

Fig. 5.

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39

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Witnesses:

J. A. Parbaschmidt

E. M. Klatcher

Inventor

Edward C. Williams,

By

Louis G. Gilson

Atty

943,504.

E. C. WILLIAMS.
MOLDING PRESS.
APPLICATION FILED AUG. 24, 1907.

Patented Dec. 14, 1909.

4 SHEETS—SHEET 2.

Fig. 2.

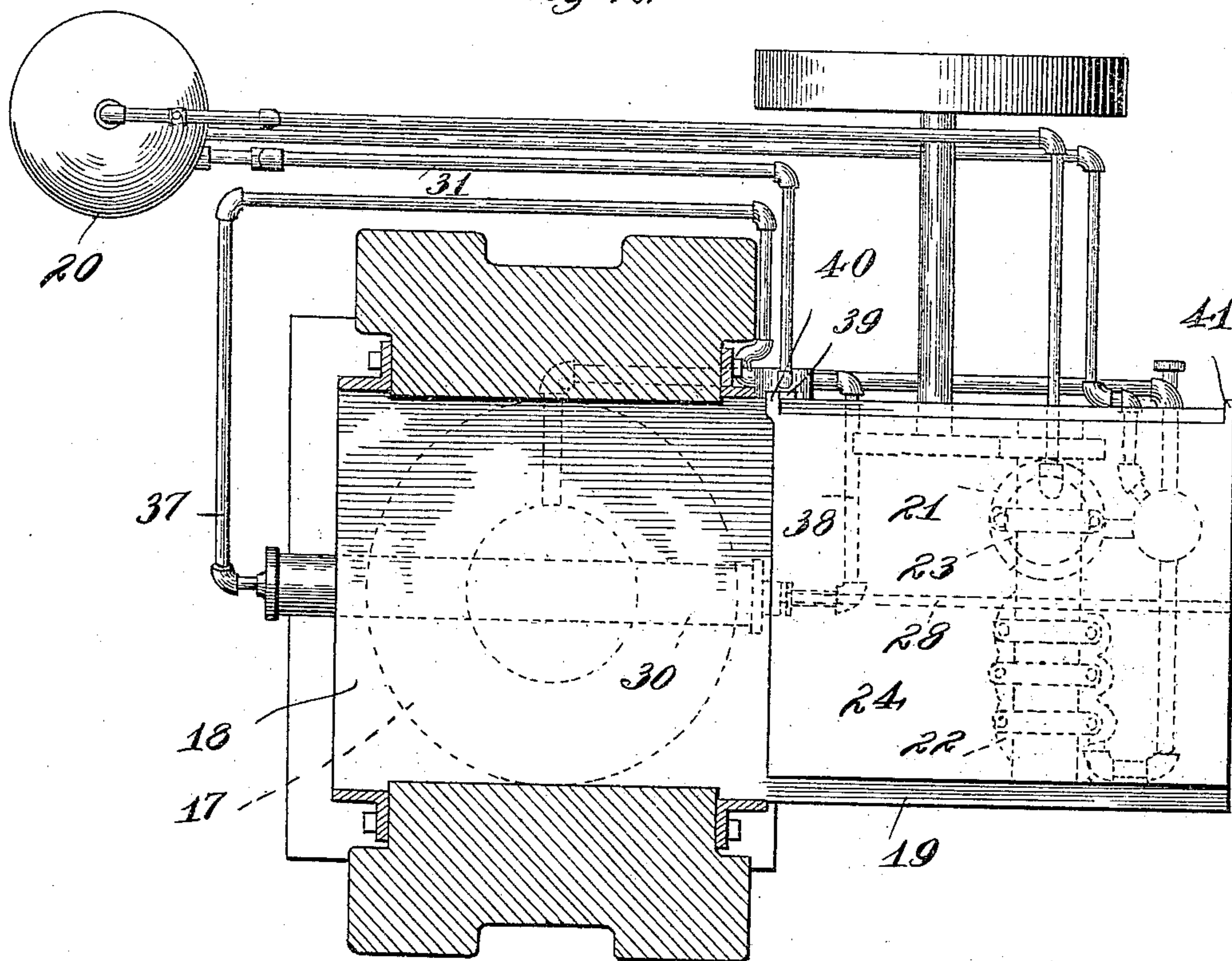


Fig. 6.

