

No. 721,144.

PATENTED FEB. 24, 1903.

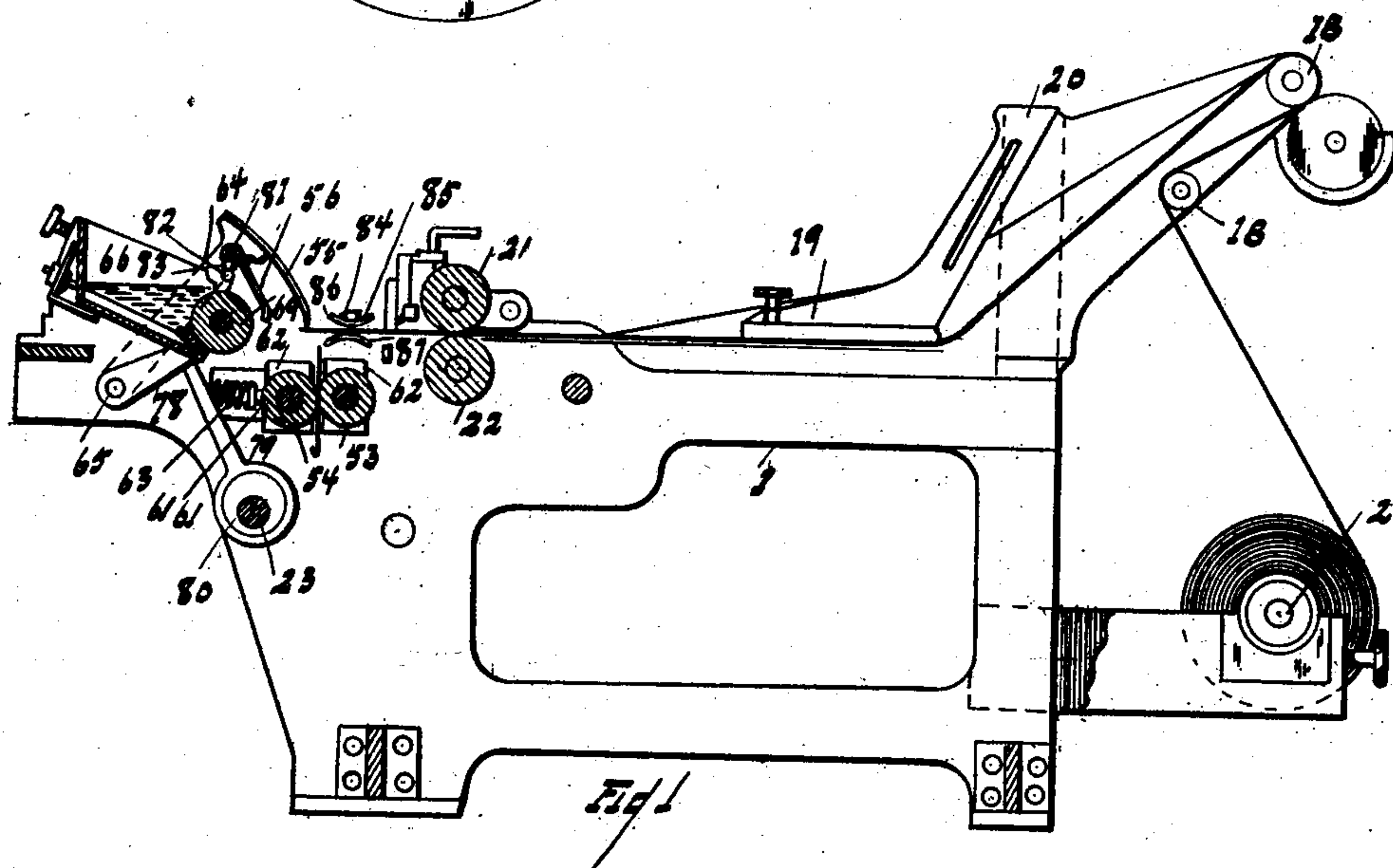
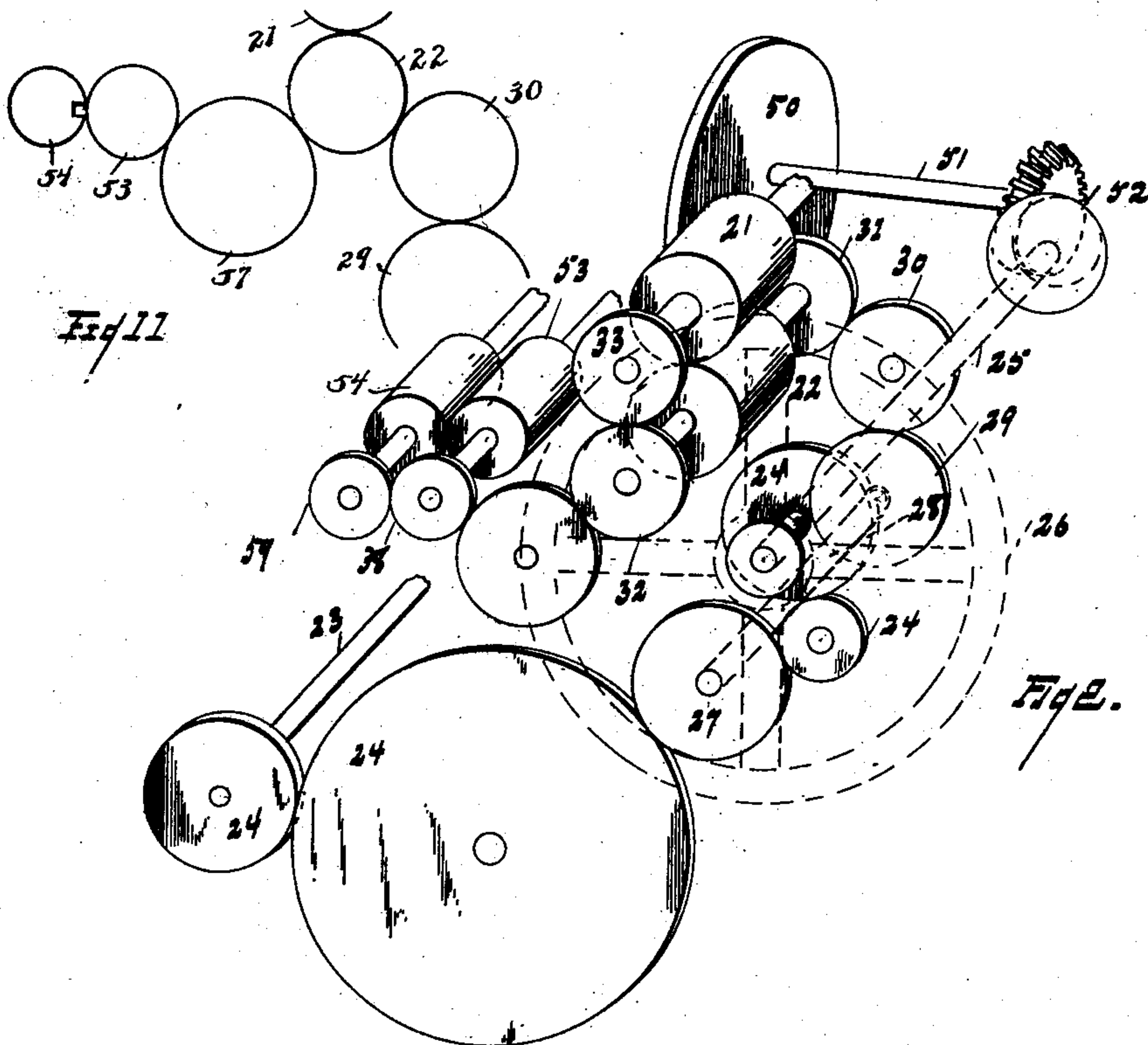
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PAPER BAG MACHINE.

