

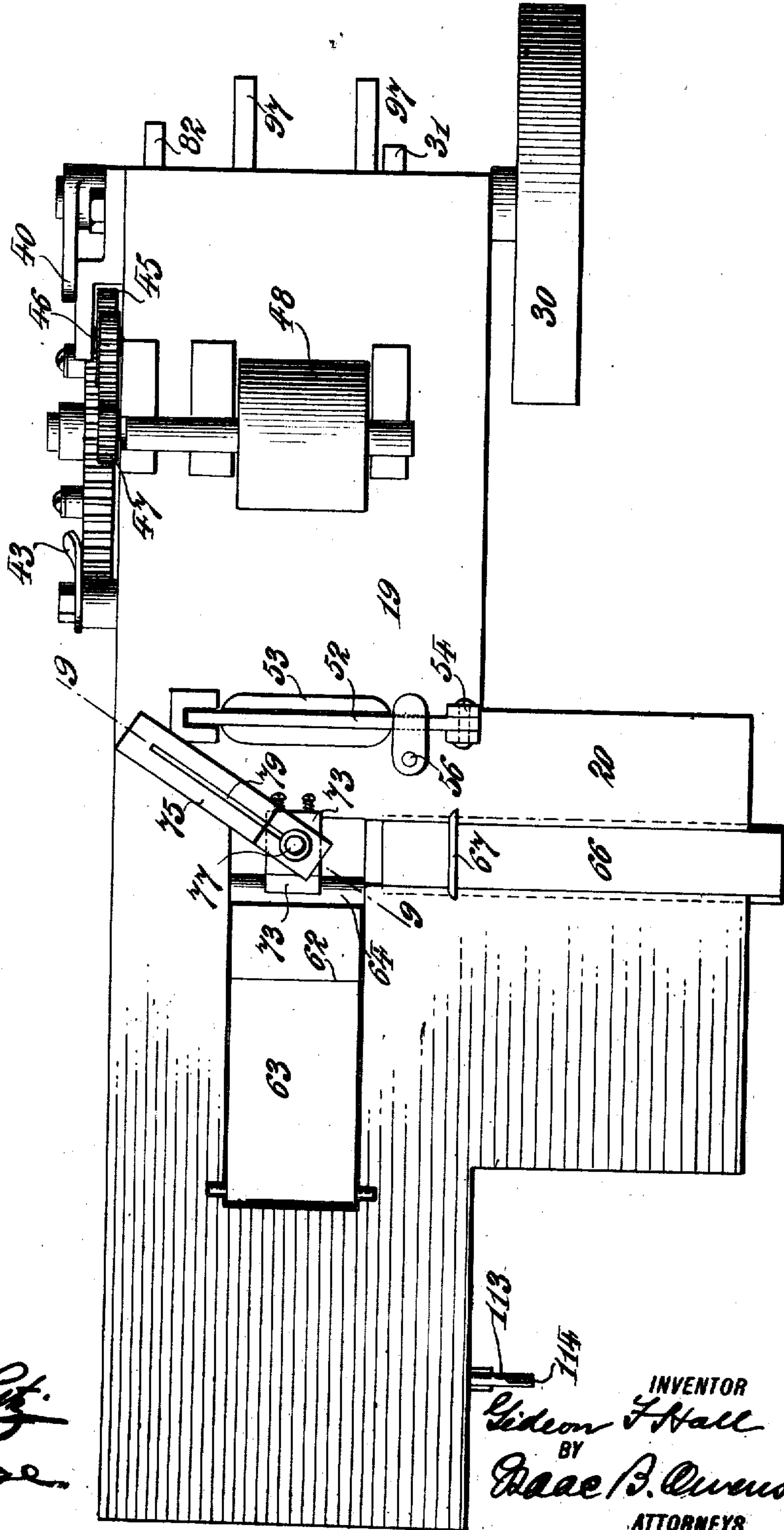
999,556.

G. F. HALL.  
WRAPPING OR PACKAGING MACHINE.  
APPLICATION FILED JULY 1, 1909.

Patented Aug. 1, 1911.

