

No. 813,127.

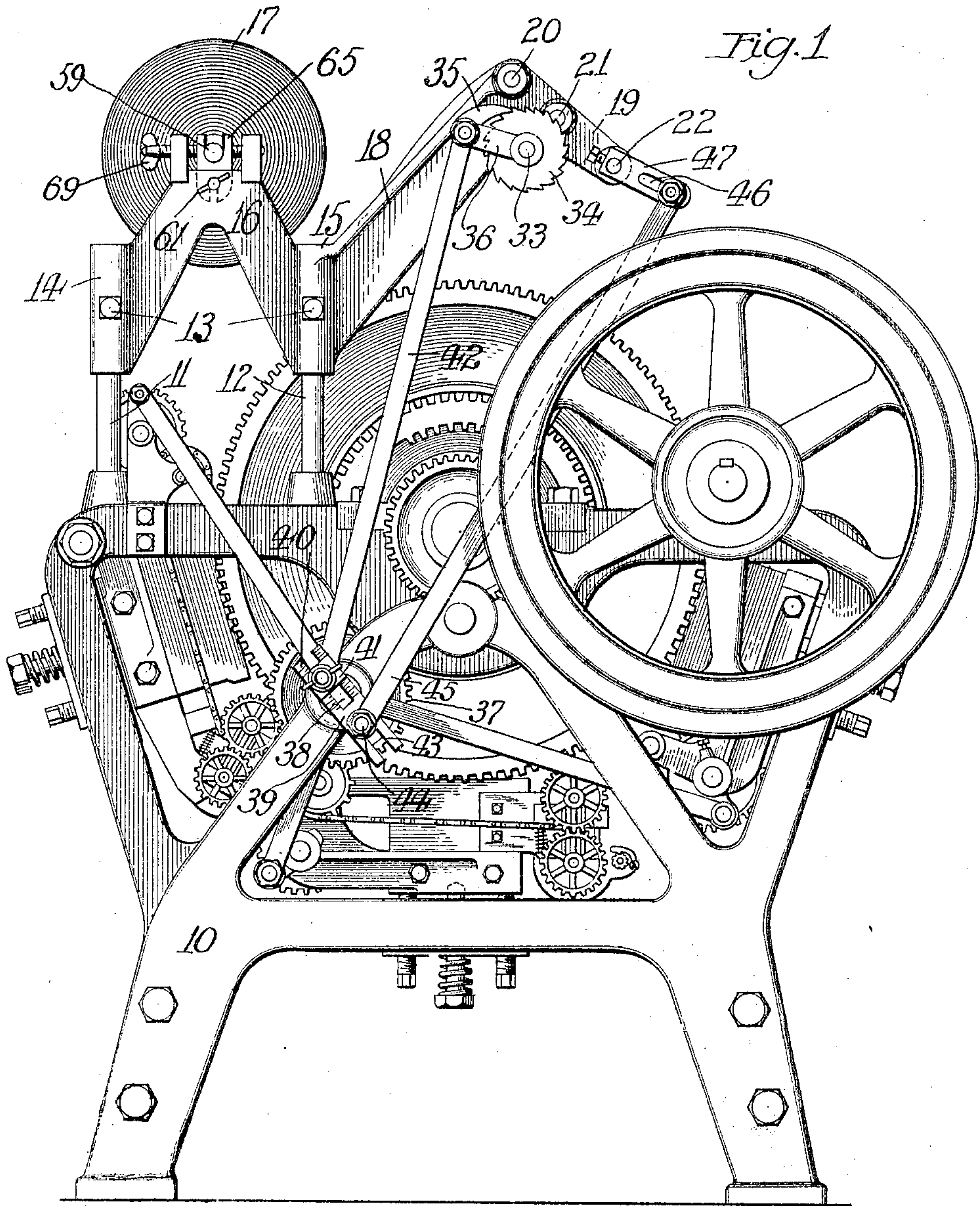
PATENTED FEB. 20, 1906.

C. WILLIAMS.

PAPER FEEDING MECHANISM.

APPLICATION FILED APR. 1, 1903. RENEWED JULY 21, 1905.

4 SHEETS—SHEET 1.



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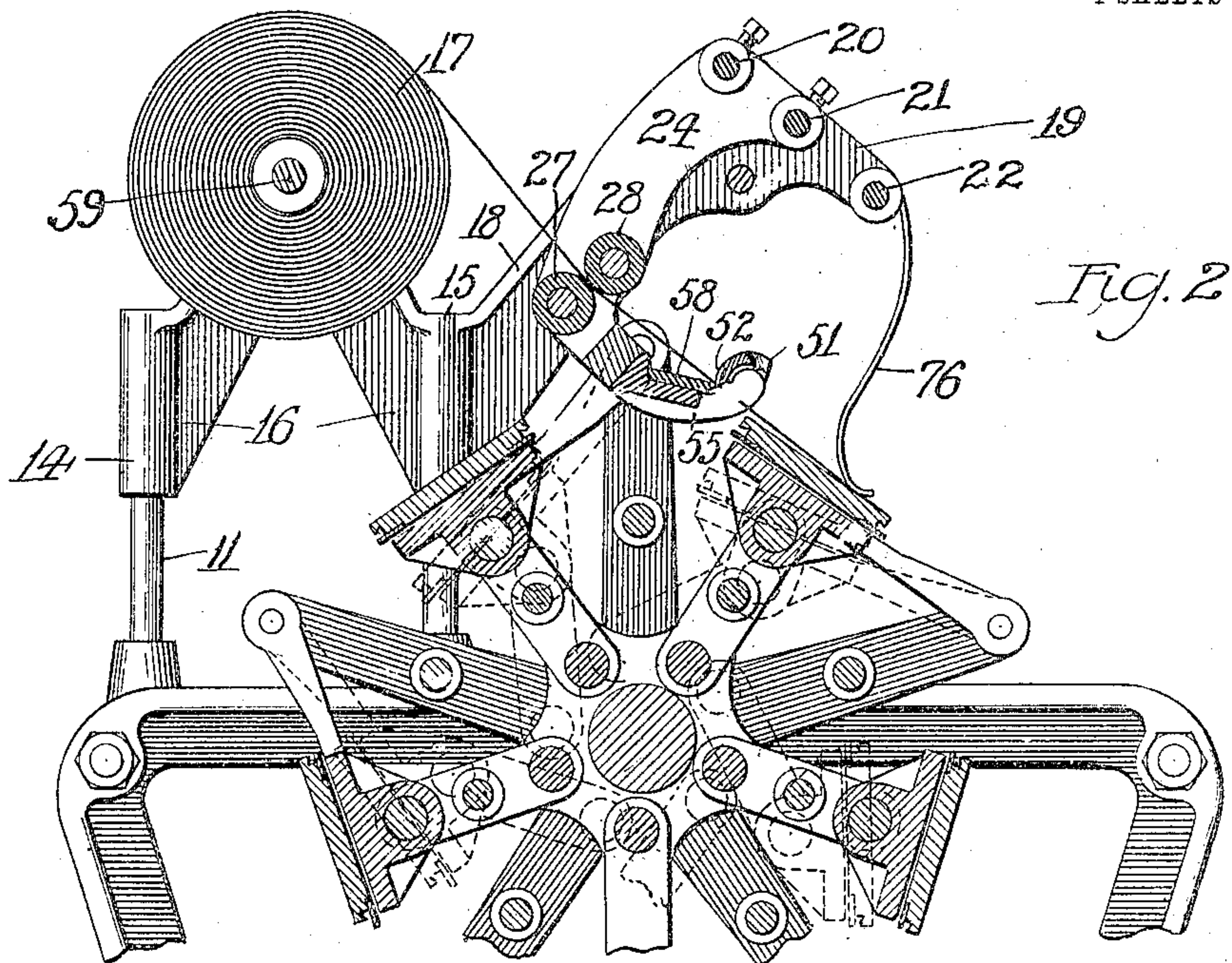