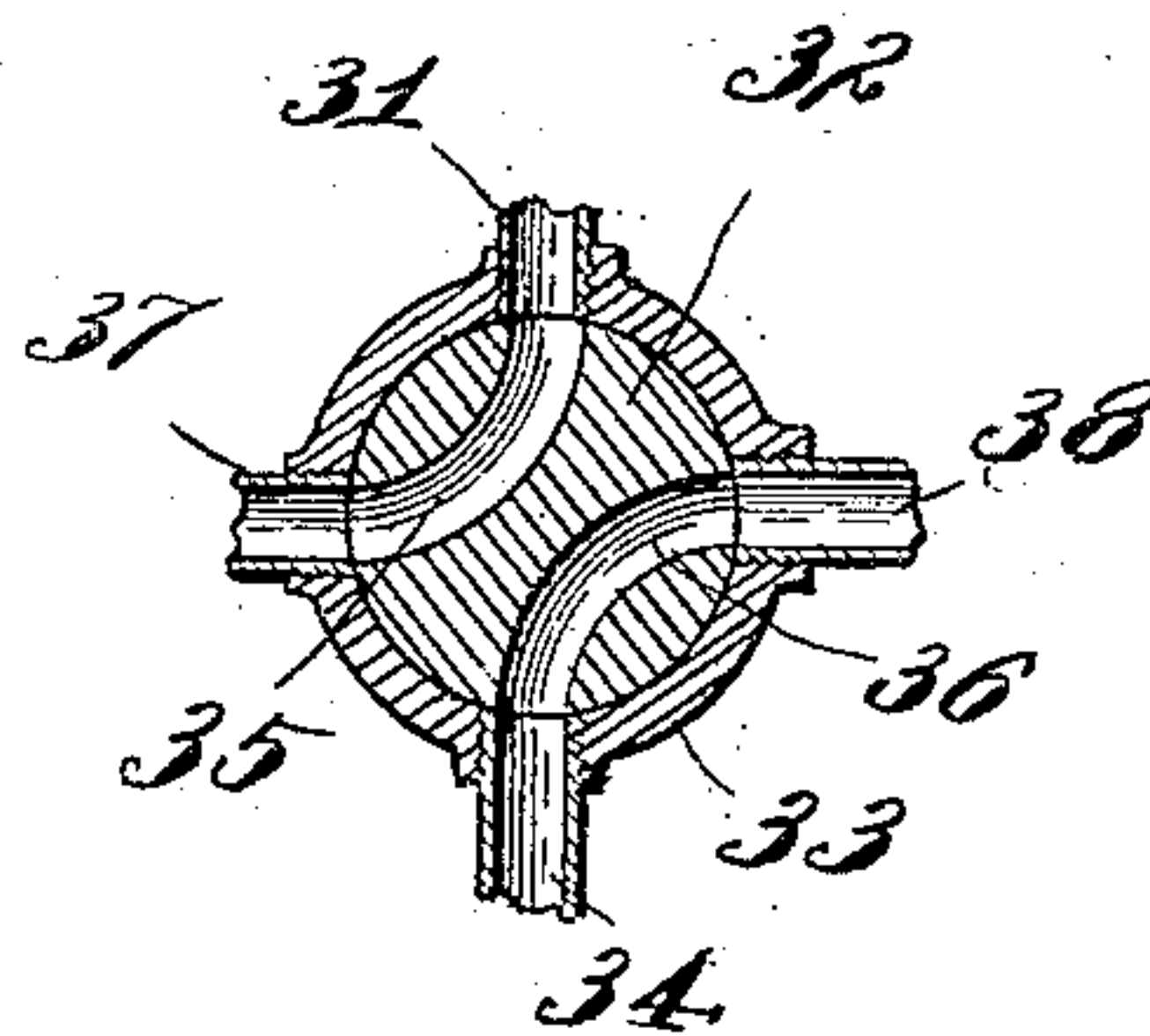


Fig. 3.

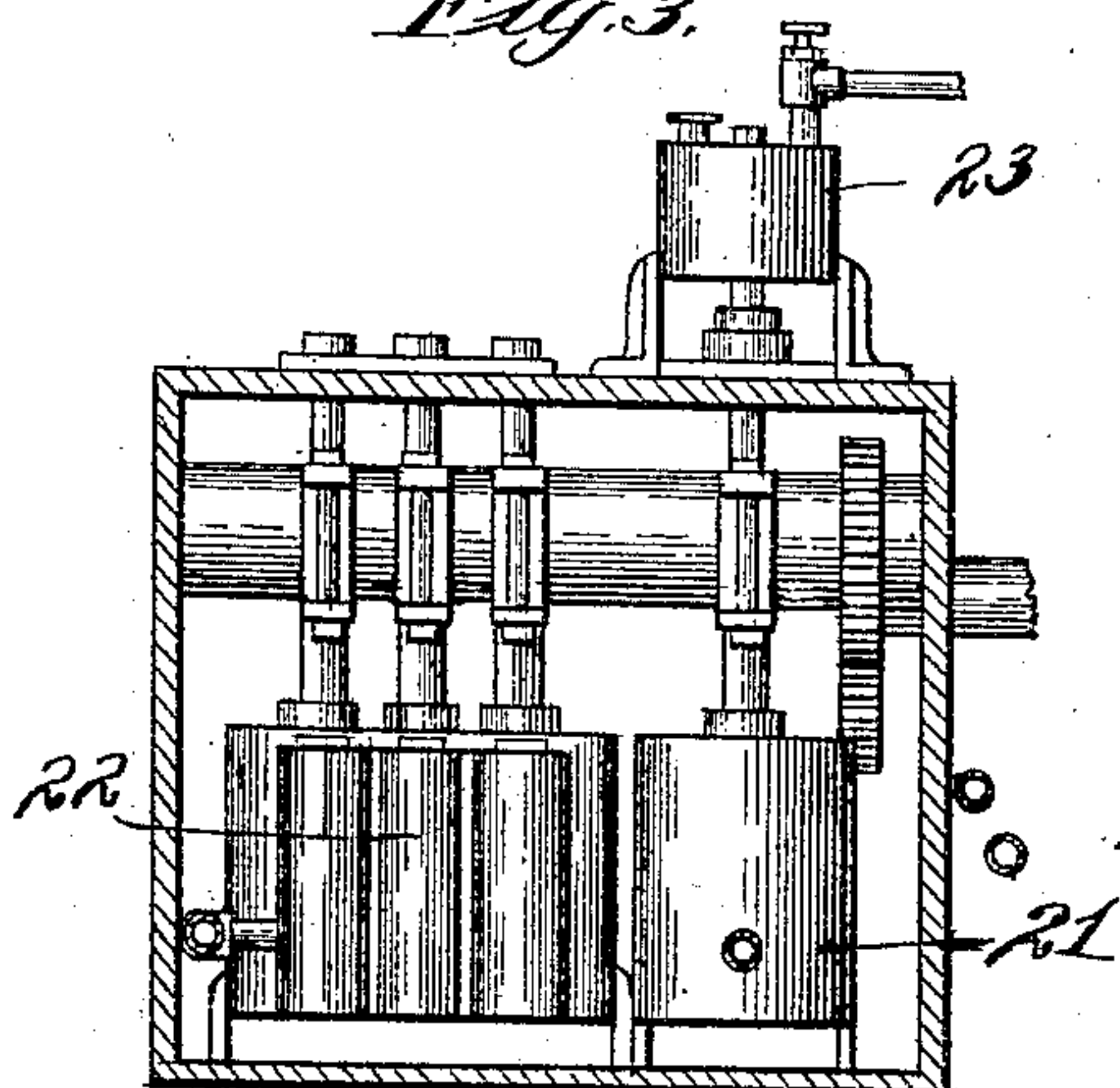
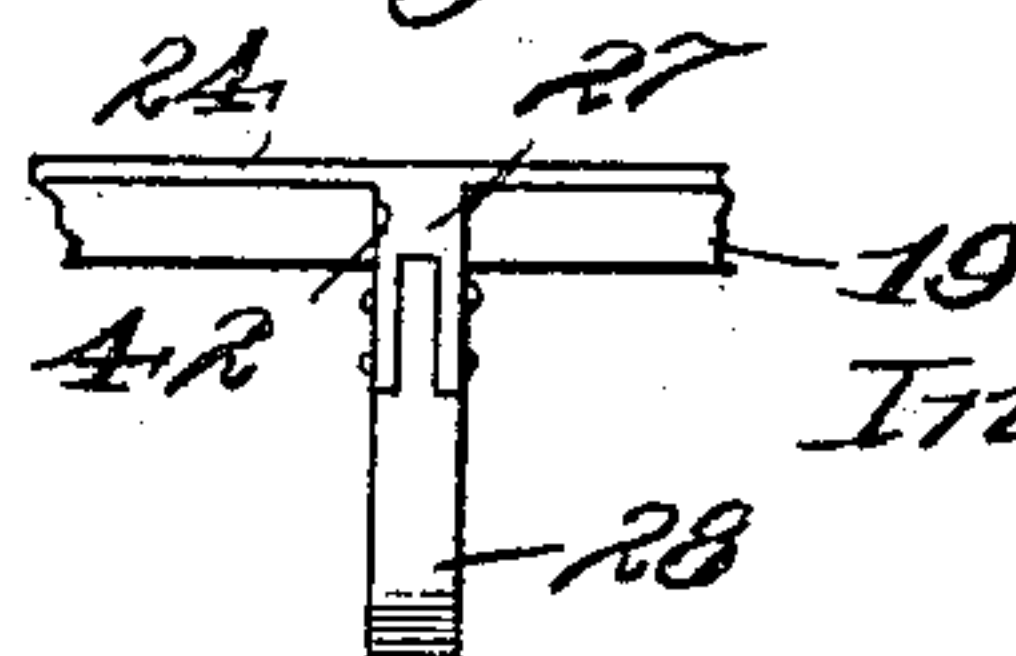