6 SHEETS—SHEET 1.

Fig. 1



WITNESSES  
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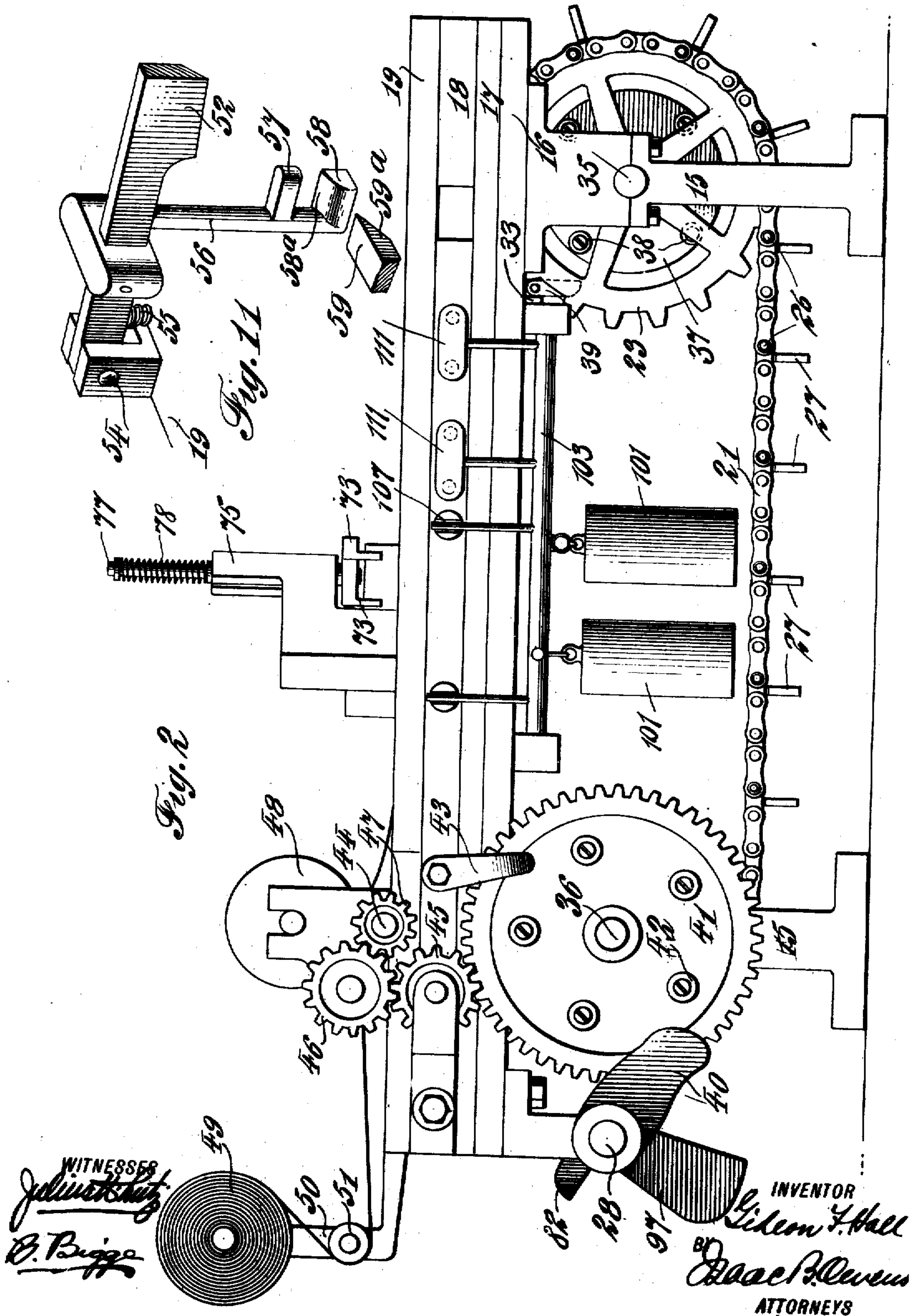
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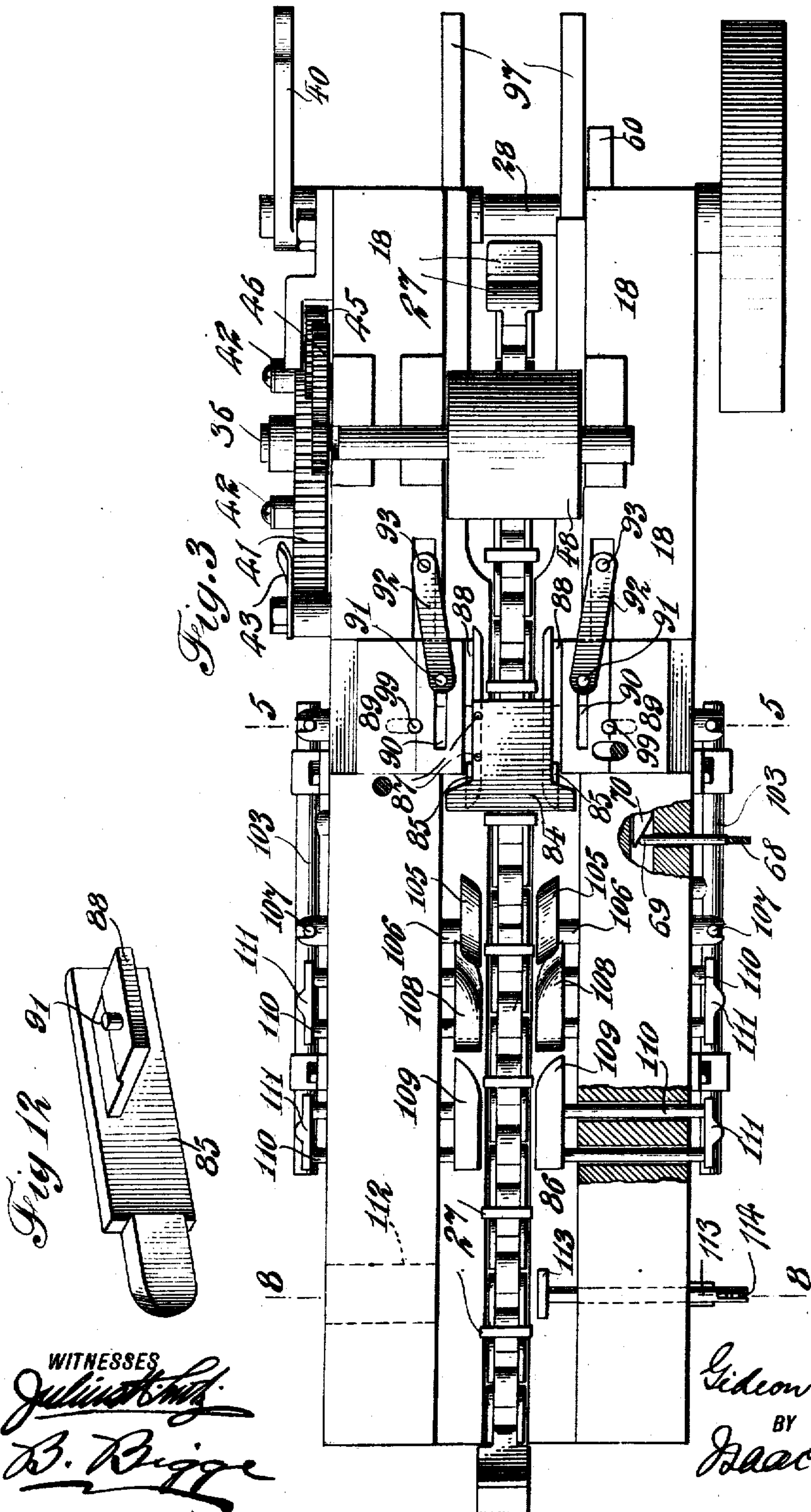


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6 SHEETS—SHEET 3.