Fig. 2

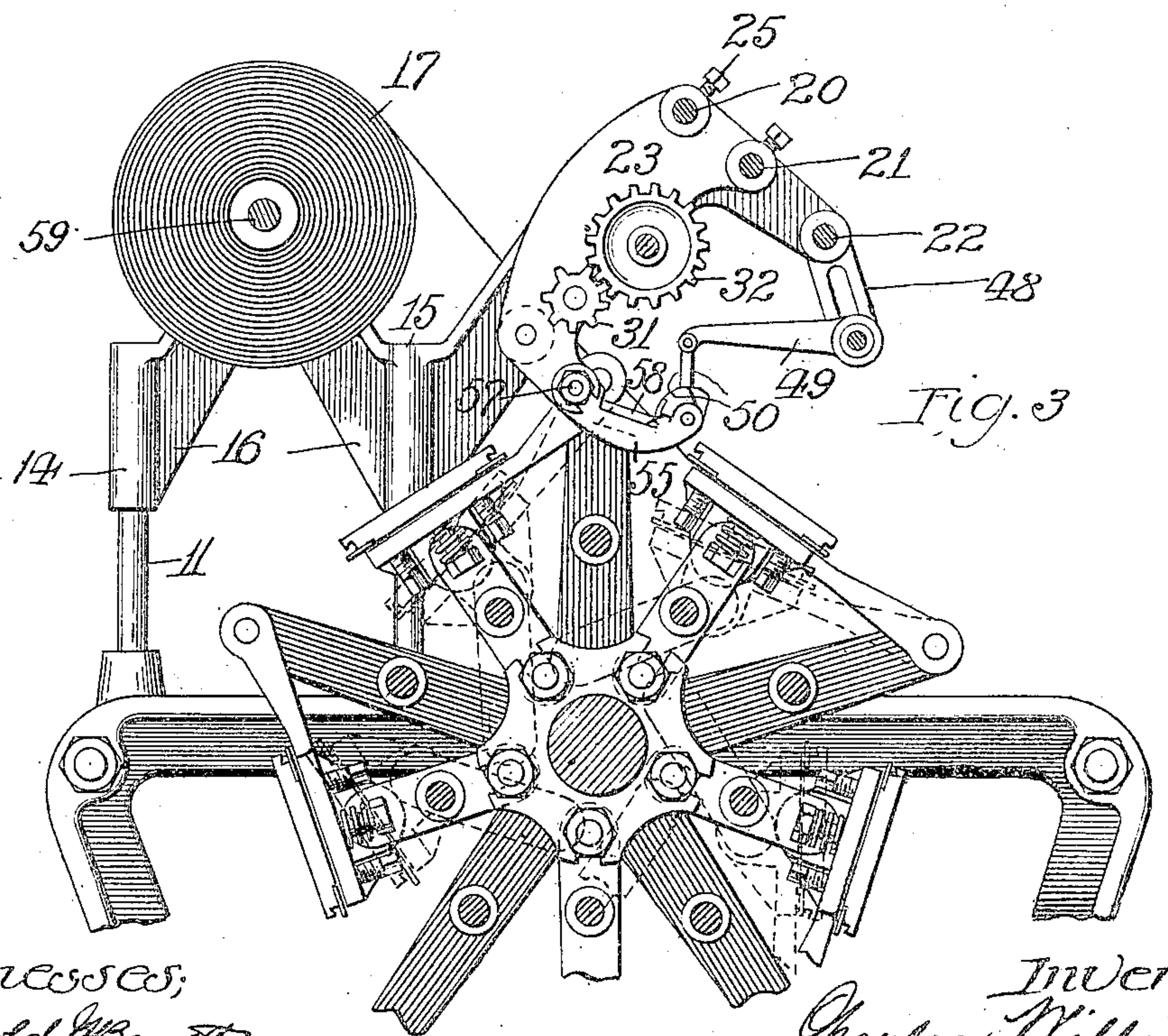


Fig. 3

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