

No. 724,404.

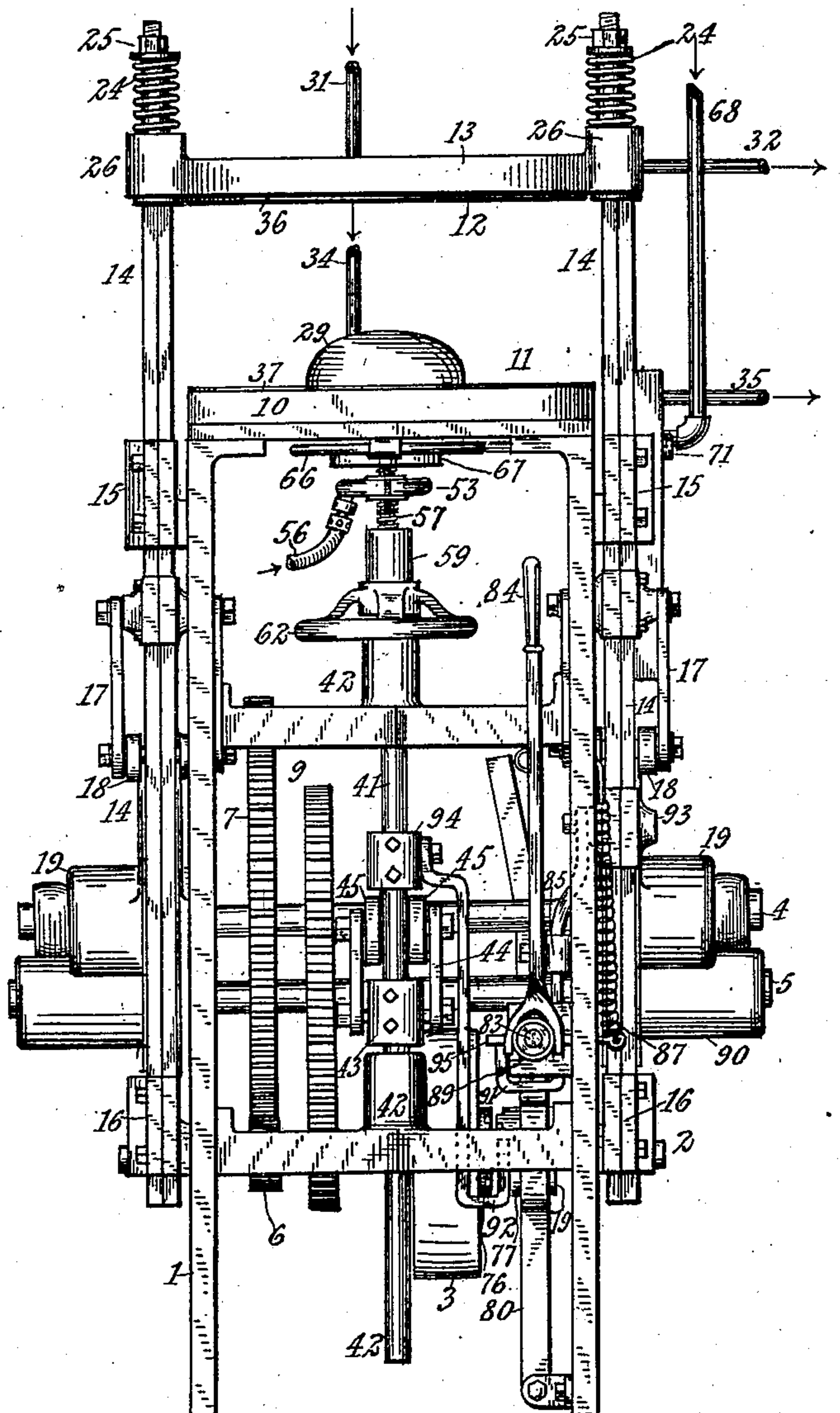
PATENTED MAR. 31, 1903.

A. B. WARING.
HAT BLOCKING MACHINE.
APPLICATION FILED AUG. 12, 1902.

NO MODEL.

6 SHEETS—SHEET 1.

Fig. 1



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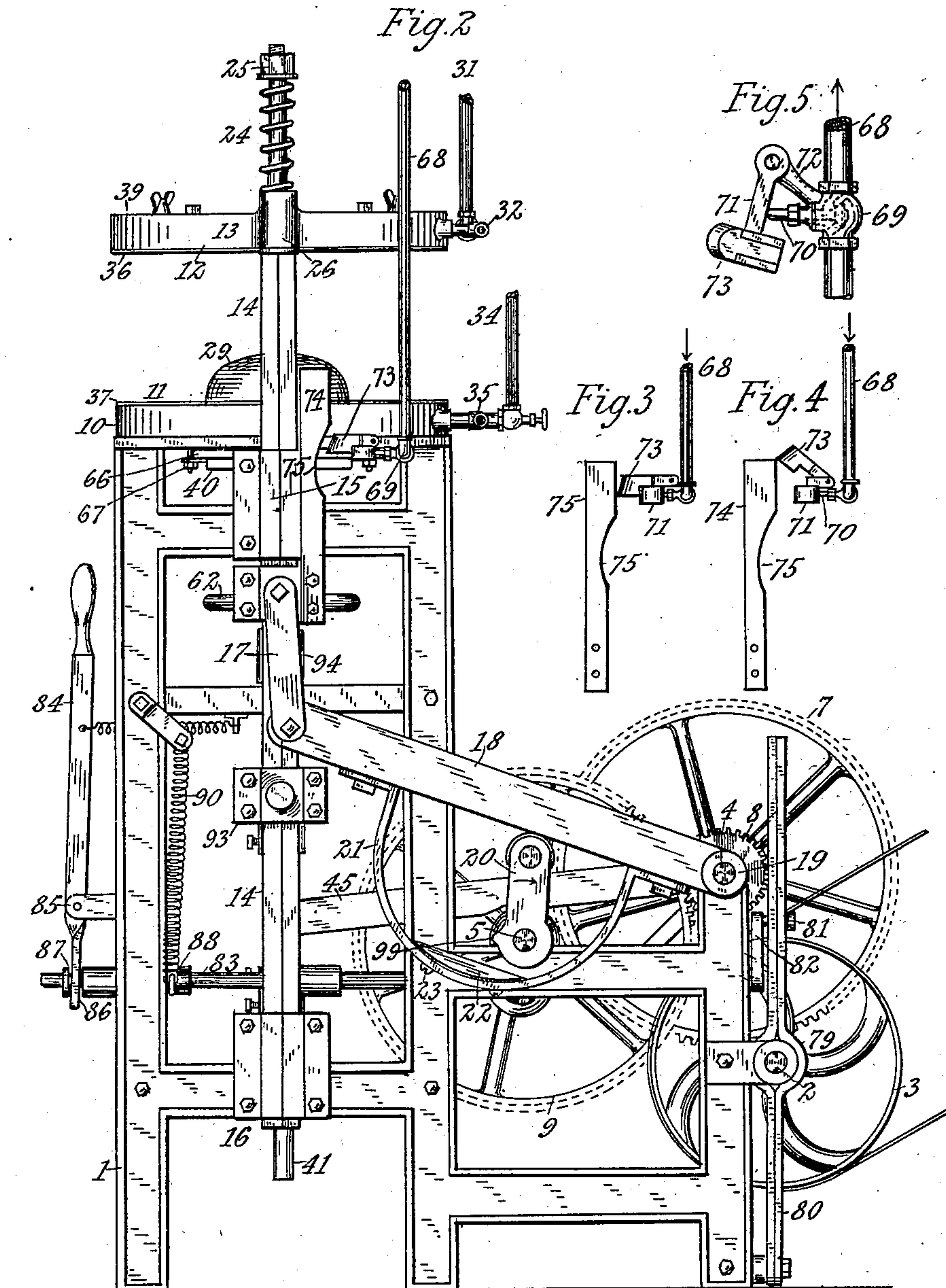
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6 SHEETS—SHEET 2.