Fig. 7.



Witnesses:

J. A. Paubewhmidt
E. M. Klatcher

Inventor:

Edward C. Williams,

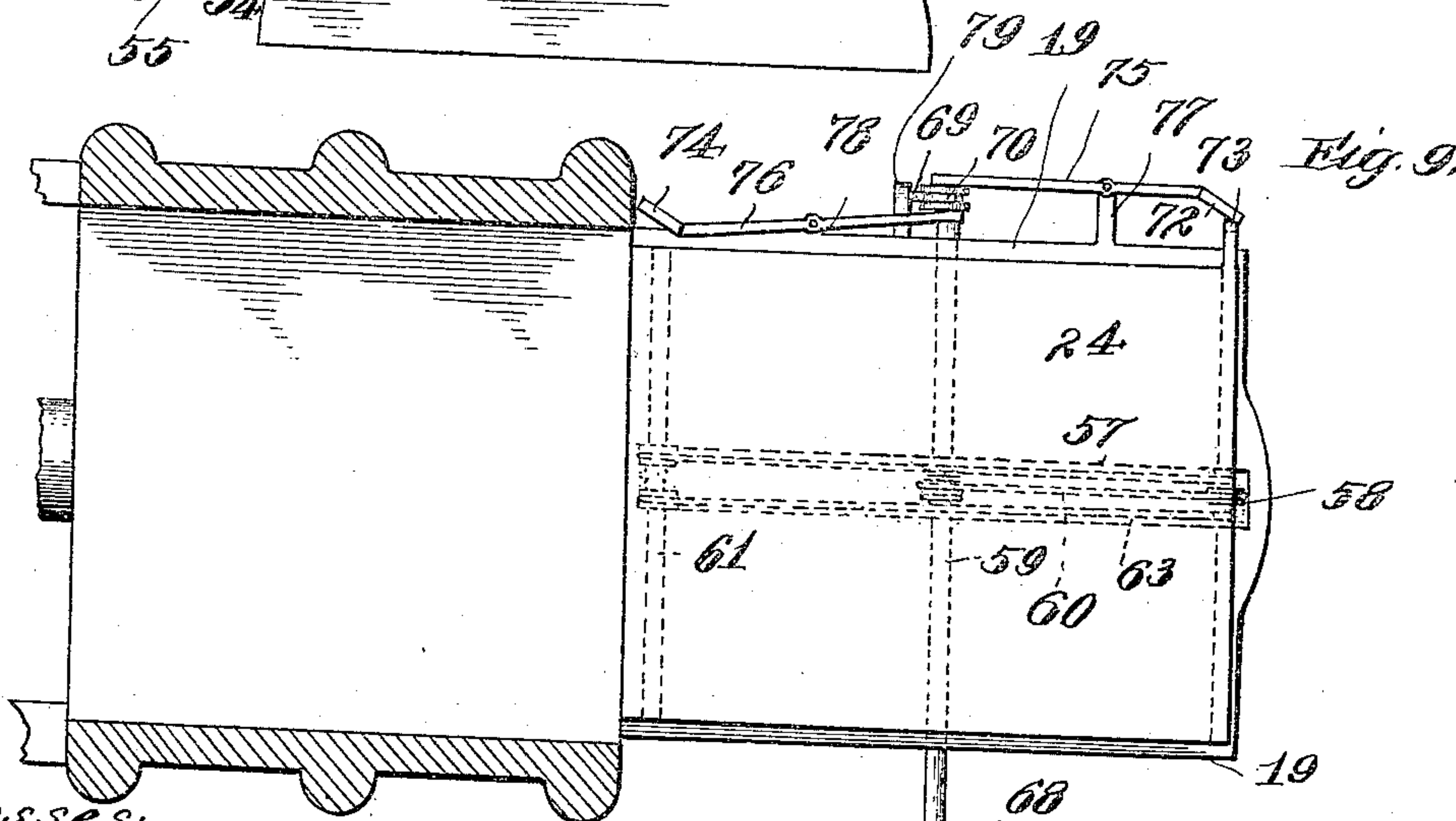