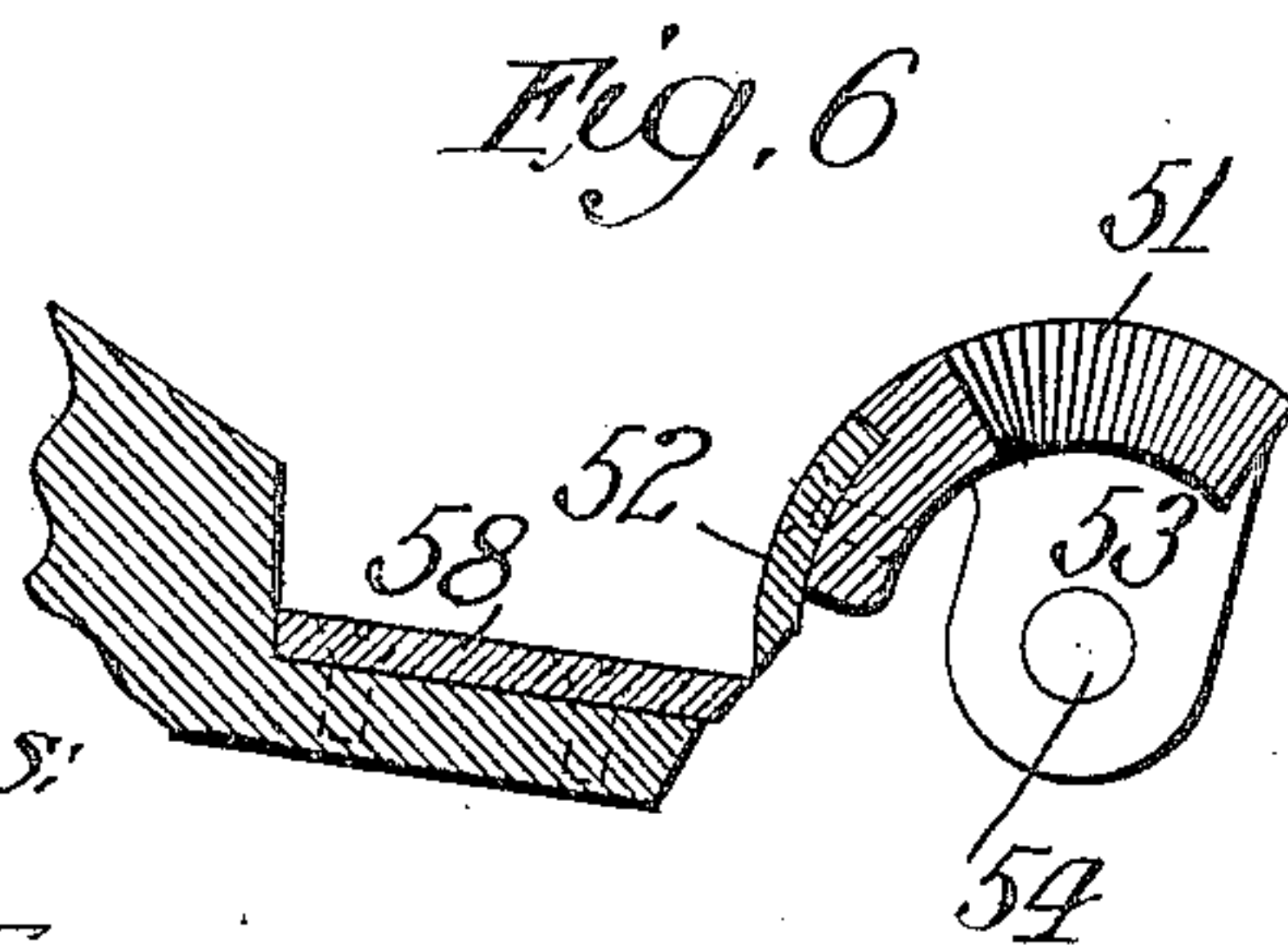
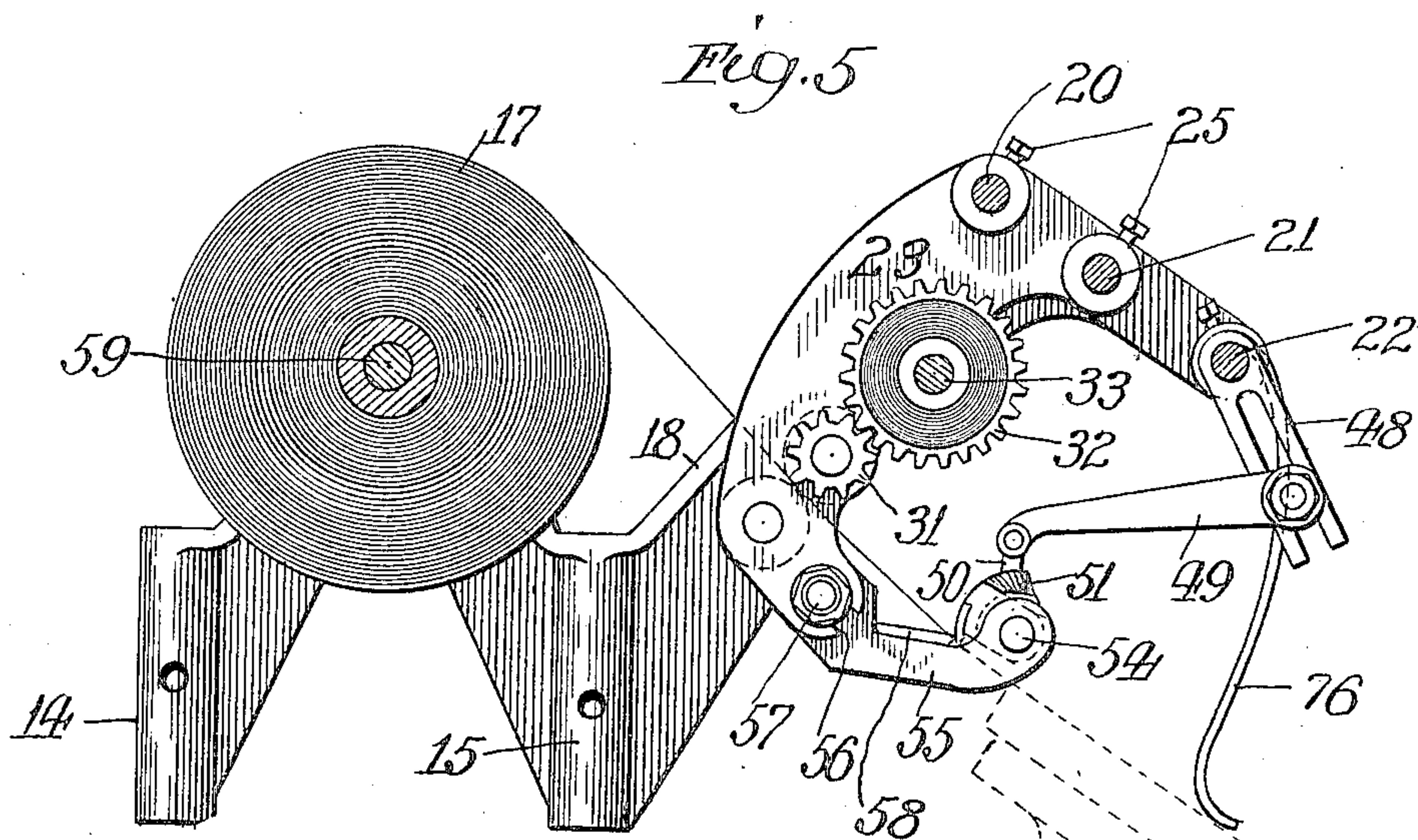
