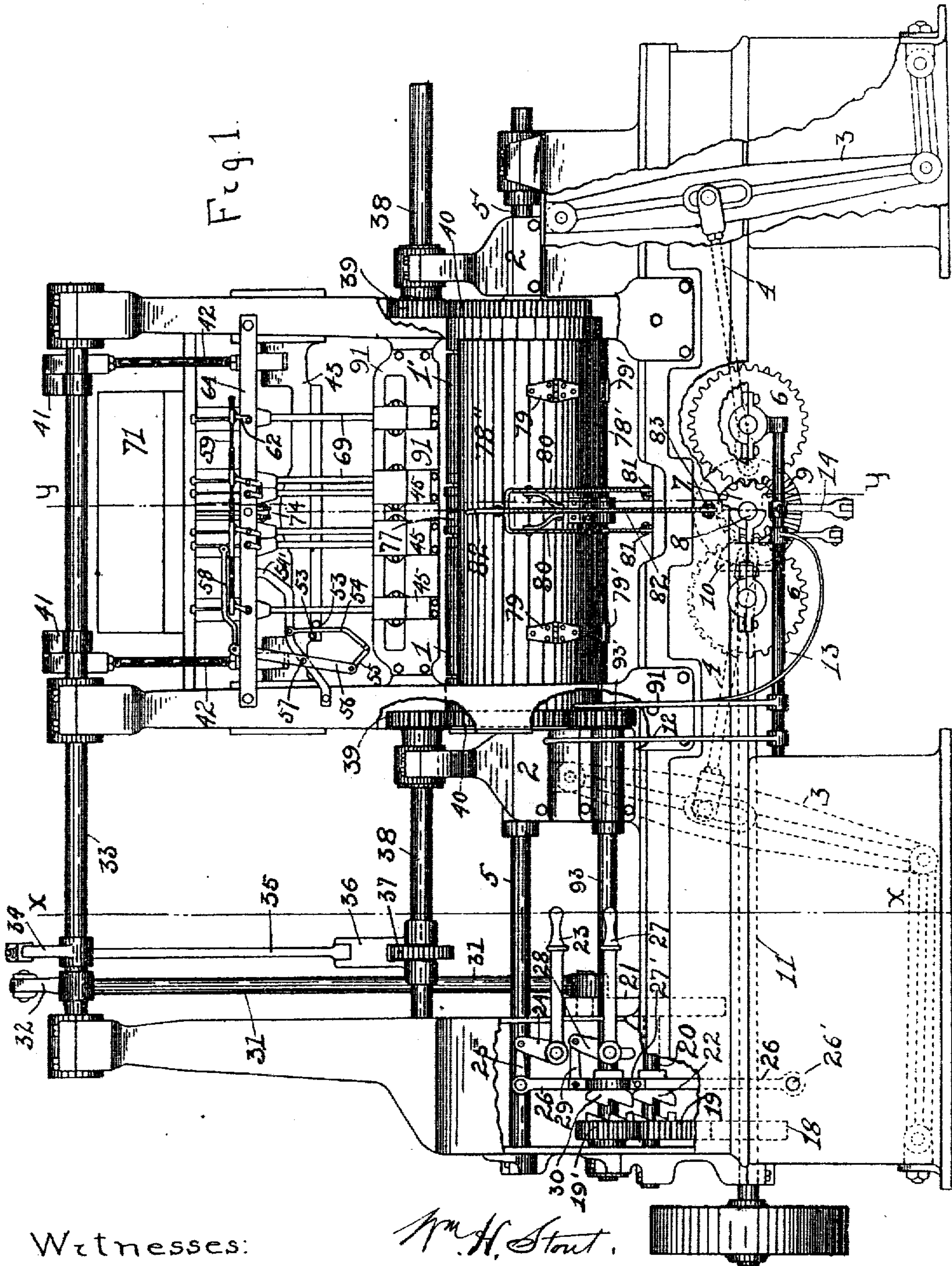


No. 782,426.

PATENTED FEB. 14, 1905.