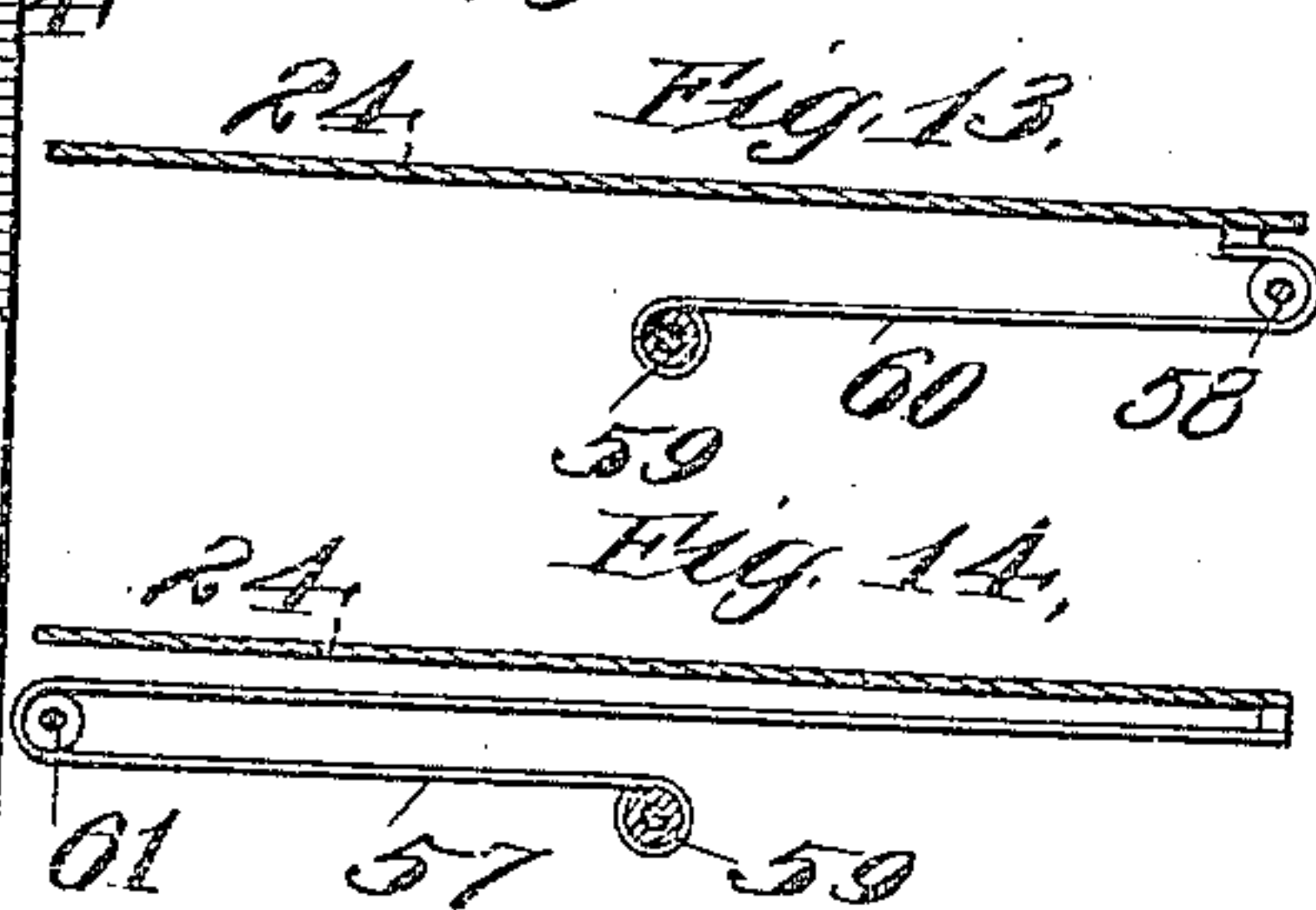
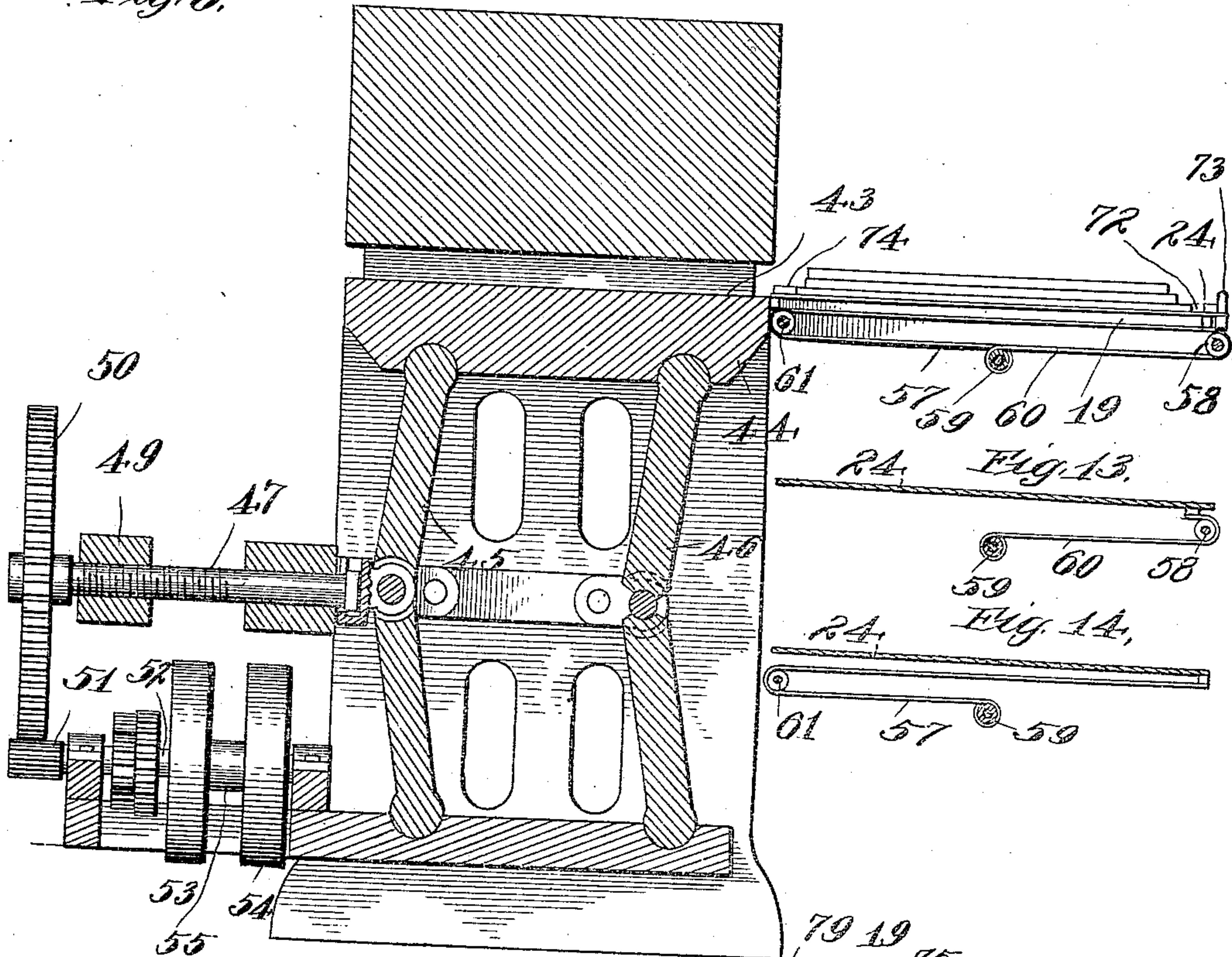
By *Leonard Gibson* Atty

