

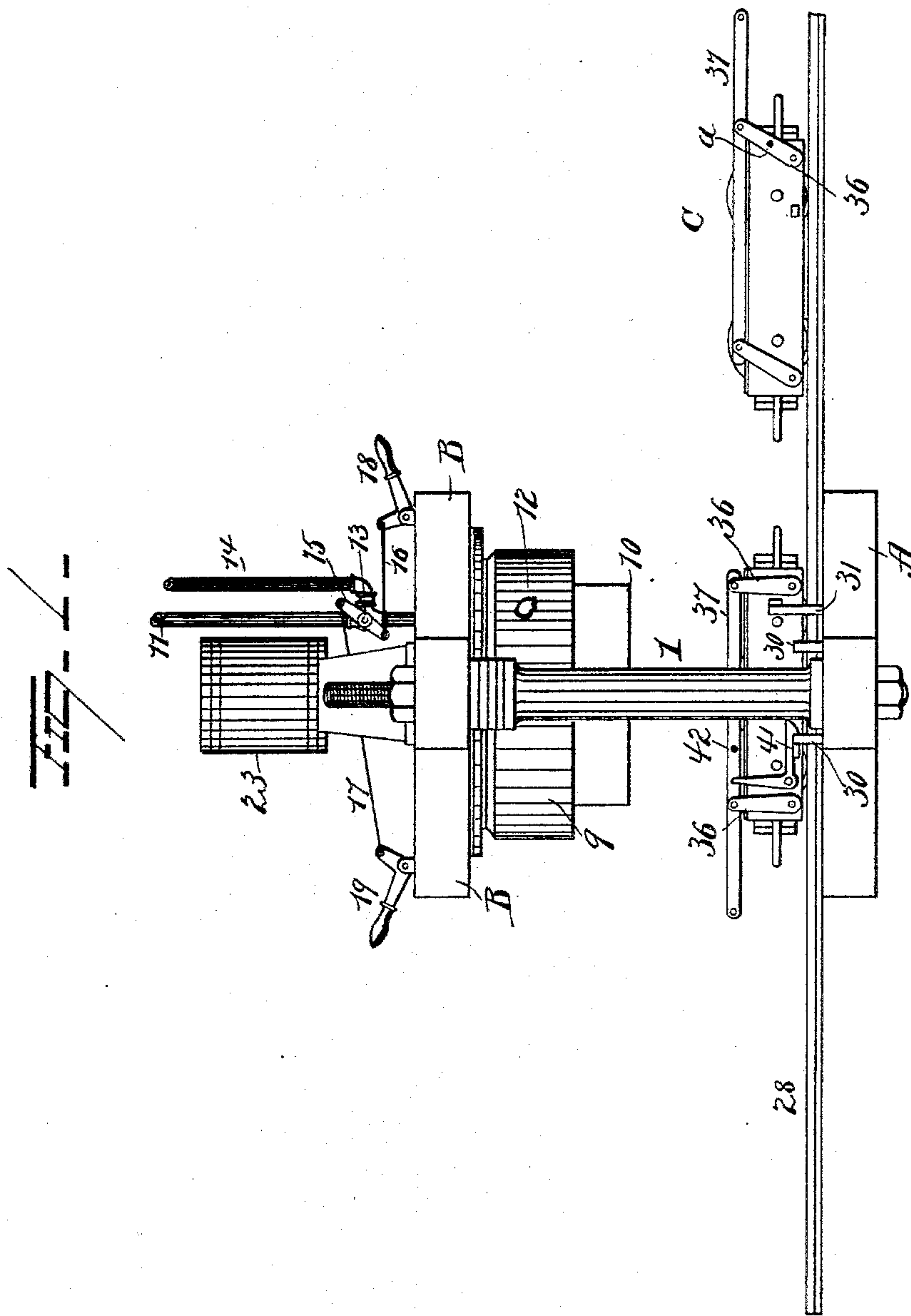
(No Model.)