W. H. STOUT.  
CYLINDRICAL BOX MACHINE.  
APPLICATION FILED MAR. 16, 1904.

4 SHEETS—SHEET 1.



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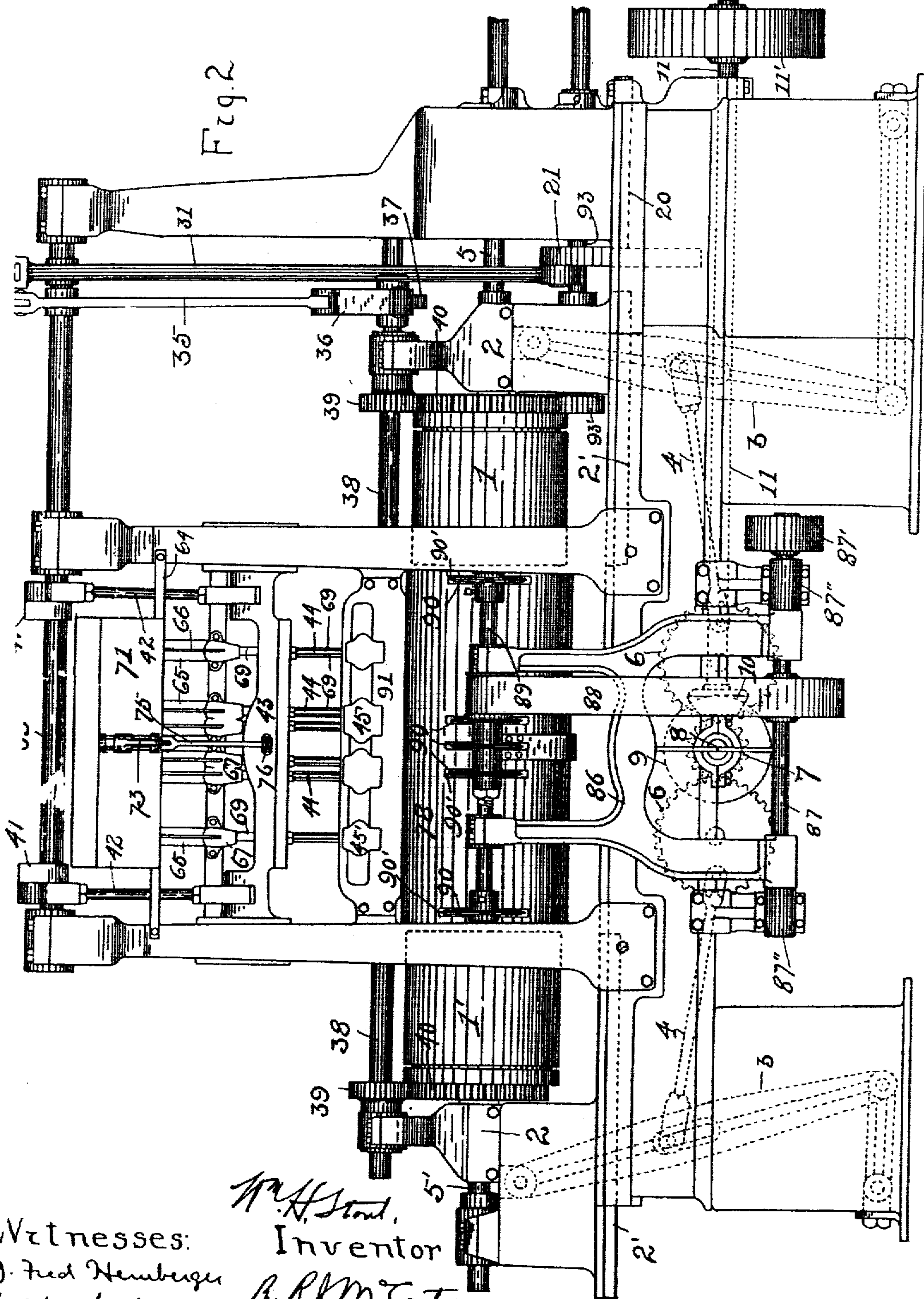
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782,426.

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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