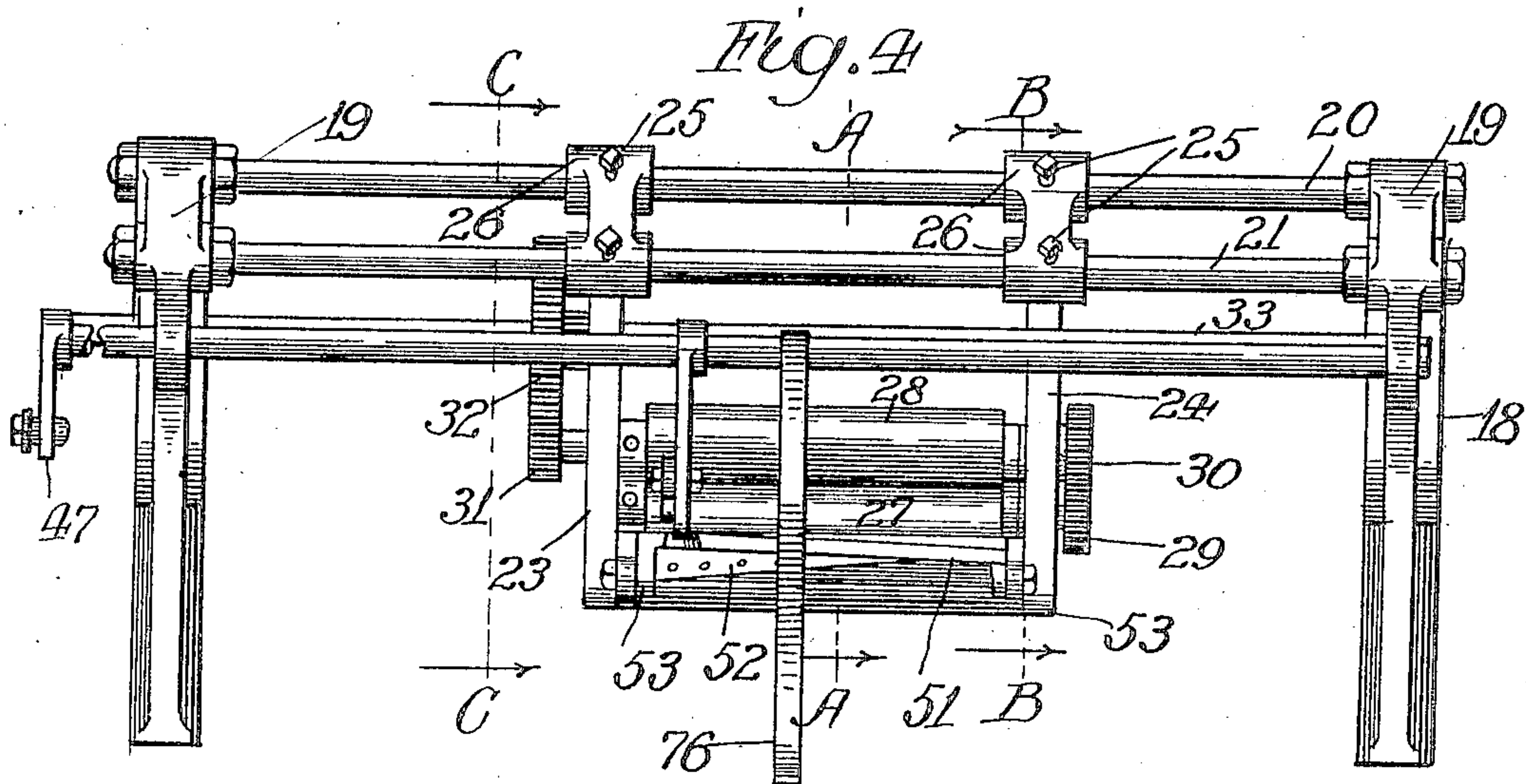
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 7