APPLICATION FILED SEPT. 6, 1901.

NO MODEL.

4 SHEETS—SHEET 1.



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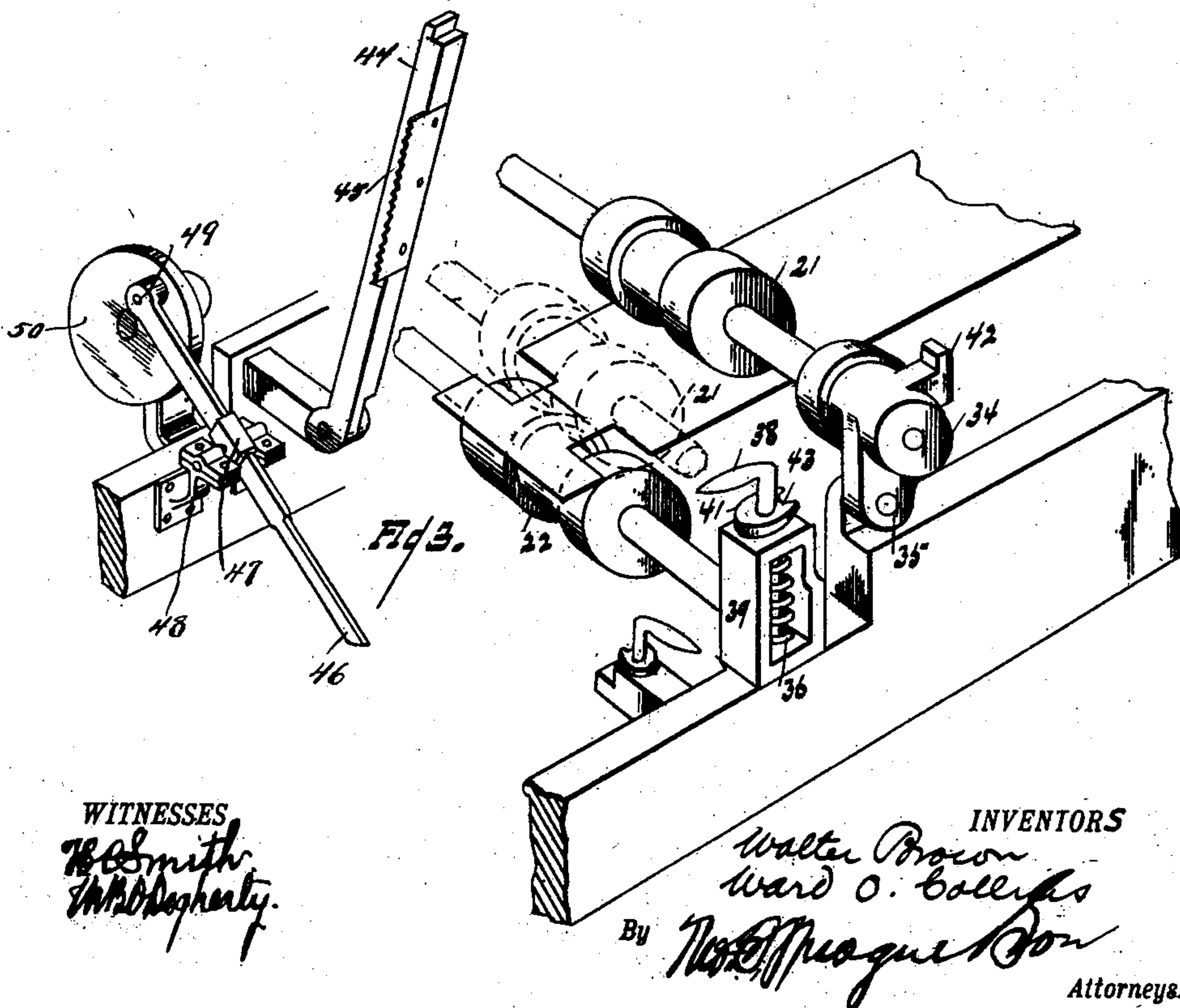
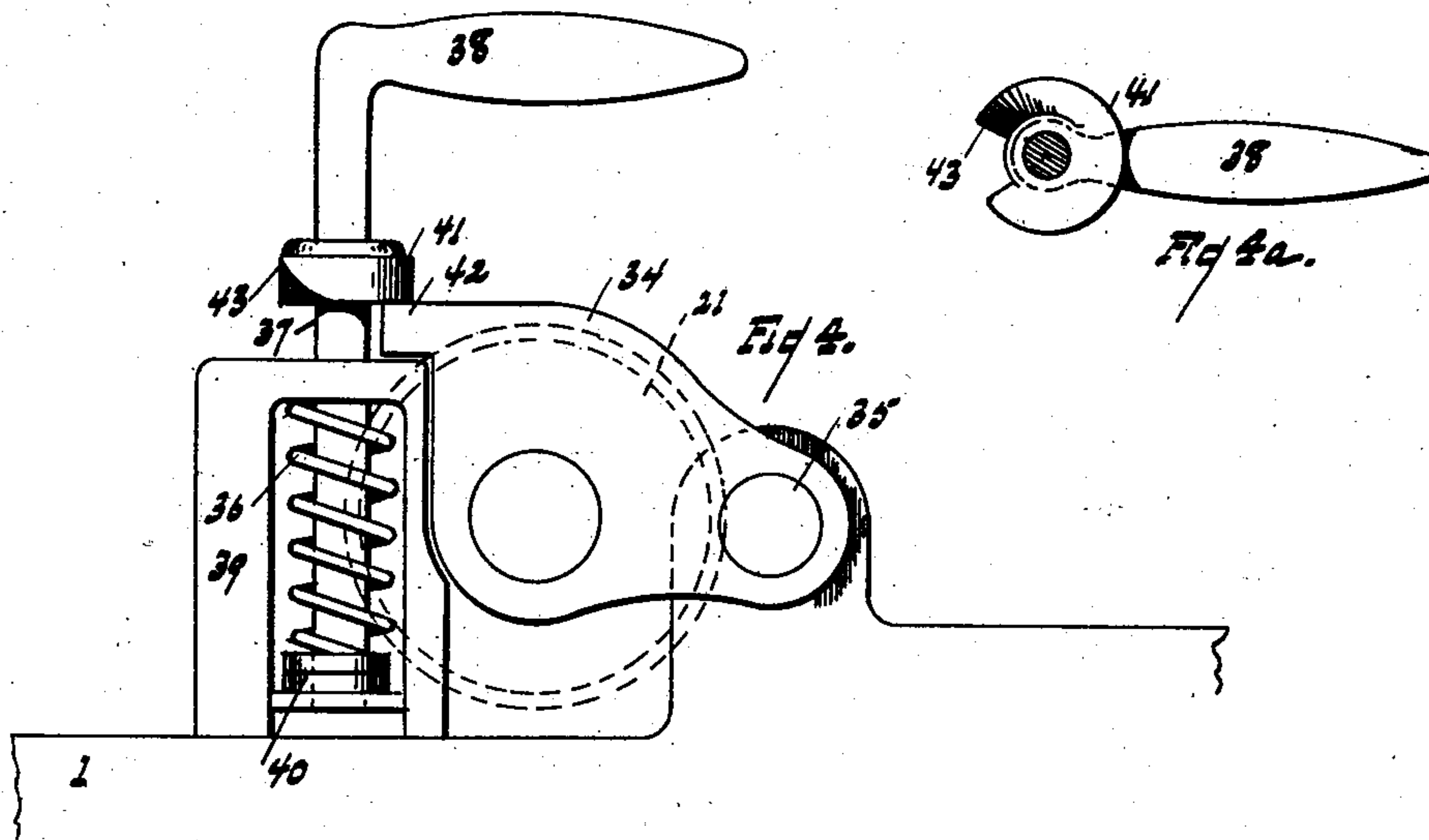
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4 SHEETS—SHEET 3.

Fig 6a.