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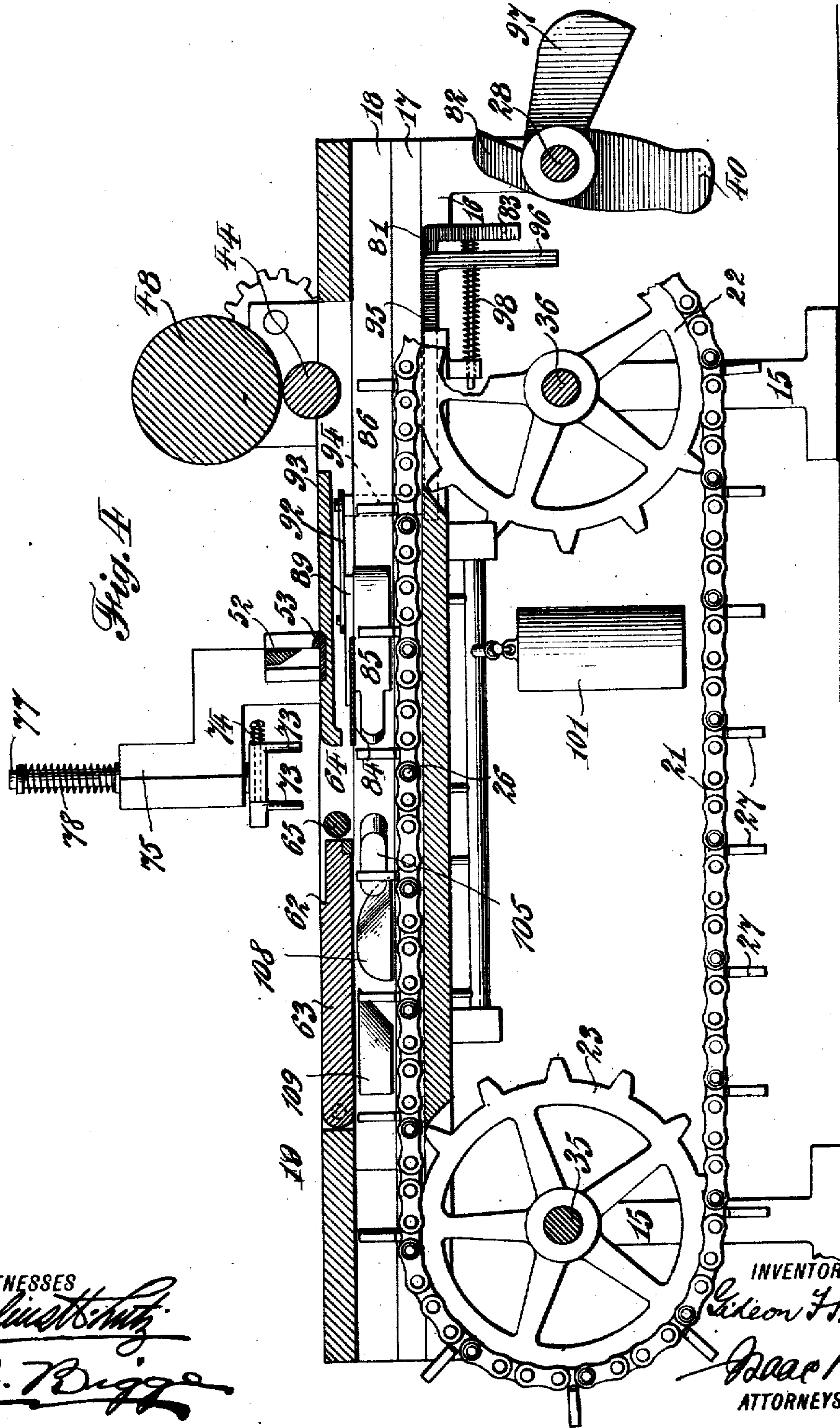


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6 SHEETS—SHEET 4.



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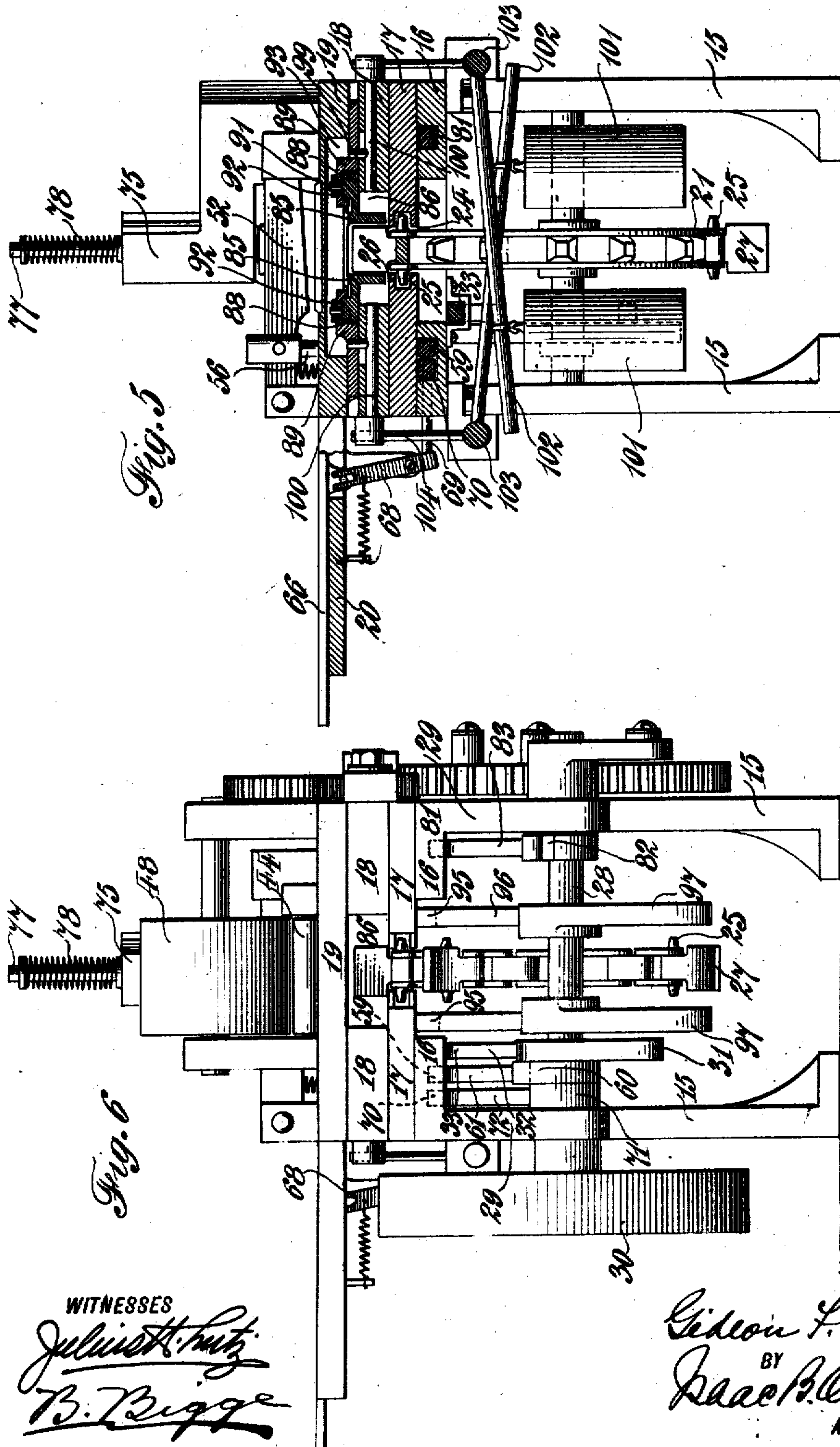
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6 SHEETS—SHEET 6.