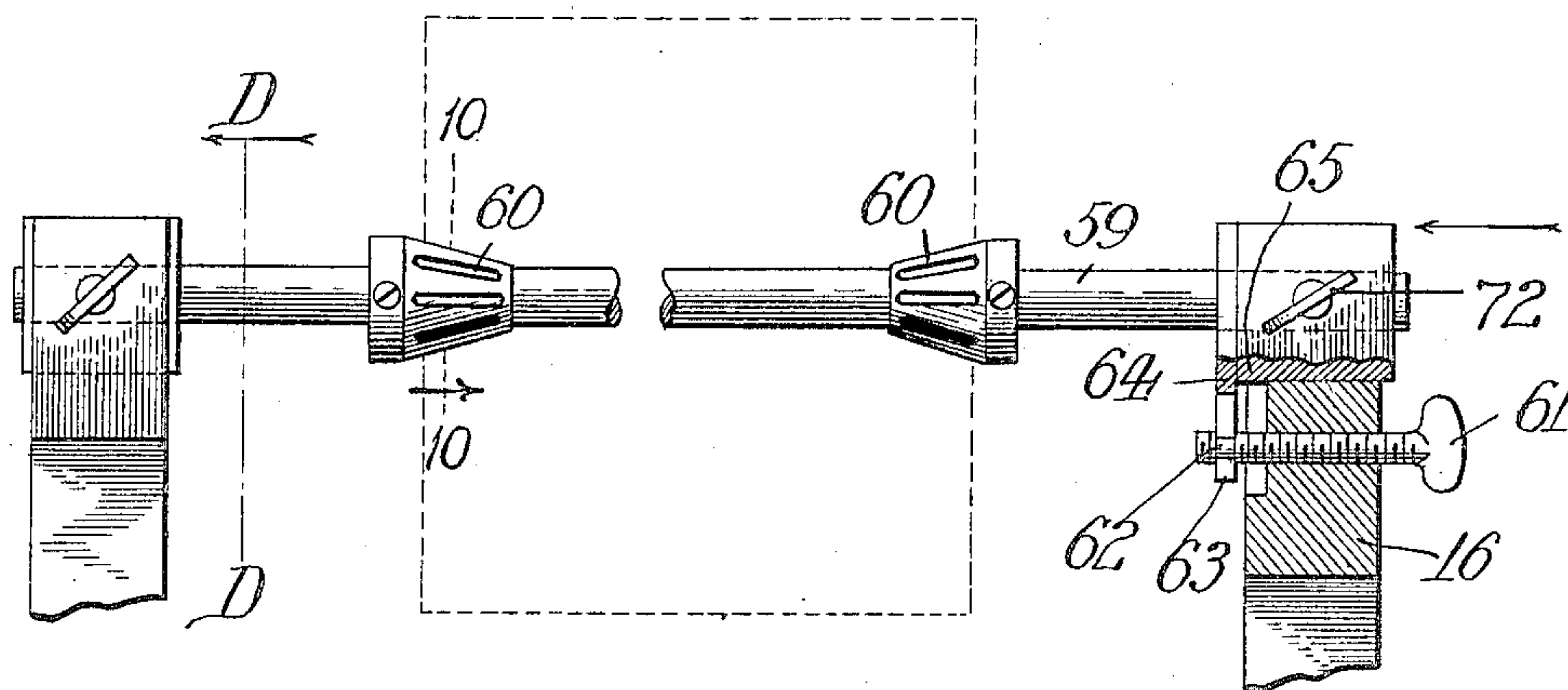


Fig. 10

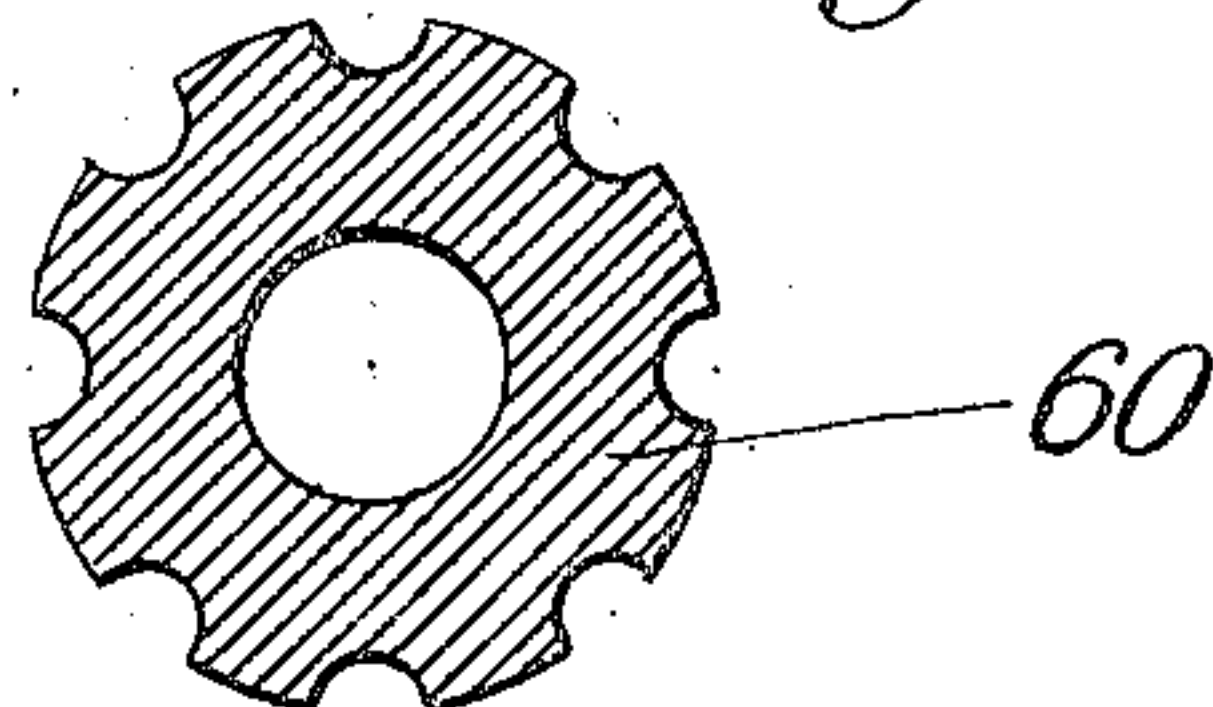