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6 SHEETS—SHEET 4.

NO MODEL.

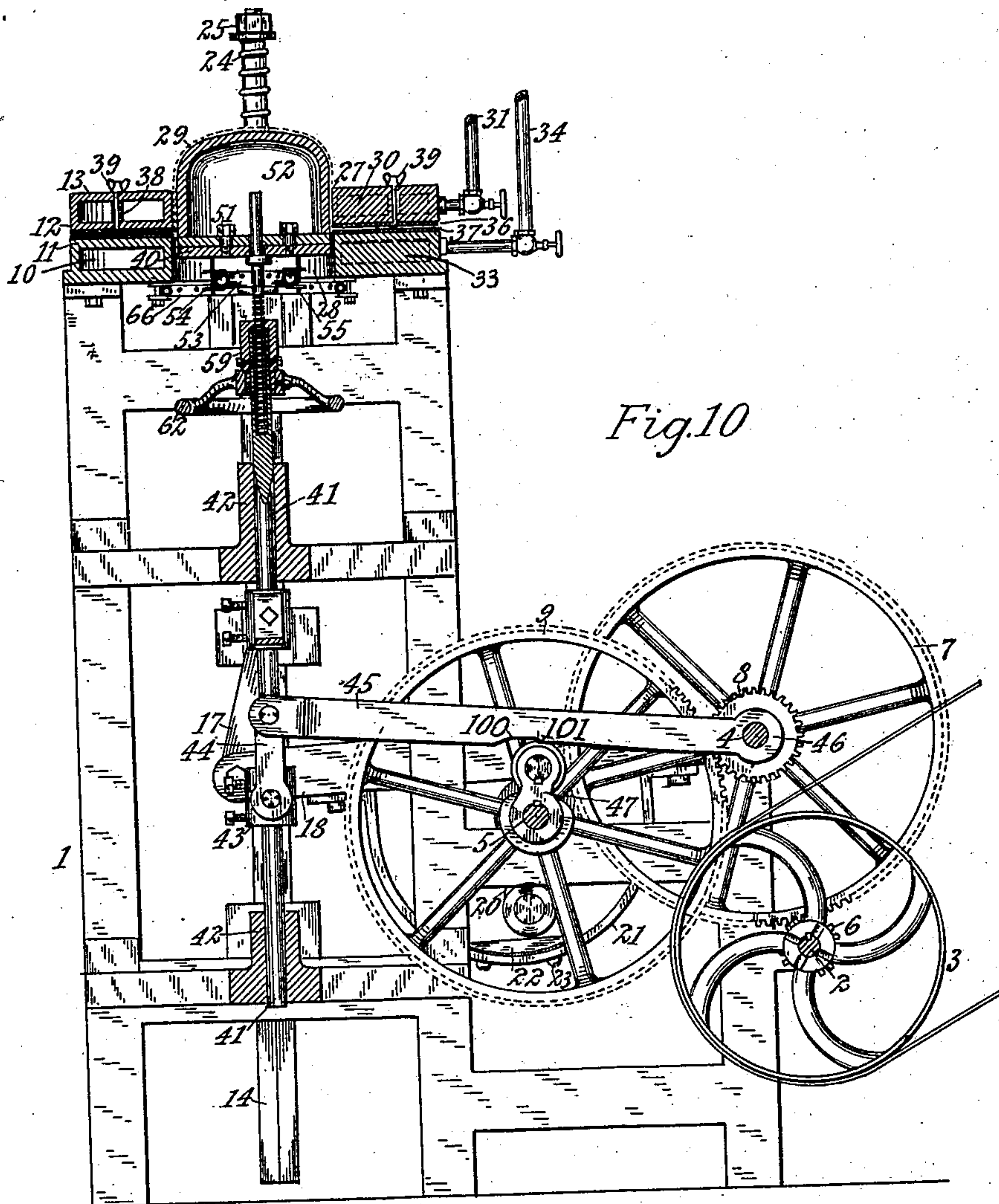