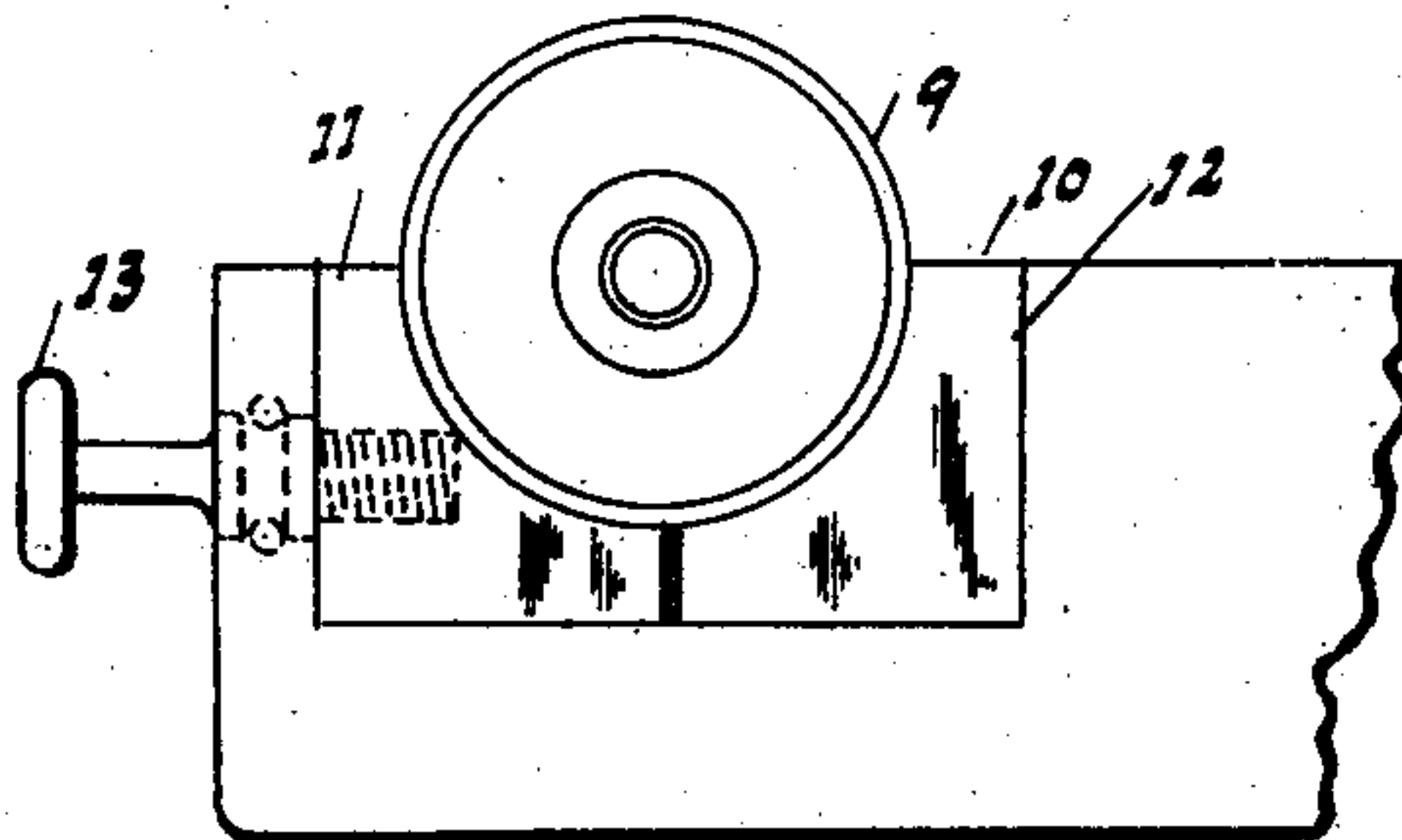


Fig 6.