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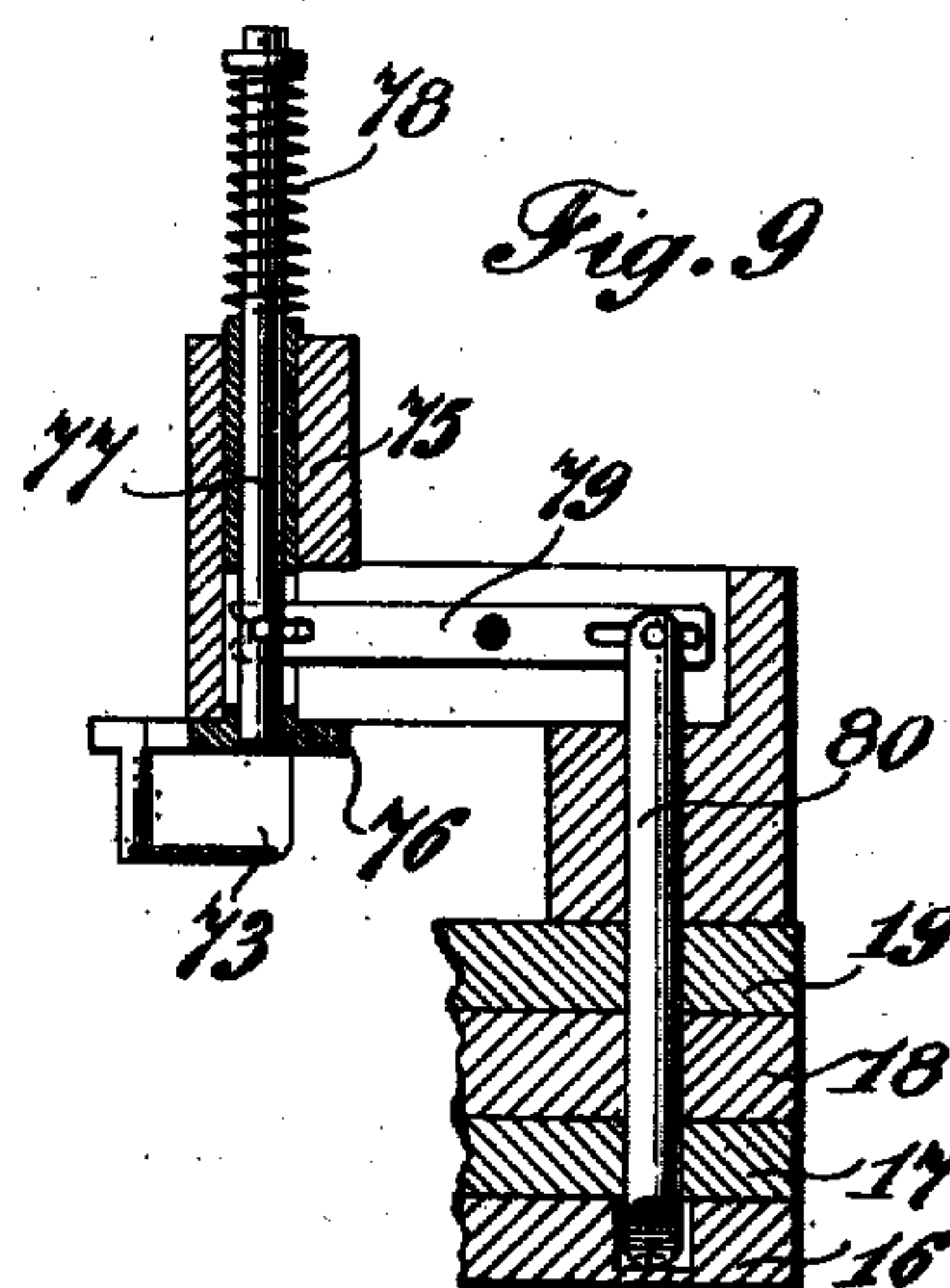