3 Sheets—Sheet 1.

J. B. RAMP.  
MOLDING APPARATUS.

No. 583,941.

Patented June 8, 1897.



WITNESSES:

*G. F. Downing*  
*S. G. Nottingham*

INVENTOR

*J. B. Ramp*  
BY  
*H. A. Symons*  
ATTORNEY.

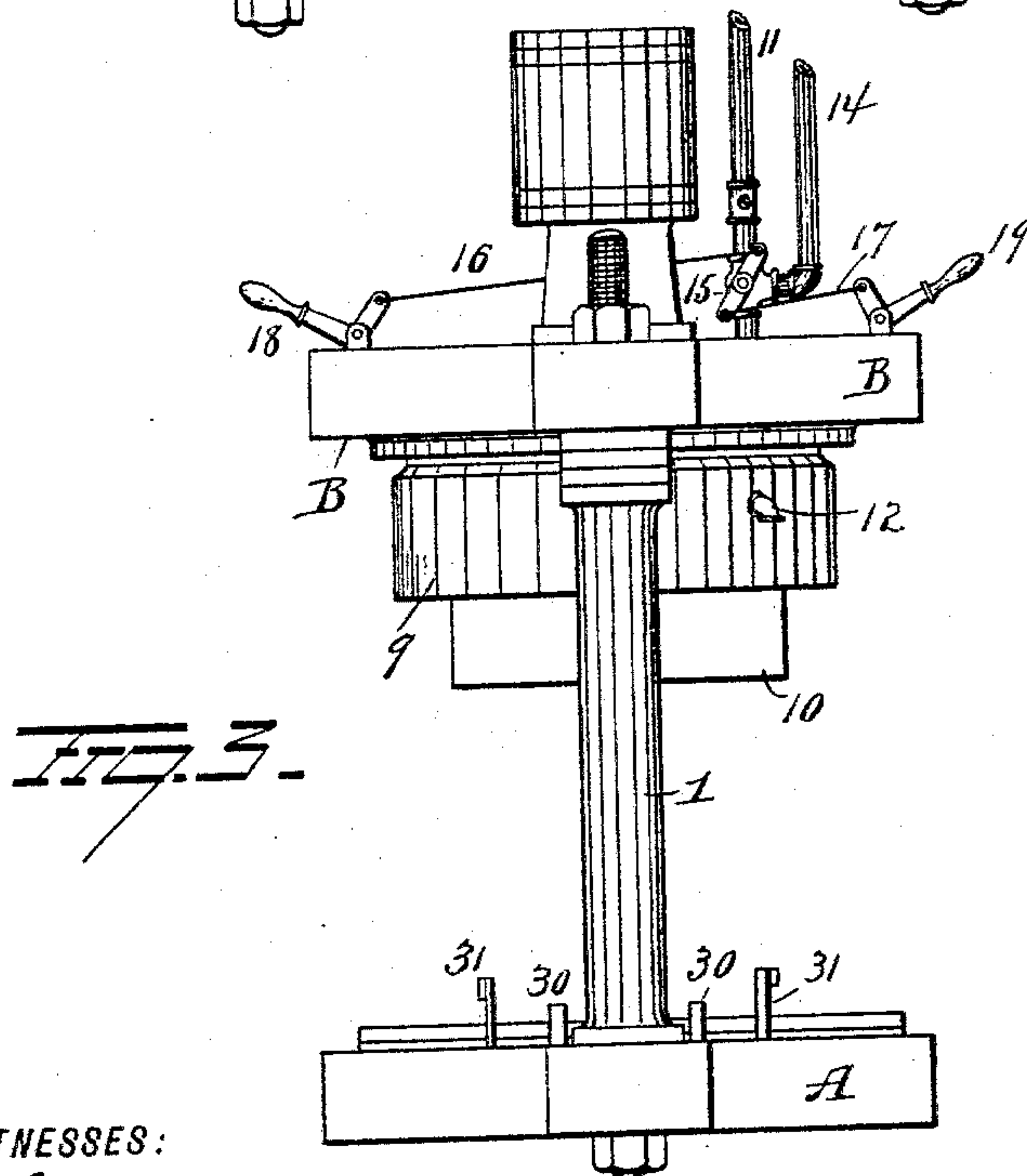