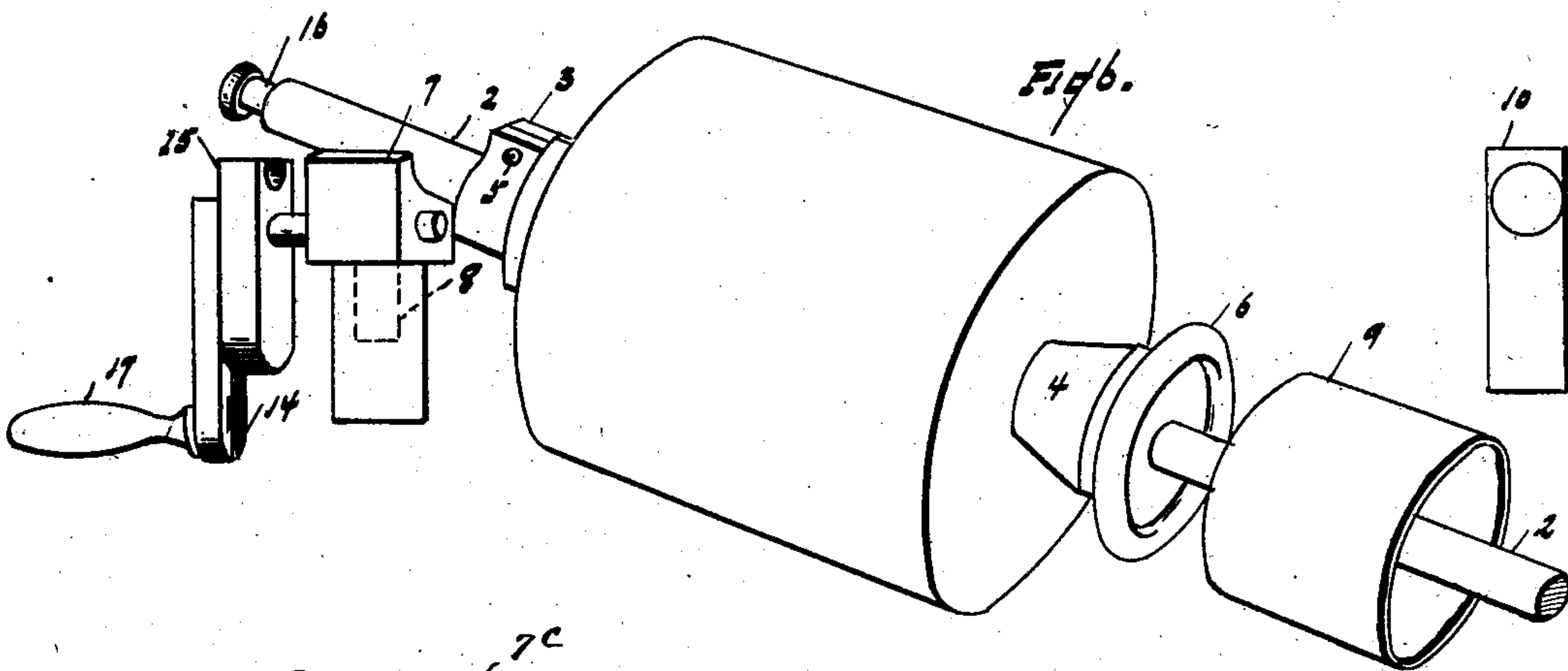
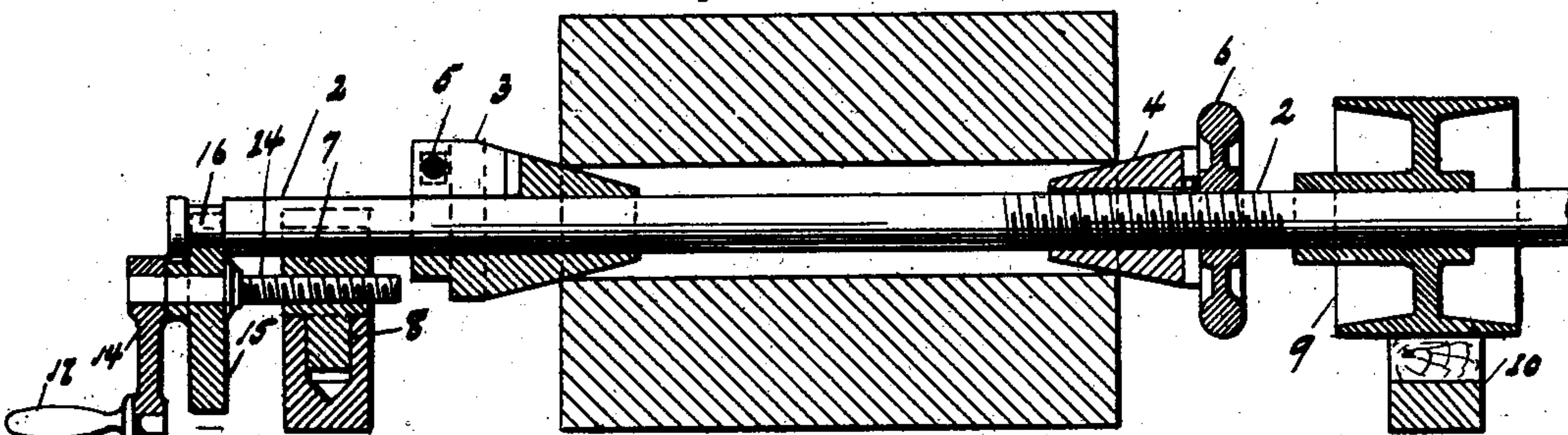