Fig. 8

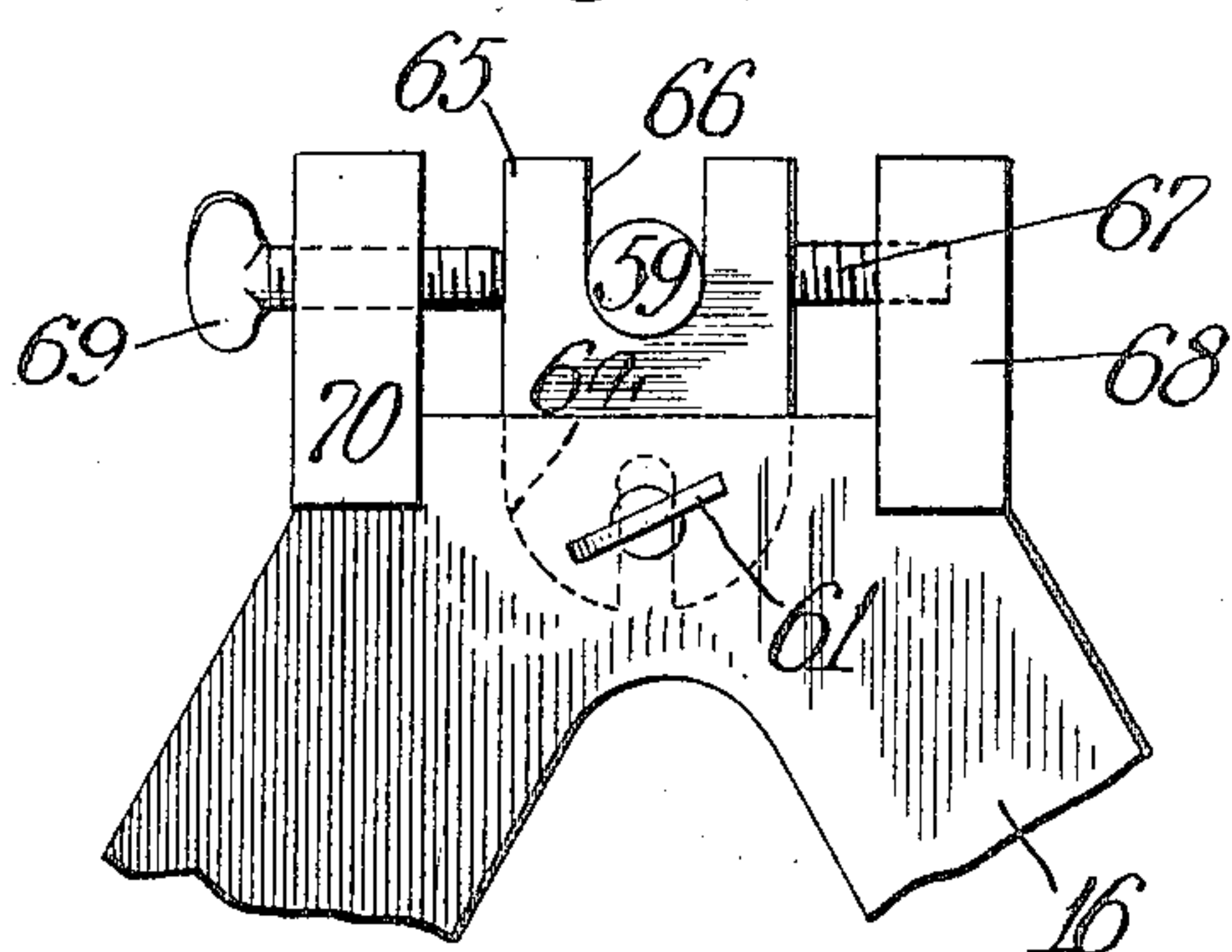
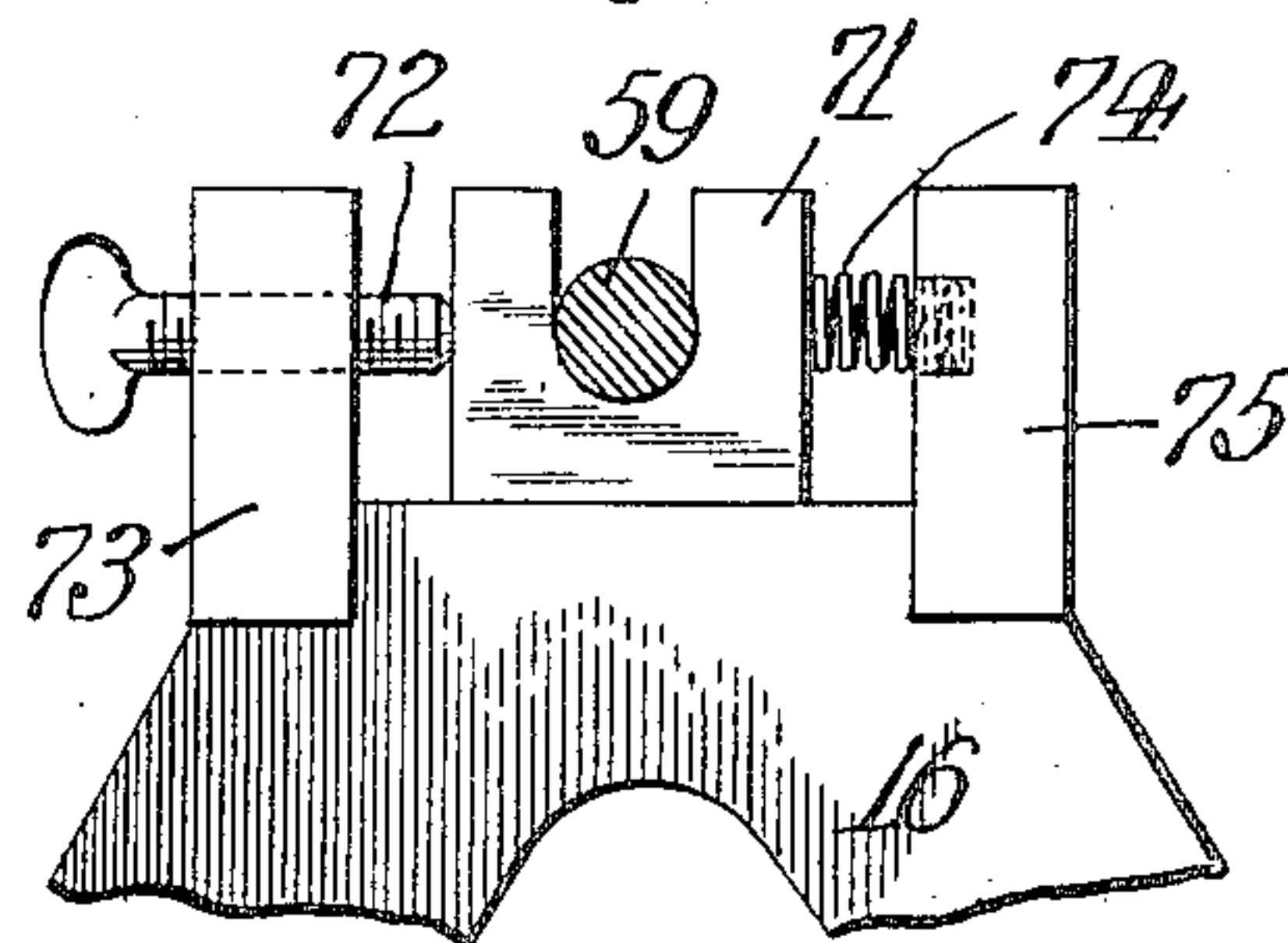