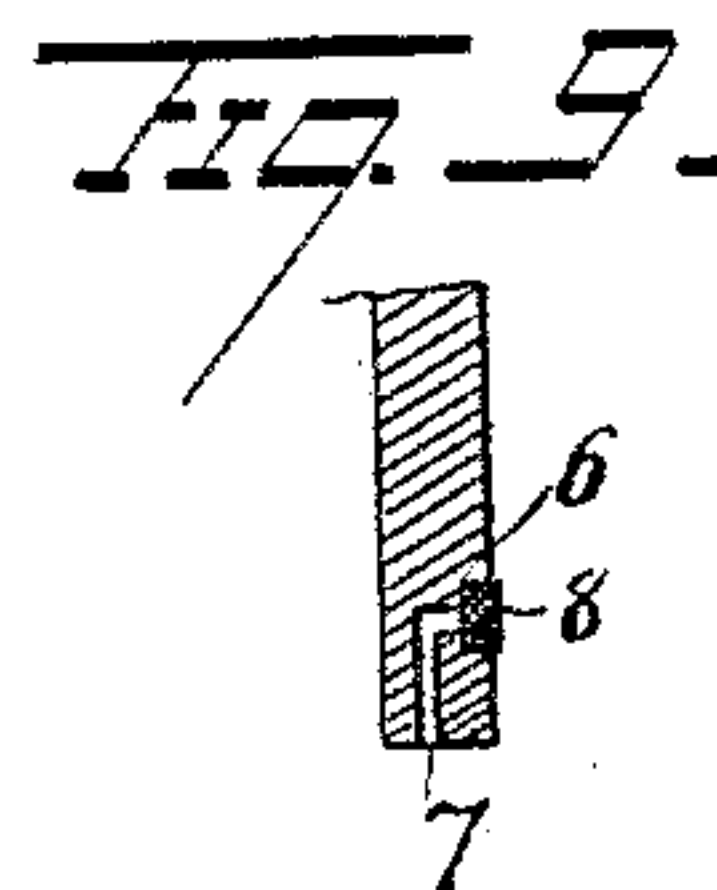
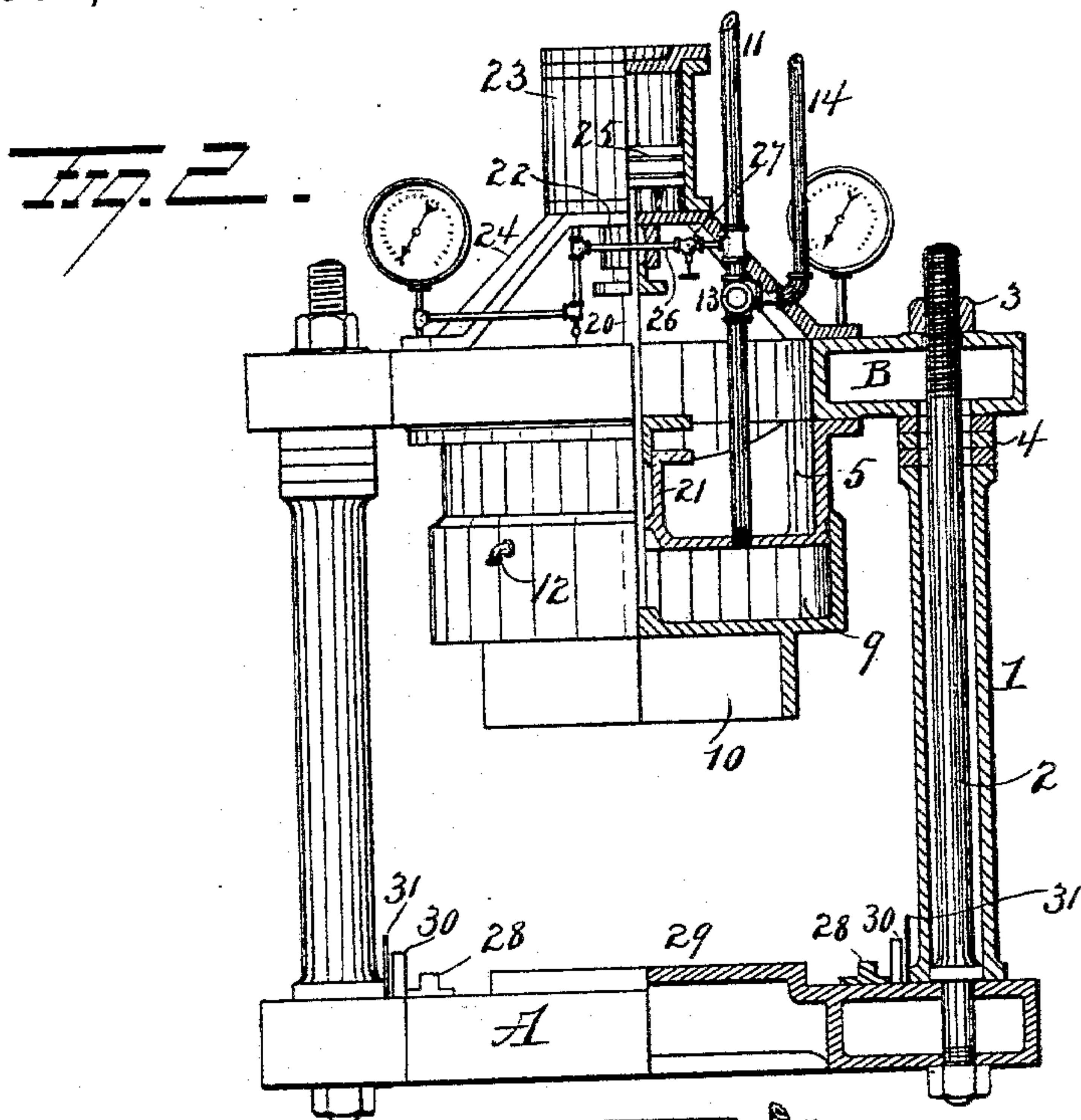
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*J. B. Ramp*