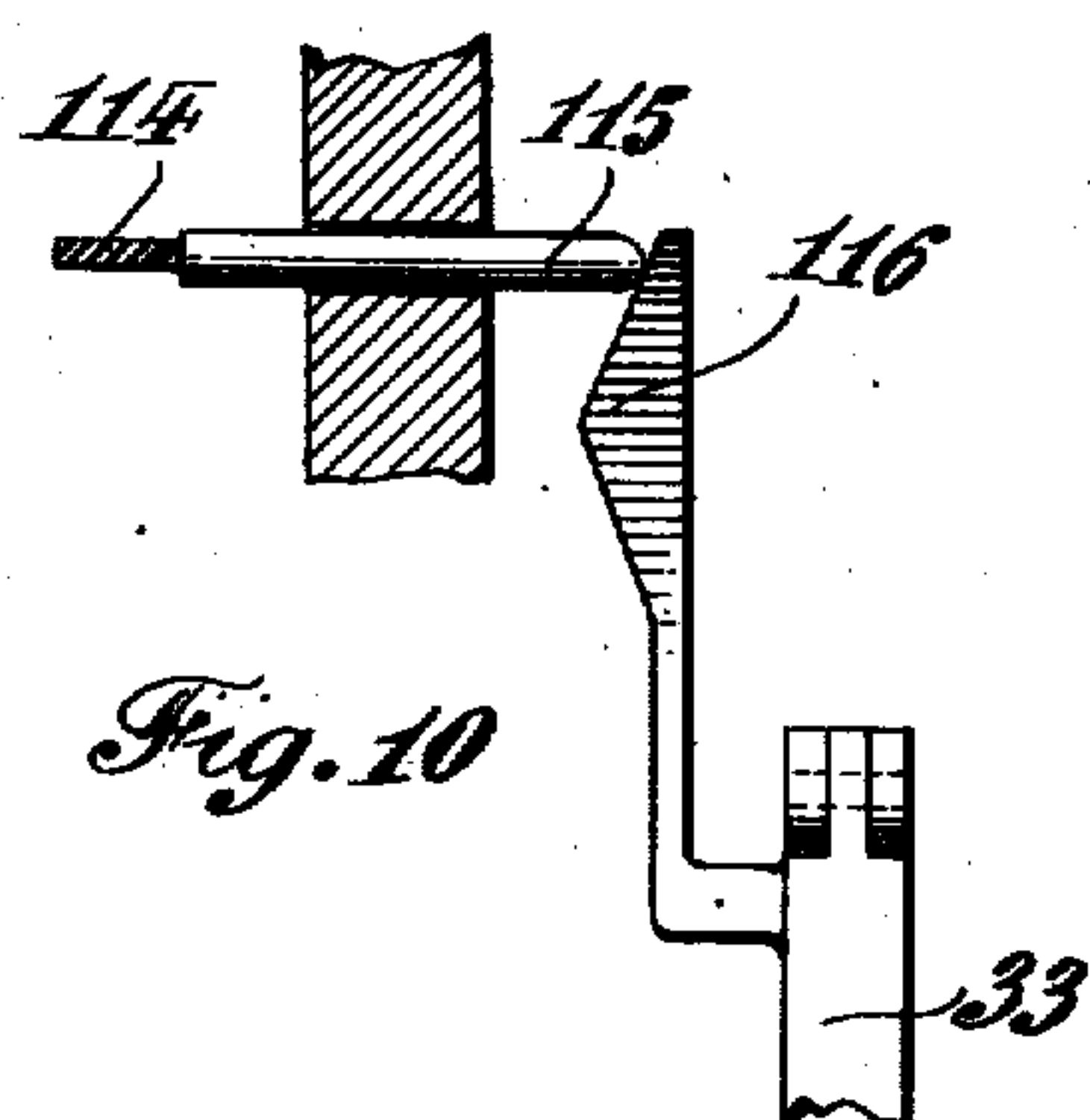
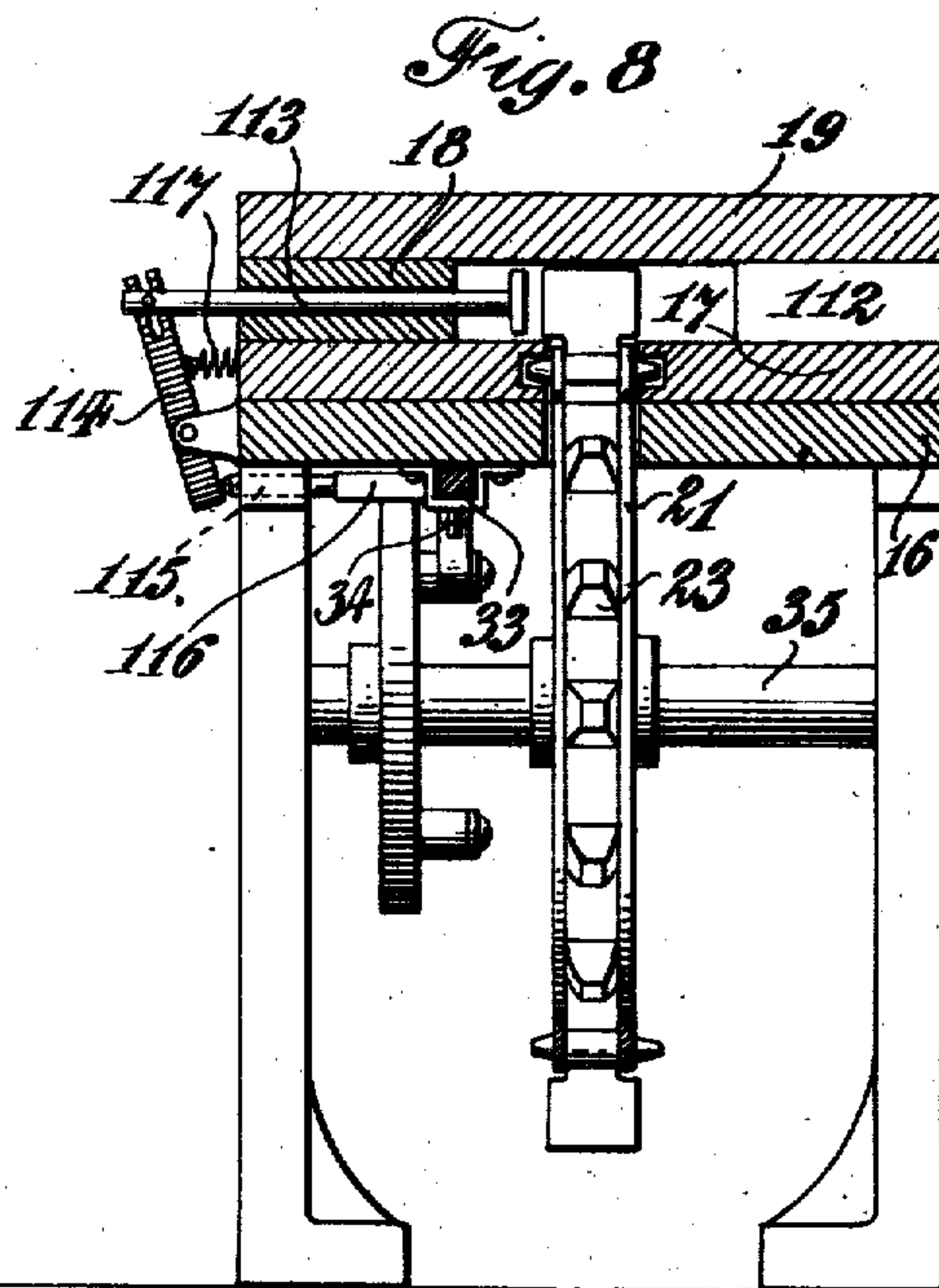
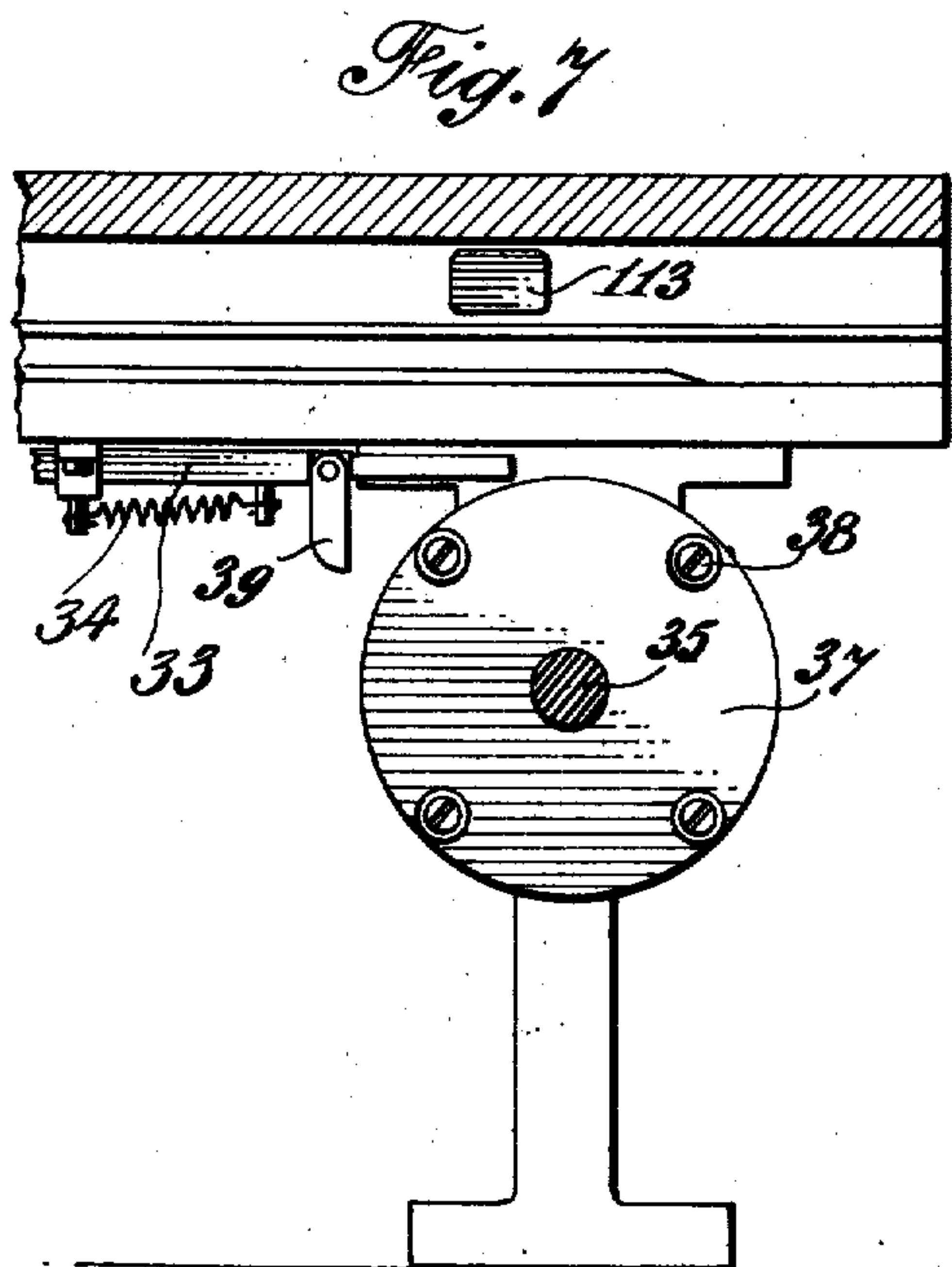