Fig. 9



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UNITED STATES PATENT OFFICE.

CHARLES WILLIAMS, OF SPOKANE, WASHINGTON, ASSIGNOR OF FIFTEEN-SIXTEENTHS TO WILLIAM H. COWLES AND JOHN F. YOUNG, OF SPOKANE, WASHINGTON.

PAPER-FEEDING MECHANISM.

No. 813,127.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed April 1, 1903. Renewed July 21, 1905. Serial No. 270,741.

To all whom it may concern:

Be it known that I, CHARLES WILLIAMS, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Paper-Feeding Mechanisms, of which the following is a specification.

My present invention is concerned with certain new and useful improvements in paper-feeding mechanisms such as are adapted to feed paper from a roll and cut it into strips of the proper length and to deliver it to a printing-press.

For convenience of illustration I have shown my invention as applied to a multi-color-printing press; but it will be understood that the mechanism may be applied to other forms of presses.

To illustrate my invention, I annex hereto four sheets of drawings, in which the same reference characters are used to designate identical parts in all the figures, of which—

Figure 1 is a side elevation of a multicolor press, showing my improved paper-feeding mechanism attached thereto. Fig. 2 is a transverse vertical section through the upper part of the paper-feeding mechanism and press on the line A A of Fig. 4. Fig. 3 is a similar view on the line B B of the same figure. Fig. 4 is a front elevation, on a slightly-enlarged scale, of the cutting and feeding mechanism proper detached. Fig. 5 is a section on the line C C of Fig. 4. Fig. 6 is a detail showing the coöperation of the shearing and ledger blades. Fig. 7 is a front elevation of the paper-roll-holding mechanism. Fig. 8 is an end elevation thereof. Fig. 9 is a sectional view thereof on the line D D of Fig. 7, and Fig. 10 is a sectional view on the line 10 10 of Fig. 7.

Upon the framework 10 of the press, I secure at each end a pair of posts 11 and 12, upon which are adjusted by the set-screws 13 the framework of the paper feeding and cutting mechanism, which consists of two plates, one at each end, each end consisting of the two sleeves 14 and 15, adapted to coöperate with the posts 11 and 12 and connected by the V-shaped portion 16, upon the upper end of which is supported one end of the paper-roll 17. Projecting forwardly from the sleeve 15 substantially at an angle of forty-

five degrees is an L-shaped arm 18, the L portion 19 of which projects forwardly and downwardly.

Referring now to Figs. 2 to 5, it will be seen that the arms 19 are connected by the two transverse bearing-rods 20 and 21, secured in suitable bearings in the said L-shaped arms, and there is also a rock-shaft 22, journaled in suitable bearings formed in the outer and downward ends of the arms 19. Adjustably mounted on the rods 20 and 21 is a frame comprising a pair of supporting-plates 23 and 24, secured in place by the set-screws 25, passing through the bearing-sleeves 26, formed on the upper ends of said plates. These plates 23 and 24 have journaled therein toward their lower ends the feed-rollers 27 and 28, which are compelled to move in unison in opposite directions, so that they will carry a sheet of paper between them by the intermeshing gear-pinions 29 and 30, secured on one end thereof. On the other end of the shaft carrying the feed-roller 28 is secured the gear-pinion 31, which meshes with a gear-wheel 32, secured on the shaft 33, extending between the end pieces 18 and journaled in them and in the bearing-plates 23 and 24. The shaft 33 has secured on its outer end a ratchet-wheel 34, with which engages a ratchet-dog 35, mounted on the swinging arm 36, mounted on the end of the shaft 33. A continuously-driven gear-wheel 37 on the machine is secured on a shaft 38, the outer end of which has mounted thereon the bar 39, containing the slots at either end thereof, one of which is graduated on its edges, as seen at 40. Secured in the slot having the graduated edges 40 is an adjustable bearing-block 41, to which is pivoted a link 42, the other end of which is pivotally secured to the arm 36, so that the continued rotation of the wheel 37 will, owing to the eccentric position of the block 41, cause the ratchet 35 to rotate the shaft 33 a definite number of degrees at each movement, and this rotation, transmitted and increased through the gears to the feed-rollers 27 and 28, will cause the paper strips to be fed between them the desired distance, which, it will be seen, can be readily regulated by adjusting the bearing-block 41 in the graduated slot. It will be apparent that this feed will be intermittent, occupying half of each rotation of the shaft 38 and being inoperative

during the other half. Secured in the slot 43, formed in the other end of the bar 39, is the adjusting pin or block 44, to which is pivotally secured the link 45, the other end of which is adjustably secured in the slot 46, formed in the arm 47, secured to the rock-shaft 22. Secured on the rock-shaft 22 a little distance inside of the bearing-plate 23 is a slotted arm 48, in which is pivotally secured in any necessary position of adjustment an arm 49, which in turn is pivotally secured to the short arm 50, projecting upward from the body 51, carrying the helical knife-blade 52. The body 51 has the arms 53, by which the swinging knife-carrying member is pivotally secured by means of studs or bearing-pins 54 in the arms 55, which may be formed integral with the lower ends of the plates 23 and 24, but which I preferably make adjustable thereon, as by the slots 56 and set-screws 57, so that the position of the knives can be accurately adjusted relatively to the platens upon which the paper is to be delivered. Extending between and secured to the upper surface of the arms 55 is the ledger-blade 58, with which the helical blade 52 coöperates as it is rocked forward at each revolution of the shaft 38.