Fig. 10

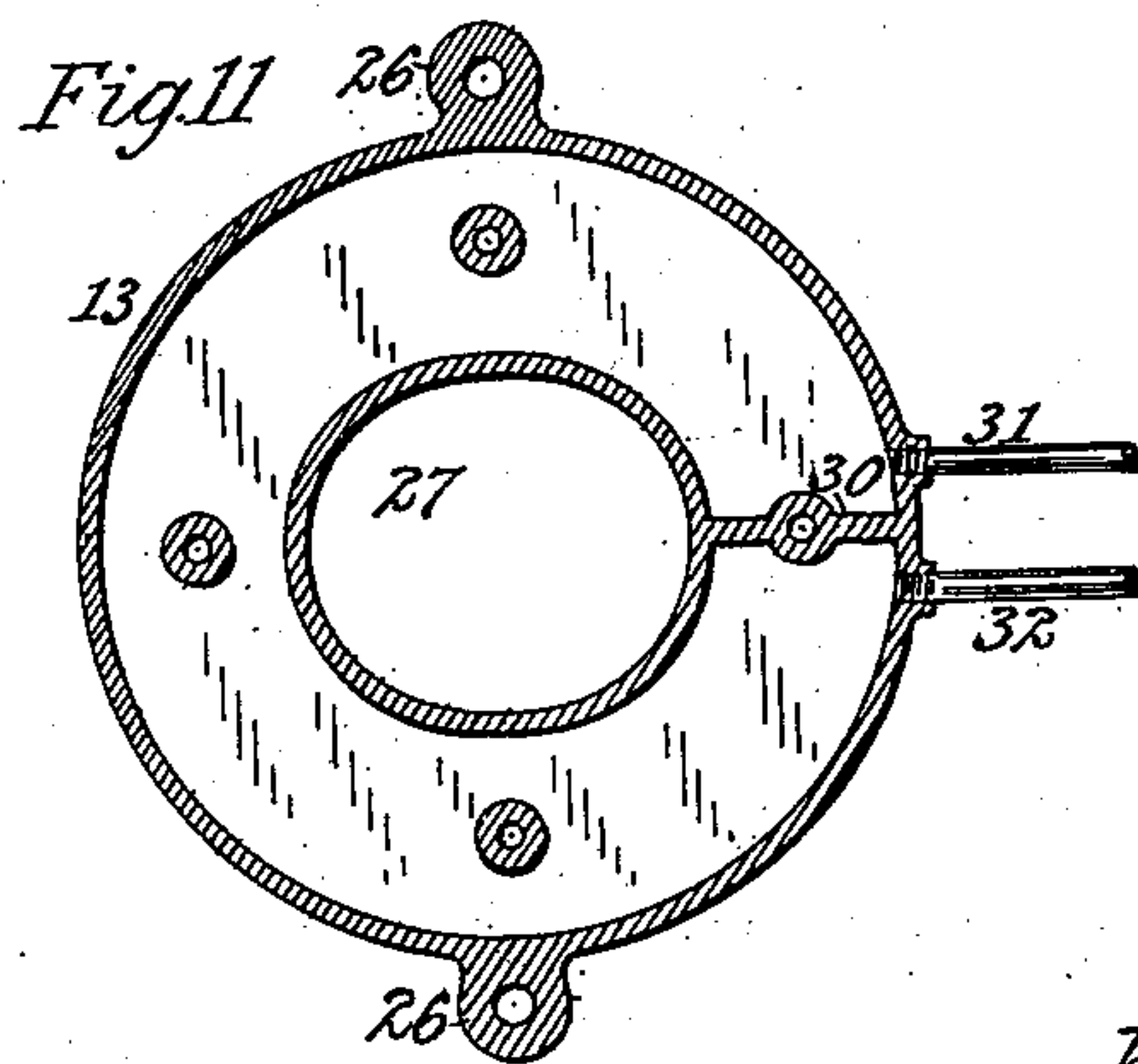


Fig. 11

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