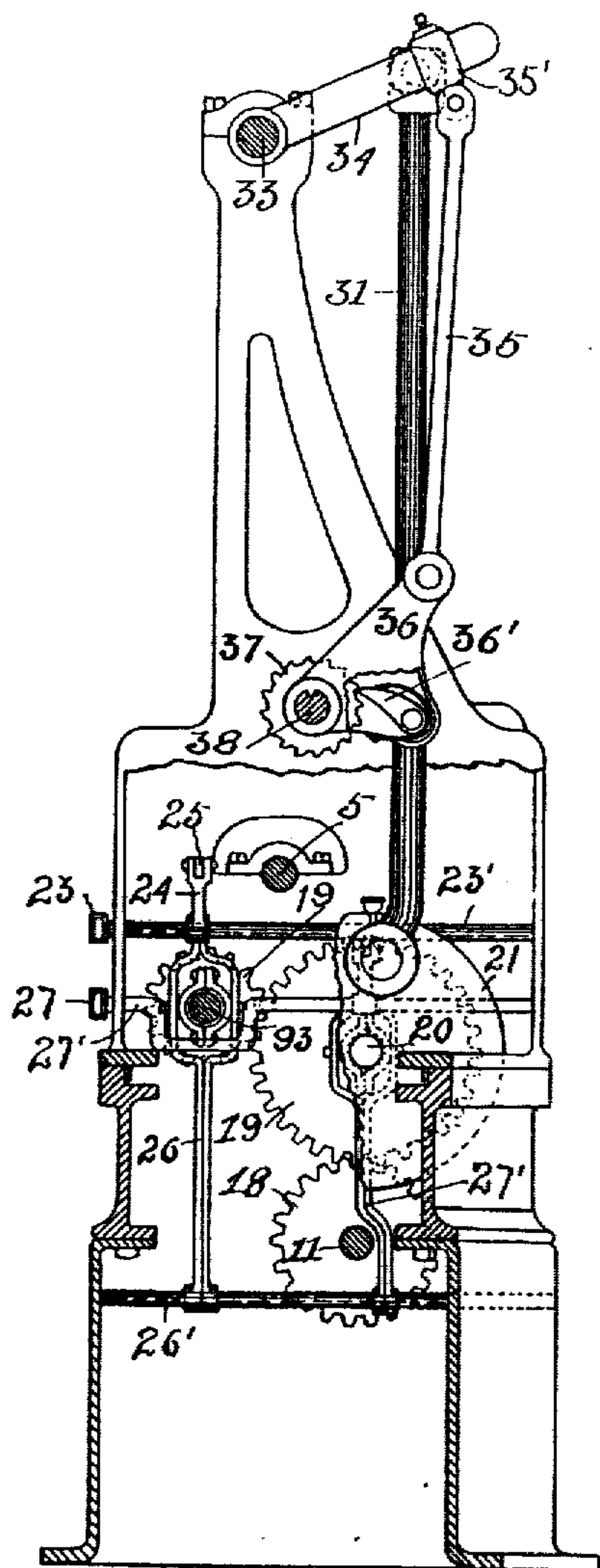


Fig. 4.

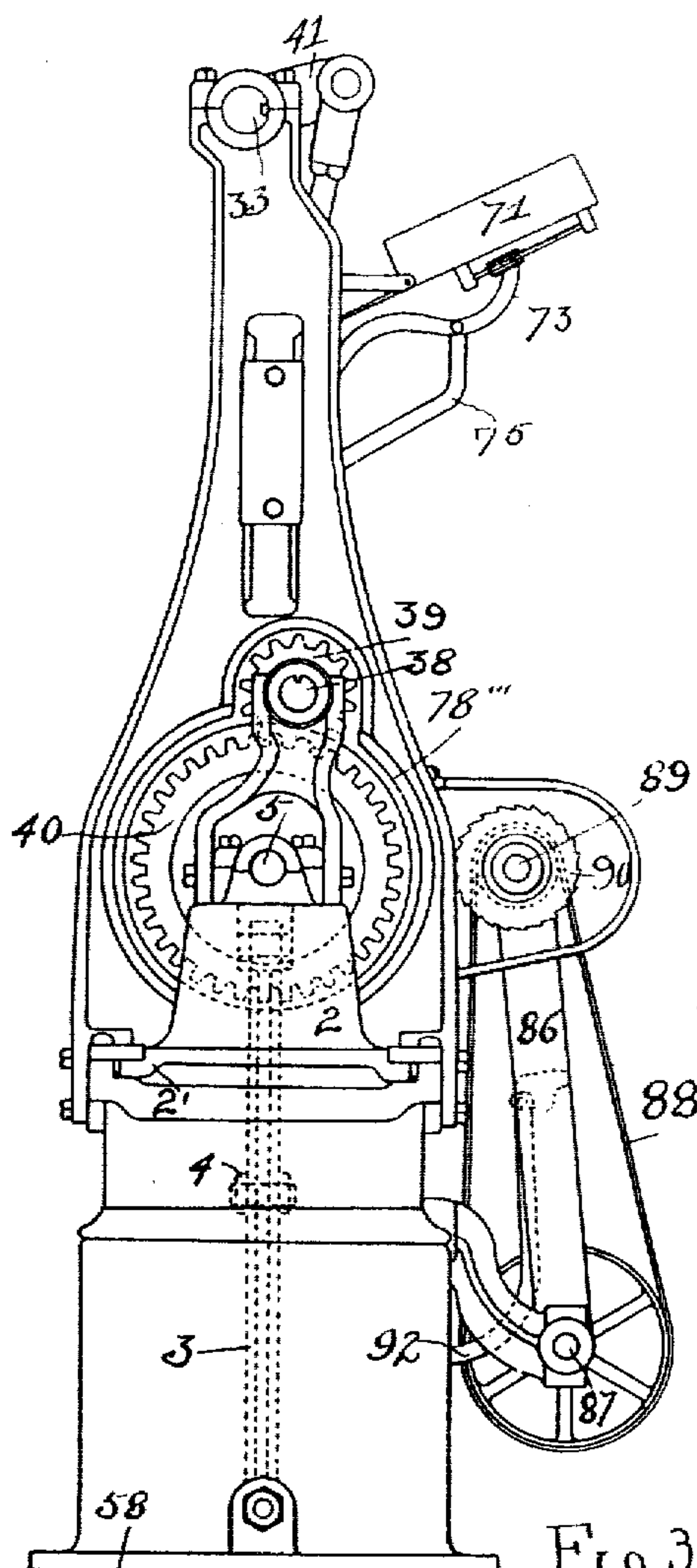


Fig. 3.