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6 SHEETS—SHEET 6.



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# UNITED STATES PATENT OFFICE.

GIDEON F. HALL, OF BROOKLYN, NEW YORK, ASSIGNOR OF TWO-THIRDS TO JOSEPH F. GARCIA, OF BROOKLYN, NEW YORK.

## WRAPPING OR PACKAGING MACHINE.

999,556.

Specification of Letters Patent.

Patented Aug. 1, 1911.

Application filed July 1, 1909. Serial No. 505,334.

*To all whom it may concern:*

Be it known that I, GIDEON F. HALL, of the borough of Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Wrapping or Packaging Machines, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain improvements in the wrapping or packaging machines forming the subject of my co-pending application, filed Oct. 22, 1908, Serial #458982, which is of that class wherein cams are provided and the article with its wrapper is moved past the cams so that the cams may successively form the folds in the ends of the wrapper.

My present improvements involve various features by which the speed and certainty of operation are increased and the mechanism is simplified and rendered less costly to manufacture, all of which features will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is now had to the accompanying drawings which illustrate, as an example, the preferred manner of practically embodying my invention.

In these drawings;—Figure 1 is a plan view of the machine; Fig. 2 is a side elevation of the same; Fig. 3 is a plan view with the top section of the frame or what is termed the table removed and other parts of the frame broken away; Fig. 4 is a central longitudinal section of the machine; Fig. 5 is a vertical cross-section on the line 5—5 of the Fig. 3; Fig. 6 is an elevation of the drive shaft end of the machine; Fig. 7 is a detail section taken longitudinally of the machine and particularly illustrating the device for driving the chain by which the articles are advanced through the machine; Fig. 8 is a vertical cross-section on the line 8—8 of Fig. 3; Fig. 9 is a detailed vertical section on the line 9—9 of Fig. 1, showing the device for pushing the articles into the machine; Fig. 10 is a detail view of the device for ejecting the wrapped articles from the machine; Fig. 11 is a detail perspective, showing the paper knife and the manner of operating the same; and Fig. 12 is a detail perspective of one of the fingers which overtake the article and

wrapper to form the first fold in the ends of the latter.

The frame of the machine in which the moving parts are mounted may be of any convenient or desired construction. As here shown, it comprises legs or supports mounting the horizontal main part or body of the frame, which, for convenience of construction, I prefer to build of four superimposed laminations 16, 17, 18 and 19. The top lamination 19 has a table-like extension 20 (see Fig. 1) on which the articles may be placed preparatory to feeding them into the machine; and it also has various vertically disposed projections serving as supports for the paper roll, paper knife and feeder, all of which will be fully described hereinafter.

The machine is adapted to wrap various rectangular articles, such for example, as yeast cakes and caramels; and these articles are, in the preferred form of my invention, carried continuously through the machine with a progressive step-by-step motion through the medium of an endless chain 21, running over sprocket wheels 22 and 23 and having its upper run or length guided in a longitudinal slot 24 formed in the center of the lamination 17 of the frame. This run of the chain is thus guided by means of studs 25 on the chain, which are received in grooves 26 in the side edges or walls of the slot 24. In this manner the top run of the chain is held against vertical motion and caused to form a firm support for the articles during the wrapping operation. The chain is provided with projecting fingers 27, fastened thereto at intervals and serving to engage the articles and push them forward.

28 indicates the prime mover shaft, which is mounted to rotate in bearings 29, depending from the lamination 16. This shaft 28 is furnished with a band wheel 30, or other means for imparting motion to it. Secured to the shaft 28 is a wiper cam 31 (see Fig. 6) which is arranged to engage a toe depending from a push rod 33 and by which the push rod is operated in one direction. For returning the push rod 33 toward the cam 31, said rod is provided with a spring 34 which may be arranged in any desired manner. One of the sprocket wheels 23 is fastened to a rotating shaft 35, suitably mounted in the rear supports 15, while the other sprocket 22 is carried on a shaft 36, mounted in the front supports 15. As



