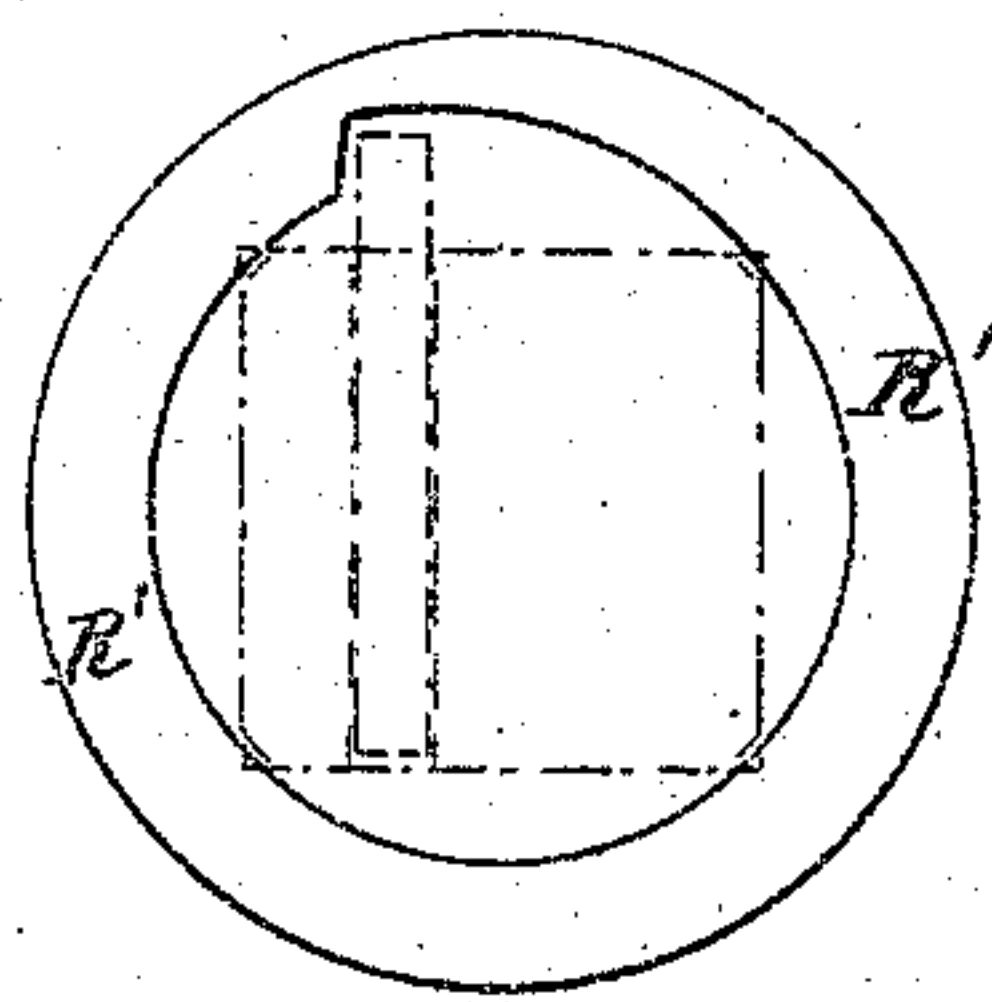


Fig. 12.



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UNITED STATES PATENT OFFICE.

TRUMAN HOTCHKISS, OF STRATFORD, CONNECTICUT.

IMPROVEMENT IN PAPER-BAG MACHINES.

Specification forming part of Letters Patent No. 152,842, dated July 7, 1874; application filed October 18, 1873.

To all whom it may concern:

Be it known that I, TRUMAN HOTCHKISS, of Stratford, in the county of Fairfield and State of Connecticut, have invented a new and Improved Paper-Bag Machine, of which the following is a specification:

The invention will first be fully described, and then pointed out in the claims.