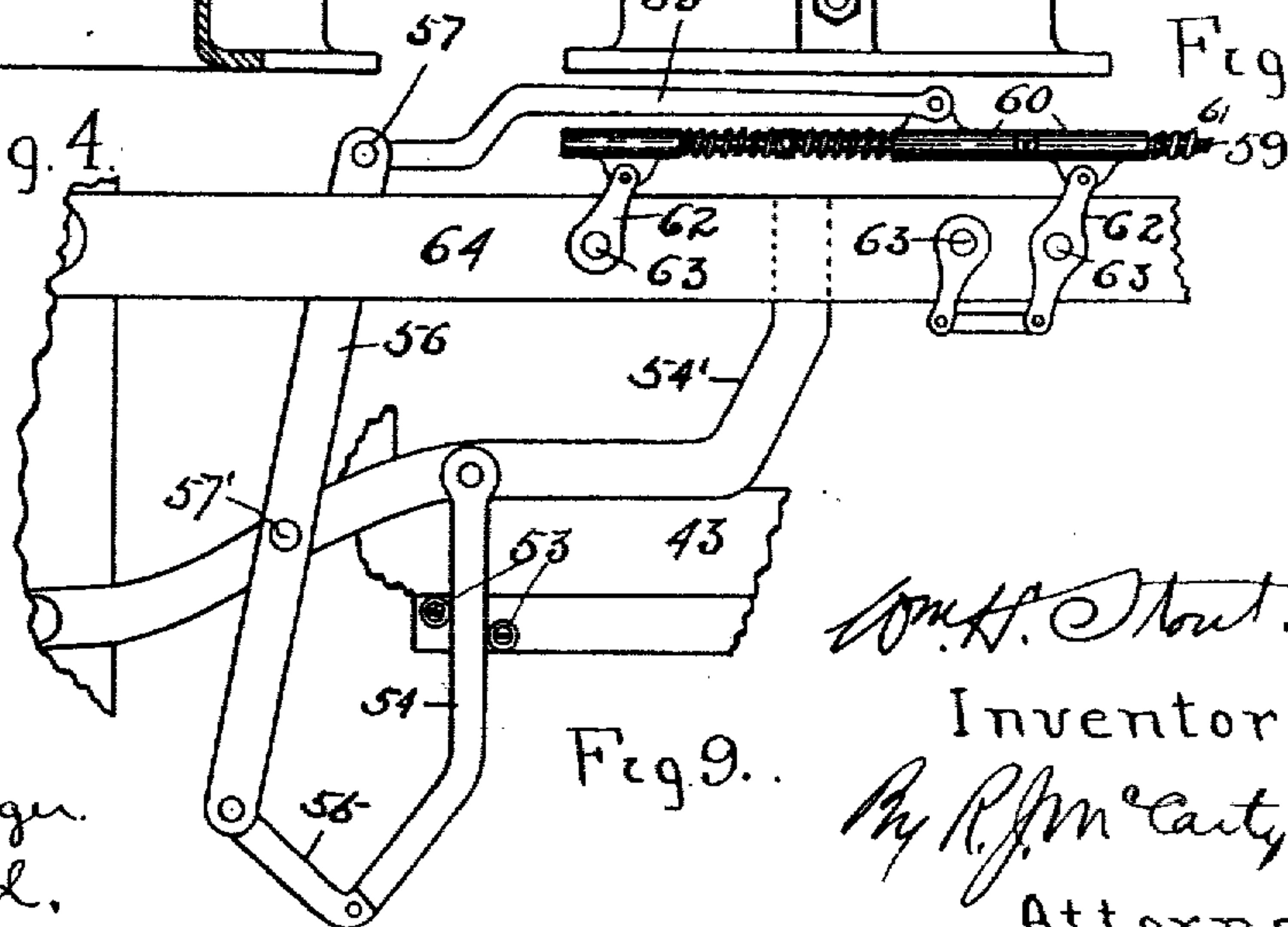


Fig. 9.