Fig 10.



Fig 5.



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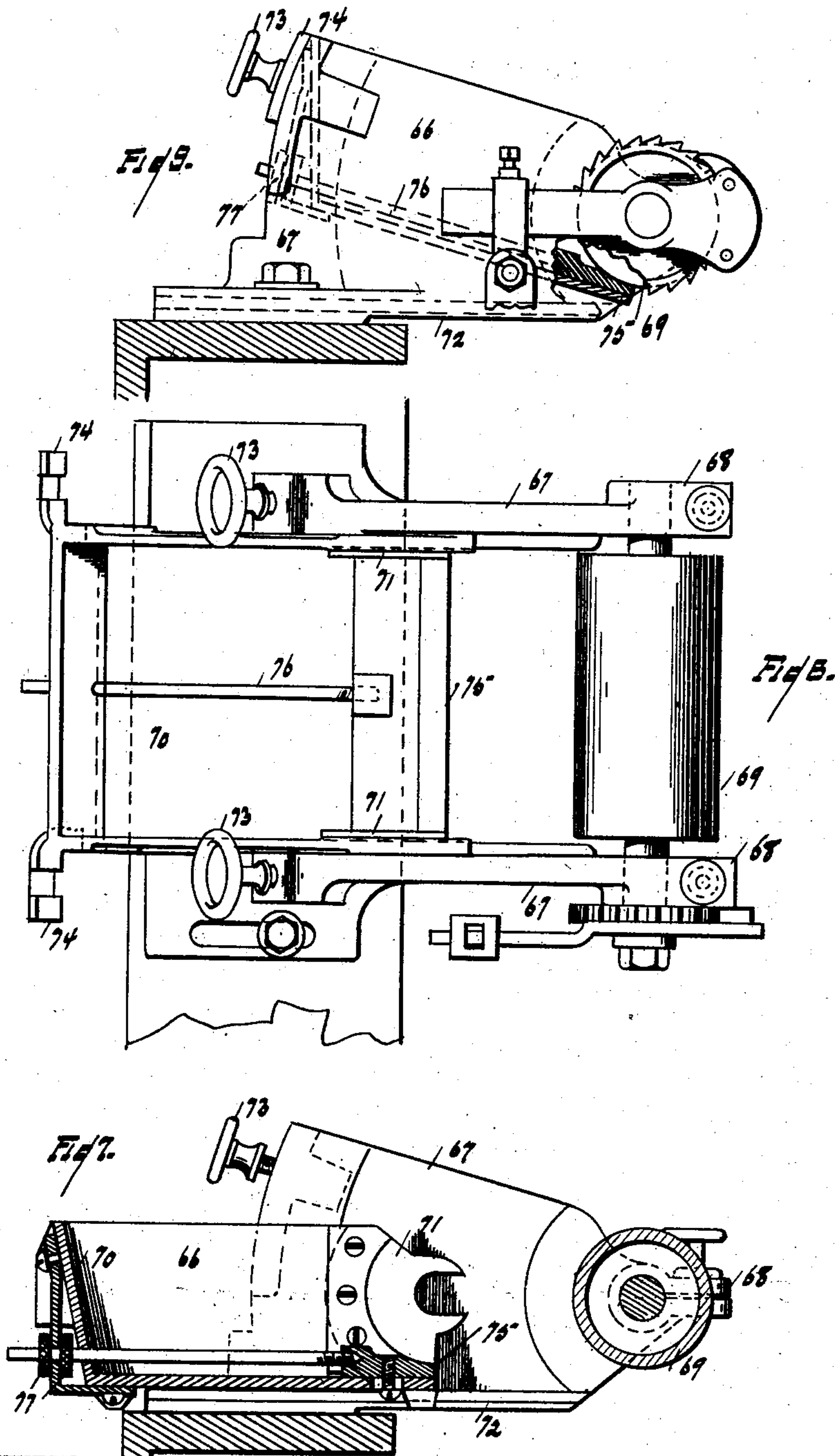
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

WALTER BROWN AND WARD O. COLLINS, OF ELKHART, INDIANA,
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PAPER-BAG MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,144, dated February 24, 1903.