943,504.

E. C. WILLIAMS.
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4 SHEETS—SHEET 3.

Fig. 8.



Witnesses:

H. A. Paulschmitt,
E. M. Klatcher

Inventor:

Edward C. Williams,

By *Louis A. Gilson*
Atty

E. C. WILLIAMS.

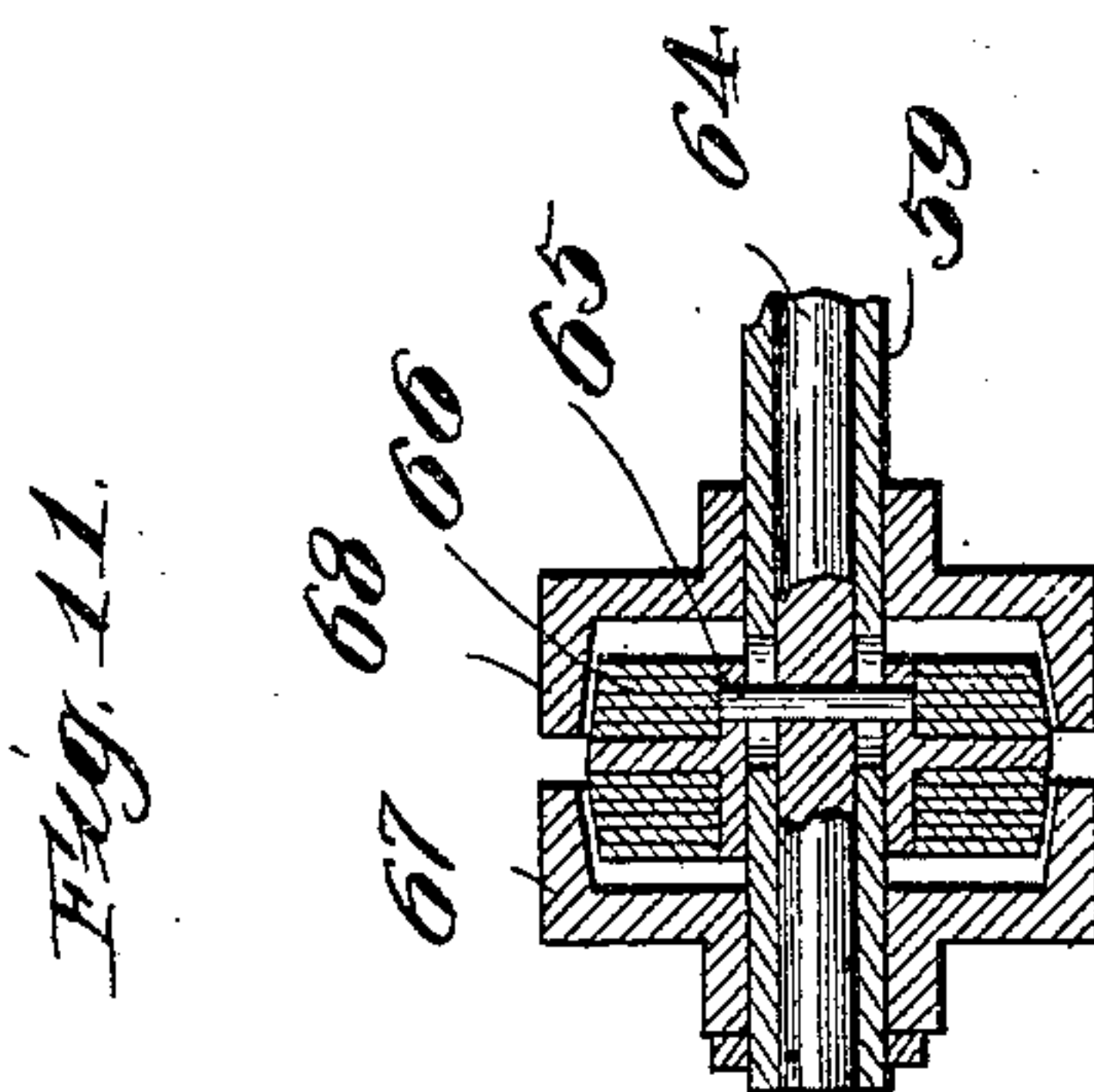
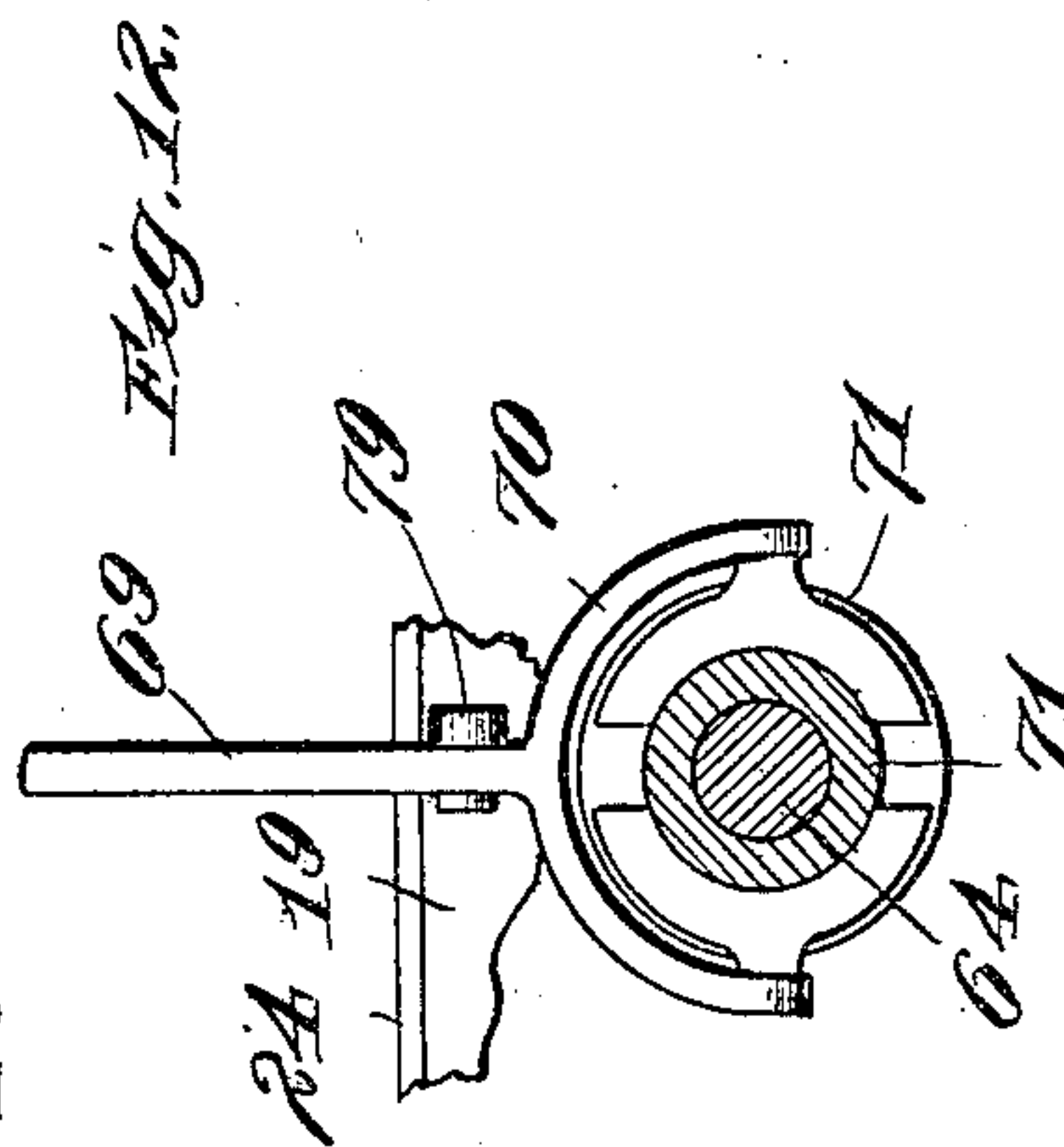
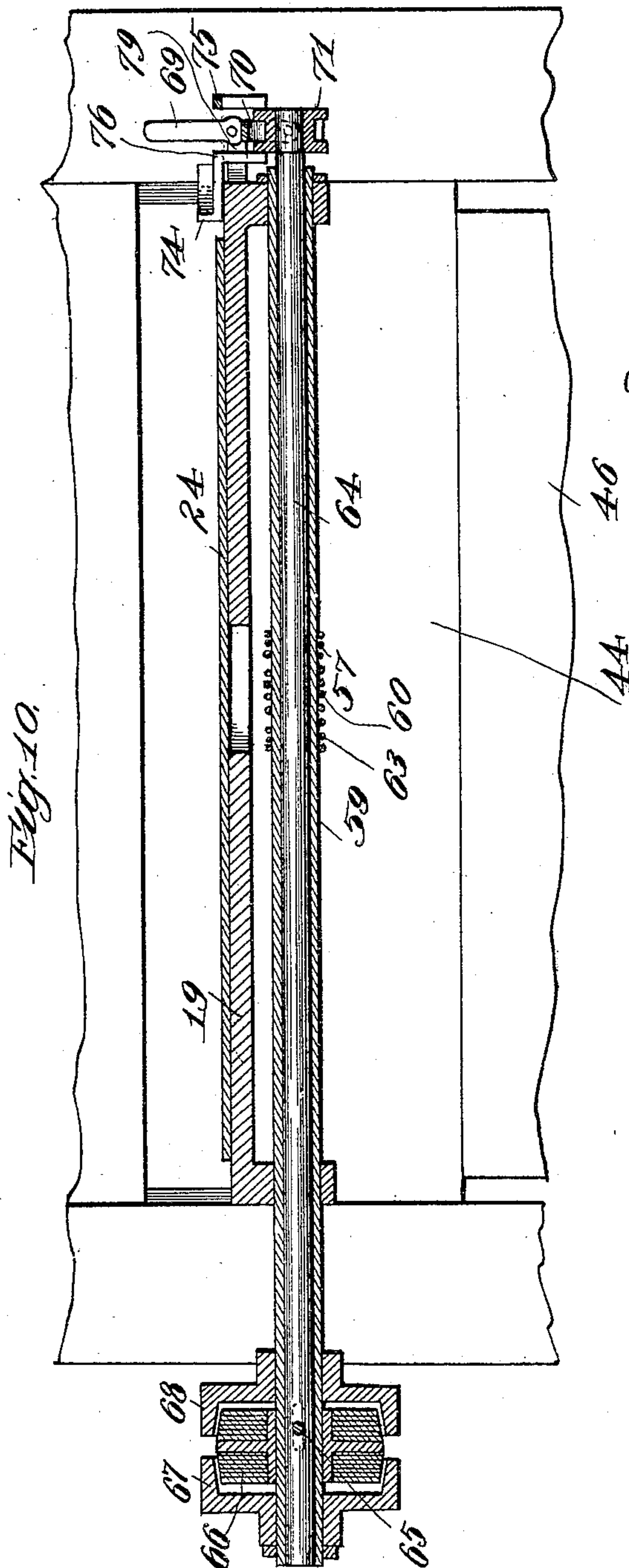
MOLDING PRESS.