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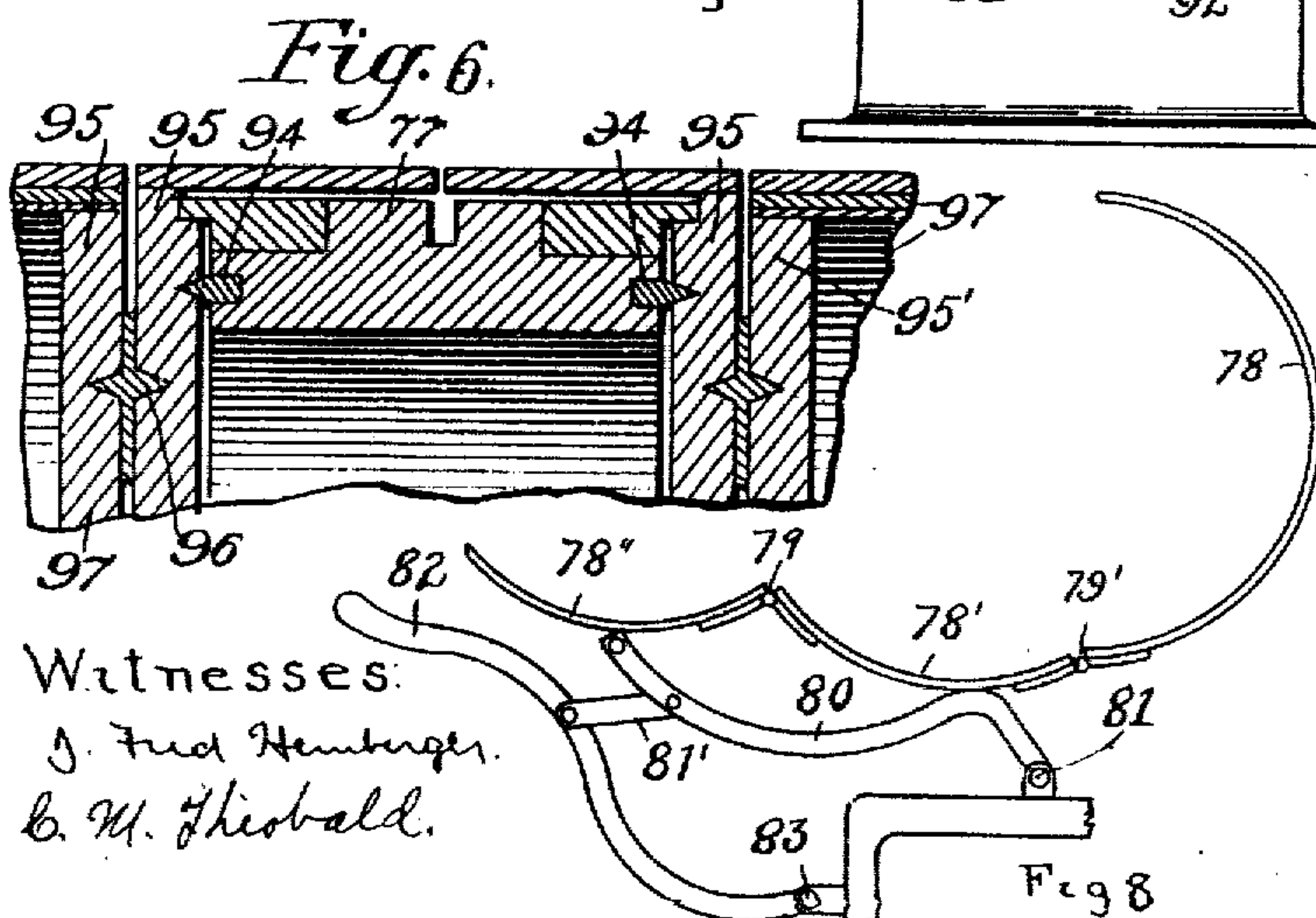
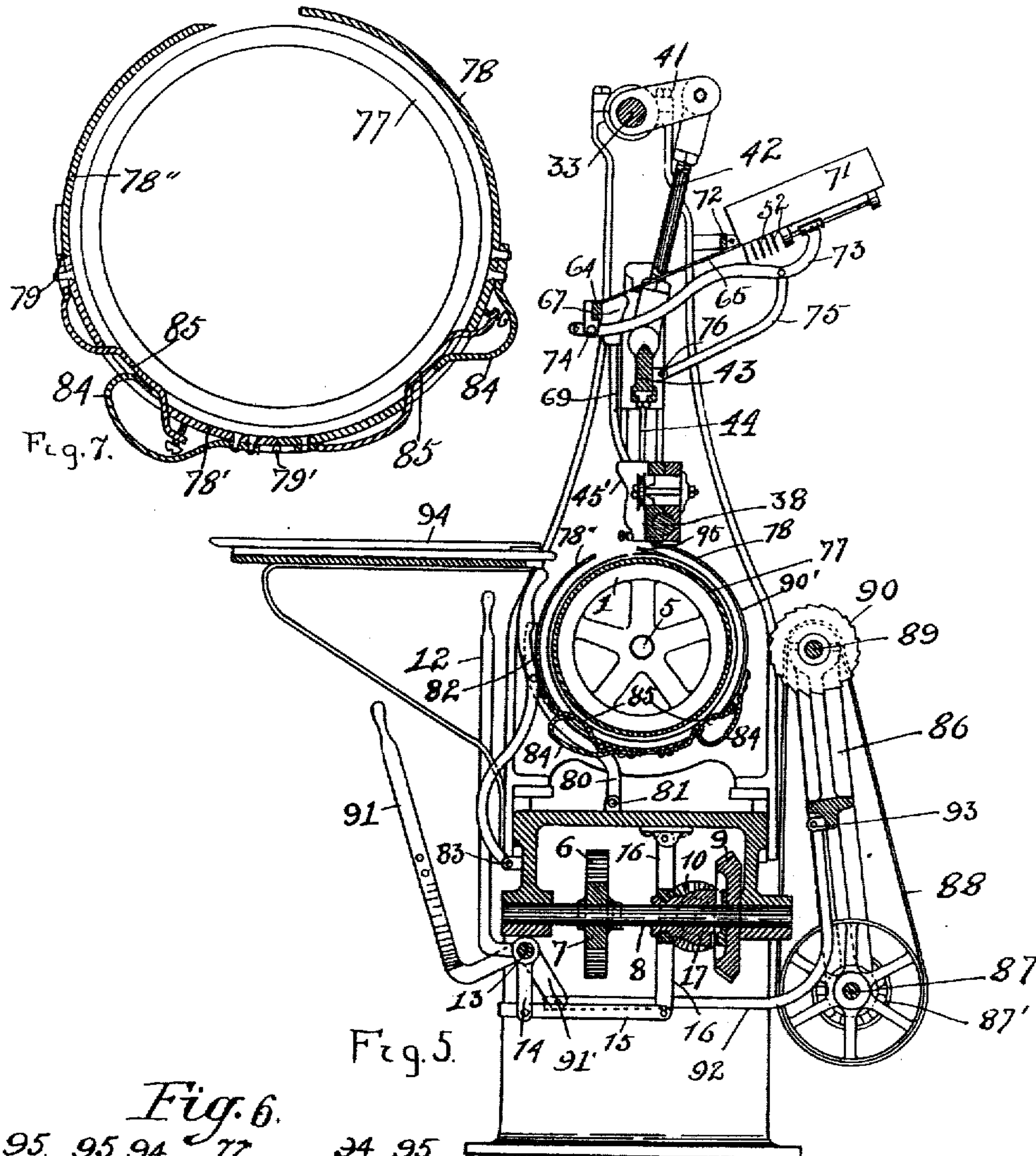
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM H. STOUT, OF DAYTON, OHIO.