Application filed September 6, 1901. Serial No. 74,479. (No model.)

To all whom it may concern:

Be it known that we, WALTER BROWN and WARD O. COLLINS, citizens of the United States, residing at Elkhart, in the county of Elkhart and State of Indiana, have invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention relates to paper-bag machines, and has more particular reference to certain details of construction, as hereinafter described and claimed.

15 In the drawings, Figure 1 is a longitudinal section through the machine. Fig. 2 is a diagram perspective view illustrating the arrangement of the drive mechanism and connecting-gearing for the various parts of the machine. Fig. 3 is a sectional perspective view illustrating the feed-rolls and a part of the cut-off. Fig. 4 is a detail view showing the tension device for the feed-roll. Fig. 4^a shows the locking-handle. Fig. 5 is a cross-section in the plane of the paper-roll holder. 25 Fig. 6 is an end elevation illustrating the manner of engaging the roll of paper with its holding device. Fig. 6^a illustrates the adjustable tension for the paper-holder. Fig. 7 is a section through the pasting device, 30 showing the detachable paste-pan. Fig. 8 is a plan view thereof. Fig. 9 is an elevation showing the pan locked in position. Fig. 10 shows a modified construction of bearing for the paper-roll holder. Fig. 11 is a diagram 35 illustrating the drive mechanism for the tucker-rolls.

40 The machine is of that type in which a strip of paper is fed from a roll over suitable forming devices, which shape it into a tube, one edge of the strip being pasted and pressed upon the other edge to form the tube. The paper tube thus formed is severed into suitable lengths for forming a bag, each of which lengths is then folded over or tucked at one 45 end to form the bag-bottom.

50 Some of the special features of the present invention are the construction of the paper-roll holder and the means whereby the roll may be readily placed in position in the frame and accurately adjusted in relation to the frame.

Another feature consists in the peculiar construction of the pasting mechanism comprising a removable paste-pan and the means whereby said pan may be secured in position 55 and the amount of paste fed regulated.

A still further feature of improvement is the construction of feed-rolls and cutter-bar, which permit of readily removing a clog in the feed of the paper tube. 60

The invention therefore consists in the improvements above set forth, as well as in certain details of construction specifically set forth in the claims.

As shown in the drawings, 1 is the frame 65 of the machine.

2 is a paper-holding shaft which is detachably journaled in bearings at one end of the frame.

3 and 4 are two oppositely-facing cones secured upon the shaft 2 and adapted to engage with the opposite ends of the paper-roll to center the same upon the shaft. The cone 3 is clamped in position by being partially split and provided with a clamping-screw 6. 75 The cone 4 is longitudinally slidable upon the shaft and has preferably a feathered engagement therewith. It is adjustably held in position by a lock-nut 6, which has a threaded engagement with the shaft. 80

7 is a bearing for one end of the shaft, which has a downwardly-extending pin 8, engaging with the frame and forming a swivel. The opposite end of the shaft is provided with a drum 9, which engages with a clamping-bearing 10 upon the frame. This clamping-bearing 85 comprises two blocks 11 and 12, engaging with a recess in the frame and upon opposite sides of the drum 9. 13 is a screw for adjusting one of said blocks, so as to alter the pressure upon the drum and increase or diminish the friction. 90

14 is a screw-threaded shank engaging with a bearing 7 and having swiveled at its outer end the yoke 15, which engages with a groove 95 16 at the end of the shaft 2. This yoke has a downwardly-extending arm which serves to hold the yoke in upright position by its gravity.

17 is a crank-arm secured to the end of the 100 shank 14.

With the construction as above described

to engage the paper-roll with the shaft 2 the cone 3 is first slid off from said shaft and the latter inserted through the central aperture in the paper-roll. The cone is then replaced
 5 and secured in position by tightening the screws 5, after which the cone may be moved inward by adjusting the nut 5 so as to center and firmly attach the roll to the shaft. One end of the shaft is then engaged with the
 10 bearing 7, which being swiveled in the frame may be turned to permit of engaging the shaft therewith, while the opposite end thereof is resting upon the floor. The opposite end of the shaft may then be lifted to engage
 15 the drum 9 with the bearing 10. This construction reduces the labor of placing the roll in position, as it is unnecessary for the workman to lift the roll bodily, but only one end of the shaft at a time, and thus one workman
 20 can perform the work which usually requires two. When the shaft is in engagement with its bearing, the paper-roll may be centered in relation to the frame by turning the crank 17, which will adjust the shank 14 inward or out-
 25 ward and will correspondingly move the shaft 2. In order that this adjustment may not disengage the drum 9 from the clamping-bearing 10, the length of said drum is greater than the length of the bearing.

30 In Fig. 10 a modification is shown in which in place of the swivel-bearing 7 a stationary bearing 7^a is employed, the latter being provided with the inclines 7^b and 7^c upon opposite sides of the center shaft-bearing 7^d.
 35 With this construction the end of the shaft may be placed upon the bearing while the roll is resting upon the floor, and in lifting the opposite end of the shaft and carrying it into engagement with the opposite bearing
 40 the inclines 7^b and 7^c will guide the shaft into the central bearing 7^d.