The paper-roll 17 is mounted upon a shaft 59, supported in the inverted-V-shaped portion 16 of the feed-mechanism-supporting frame. A pair of conical adjusting-plugs 60 are secured by set-screws in proper position on the shaft 59 to accurately secure the roll of paper from any longitudinal movement on its shaft. The longitudinal position of the roll of paper is secured by means of the set-screw 61, passing through a threaded bearing formed in the top of the part 16 and having the groove 62 formed in its end working in the vertical slot 63, formed in the plate 64, projecting down from the block 65, which is mounted to slide on the top of the piece 16 so far as may be necessary for this longitudinal adjustment. The block 65 has the U-shaped bearing-recess 66 formed in its upper side to receive the shaft 59. The transverse position of this end of this shaft is determined by the set-screw or stud 67, secured in the ear 68 of the part 16, against which one side of the block 65 is securely held by the set-screw 69, passing through a similar ear 70. The adjustment of the other end of the shaft is cared for by the mechanism shown in Fig. 9, where it will be seen that the bearing-block 71, which is free to slide on the upper surface of the part 16, is held in any desired position of adjustment against the set-screw 72, screwed through the ear 73 by the helically-coiled expanding-spring 74, confined between the block 71 and the ear 75.

From a consideration of the foregoing mechanism the method of operation will be apparent. The machine being in operation and the shaft 38 revolving during half of one

rotation of said shaft, the feed-rollers are rotated forward to carry the paper between the cutting-blades and onto the platen, which may be adjacent and which is held in the retracted position shown in dotted lines in Fig. 2. At the end of the feeding movement the platen is thrown outward to the position shown in full lines and the strip of paper that has been fed forward is caught between the surface of the platen and the wire springs 76, projecting downward from the plates 23 and 24 in suitable position to catch the paper. As soon as the paper is properly held the reciprocating helical blade 52 reaches the limit of its forward movement and shears off the paper and retreats, leaving the parts ready for a fresh operation. Of course it will be understood that the platens are provided with the customary paper-clamps which secure the portion cut off firmly before the platens are advanced to printing position.

The plugs 60 are provided with suitable means to engage the roll of paper so as to insure the rotation of the roll with the shaft 59. For this purpose the plugs may be provided with serrations, as shown in Fig. 10, by forming the conical portions of the plugs with alternate ribs and grooves along the axial line. It is of course obvious that any other means may be employed.

While I have shown and described my invention as embodied in the form which I at present consider best adapted to carry out its purposes, it will be understood that it is capable of modifications.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class described, the combination with the support for a roll of paper, of a stationary frame, a pair of feed-rollers mounted on the frame, a ledger-blade fixed on the frame, a swinging cutting-blade coöperating therewith, and mechanism for alternately operating the feed-rollers and the cutting-blade; substantially as and for the purpose described.

2. In a device of the class described, the combination with a paper-roll support, of a stationary frame, a pair of feed-rollers mounted in bearings on the frame, means for adjusting the amount of movement given to said rollers at each operation, a ledger-blade fixed on the frame, a swinging cutting-blade coöperating therewith, means for regulating the time and throw of said swinging blade, and means for alternately operating said feed-rollers and swinging said cutting-blade; substantially as and for the purpose described.

3. In a device of the class described, the combination with the roll-support and the feed-rollers, of a ledger-blade, a swinging and cutting blade coöperating therewith, and means for swinging said blade consisting of a continuously-rotating shaft carrying a slotted arm, a bearing-pin secured in said slotted

arm, a link secured to said bearing-pin, a rock-shaft having a slotted arm to the other end of which said link is pivotally secured, another slotted arm on said rock-shaft, and a link connecting said last-mentioned slotted arm and the swinging cutting-blade.

4. In a device of the class described, the combination with the paper-roll support, of the paper-feeding rolls, the ledger-blade and the coöperating swinging cutting-blade, a continuously-rotating shaft carrying an arm slotted at both ends, and connections with one slotted end of said arm for operating the paper-feeding rolls and connections with the other slotted end of said arm for alternately operating the swinging knife.

5. In a device of the class described, the combination with the paper-roll-holding mechanism, of the framework therefor having an intermittently-rotating shaft and a rock-shaft mounted therein, a pair of feed-rolls mounted in said framework and actuated from said intermittently-rotated shaft, a fixed ledger-blade and a swinging cutting-blade coöperating therewith actuated by the rock-shaft, a continuously-rotating shaft, and connections between said continuously-rotating shaft and the intermittently-rotated shaft and the rock-shaft for alternately operating the feeding-rolls and the cutting-blade.

6. In a device of the class described, the combination with the paper-roll-holding mechanism, of the framework therefor having an intermittently-rotating shaft and a rock-shaft mounted therein, a pair of feed-rolls mounted in said framework and actuated from said intermittently-rotated shaft, a

fixed ledger-blade and a swinging cutting-blade coöperating therewith actuated by the rock-shaft, a continuously-rotating shaft, and connections between said continuously-rotating shaft and the intermittently-rotated shaft and the rock-shaft for alternately operating the feeding-rolls and the cutting-blade, said connections consisting of a slotted bar on the continuously-rotating shaft having an adjustable bearing-block in one end thereof to which is pivotally secured a link pivoted to a swinging arm carrying a dog engaging a ratchet-wheel secured on said intermittently-rotated shaft and another link pivotally secured to the other end of the slotted bar at one end and at the other end to an arm secured to said rock-shaft.

7. In a device of the class described, a support for paper-rolls consisting of the shaft mounted at one end in the bearing-block having the set-screw secured thereto for moving the bearing longitudinally of the shaft and means for adjusting the shaft at each end transversely, said means consisting at one end of the stationary set-screw with the coöperating set-screw for engaging the two sides of said bearing and at the other end of the helically-coiled expanding-spring and the set-screw for engaging the opposite sides of said bearing; substantially as and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES WILLIAMS.

Witnesses:

E. MOLITOR,

J. McROBERTS.