Figure 1 is a plan view of my improved paper-bag-making machine. Fig. 2 is a side elevation. Fig. 3 is a cross-section taken on the line *xx* of Figs. 1 and 2, and looking in the direction indicated by arrows. Fig. 4 is a transverse section, taken on the line *yy*, Figs. 1 and 2, and looking in the same direction. Fig. 5 is a side elevation of some of the driving-gear, looking in the same direction. Fig. 6 is a cross-section of the forming folding-roller on the line *xx* of Fig. 2, looking toward the left hand of the drawing. Fig. 7 is partly a side elevation and partly a sectional elevation of the forming folding-roller. Fig. 8 is a transverse sectional elevation of Figs. 1 and 2, on line *zz*, looking in the direction of arrow 1. Fig. 9 is a partial longitudinal sectional elevation of Fig. 1, on the line *vv*; and Fig. 10 is a partial side elevation, with some parts broken out, taken in the direction of arrow 2, Fig. 1. Fig. 11 is a cross-section of one of the feed-rollers; Fig. 12 is a detail of the cam which works the presser which clamps the paper on the forming-roller.

Similar letters of reference indicate corresponding parts.

A is the paper roll, from which the paper B is drawn by the feed-rollers C down over the guide-roller D, and forced along under the movable shear E, over the stationary one, F, onto the table G in front of the forming-roller H and the folding-roller I. One margin of the paper strip also passes under the pasting-roller J, (see Fig. 8,) to receive the paste, by which the edges, joined in the forming of the tube, are pasted, and it also passes between the former H and folder I, and under the presser-bar K. As soon the end of the paper strip comes to the gage L it stops by the stopping of the feed-rollers, and is cut off from the strip by the fall of the cutter E. The folders H and I then commence to turn, and at the same time the pressure-bar K springs

down and presses the paper against the forming-roller H, so that it will be drawn in between the folding-rollers and folded. By the same operation, the margin of the paper at the knife is drawn under the pasting-roller M on the cutter E and pasted, for securing the folds of the bottom of the bag. The forming-roll H is square, to fold the bag in that form, and the folding-roller I has deep flutes N to pass the corners of the former and fold the paper onto them. When the roller-folders have made one revolution, and formed the tube and united the edges, they rest, while the sliding horizontal end folders O go forward just in front of the end of former H, and fold in two sides of the extension of the tube beyond the former to form the bottom. Then the vertical sliding folders P move forward and fold in the other two sides, and complete the bag.

The paste for fastening the folds of the bottom together, being on the upper side of the paper, comes outside of the end folds, and sticks the inside of the folds pressed against it by the sliding folders.

When the sliding folders all go back the discharger Q slides forward on the former H, in the direction indicated by the arrows, and pushes the bag off upon the endless carrier R, on which it is carried under the folding-blade S, which comes down on the top of the bag just above the bottom, flattens the sides down, and, in connection with the pressing and discharging-rollers T, flattens the bag down at the sides, and folds the bottom down flatwise on the upper side of the bag, so that they will pack into bales or boxes economically without injury to the bottom. From the roller T the bag drops onto the receiver V, whereupon they are taken in packs to be baled or boxed. The paste is taken up from the trough W by the pasting-wheel X, and delivered onto the under side of the carrier-wheel Y, which delivers it onto the paste-rollers J, and the first roller M of the train on the cutter, by which the bottom margin is pasted. The other rollers of the train receive the paste from the first one. The carrier-wheel rises off from the feeder X and the pasting-rollers, to avoid applying the paste during a portion of its movement, when it is not necessary to apply it.

A' represents the driving-shaft, to which continuous motion is imparted by a belt on the pulley B', or any way. This shaft carries a disk, C', which is toothed on one side about one-third of its circumference, to gear with the wheel D', for turning the feed mechanism, pasting mechanism, the endless carrier R, folder S', and rollers T, to paste and present the paper to the folders, and then allow them to rest while the folders and discharger operate. This disk C' also actuates the cutter and the sliding end folders O. The wheel D' gears with wheel E', which gears with the idle-wheel F', which drives the rollers T. The shaft of wheel E' has a wheel, G', which drives the feed-rollers. The paste-carrying disk Y is turned by the pasting-disk J, on the top of which it bears, said disk being on the shaft of the upper feed-roller C directly under the disk Y, near its periphery. Said disk turns the pasting-wheel X by friction, and it also turns the first paste-roller M in the same way, and said roller turns the next one of the train at the same time that it delivers the paste to it, and so on. The shaft of disk Y is capable of rising and falling a short distance, and a cam, H', is arranged on the shaft of the upper feed-roller to raise the disk off the paste-rollers when the paste is not to be given to them. Below paste-disk J is a plate, I, between which and the disk the paper passes close to the disk to make sure of taking the paste. The cutter E is raised by a cam, J', on the disk C', coming against one end of the rock-lever K', which is connected at the other end, by a link, L, with the free end of the cutter, which is pivoted at the other end to the axis of the paste-roller M. The object of mounting the rollers M on the cutter is to keep them off the paper while it is feeding in by the rollers C, and let them down on it as soon as it is cut off from the strip ready to paste the paper when it is drawn into the folders. The forming-roller H is arranged on the shaft M', having fixed bearings for its journals and gearing with the drive-wheel N' by a pinion, O'. The wheel N' has teeth on only about one-third of its periphery and they are arranged relatively to the teeth of disk C', so that they turn the folding-rollers while the feeding and pasting rollers are at rest, and allow the folders to rest while the feeding and pasting rollers run.