The paper strip from the roll on the shaft 2 is led over idler-rolls 18, journaled in an upward extension of the frame, and thence to
 45 the paper-folding form 19. This, as is usual, is suspended from an overhanging bracket 20, secured to the frame, so that the paper strip may be wrapped around the form to make the tube. At the end of the form 19 is arranged
 50 a pair of feed-rolls 21 and 22, respectively above and below the paper tube. These rolls are driven by the following mechanism:

23 is a drive-shaft extending transversely of the frame and connected by a gear-train
 55 24 with a second transverse shaft 25, journaled in the upper part of the frame. This shaft has secured thereto a hand-wheel 26. One of the intermediate gears 27 of the train 24 is secured to a transverse shaft 28, which
 60 at its opposite end has a change-gear 29, detachably secured thereto. This gear meshes with an intermediate gear 30, which in turn meshes with a gear 31 upon the shaft of the roll 22. 32 is a gear on the opposite end of
 65 the roll-shaft 22, which meshes with a corresponding gear 33 on the roll-shaft 21.

In order to facilitate the engagement of the

paper with the feed, as well as to easily remove any clogging when necessary, the upper feed-roll 21 is journaled in movable bear- 70 ings, which permit of its being swung out of contact with the roll 22. As shown in the drawings, 34 represents bearings for the shaft of the roll 21, which bearings are in the form of rock-arms pivotally supported at 35 to 75 lugs upon the frame. In their normal position these rock-arms are arranged substantially horizontal and hold the roll 21 in contact with the lower roll 22. The requisite pressure is exerted on the roll 21 by a spring 80 36, which is sleeved upon the rotary shank 37, having a crank-handle 38, and is housed within the frame 39, secured to the main frame 1. The frame 39 forms a bearing for the upper end of the spring 36, while the 85 lower end thereof bears against the collar 40 on the shank 37.

41 is a collar upon the shank 37 above the frame 39, which is adapted to engage with a lug 42 on the rock-arm 34. The collar 41 is 90 cut away on one side to permit of disengagement from the lug 42 and has an adjacent cam 43 for engaging the collar with said lug.

With the construction just described the tension of the spring 36 will exert a down- 95 ward pull on the shank 37 and through the engagement of the collar 41 with the lug 42 will transmit the tension of said spring to the bearings 34 of the roll 21, thereby pressing
 100 said roll downward against the corresponding roll 22. When it is desired to throw back the roll 21, the arm 38 is turned to register the aperture in the collar 41 with the lug 42, which will permit of the disengagement of
 105 said lug and the turning back of the roll in the rock-arm bearings 34.

The cut-off mechanism is arranged in adjacency to the rolls 21 and 22 and is of the following construction:

44 is a bar extending transversely of the 110 frame which is arranged in rear—i. e., in the direction of the feed—of the rolls 21 and 22. This bar 44 carries the usual notched cutter-blade 45, adapted to sever the paper tube when the latter is forced against said plate 115 by the striker. The striker 46 is formed by a blade having a shank slidably secured in the bipivotal bearing 47, secured to the bracket 48 upon the frame. The opposite end of the blade 47 is secured to the crank-pin 49 upon 120 the disk crank 50, while the latter is secured to the shaft 51, extending longitudinally of the frame, at one side thereof. The shaft 51 has a changeless drive connection with the drive-shaft, comprising the miter-gears 52, 125 which connect the shaft 41 with the transverse shaft 25. Thus the motion of the drive-shaft 23 is imparted through the gear-train 24 to the shaft 25 and through the miter-gears 52 to the shaft 51. This in turn rotates the 130 crank 50 and crank-pin 49, which rotates the rear end of the striker-blade 60. As this blade is slidably secured in the pivotal bearing 47, the result will be that in each revolu-

tion of the crank 50 the blade will strike upwardly across the path of the paper tube in adjacency to the cutter-blade 45 and is then withdrawn out of the path of the tube to be returned. In order that the bar may not interfere with access to the form for the paper tube, said bar is preferably hinged to the frame, so that it may at any time be turned up in a position to clear the top of the machine. This also facilitates the removal of the paper upon the form in case of clogging.

The tucking or bottom-forming mechanism is arranged in rear of the feed-rolls and cut-off and comprises, essentially, a pair of tucking-rolls 53 and 54 and a reciprocating tucker-plate 55, the latter being adapted to form a fold near the bottom edge of the paper strip and press it into engagement with the tucking-rolls. The paste-dasher 56 is also provided for depositing paste in the fold, so that when pressed together by the tucking-rolls the bottom of the bag will be completed. The tucking-rolls 53 and 54 receive their motion from the feed-rolls 21 and 22 through the medium of the gear-train 57, which connects the gear-wheel 32 on the roll-shaft 21 with a gear-wheel 58 upon the tucker-roll shaft 53. The roll 54 derives its movement from a gear-wheel 59 upon its shaft, which meshes with the gear-wheel 38. The gear-wheels 32, 38, and 59 are proportional to the diameters of the rolls 21, 53, and 54, so that said rolls will run at the same peripheral speed. In order to avoid squeezing out the paste deposited in the fold or tuck which forms the bottom of the bag, the roll 54 is provided with a longitudinal groove 60, which is so arranged as to register with the edge of the fold when passing between the rolls 53 and 54. This necessitates that the movement of the roll 54 be so timed as to always register the groove 60 with the fold in the bag, and as the length of bag varies with each change of the change-gear 29 the roll 54 must be correspondingly changed. This change is simplified by making the gear 59 upon the change-roll 54 the same as change-gear 29 or an exact fraction of the latter. Thus if the length of the bag is considerable the gear-wheel 59 may be one-half the pitch diameter of the gear-wheel 29 and the circumference of the roll 54 correspondingly one-half the length of the bag, so that two revolutions will be made by the roll 54 in feeding through each bag length. This reduces the size of the roll 54 and at the same time times its rotation to register the groove 60 with the fold. To permit of changing the roll 54, it is journaled in bearings 61, which are removably secured in the side frames of the machine by detachable caps 62. Springs 63 are also arranged to bear upon the bearings 61 to yieldingly hold the roll 54 in contact with the roll 53. The tucker-plate 55 is secured to the rock-frame 64, which is secured to a rock-shaft 65, extending transversely of the frame.