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4 SHEETS—SHEET 4.

943,504.



Witnesses:

J. W. Pauberschmidt
E. M. Klatcher

Inventor:

Edward C. Williams,

By Louis L. Gilson
Atty

UNITED STATES PATENT OFFICE.

EDWARD C. WILLIAMS, OF CHICAGO, ILLINOIS.

MOLDING-PRESS.

943,504.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed August 24, 1907. Serial No. 389,998.

To all whom it may concern:

Be it known that I, EDWARD C. WILLIAMS, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Molding-Presses, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to molding presses used in the electrotyping art, wherein there is employed a ram or plunger coöperating with a fixed abutment for taking the impression in wax of the form to be reproduced. In machines of this kind the form and matrix are usually mounted upon a plate which slides over a bed-plate to be brought into position for engagement by the ram or plunger, and heretofore the practice has been to manipulate such sliding plate by hand, involving the possibility of inaccuracy of adjustment due to carelessness and the consequent improper working of the machine.

The object of the invention is to provide, in machines of this character, power-actuated appliances for carrying the work-supporting plate into and out of the press; and the invention consists of the features hereinafter described, and as illustrated in the accompanying drawings, in which—

Figure 1 is a vertical section of a hydraulic press; Fig. 2 is a plan sectional view of the same machine taken over the bed; Fig. 3 is a detail section of the pump chamber of the machine; Fig. 4 is a sectional view of the power cylinder and piston for actuating the plate in a hydraulic machine; Fig. 5 is a detail of the valve for controlling the motor shown in Fig. 4 and illustrating the automatic stops for controlling the valve; Fig. 6 is a detail of the valve drawn to a larger scale; Fig. 7 is a detail end view of the bed and carrying plates of the machine; Fig. 8 is a vertical sectional view of a toggle-actuated press; Fig. 9 is a plan section of the same taken above the bed-plate and showing the carrying plate actuating mechanism; Fig. 10 is a detail vertical transverse section of the machine, showing the driving shaft for the plate-carrying mechanism; Figs. 11 and 12 are details of the clutch shown in Fig. 10.

The hydraulic machine represented in Figs. 1 to 7 comprises the base 15, carrying the abutment block 16, and provided with a

hydraulic ram 17 which carries the platen 18. The machine is provided with a bed plate 19, carried by the head of the ram as a bracket and being on a level with the upper surface thereof and which constitutes a support for the carrier-plate, hereinafter mentioned, and ways upon which it travels. The tank 20 contains the liquid (usually oil) used in operating the ram, and is suitably connected therewith by pipes. Pumps 21 and 22 are used for filling the tank 20, and for the purpose of supplying increased pressure to the ram 17 during the latter part of its advance stroke. There is shown an air pump 23 for maintaining an air pressure within the tank 20.

The parts thus far mentioned being in common use, are not described or illustrated in detail.

The plate for carrying the form is shown at 24 as resting on the bed 19 and carrying a form 25 and matrix 26. An arm 27 depends from the rearward end of the plate 24, and is connected to the rod 28 of a piston 29 which reciprocates in a cylinder 30 located below the bed of the machine and extending through a suitable aperture in the ram 17, by means of which it is carried. Fluid, preferably liquid, used in operating the ram is led from the tank 20 by means of the pipe 31 to the cylinder 30 through the four-way valve 32, mounted in a suitable casing 33 carried by the ram, and is discharged from this cylinder through the same valve by means of the exhaust pipe 34. The valve ports 35, 36, are arranged to register in alternation with the induction and exhaust ports 31, 34, and with the pipes 37, 38, leading, respectively, to the opposite ends of the cylinder 30. The valve 32 is controlled by means of a handle 39, which projects into the path of a pair of stop lugs 40, 41, projecting laterally from the carrying plate 24 at its front and rear edges, respectively. The bed plate 19 is longitudinally slotted, as indicated at 42, to accommodate the arm 27.