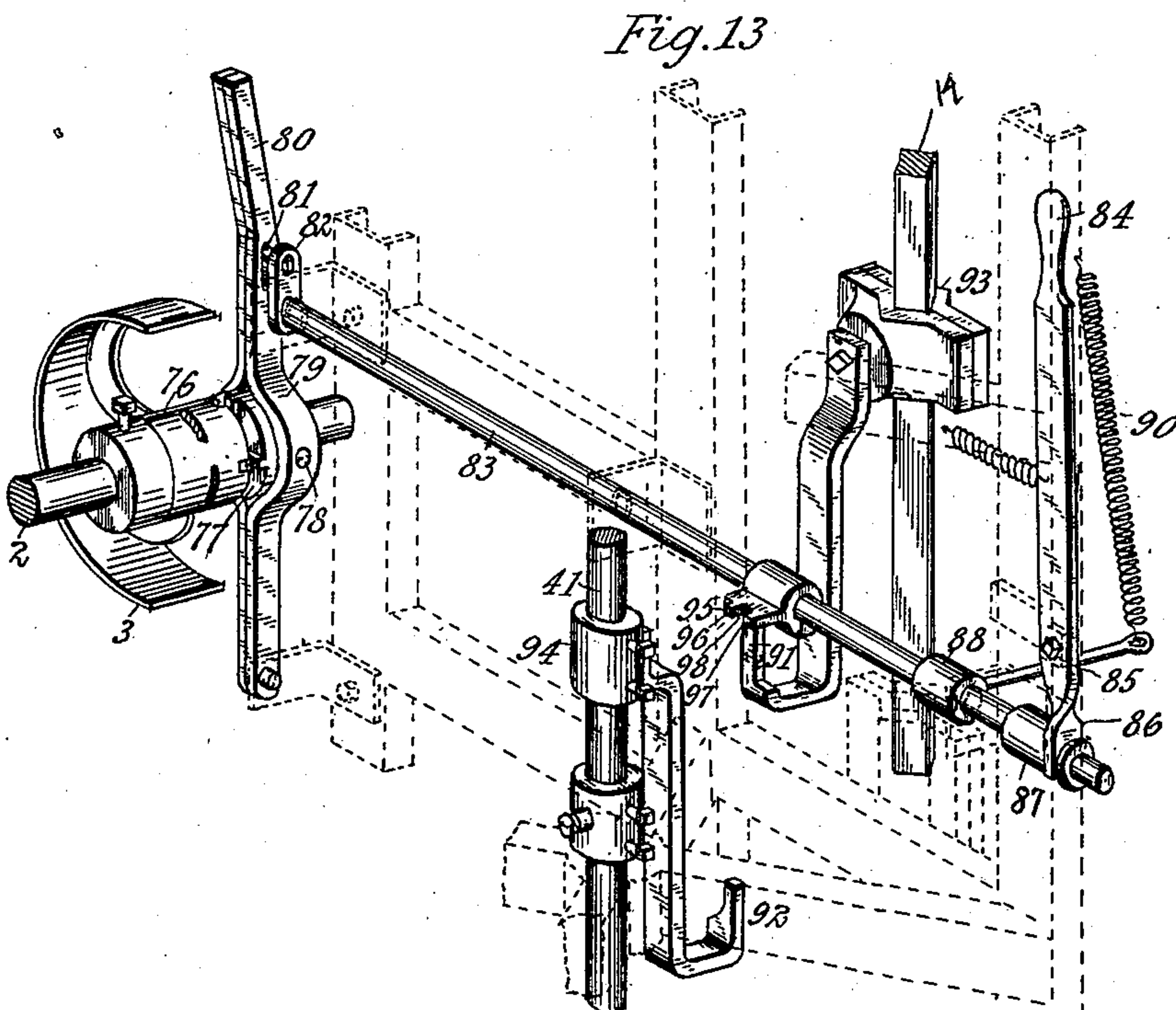
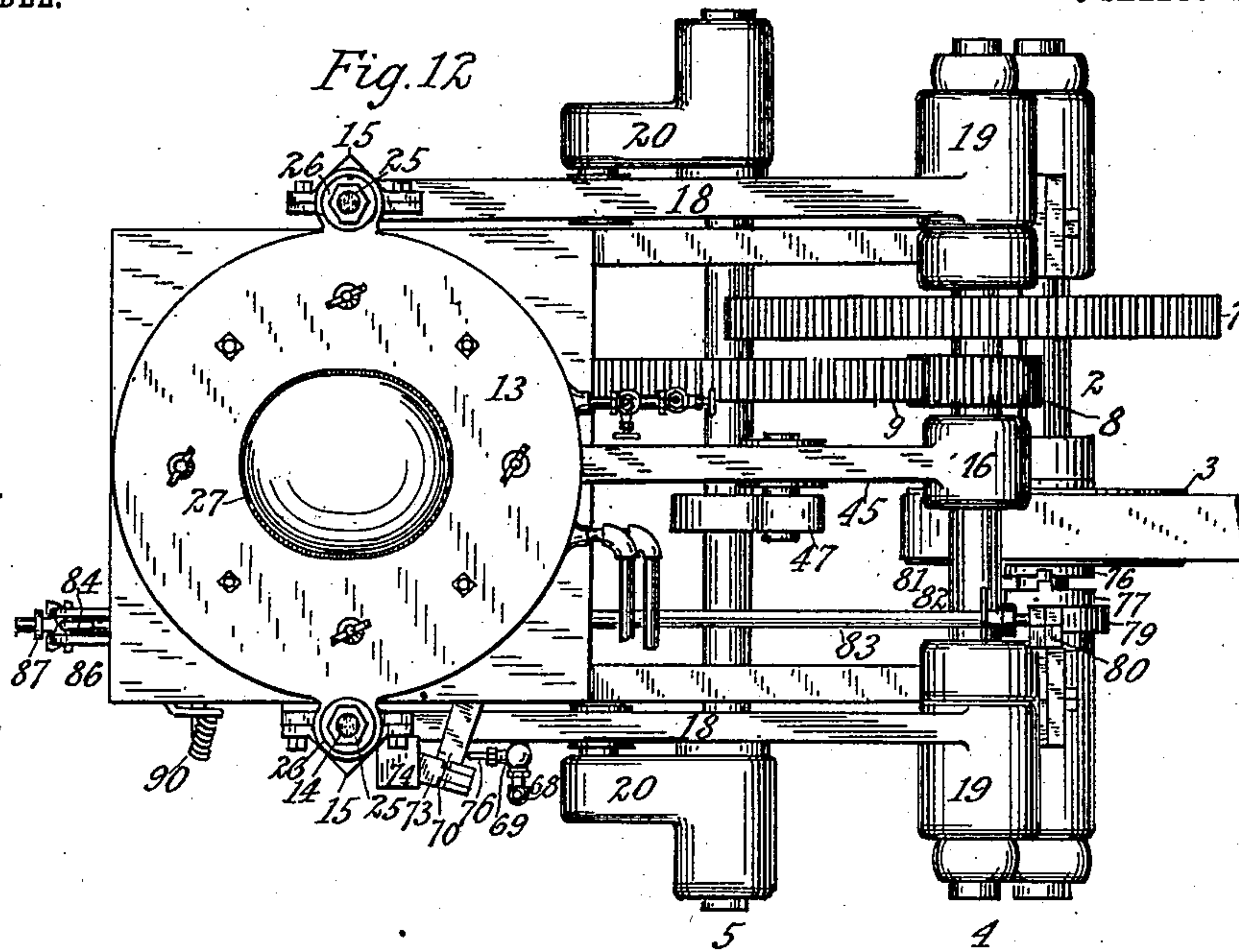
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NO MODEL.