66 is a paste-receptacle which is embraced by a rock-frame 64 and is of the following construction.

67 is a framework secured to the frame 1 and provided at its outer end with bearings 68 for the shaft of the paste-roll 69.

70 is a detachable paste-pan comprising sides, bottom, and rear end, the forward end being formed by the paste-roll 69. To permit of engaging or disengaging this pan, its sides 71 are forked to embrace the roll-shaft and to bear against the opposite ends of the roll. These ends are also provided with segmental bearings for overlapping the periphery of the roll and forming the paste-tight joint therewith. The pan may then be slid along ways 72 upon the frame 67 until the forked sides embrace the roll-shaft, after which the rear end of the pan may be elevated and locked in this position by clamping-screws 73 in the frame 67, which engage with slotted flanges 74 on the paste-pan. The feeding of the paste is regulated by a sliding block 75, arranged at the forward end of the bottom of the pan, which block is adapted to bear against the paste-roll and to be adjusted away from the latter by a screw-threaded rod 76, having operating thumb-nuts 77 at the rear end of the pan. This construction permits of removing the pan for the purpose of cleansing and for readily replacing it when needed.

The various groups of mechanism constituting the machine being constructed and arranged as above described, a brief description of the complete operation is as follows: The paper-roll is first mounted upon the shaft 2 in the manner previously described, and said shaft is engaged with its bearings and adjusted in position to center the roll, as hereinbefore set forth. The end of the paper strip is then drawn over the roll 18 and around the tube-form 19 and the end inserted between the rolls 21 and 22. To permit of thus inserting the paper between the rolls, the roll 21 is thrown back by turning back the rock-arm bearings 34, as above described. When the paper is in position, the roll 21 may be thrown back and locked in position by turning the crank-handle 38 to engage the collar 41 with the lug 42 on the bearing 34. This will place a spring tension upon the roll 21, holding it against the paper strip on the roll 22. Motion may now be imparted to the drive-shaft 23, which through the gear-train 24 will cause the rotation of the shaft 25 and hand-wheel 26. Each revolution of the hand-wheel will cause a complete revolution of the crank-disk 50 and the striker 46, actuated thereby. Thus the bag length is severed with each revolution of the hand-wheel regardless of the length of bag which may be severed. The tucker and paste-dasher being actuated by a direct connection with the drive-shaft will also make a complete revolution with each revolution of the hand-wheel regardless

of the length of bag. The length of bag is determined by the speed of the feed and tucking rolls, and as the latter all run at the same relative speed they may be changed by the adjustment of a single change-gear 30. Thus it will be seen that the machine may be very readily adjusted for forming bags of different length. It is necessary, however, in each adjustment to also change the tucking-roll 54. This may be readily done by removing the cap 62, which will permit moving the bearing 61 and engaging another roll therewith. After the paper tube has passed between the feed-rolls it is fed forward until the tucker-plate strikes the end of the tube and forms the fold which is engaged with the tucker-rolls. Simultaneous with this operation of the tucker the striker-blade is turned upward across the path of the paper and presses the latter against the cutter-plate, thereby severing the tube. As the precise construction of the tucking mechanism forms no part of the present invention, a further description thereof is deemed to be unnecessary.

What we claim as our invention is—

1. In a paper-bag machine, the combination with a stationary frame and a rotary paste-roll journaled therein, of an open-ended paste-pan, a guideway upon said frame along which said pan is adapted to be moved while in a horizontal position to embrace said roll, said way permitting said pan to be tilted upward when in engagement with said shaft to feed the paste against said roll, and means for locking said pan in its tilted position.

2. In a paper-bag machine, the combination with a stationary frame and a rotary paste-roll journaled therein, of an open-ended paste-pan having sides forming a paste-tight joint with the end of said roll and projecting beyond the bottom of said pan, said projecting ends being bifurcated to embrace the roll-shaft, a guideway on said frame along which said pan is adapted to be moved while in a horizontal position into engagement with said roll, said way permitting of tilting said pan after said engagement to feed the paste against

said roll, and means for locking said pan in its tilted position.

3. In a paper-bag machine, the combination with a frame and a rotatory paste-roll journaled therein, of a removable paste-pan having an open end, and adjacent sides adapted to embrace the opposite ends of said roll, cooperating guides on said frame and pan for holding the latter in a position to retain the paste therein while being engaged or disengaged from said roll, said guides disengaging after the pan is in engagement with the roll to permit of elevating the outer end of said pan, and means for locking the pan thus elevated to said frame.

4. In a paper-bag machine, the combination with the frame, a detachable paper-roll-holding shaft and means for securing the paper-roll thereon, of a swivel-bearing for one end of said shaft, a shank having a threaded engagement with said bearing and projecting laterally therefrom, a yoke swiveled upon said shank, and adapted to engage with an annular bearing in said shaft, a gravity-arm for holding said yoke in upright position and a bearing for the opposite end of said shaft for the purpose described.

5. In a paper-bag machine, the combination with the frame, a detachable paper-roll-holding shaft and means for securing the roll therein, of a bearing for one end of said shaft, means carried by said bearing for adjusting the shaft longitudinally therein, a drum upon the opposite end of said shaft, a two-part clamping-bearing engaging said drum, and an adjusting-screw for tightening said bearing, said drum being of greater length than the bearing to permit of longitudinal adjustment thereon.

In testimony whereof we affix our signatures in presence of two witnesses.

WALTER BROWN.
WARD O. COLLINS.

Witnesses:

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BERYL M. TOUSLEY.