When it is desired to advance the carrying plate the valve handle 39 is drawn backwardly to bring the pipes 31 and 38 into communication, through the valve port, 35, and the pipes 34, 37, into communication, through the valve port 36, thus causing the piston 29 to move inwardly. As the plate 24 approaches a proper po-

sition over the platen 18, its lug 41 engages the valve handle 39 and brings the valve to central position, stopping the advance movement of the plate. After the ram has acted the plate is retracted by throwing the valve handle 39 in the opposite direction, thus bringing the valve to the position shown in Fig. 6 and applying pressure to the front face of the piston 29 and exhausting from its rearward face, setting it in motion and retracting the plate 24. The motor is again stopped automatically by the engagement of the lug 40 with the valve handle 39 and the consequent movement of the valve to neutral position. After each movement of the plate 24 either to advance or retract it, the valve can be moved by hand only to provide for the movement of the plate in the opposite direction from that in which it has last traveled.

The press illustrated in Figs. 8 to 12 is driven by mechanical means, the platen 43 being carried by a plunger 44 controlled by toggle levers 45, 46, actuated in any suitable manner. As shown the mechanism for actuating the toggle levers comprises a thrust shaft 47, in threaded engagement with a bracket 49, carried by the base of the machine, this shaft carrying a gear-wheel 50 which intermeshes with and longitudinally slides upon a pinion 51 in gear connection with a shaft 52, upon which loosely run a pair of belt pulleys 53, 54, and which may be clutched in alternation to the shaft 52 by means of the clutch mechanism represented at 55. All of this mechanism, however, being old, it is not described and illustrated in detail.

A carrying plate 24 of the same form as that shown in connection with the hydraulic press, is mounted on the bed 19 of the machine, on a level with the face of the platen 43. From the rear end of the plate 24 is attached a cable 57, or equivalent device, which leads over a shaft 61 to the shaft 59 upon which it is wound, which shaft is journaled in suitable boxes carried by the bed plate 19. A similar cable 60, or equivalent device, is also attached to the plate 24 and is led over a pulley 58, journaled to the bed plate 19 at its rearward end, and is wound upon the shaft 59. The two cables 57, 60, are oppositely wound upon the shaft, so that its rotation in one direction will advance and in the opposite direction will retract the plate 24. In order that draft upon the plate may be exactly in the direction of its travel, I prefer to use a pair of cables on one side, and to that end show the cable 57 as located adjacent one side of the plate and the companion cable 63 adjacent the other side, while the cable 60 is located on the median line of the plate.

The shaft 59 may be driven in any suitable manner. As shown it is tubular, and

within it is located a longitudinally movable shipper rod, 64 connected by means of a pin 65, projecting through longitudinal slots in the shaft, with a clutch cone 66, playing between and alternately engaging the cup faces of a pair of belt pulleys 67, 68, mounted loosely on the shaft 59, and which may be driven in opposite directions from any suitable source of power.

The shipper rod is controlled by a hand lever 69, pivoted to a suitable bracket-arm 79 projecting laterally from the bed plate 19, and having its forked end 70 in engagement with the peripheral channel in a block 71 fixed upon a projecting end of the rod 64. A lug 73 projects laterally from the rear corner of the plate 24 for engaging in alternation the bent ends 72, 74, of a pair of levers 75, 76, pivoted to suitable bracket-arms 77, 78, projecting laterally from the bed-plate 19, and bearing one upon the outer and the other on the inner face of the block 71, thereby automatically throwing the clutch 66 to the central position and stopping the plate at each end of its stroke.

It is obvious that the means for advancing and retracting the carrying plate in either the hydraulic or mechanically-operated machines may be worked out in many ways.

The forms of construction herein shown and described are simple and effective, and either may be applied to either of the two kinds of presses shown. The fluid motor is preferably used in connection with the hydraulic machine, as the power for driving it is immediately available, and for the same reason the belt-driven mechanism is shown as applied to the mechanically-actuated machine.

I claim as my invention—

1. In a molding press, in combination, a plunger, a carrier movable onto and off from the plunger, a fluid motor for actuating the carrier, a four-way valve for controlling the motor, a hand lever for operating the valve, the carrier being provided with appurtenances for engaging the valve to close it.

2. In a molding press, in combination, a plunger, a carrier movable onto and off from the plunger, a fluid motor for actuating the carrier, a four-way valve for controlling the motor, a hand lever for operating the valve, and lugs projecting from the carrier to engage the valve to close it.

3. In a molding press, in combination, a plunger, a carrier movable onto and off from the plunger, a fluid motor for actuating the carrier, a valve for controlling the motor, and a hand lever for operating the valve, the carrier being provided with appurtenances for engaging the valve to close it.

4. In a molding machine, in combination, 130

a platen, a bed, a carrier movable over the bed and platen, power-actuated means for moving the carrier, and means controllable by the carrier for automatically disconnect-
5 ing the moving means.

5. In a molding machine, in combination, a platen, a receiving bed in line with the platen, a carrier movable over the bed and platen, means for moving the carrier from
10 the bed to the platen and from the platen to the bed, and a trip mounted on the carrier for throwing the moving means out of action.

6. In a molding machine, in combination,
15 a platen, a receiving bed in line with the platen, a carrier movable over the bed and platen, means for moving the carrier from the bed to the platen and from the platen to the bed, and a trip mounted on the car-
20 rier for throwing the moving means out of action in both directions of travel.

7. In an apparatus requiring work to be presented and withdrawn, the combination
25 of a work plate, means to slide the plate into the apparatus, and means controllable by the plate to disconnect the first-named

means and plate and check the movement of the plate.

8. In an apparatus requiring work to be presented and withdrawn, the combination
30 of a work plate, means to slide the plate into the apparatus, a handle to operatively connect said means and plate, and means controllable by the plate to disconnect the
35 first-named means and plate and check the movement of the plate.

9. In an apparatus requiring work to be presented and withdrawn, the combination
40 of a work plate, a lateral support, means to slide the plate from the support into the apparatus and back again, and means con-
45 trollable by the plate to disconnect the first-named means and plate and check the movement of the plate when it has reached its proper position in the apparatus and also
when it has moved back again upon the lateral support.

EDWARD C. WILLIAMS.

Witnesses:

LOUIS K. GILLSON,
E. M. KLATCHER.