6 SHEETS—SHEET 5.



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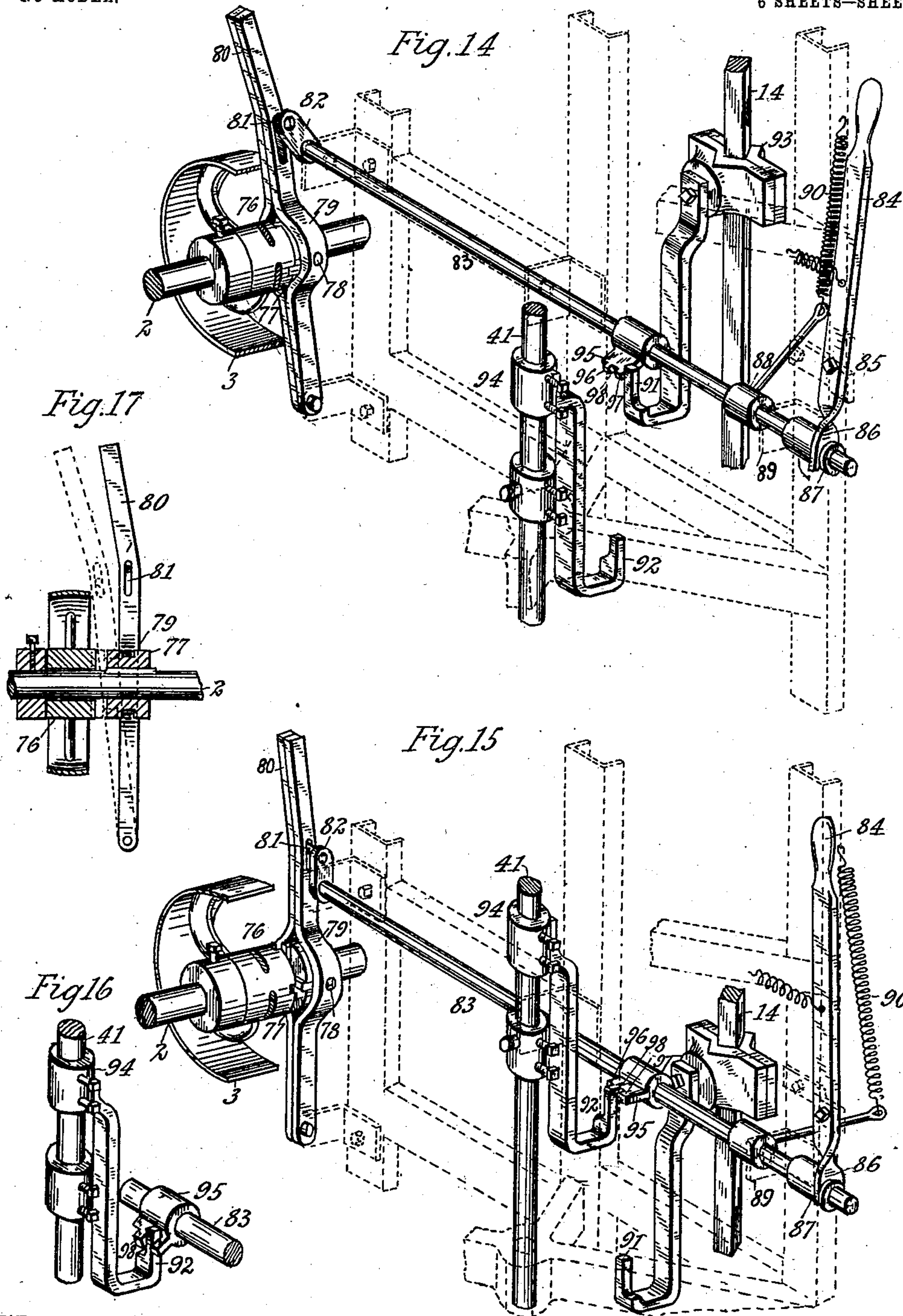
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NO MODEL.

6 SHEETS—SHEET 6



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UNITED STATES PATENT OFFICE.

ARTHUR B. WARING, OF YONKERS, NEW YORK.

HAT-BLOCKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 724,404, dated March 31, 1903.

Application filed August 12, 1902. Serial No. 119,446. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR B. WARING, a citizen of the United States of America, and a resident of Yonkers, county of Westchester, and State of New York, have invented certain new and useful Improvements in Hat-Blocking Machines, of which the following is a specification.

The present invention relates to hat-blocking machines. Until now hats have been blocked in the rough while wet, then dried and pounced. Although when the hats are blocked in the rough they are manipulated so as to produce as near as possible the desired shape and size, the shrinking of the hat-body during this process of drying makes the hats very irregular in shape and size. To produce the actual final shape and size, the hat-body is generally held in steam by the workman, pulled by hand over a wooden block, and the crown and brim ironed and flattened. There are no machines which do this work satisfactorily. The process is difficult and laborious.

The objects of my invention are to do away with practically all of the hand labor now resorted to in shaping the crown and ironing the brim of the hat and to do the work in a superior manner, to provide a machine several of which may be operated by one person, thus enabling a much greater output per operator than heretofore, and generally to provide a machine which is efficient and reliable for blocking in the finishing-room felt hats to their final desired shape and size.

Some of the characteristic features of my invention are that a heated hat-block is used in combination with heated brim-clamps, thus shaping the crown and flattening and ironing the brim to the desired final shape and size in one operation; that the upper and lower brim-clamps are both furnished with steam-chests; that the hat-block is adjustable and that the whole hat may be steamed automatically during the operation of the machine; that one of the brim-clamps is cushioned or spring-pressed, and the whole general make-up of the machine and cooperating parts is such that the method of blocking hats by hand is well imitated in all its steps and done in a rapid and superior manner.

My invention consists of certain features of construction and combinations of parts to be

hereinafter described and then pointed out in the claims.

In the accompanying six sheets of drawings, which illustrate one embodiment of form, structure, and combination of which the parts of the invention are susceptible, Figure 1 is a front elevation of a hat-blocking machine, showing my invention, the machine being at rest or in receptive condition. Fig. 2 is a side elevation as viewed from the right of Fig. 1. Figs. 3, 4, and 5 are detail views showing the steam-controlling devices, Fig. 3 showing the same in side view, steam being supplied, Fig. 4 showing the same in side view, steam being shut off and the upper clamp permitted to rise without acting on the steam-valve, and Fig. 5 showing the same parts in plan, the valve-actuator or shoe being omitted. Fig. 6 is a vertical central section of the machine, parts in elevation. Fig. 7 is an enlarged under side view of the hat-block. Fig. 8 is a detail vertical section, parts broken away, showing the means for adjusting the hat-block. Fig. 9 is an enlarged transverse section on line IX IX, Fig. 8. Fig. 10 is a section similar to Fig. 6, in which the brim-clamps are shown closed and the hat-block raised as in blocking a hat. Fig. 11 is a horizontal section through the steam-chest of the upper brim-clamp. Fig. 12 is a plan view of the machine. Fig. 13 is a perspective view of the clutch and clutch-operating mechanism, the clutch and machine being entirely out of action. Fig. 14 is a perspective view of same parts, in which the position to which the same are moved to start the machine is shown. Fig. 15 is a perspective view of same in the position in which the clutch is disconnected and the machine is blocking at rest. Fig. 16 is a detail perspective view showing only parts of the clutch-operating mechanism in position in which the clutch has been again thrown to release the hat; and Fig. 17 is a detail view of the clutch, showing it open in full lines and closed in dotted lines.