## CYLINDRICAL-BOX MACHINE.

SPECIFICATION forming part of Letters Patent No. 782,426, dated February 14, 1905.

Application filed March 16, 1904. Serial No. 198,371.

*To all whom it may concern:*

Be it known that I, WILLIAM H. STOUT, a citizen of the Dominion of Canada, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Cylindrical-Box Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in machines for making cylindrical veneer boxes; and the said invention is an improvement of the machine shown and described in United States Letters Patent No. 706,274, granted to me August 5, 1902.

The present improvements relate to more simplified and reduced mechanism for imparting to the drums the necessary horizontal reciprocating movements and the intermittent and continuous rotary movements, also to means for holding the bottoms and tops of the boxes in positions during the operations of forming the boxes, and further improvements relate to an inclosing hood for the drums, which is instrumental in holding the veneer in position during the operations of forming the boxes, and other features hereinafter more fully described in the following specification.

Preceding a detail description of the invention, reference is made to the accompanying drawings, of which—

Figure 1 is a front elevation of the machine. Fig. 2 is a rear elevation of the same. Fig. 3 is an end elevation of the same. Fig. 4 is a section on the line *xx* of Fig. 1. Fig. 5 is a section on the line *yy* of Fig. 1. Fig. 6 is a sectional view of a portion of the removable top drum, which holds the tops of the boxes in position while in operation. Fig. 7 is an enlarged detail cross-sectional view of the inclosing hood. Fig. 8 is an enlarged detail view of the hood in an open position. Fig. 9 is an enlarged detail view of a portion of the feeding mechanism.

Throughout a detail description of the invention similar reference characters indicate corresponding parts.

The drums 1 1', upon which the cylindrical veneer boxes are formed, are mounted to slide longitudinally in the upright portions of the frame and to be given reciprocating movements by the following mechanisms: The drum-shafts 5 5' are fixed to the axis of the drums and are moved by slide-bearings 2 2, the bases 2' of which slide in ways in the stationary frame of the machine. Pivottally connected to the slidable bearings 2 2 are rocker-arms 3 3. To these rocker-arms there are connected rods 4 4, which in turn are connected, by means of wrist-pins, to spur-wheels 6 6, the said spur-wheels serving as cranks in this connection, from which the rocker-arms are oscillated. The spur-wheels 6 6 are rotated to impart such movements from a pinion 7 on a shaft 8, lying at right angles to the plane of the machine, and has bearings in said frame, as shown in Fig. 5. The shaft 8 is driven through a miter-gear 9 thereon, which is engaged by a smaller miter-gear 10 on shaft 11, the latter being the main power-shaft which is driven by a pulley 11', the latter being belted to the driving power-shaft. (Not shown.) The power transmitted from shaft 11 to shaft 8 is controlled by a clutch 17 on shaft 8, which is movable in and out of engagement with the miter-gear 9 by hand operating-lever 12, which is fulcrumed on shaft 13 and is connected with the clutch 17 by shifting lever 16, connecting-link 15, and arm 14, the latter being an extension from the operating-lever 12.

The rotary movements are imparted to the drums 1 1' through the following mechanisms: The outer ends of said drums 1 1' have fixed thereto spur-wheels 40, which gear with pinions 39 on shaft 38. These pinions, as well as the spur-wheels 40, are splined upon their respective shafts and are therefore rotated by said shafts and are permitted to have sliding movements along said shafts when the slidable bearings 2 2 are given the horizontal reciprocating movements hereinbefore described. From Figs. 1 and 2 it will be seen that the pinions 39 have their boxes connected with