shown in Figs. 7 and 8, the shaft 35 is provided with a disk 37, having at one side roller studs 38, adapted to be engaged by a toe 39 mounted with a knuckle joint on the push rod 33. As said rod reciprocates the toe 39 periodically engages the studs 38 and imparts a step-by-step rotation to the shaft 35, which results in a step-by-step motion of the chain 21 as before described. The shaft 28 also carries a wiper cam 40, which overlaps a spur gear 41, loose on the shaft 36, and is adapted to engage studs 42 on the face of said gear. By these means the gear 41 is intermittently rotated; and in order to prevent idle motion of such gear a friction-spring 43 is arranged to bear continually on the face of the gear. This gear 41 is adapted to drive the paper feed-roller 44 which, in the example here given, is accomplished by a train of gears 45, 46 and 47. Above the feed-roller 44 is a pressure-roller 48, the paper passing between these rollers from the paper roll 49 mounted in any desired manner on the frame, for example, by an arm 50. Said arm preferably carries a guide or idler roller 51. By these means the paper is advanced in stages over the top of the machine and is automatically cut into lengths by devices which will now be described. This cutting device comprises (see Fig. 4) a transversely disposed knife 52 which extends over the top of the machine and coacts with a ledger blade 53 suitably provided on said top. As shown in Fig. 11 the blade 52 is mounted to swing vertically on a center 54 carried by the top section 19; and said blade is pushed upward by a spring 55 bearing under it. For periodically moving the blade 52 downward against the ledger blade 53 I provide a rod 56 which is pivotally connected to the tang of the shear blade 52 and provided at its lower end with transverse fingers 57 and 58. This rod 56 is vertically guided in the top or body of the frame and its fingers 57 and 58 are adapted to be engaged by a push rod 59 which is slidably mounted in the lamination 16 of the body of the machine (see Fig. 5). As shown in Fig. 11 the push rod 59 has a cam surface 59<sup>a</sup> adapted to engage a similar surface 58<sup>a</sup> on the finger 58, thereby bringing about a downward motion of the rod 56 and the connected knife and causing a short length of paper, constituting the wrapper, to be sheared from the main body or supply of paper. This operation is timed to take place immediately after the paper feed device has acted to advance the paper one step in its series of motions. The push rod 59 is operated from a cam 60 on the shaft 28 which cam engages a toe 61 depending from the front end of the push rod (see Fig. 6). Said rod 59 is returned against the cam by a spring suitably provided for that purpose.

The paper, as I have described, is fed over the top of the machine and lengths are sheared off to form the wrapper, such lengths lying, immediately after the shearing operation, on the top lamination 19 between the ledger blade 53 and a shoulder 62 formed on a hinged section 63 which is let into an opening in the lamination 19 directly over the chain 21. Between the free end of the hinged section 63 and the adjacent wall of said opening in the lamination 19 a space 64 is provided through which space the article and wrapper are moved downwardly. Directly adjacent to the free end of the hinged section 63 a roller 65 is mounted transversely in said opening in the lamination 19, the purpose of which roller, as well as that of the section 63, will be fully set forth hereinafter. The article to be wrapped is moved transversely over the top of the machine and over the wrapper which lies in the position above described. The article may be so moved manually, but I prefer to feed in the article automatically by a slide 66 dove-tailed in the upper surface of the table 20 and provided with an upward projection 67 to engage the article. The articles are fed manually to the slide which periodically places one of them in position. The slide 66 is operated back and forth by a lever 68 joined to the underside of the slide and in turn actuated by a rod 69 driven from a slide rod 70. The slide rod 70 operates in the lamination 16 alongside of the slide rod 59 and is driven from a cam 71 on the shaft 28. This cam actuates the rod 70 through a toe 72 depending from the front end of the rod.

By means of the slide 66 the articles are moved horizontally into position for movement downward; and devices are provided for receiving the article from the slide and holding it until the slide is retracted and the proper time for the downward motion of the article occurs. These devices for so receiving the article consist in opposing jaws 73 which are yieldingly connected to move toward and from each other by springs and pins 74 (see Fig. 4). This yielding connection of the jaws 73 allows them not only to receive and hold the articles, but to accommodate themselves to variations in the size of the articles. As shown best in Fig. 9, the jaws 73 are supported in an overhanging arm 75 carried by the lamination 19; and between the said jaws a plunger 76 operates vertically and periodically for the purpose of pushing the article from the jaws downward through the opening 64. This plunger is actuated through a rod 77 which moves in the arm 75 and is raised by a spring 78. The rod is periodically moved downward by a lever 79 articulated to the rod and to a push rod 80 which is movable vertically through the laminations in the



body of the frame and has its lower end formed with a cam surface 80<sup>a</sup>. Such cam surface is adapted to be engaged by a corresponding surface on a push rod 81 which works horizontally in the lamination 16 and is driven by a cam 82 on the shaft 28, said cam engaging a toe 83 depending from the push rod. It therefore follows that at the proper time in the cycle of operations the article is pushed from the jaws 73 downward with the wrapper into the opening 64 and through the same to a position on the chain 21. The distance between the roller 65 and the opposite wall of the opening 64 is approximately equal to the width of the article so that as it is moved downward the side edges of the wrapper are folded up and the article lies on the chain with the wrapper in U-shaped form under and around it. At this instant the chain 21 advances a step in its series of movements and one side edge of the wrapper in passing under the roller 65 is folded down on top of the article, as said article moves under the roller and hinged section 63. By hinging the section 63 it is allowed to give to accommodate various sized articles.

Simultaneously with the above-described movement of the article with the chain the second or remaining side edge of the wrapper must be folded down on the article; and this is accomplished by a sliding folder-plate which, at the beginning of the movement of the chain, moves forward over the article faster than the chain and folds down the flap as described. Said folder plate is indicated at 84 in the drawings. The plate 84 is mounted under the lamination 19 and directly over the edge-folding fingers 85. The fingers 85 lie on edge parallel with and at opposite sides of the chain in the longitudinal opening 86 formed in the lamination 18 and constituting the passageway through which the article moves with the chain. Said fingers 85 move in unison with the plate 84 and, simultaneously with the operation of said plate, serve to engage opposite ends of the wrapper and tuck the same in against the article. The plate 84 is fastened, as indicated at 87 in Fig. 3, to the upper edge of one of the fingers 85 and moves with the same transversely as well as longitudinally. Said plate, however, is free to move transversely independently of the other plate 85. As shown in Fig. 12, the fingers 85 carry at their outer sides transversely projecting arms 88, which arms lie under transversely disposed slide plates 89 fitted between the laminations 18 and 19. The slide plates 89 have longitudinal slots 90 in which are movable pins 91 attached to the said arms 88 of the fingers 85. The pins 91 are joined to links 92 which lie in a cavity in the lamination 19 and extend forward from the slide plates. As indicated in Fig. 4, the links 92

have their front ends pivotally connected with pins 93 carried on upward extensions 94 of push rods 95. Said push rods are two in number and are arranged to slide horizontally in cavities in the lamination 16. Push rods 95 are provided at their front ends with downwardly extending toes 96 adapted to be actuated by cams 97 on the shaft 28. The push rods 95 are returned toward the cams by springs 98 acting thereon in any suitable manner, (see Fig. 4). The slide plates 89 are engaged by pins 99 which, as shown best in Fig. 5, are carried by push rods 100 operating in the lamination 18. These push rods are held inward with a steady pressure by weights 101 hung from arms 102 on rock-shafts 103, the rock-shafts having arms 104 engaging the push rods. This serves to hold the slide-plates 89 yieldingly inward; and through the medium of the slide-plates the fingers 85 are also held yieldingly. The result of this organization of parts is that the plate 84 and fingers 85 are free to move back and forth longitudinally of the chain to carry out their described operations on the wrapper. At the same time, however, the fingers 85 are free to give toward and from each other and are thereby allowed to accommodate varying sizes of stock and cause to exert a steady pressure thereon.