Referring to the drawings, the frame 1 supports, preferably at one side, the driving mechanism, which comprises a main shaft 2, on which a loose power-driven pulley 3 is mounted, and auxiliary shafts 4 5, the former being driven from the shaft 2 by a pinion 6 and a gear-wheel 7 and the latter being driven

from shaft 4 by a pinion 8 and a gear-wheel 9, so that shafts 2 4 5 have a rate of speed greater the one over the other in the order named.

5 Fixed at the upper part of the frame 1 is a steam-chest 10, having a hat-brim clamp 11, the clamp 11 being preferably formed by the upper surface of the steam-chest. The upper
10 brim-clamp 12 is preferably formed by the lower surface of an upper steam-chest 13, which is mounted on the upper ends of supporting-slides 14 in the form of squared rods, which move in suitable guides 15 16 at the
15 sides of the frame 1, so as to clamp the hat-brim between the brim-clamps 11 12 or to release the brim therefrom. To this end the slides 14 of the upper brim-clamp and steam-chest are connected by links 17 with oscillatory levers 18, pivoted at 19, the said levers
20 being oscillated by means of tappets 20, fixed on the shaft 5. The upward movement of the upper brim-clamp is accomplished by the outer end of the tappets 20 bearing against the lower edges of the levers 18, while the
25 downward movement thereof is accomplished by the weight of the steam-chest and attached parts, the final pressure being obtained by the bearing of the tappets on straight bearing-pieces 22, joined adjustably
30 to the stirrups by set-screws 23, which pass through slots (not shown) in the stirrups. This final pressure quickly compresses helical springs 24, which are located on the rounded upper ends of the slides 14 and are confined
35 between nuts 25 and ears 26 on the upper steam-chest and brim-clamp, said ears guiding the slides loosely and permitting the same to move down farther after the upper brim-clamp has been clamped upon the lower brim-clamp. In this way a cushioned or spring-
40 pressed upper brim-clamp is provided, so that the pressure will not be hard and unyielding, while at the same time the said brim-clamp will always clamp down upon hat-brims
45 of various thicknesses.

Each brim-clamp as well as steam-chest is provided with a central opening 27 28, respectively, to receive a hat-block, such as 29, which forms a male member, while the brim-clamps form two female members. A horizontal section of the upper steam-chest is shown in Fig. 11, from which it will be seen that the same has a transverse partition 30 at one side, on one side of which is connected
50 at inlet steam-pipe 31, while at the other side an outlet steam-pipe 32 is connected. The lower steam-chest 10 has a similar partition 33, an inlet steam-pipe 34, and an outlet steam-pipe 35. Both the upper and lower
55 brim-clamps are thus heated.

The brim-clamps are equipped with flat templets 36 37, respectively, templet 37 being simply laid upon or fastened to the lower brim-clamp and templet 36 having studs 38,
65 which pass through the upper steam-chest and receive at their upper ends thumb-nuts 39, whereby the templet 36 is firmly secured

to the brim-clamp 12. Various sizes of templets are provided for use with the machine, which sizes accord with a like number of
70 head-sizes of hat-blocks.

Hat-block 29 is supported on a plate or table 40, which is connected for adjustment with reciprocating rod 41, that moves in guides 42 of the frame 1, and has a fixed sleeve 43,
75 to which is pivoted one end of each of two links 44, the opposite ends of which are pivoted to the forked end of a lever 45, pivoted at 46. The lever 45 is oscillated by a tappet 47 on the shaft 5 to elevate the hat-block, 80 which lowers by gravity, as do the upper brim-clamp and steam-chest also. The hat-block 29 is shown in Fig. 7 provided with a cross-piece 48, having concentric with its centering-hole 49 two edge notches or recesses 50, 85 which are engaged by headed studs 51 on the block-plate 40 when a short turn is imparted to the hat-block, thereby locking the hat-block in place. The hat-block is hollow, so as to form a chamber 52, it being in the form 90 of a metallic shell having the proper contour for the hat-crown. It is made hollow not only for lightness, but mainly to receive a suitable amount of heat and to retain the same in its chamber 52, to which end an an- 95 nular perforated burner 53 is located under the plate 40, it being supported adjustably thereon by clips 54, which are screwed like nuts onto screw-threaded pins 55 on the under side of the said plate. A gas-supply pipe 100 56 leads to the burner.

In Figs. 8 and 9 the means for raising and lowering the block-plate 40, so that the block will normally protrude more or less above the lower brim-clamp 11, is shown. This means 105 consists of a screw-spindle 57, formed as an extension of the block-centering pin 58 and which screws into the upper end of a cap-like adjusting-nut 59, that fits over the hollow upper end of the slide-rod 41 and has tapped 110 thereinto confining-screws 60, the ends of which protrude into an annular groove 61 in the upper end of the slide-rod and prevent the longitudinal movement of the adjusting-nut 59, while permitting the same to turn. 115 The turning of the adjusting-nut 59 is done by a hand-wheel 62, the hub of which is secured to a portion of the nut by a set-screw 63. To compel the spindle 57 to move longitudinally without turning, the same is provided with a longitudinal groove 64, into 120 which protrudes the end of a guide-screw 65, which is countersunk in the hollow upper end of the slide-rod 41. The screw 65 precludes the turning of the spindle; but as the latter may 125 move longitudinally the turning of the nut acts to feed the spindle up or down, as the case may be.