The presser K is fixed to this former, as represented in Fig. 7, between guide-studs P', and in the groove Q', so as to move to and from the surface of the former, and it is pressed down on said former by a stationary cam, R', around which it is carried by the former, so that said cam acts on the elevation S' and it is raised by the spring T'. The cam forces it down upon the paper as soon as the former starts to hold the paper, and draw it in between the forming-rollers, and said cam holds it down until just before the former stops again, and then allows it to rise to re-

lease the bag preparatory to its being discharged. The folding-roller I is arranged in the bearings of its shaft U' so that the end at which the paper is received swings up to allow the edge of the paper to pass in between it and the former, and under the presser it is forced up by a cam, V', on the main shaft A', and the slide W', in the upper end of which the shaft of roller I is arranged so as to be lifted up by it. The cam is so constructed that it lets the folding-roller fall at the proper time for it to begin to turn, and raises it as soon as it has revolved, and holds it up till the proper time for it to turn again. Immediately after the rollers H and I have stopped, and I has been raised, the horizontal sliding folders O are moved forward by the cam a^1 on disk C' coming against the toe b^1 of slide d' , which is connected with one of said folders by the pin e' in the slot f^1 , and with the other by the rock-lever f^2 , link g' , pin h' , and slot i' , so that it forces them together as it is raised by said cam. The spring j pulls the folders back. Just before the folders I come back, the folders O are moved forward by the cam X' on the main shaft A' coming against the stud-pin Y' in the link Z', on the lever a , which is pivoted to the frame at b , and connected to the lower slide P by link d , (shown dotted in Fig. 3,) and to the upper one by the rod e , so as to move one slide down and the other up. The pin y runs in a guide-groove, f , which has a lateral-widened part, g , into which the pin swings to escape from the cam before it otherwise could, and thus let the slides P return at the proper time. The spring h pulls them back. After the folders O move back, the discharger Q is thrown forward by the crooked lever k , which is worked by the crank l and cam m . The discharger pushes the bag off to the carrier R, on which it is folded and delivered, as before described. The pusher consists of a thick round disk of metal fitted on the former H so as to slide forward and backward on it, and having a groove, n , in the face for the pins p of the forked lever, and also having a notch at q to allow it to pass under the folding-roller I. The folding-blade, by which the bag is flattened and its bottom folded down, is pivoted at r , and is operated by one of the discharging-rollers, to which it is connected by a rod, t , and wrist-pin a . For altering the feed to make bags of different lengths, one of the feed-rollers c is formed in one part of thin layers a^2 , b^2 , &c., which are fastened on detachably to be taken off, so that the roller will not draw the paper while the part from which a layer or layers is removed is passing. The width of this part will be varied by the number of layers removed. For the longest bags all the layers will be put on, making the circle of the roller complete.

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

1. The combination of the square forming-roll H and fluted folding-roll I, as and for the purpose described.

2. The combination, with former H and roller I, of the discharger Q, having notch *q*, as and for the purpose specified.

3. The combination, with former H and presser K, of the cam R', as and for the purpose described.

4. The combination, with discharger Q and shaft A', of the cam *m*, crank *l*, and lever *k*, as and for the purpose set forth.

5. The feed-roller constructed in detachable layers *a*² *b*² *c*, as and for the purpose specified.

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