the upper ends of the bearings 22. The shaft 38 is given intermittent rotary movement from the main power-shaft 11 through a crank-disk 21, to which the lower end of connecting-rod 31 is pivoted. The shaft 20, to which the disk 21 is rigidly attached, is driven from the main power-shaft 11 through spur-wheels 18 19, the latter wheel being controlled by a clutch 22 on the shaft 20, wheel 19 being also on the same shaft. The clutch 22 is operated to be thrown in and out of gear by a hand-lever 23, which is connected to a shifting lever 26 on shaft 26' and is attached to said clutch by connecting-links 24 25. (See Fig. 1.) The connecting-rod 31 is connected at its upper end to the rock-shaft 33 by a crank-arm 32. Power is transmitted from shaft 33 to shaft 38 through connecting-rod 35. The upper end of this connecting-rod 35 is connected to the shaft 33 by an arm 34 and an adjustable yoke 35', which is pivoted to the connecting-rod 35, and is moved to the proper position on the arm 34 and is then secured by a set-screw. (See Fig. 4.) 36 is a pawl support pivoted to the lower end of rod 35 and carrying a pawl 36', which engages a ratchet-wheel 37, fast on shaft 38. It will be seen that intermittent movement is transmitted to the shaft 38 from the power-shaft 11 and thence to the drums 1 1' through the spur-wheels 39 and 30, hereinbefore referred to. During this intermittent rotary movement the sheets of veneer are fed into the machine and the nailing operations take place, said nailing operations occurring at each stop of the drums through the following mechanism. (See Fig. 5.) 42 represents adjustable connecting-rods which are pivoted to arms 41, fast upon the rocker-shaft 33. The lower end of rods 42 have fixed connections with a vertically-slidable support 43, in which the nail-drivers 44 are held. The nails 52 are placed in a hopper 71, which is hinged at its front to a support 72, and the bottom of which is provided with a number of parallel slots through which the nails project and are suspended, as shown in Fig. 5. The hopper is supported in an inclined position and is vibrated to cause the nails to travel therein by means of a lever 73, which is hinged at 74 to the cross-support 64, and has a pivotal connection with a lever 75, which is pivoted at 76 to the slidable support 43. Extending forwardly from said hopper are a series of chutes 65, which are connected at their forward ends to a cross-support 64. (See also Figs. 6 and 7.) The chutes 65 have slots or passages 66 extending longitudinally through them, through which the nails pass downwardly and are suspended therein by their heads. (See Fig. 10.) Below the forward ends of these chutes and attached to the supports 64 are a series of casings 67, which support the nail-separators. (Not shown.) 59 is a reciprocating rod operating the nail-separators and which is con-

nected, at suitable points to said separators by cranks 62, which are fixed to the journals 63 of the separators and have pivotal connections with sleeves 60 on said rod, said sleeves being held firmly at one end by collars and at the other end they are held yieldingly by coil-springs 61. Reciprocating movement is imparted to the rod 59 from a slidable support 43, as follows: On said support there are two antifriction-rollers 53, which inclose a cam-bar 54, pivoted at its upper end to a rigid arm 54', which is attached to the support 64 at one end and to the upright frame at the other end. The lower portion of the cam-bar 54 has a suitable bend to impart the necessary movement to a lever 56. The lower end of said cam-bar is connected to the lever 56 by a pivotal link 55, said lever being fulcrumed at 57' and having its upper end pivoted at 57 to link-lever 58, which in turn is pivoted to one of the sleeves 60 on rod 59. It will thus be seen that in the vertical movements of the slidable support 43 longitudinal movement will be imparted to the rod 59 to move it in one direction and in the reversed direction. After the veneer cylinder has been formed and united to the bottoms and tops and at the center of each box the rotary movement is changed from an intermittent movement to a continuous movement, during which the cylinder is sawed through at both ends and at the centers to construct two boxes from each cylinder thus formed. This continuous rotary movement is transmitted by the following mechanism: 93 designates a shaft which is driven from the main power-shaft 11 through gears 18 19 19', the latter gear being loose on said shaft and controlled by a clutch 30, which is operated from a lever 27, connected to a shifting lever 27' on shaft 26' by links 28 and 29. The shaft 93 carries a pinion 93', which gears with the spur-wheel 40 on drum 1. When the shaft 93 is thrown in gear with the power-shaft 11, it will be understood that the shaft 33 is idle, having performed its operations. Shaft 38 is driven from the drum-gear 40. The gear 39 on the opposite end of said shaft 38 drives the drum 1' at the same rate of speed as adjacent drum 1 is driven, and a continuous movement is imparted to both drums. I will now describe the sawing mechanism which is operated during this period. Before power is put into shaft 93 the saw-frame 86, which swings on shaft 87, is moved into operative position to bring the saws in contact with the box-cylinder by means of a hand-lever 91, which is fulcrumed upon shaft 13 and is connected to the saw-frame 86 by a lever 92, which connects with the crank end 91' of said hand-lever and also with the saw-frame at point 93. Shaft 87 is mounted in bearings 87'' and is driven from the main power-shaft 11 by pulleys, one of which, 87', is shown in Figs. 2 and 5.



90 designates the two end saws and three center saws, mounted upon a mandrel 89 in the upper end of the swinging frame 86. The saw-mandrel 89 is driven from shaft 87 by a belt 88, passing around pulleys on said shafts. The two end saws are adjustable along the shaft to proper points to cut the ends of the boxes, and the central saws separate the lids from the boxes. One complete revolution of the drums is required to cut the boxes to their respective sizes, after which the power is shut off, and the drums are withdrawn from the cylinder by the outward movement of said drums by throwing into gear the clutch 17.