Prior to the closing of the upper brim-clamp and the entrance of the hat-block thereinto 130 the hat is steamed. For this purpose a perforated steaming-ring 66 is mounted on suitable hangers 67 on the underside of the steam-chest 10, steam being supplied thereto by a

valve-controlled supply-pipe 68. The valve 69 works against a valve-seat (indicated in dotted lines in Fig. 5) and its spindle 70 is engaged by an actuating-arm 71, pivoted to a bracket 72 at one end and at the other end carrying a pivoted gravity-dog 73, the free end of which is located in the path of a pressure-shoe 74, fixed to a slide 14 and extending upwardly alongside it. In raised position of the upper brim-clamp the free end of the dog extends into a recess or cut-out 75 in the shoe 74, and when the said clamp is being lowered the dog, not being free to yield in downward direction, is engaged, as shown in Fig. 3, so as to press on and open the valve 69, and steam is then supplied to the hat on the hat-block through the opening in the lower clamp. When the shoe passes below the dog, the pressure on the valve is removed and the valve closes. During the upward movement of the upper brim-clamp the shoe 74 strikes the dog and simply swings it on its pivot without action on the valve, as shown in Fig. 4.

Mechanism for throwing the clutch into and out of action for starting and automatically stopping the machine will now be described. This mechanism is shown more or less in most of the views; but it is shown in detail in Figs. 13 to 17, inclusive, the mechanism used with the machine being, however, only a matter of choice, although the illustrated mechanism is of my invention.

Pulley 3 is loose and has a toothed clutch member 76, which may be engaged by a shiftable clutch member 77 in well-known manner. The shiftable clutch member 77 has an annular groove which receives the inner ends of pins 78, projecting from the yoke 79 of a lever 80, pivoted to the frame 1 of the machine and which has pin-and-slot connection at 81 with a crank-arm 82 on a rock-shaft 83, journaled in suitable hangers on the machine-frame. The lever 80 is separated a short distance away from the crank-arm, so as to permit of the longitudinal shifting of the rock-shaft for the purpose to be stated hereinafter. A hand-lever 84, pivoted to the front of the frame 1 at 85, at its forked lower end 86 enters the groove of a grooved sleeve 87 of the rock-shaft, which with a fixed sleeve 88 on the opposite side of the lug 89 on the frame 1 forms stops in striking the lug to limit the inward and outward movements of the rock-shaft by the movement of the hand-lever. The shaft 83 may rock, its rocking in one direction being caused by a spring 90 or its equivalent and in the other direction by contacts 91 92, connected with the upper brim-clamp slide and the hat-block slide, respectively. The contacts 91 92 are in the form of fingers or hooks, the shanks of which are secured to the slides 14 and 41, respectively, by means of suitable sleeves 93 94 in such position that the shanks project downwardly, with the operative contact ends of the hooks

projecting upwardly in the plane of a lug 95 on the shaft 83.

The lug 95 has two shoulders 96 97, formed by a notch 98, the width of which is approximately the distance that the contacts 91 92 are laterally removed from each other in a direction parallel with the rock-shaft 83, so that in the normal unshifted position of the rock-shaft the shouldered parts of the lug will lie vertically above the contacts 91 92 in the path of movement of the contacts.

The operation of the machine and of the illustrated mechanism which may be used to operate it is as follows: Steam is let into the steam-chests 10 13 to heat the brim-clamps, and hat-block is heated from burner 53. A hat to be blocked is now slipped over the part of the hat-block which projects above the brim-clamp to facilitate centralization, the brim being moved down, so as to rest on the lower brim-clamp or plate. The operator then shifts the hand-lever 84 against the action of its spring, thereby releasing the lug 95 from the contact 91 and allowing the spring 90 to rock the shaft 83, so that the parts are moved from the position shown in Fig. 13 to that shown in Fig. 14 and the clutch members are engaged, thereby starting the machine. The movable heated brim-clamp 12 now moves under gravity toward the heated brim-clamp 11. Before the brim-clamp 12 comes to a stop steam is let on automatically by the operation of the valve 69 from the shoe 74, so that the hat is steamed in the machine. The hat-brim is then clamped or pressed by the movable brim-clamp 12; but just before the final squeezing or ironing pressure effected by the action of the tappets 20 on the bearing-piece 22 the movable brim-clamp is moved slightly away from and then upon the hat-brim by the action of the cam projections 99 on the said tappets upon the levers 18. This sudden release of pressure and the air-circulating space formed between the movable brim-clamp and the hat-brim permit any steam remaining in the hat-brim to escape before the final pressure, as just stated, is imparted to the hat-brim. The escaping of the steam allows the brim to dry, so that when taken from the machine after final pressing it is not apt to warp, and being thoroughly dried out is in perfect condition to finish. As soon as the hat-brim is clamped the tappets 47 operate on the levers 45 to move the heated hat-block into the hat-crown, and during this movement of the hat-block the ends of the tappets 47 move into recesses 100 in the said lever, thus interrupting the pushing movement, and then suddenly the hat-block is pushed completely into the hat-crown by the action of the tappet on the cam projection 101 on the same lever. Thus the hat-block is not pushed directly full into the hat-crown, but intervals are produced, so that the crown is not overstrained. The parts of the machine will now be in the position shown in Fig.

10 and the clutch members will be automatically disengaged by the striking of the shoulder portion 96 of the lug 95 by the contact 92, as shown in Fig. 15. The machine being thus brought to rest the hat is kept therein under the action of heat for a sufficient length of time to assure that the same is properly blocked and all creases and wrinkles smoothed out. Having been blocked, the hat is ready to be removed, so that another may be placed in the machine. For this purpose the operator again operates the handle 84 to shift the shouldered portion 96 of the lug 95 off the contact 92, which permits the spring 90 to rock the shaft 83, as shown in Fig. 16, and again engage the clutch members. The machine being started, the hat-block is automatically lowered and the movable brim-clamp automatically raised, and at the completion of these movements the contact 91 strikes the shouldered portion 97 of the lug 95, as shown in Fig. 13, and automatically stops the machine. The blocked hat may now be removed and another hat to be blocked placed in position. The machine operates automatically to block the hat and to release the same after it is blocked.