It has been described that the wrapper is caused to take U-shaped form around the article, to have its side edges folded down over the top side of the article and to have its ends tucked in at one edge of the article. The latter operations take place during the first forward movement of the article in the passage 86, at which time the article and wrapper are moved into engagement with the fingers 105 which bear against the ends of the article and tuck in the ends of the wrapper at points opposite the points at which the fingers 85 operate. These fingers 105 are mounted on transversely sliding rods 106 carried in the lamination 18 and are engaged at their outer ends by arms 107 attached to the rock-shafts 103. In this manner the fingers 105 are yieldingly held for the double purpose of pressing firmly on the wrapper and accommodating varying sizes of stock. It now remains to fold upward and downward the ends of the wrapper at the top and bottom sides of the article, and this is accomplished by oppositely disposed cams 108 and 109. These cams are situated in the passage 86 in the line of travel of the article so that as the article moves past them they engage the edges of the wrapper then lying in the top and bottom planes of the article and fold said edges respectively upward and downward thereby completing the folding operation. The cams 108 and 109 are mounted on transversely sliding rods 110 which project through the lamination



18 and are engaged by arms 111 fastened to the shafts 103, whereby the cams 108 and 109 are pressed inward in same manner and for the same purpose as the fingers 85 and 105. The folding operation having been completed, it only remains to discharge the finished article. As the wrapped article continues its advance with the machine it reaches a point opposite the transverse discharge passage 112. This passage is formed by an opening in the lamination 18; and opposite such opening an ejector plunger 113 is located. This plunger operates transversely at pre-arranged periods in the lamination 18 and is timed to move toward the opening 112 when the wrapped articles take positions opposite the plunger. The result of this operation is that the wrapped articles are successively moved from the chain into the passage 112 and are pushed by the plunger and by each other out of the machine. For operating the plunger 113 a lever 114 is provided, and this in turn is actuated by a push pin 115 and a cam 116 on the push rod 33 (see Figs. 8 and 10). 117 is a spring for returning the plunger.

The organized operation of the machine may be traced as follows: The paper is fed over the opening 64 and a length is sheared off to form the wrapper. While this is in progress the slide 66 advances and places an article between the jaws 73, whereupon the slide withdraws and the plunger 76 descends moving the article against the wrapper and causing the two to pass through the opening 64 to their position on the chain. At this time the wrapper assumes U-shape form, and simultaneously the chain advances and is followed by the more-rapidly moving blade 84 and fingers 85 which results in the simultaneously, or practically simultaneously, folding of the side edges of the wrapper and tucking in of the ends of the wrapper at the forward side-ends of the article. The advance of the chain then brings the article to the fingers 105, which tuck in the ends of the wrapper at the rear-side-edge of the article. Instantly after this the edges of the wrapper at the top and bottom sides of the article are engaged with the cams 108 and 109 and folded respectively upward and downward. The article thus completely wrapped is moved from the chain into the discharge passage 112. It will be understood that the operations on the separate articles overlap each other so that the machine has a high speed capacity, all of the various parts acting almost continuously and performing at the same time various operations on the successively advancing articles.

It will be seen that my invention allows of the wrapping of different sizes of goods and avoids the necessity of several different machines in a single factory. This is due

to the width of the passageway 86 and the adjustment of the devices therein for making the folds. This adjustment allows the folding devices to stand at any desired position according to the size of the article and in doing this the weights 101 may be adjusted on the arms 102 to regulate the position of the folding devices and the pressure which they exert on the article.

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

1. A wrapping machine having a series of folding members adapted to act on the wrapper to fold the same, means on which said members are mounted, such means sliding laterally with the said members, a rock-shaft having connection with said means and a device for yieldingly pressing the rock-shaft, thereby yieldingly to sustain said folding members.

2. A wrapping machine having folding devices, a chain to advance the articles to the folding devices, wheels on which the chain is mounted, devices for rotating one of the wheels, such devices including a push rod, a rotating prime mover shaft, a cam thereon to operate the push rod, wrapper feed device, gearing for driving the same including a wheel loose on the shaft of one of the chain-carrying wheels and a cam on the prime mover shaft and serving periodically to rotate said wheel.

3. A wrapping machine having a frame formed with a passageway therethrough, an endless conveyer for moving an article along said passageway, folding devices located along said passageway, push rods movable lengthwise of said frame for operating said folding devices, a shaft mounted in the said frame and cams mounted on said shaft for operating said push rods.

4. A wrapping machine having a frame formed with a passageway therethrough, an endless conveyer movable along said passageway for advancing an article along the same, a holder for articles mounted above said passageway, a plunger transferring articles from said holder to said passageway, a push rod movable lengthwise of said frame for operating said plunger and a cam for intermittently operating said rod.

5. A wrapping machine having a frame formed with a passageway therethrough, an endless conveyer for moving an article and wrapper along said passageway, an ejector movable across the passageway to remove the article and wrapper therefrom, a push rod movable lengthwise of said frame for operating said ejector, means for driving said conveyer and a cam having operative connection with said driving means for reciprocating said push rod.

6. A wrapping machine having a frame formed with a passageway therethrough, an



endless conveyer for moving an article along said passageway, folding devices located along said passageway, push rods movable lengthwise of said frame for operating said folding devices, and means adjacent to one end of said machine for intermittently reciprocating said push rods.

7. A wrapping machine having a frame formed with a passageway therethrough, an endless conveyer movable along said passageway for advancing an article along the same, a holder for articles mounted above said passageway, means for transferring the article from the holder to said passageway, a plunger transferring said articles from said passageway, a push rod movable lengthwise of said frame for operating said plunger, and means adjacent to one end of said frame for intermittently reciprocating said push rod.

8. A wrapping machine having a frame formed with a passageway therethrough, an endless conveyer movable along said passageway for advancing an article along the same, a holder for articles mounted above said passageway, means for transferring the article from the holder to said passageway,

a plunger transferring said articles from said passageway, a push rod movable lengthwise of said frame for operating said plunger, a shaft extending transversely to said frame and a cam on said shaft for intermittently reciprocating said plunger, and a second cam on said shaft for intermittently moving said conveyer.

9. A wrapping machine having a frame with a passageway therethrough, an endless conveyer for moving an article along said passageway, folding devices located along said passageway, push rods movable lengthwise of said frame for operating said folding devices, a shaft mounted in said frame, cams mounted on said shaft for operating said push rods and an additional cam mounted on said shaft for intermittently advancing said conveyer.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GIDEON F. HALL.

Witnesses:

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B. BIGGE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."