The independent central drum 77 is removed with the boxes, after which said boxes are detached from said drum, and the disk portion forming the tops 95 are then detached from said drum. In assembling the lid-drum 77 with the box-tops 95 a suitable number of spurs 94 are employed, which temporarily hold said tops in positions at the ends of the lid-drum 77. Against the outer sides of the tops 95 thin rings 96 are placed, having a suitable number of spurs which hold the bottoms 95' of the boxes in positions against the tops 95. The rings 96 provide suitable space for the entrance of the two outer middle saws 90 in severing the boxes. When the bottoms 95' and tops 95 are thus assembled with the drum 77, the said drum is placed in a central position within a hood and rests upon spring-pads 85 in said hood. (See Figs. 13 and 14.) This hood holds the drum 77 in a central position to meet the box-drums 1 1' as said drums are moved into position within the hood. The pads 85 are held in suitable contact with the central drum 77 by means of springs 84, which press against the spring-pads 85. For a more detailed description of the hood reference is made to Fig. 14, where it will be seen to consist of three parts. The rearward part 78 is stationary in the machine, a bottom part 78' hinged to 78 at 79', and a forward part 78'' hinged to the part 78' at 79. These hinged portions 78' and 78'' are operated upon their hinges to open and close, as follows: 82 is a lever fulcrumed at 83 to a stationary portion of the frame. This lever is coupled to lever 80 by a link 81'. Lever 80 is fulcrumed at 81 to the frame, and upon this lever 80 the hinged portions 78' and 78'' of the hood are supported or held, said parts of the hood resting upon said lever when in their lower position, as shown in Fig. 15, the said lever 80 holding said parts up when elevated to a closed position, as shown in Fig. 5. The back portion 78 of the hood is held in position by a grooved ring 78'''. (See Fig. 3.) There is one of said grooved rings in each of the upright portions of the frame, which is instrumental in stripping the boxes from the drums in the downward movement of said drums. These rings are fully illustrated and

described in my former patent. The function of the hood thus above described is to prevent the incoming veneer from bulging out from the drums as it is fed around said drums. In other words, its function is to keep the veneer in suitable proximity to the drums in the operations of forming the cylinders from which the boxes are constructed.

Having described the various essential features of my invention, I will now detail briefly a description of its operation. The sheets of veneer are cut to the proper sizes and are laid upon the feed-table 94, properly assembled and united with the parts that form the bands. The veneers are moved into a point where they are caught by the lip 95, which is on the center drum 77. (See Fig. 5.) When in this position, the nailers unite the veneer to the tops and bottoms 95 95', as shown in Fig. 13. The nailing devices are the subject-matter of another application for Letters Patent. The drums being rotated intermittently, as herebefore described, the veneers are nailed around said tops and bottoms until one complete revolution of the drums is made. The nailing mechanism is then stopped by throwing out of gear the shaft 20 by lever 27, and shaft 93 is thrown in gear by its respective lever 27. The saws having been moved into operative position with relation to the drums by lever 91, said drums are given one complete and continuous rotation from shaft 93, during which the cylinder formed upon the two drums is cut to the respective sizes to complete two boxes. The power is then cut off from shaft 93 and the hood 78 is lowered, after which the drums 1 1' are moved outwardly by lever 12, throwing in operation the clutch 17, and the boxes are removed from the hood.

Having described my invention, I claim—

1. In a cylindrical-box machine, the combination with end drums, of an independent central drum which supports the disk portions of the boxes, and a hood partially inclosing said drums, said hood consisting of hinged sections one of which is stationary, and means operatively connected with the other portions of said hood for opening and closing the same.

2. In a cylindrical-box machine, the combination with two end drums, of an independent central drum interposed between said end drums, means for temporarily uniting disk portions of the boxes with said central drum, and means interposed between the end drums and said disk portions whereby the central drum is rotated during the formation of boxes.

3. In a cylindrical-box machine, two end drums, an independent central drum interposed between said end drums, said central drum supporting disk portions of the boxes to be formed, a hood consisting of sections with hinged connections, the rearward section being stationary, openings in the body of



said hood, and spring-cushions projected through said openings and adapted to support said central drum.

4. In a cylindrical-box machine, the combination of a drum having means at each end adapted to engage and rotate disk portions of boxes to be formed, a hood inclosing said drum, and means whereby said drum may be rotated by power communicated through said disk portions.

5. In a cylindrical-box machine, the combination with end drums upon which boxes are formed, an independent central drum which supports disk portions of the boxes during the operation of forming said boxes, means for severing the cylinders formed upon said drums into boxes, and a hood inclosing said drums, said hood being in hinged sections which are opened to admit of the removal of the boxes with the central drum.

6. In a cylindrical-box machine, an independent central drum, means for supporting

the disk portions of the boxes on the ends of said drum, means whereby said drum may be rotated by power communicated through said disk portions, and a hood inclosing said drum and holding it in position.

7. In a cylindrical-box machine, the combination of end drums, an independent central drum, means for temporarily uniting disk portions of the boxes to the ends of the said central drum, and independent rings with oppositely-extending spurs which unite the boxes to said disk portions and whereby power is transmitted from the end drums to the central drum during the operations of forming the boxes.

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

WILLIAM H. STOUT.

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