It will be seen from the foregoing that the machine herein described is a power-driven hat-blocking machine, in which are combined means operated by hand for connecting the machine with the driving power, brim-clamps, means operating automatically after the machine has been connected with the driving power for closing the clamps, a hat-block, means operating automatically after the clamps are closed for bringing the hat-block into the blocking position, and means operating automatically after the clamps have been closed and the hat-block has been brought into blocking position for disconnecting the machine from the power, leaving the clamps closed and the block in blocking position, means operated by hand for again connecting the machine with the driving power, means operating automatically after the machine has been so again connected for opening the clamps and removing the block from the blocking position, and means operating automatically after the clamps have been so opened and the block removed from blocking position for again disconnecting the machine from the driving power.

Since the operation of blocking requires some time and the operator is called upon to do nothing but place a hat in position and throw a lever, he can start one machine and leaving it to operate automatically go to another, then to another, thus starting four or five machines before it is necessary for him to return to the first machine to take the blocked hat out of the machine and put another in its place.

Without limiting myself to details, what I claim as new and of my invention is—

1. In a hat-blocking machine, the combina-

tion of brim-clamps, a hat-block, and means comprising adjustable connections on which the hat-block is supported, for moving the hat-block through the brim-clamps, substantially as described. 70

2. In a hat-blocking machine, the combination of brim-clamps, a hat-block, and automatic means on which the hat-block is adjustably supported, for moving the hat-block through the brim-clamps, substantially as described. 75

3. In a hat-blocking machine, the combination of brim-clamps, automatic means for closing the same, a hat-block, and automatic means, on which the hat-block is adjustably supported, for moving the hat-block through the brim-clamps, substantially as described. 80

4. In a hat-blocking machine, the combination of two brim-clamps, one stationary, the other movable, and a hat-block movable through the stationary brim-clamp, the said hat-block being adjustable independently of the said movement, relatively to the stationary brim-clamp, substantially as described. 85 90

5. In a hat-blocking machine, the combination of brim-clamps, a vertically-movable table or plate, means for adjusting the same relatively to the brim-clamps, and a hat-block on the table, substantially as described. 95

6. In a hat-blocking machine, the combination of brim-clamps, a hat-block, means for raising and lowering the hat-block, and an adjustable spindle supporting the hat-block from the said means, substantially as described. 100

7. In a hat-blocking machine, the combination of brim-clamps, a hat-block, automatic means for raising and lowering the hat-block, and an adjustable spindle supporting the hat-block from the said automatic means, substantially as described. 105

8. In a hat-blocking machine, the combination of brim-clamps, one movable toward the other, and means for moving the movable clamp toward, away from and returning it to the other clamp during the action on the hat-brim, substantially as described. 110

9. In a hat-blocking machine, the combination of brim-clamps, one movable toward the other, and means for automatically moving the movable clamp away from and returning it to the other clamp during the action on the hat-brim, substantially as described. 115

10. In a hat-blocking machine, the combination of a hat-block, and means for pushing the same into the hat-crown, in a plurality of interrupted movements, substantially as described. 120

11. In a hat-blocking machine, the combination of brim-clamps having hat-block openings, a hat-block guided in the openings, and means for pushing the hat-block into the hat-crown, in a plurality of interrupted movements, substantially as described. 125 130

12. In a hat-blocking machine, the combination of brim-clamps having hat-block open-

ings, a hat-block guided in the openings, and a steaming-ring opposite the openings, substantially as described.

13. In a power-driven hat-blocking machine the combination with heated brim-clamps, of a heated hat-block, means for connecting the machine with the driving power for closing the clamps, and means automatically acting after the closing of the clamps for bringing the hat-block into position, substantially as described.

14. In a power-driven hat-blocking machine, the combination with heated brim-clamps, of a heated hat-block, means for connecting the machine with the driving power for closing the clamps, means automatically acting after the closing of the clamps for bringing the hat-block into position, and automatic means for disconnecting the driving power from the brim-clamps when closed, and from the hat-block when brought into position, substantially as described.

15. In a power-driven hat-blocking machine, the combination of means for connecting the machine with the driving power, heated brim-clamps, automatic means for closing the clamps, a heated hat-block, and automatic means for bringing the hat-block into blocking position, substantially as described.

16. In a power-driven hat-blocking machine, the combination of means for connecting the machine with the driving power, heated brim-clamps, automatic means for closing the clamps, a heated hat-block, automatic means for bringing the hat-block into blocking position, and automatic means for disconnecting the machine from the power, substantially as described.

17. In a power-driven hat-blocking machine, the combination of means for connecting the machine with the driving power, brim-clamps, automatic means for closing the clamps, a hat-block, automatic means for bringing the hat-block into blocking position, and automatic means for disconnecting the machine from the power, leaving the clamps closed, and the block in blocking position, substantially as described.

18. In a power-driven hat-blocking machine, the combination of means for connecting the machine with the driving power, brim-clamps, automatic means for closing the clamps, a hat-block, automatic means for bringing the hat-block into the blocking position, automatic means for disconnecting the machine from the power, leaving the clamps closed and the block in blocking position; means for again connecting the machine with the driving power, automatic means for opening the clamps and removing the block from the blocking position, and automatic means for again disconnecting the machine from the driving power, substantially as described.

19. In a hat-blocking machine, the combination of the drive-shaft, brim-clamps, one being movable, a hat-block, contacts connected with the movable brim-clamp and a hat-block, clutch members on the drive-shaft, one movable, and means controlled by the said contacts to operate on the movable clutch member, substantially as described.

20. In a hat-blocking machine, the combination of the drive-shaft, clutch members on the same, one being movable, brim-clamps, one being movable, a hat-block, slides for operating the movable brim-clamp and hat-block, contacts on the said slides, and hand-operated means controlled by the said contacts to operate on the movable clutch member, substantially as described.

21. In a hat-blocking machine, the combination of the drive-shaft, clutch members on the same, one being movable, brim-clamps, one being movable, a hat-block, contacts connected with the movable brim-clamp and hat-block, a shiftable rock-shaft connected with the movable clutch member, means for rocking the same, and a lug on the rock-shaft engaged by said contacts, substantially as described.

Signed by me at Yonkers, New York, this 9th day of August, 1902.

ARTHUR B. WARING.

Witnesses:

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JULIUS TACKMAN.