BY

*H. A. Seymour*  
ATTORNEY.

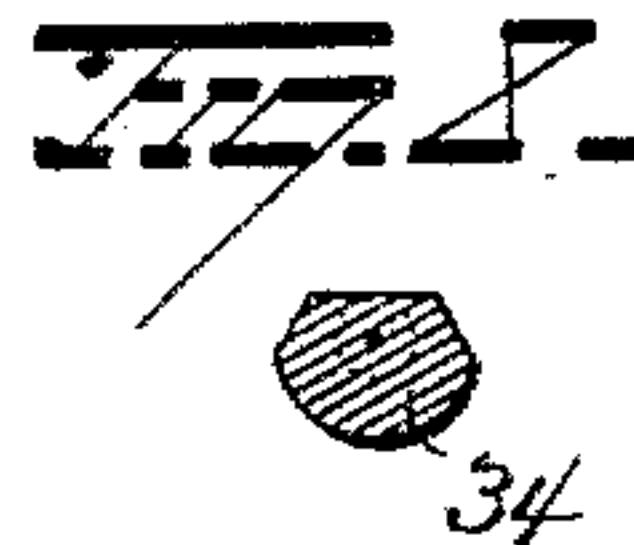
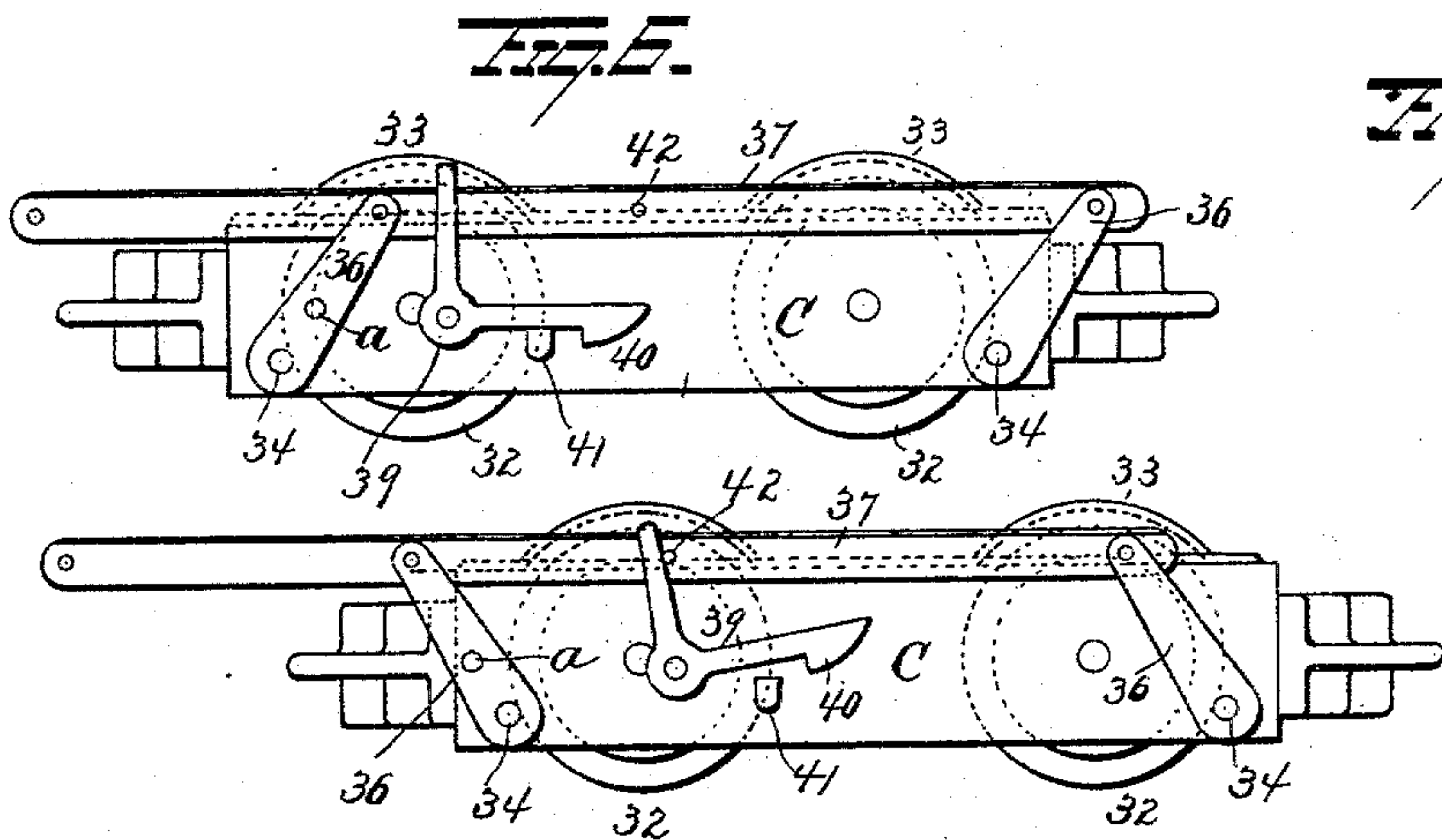
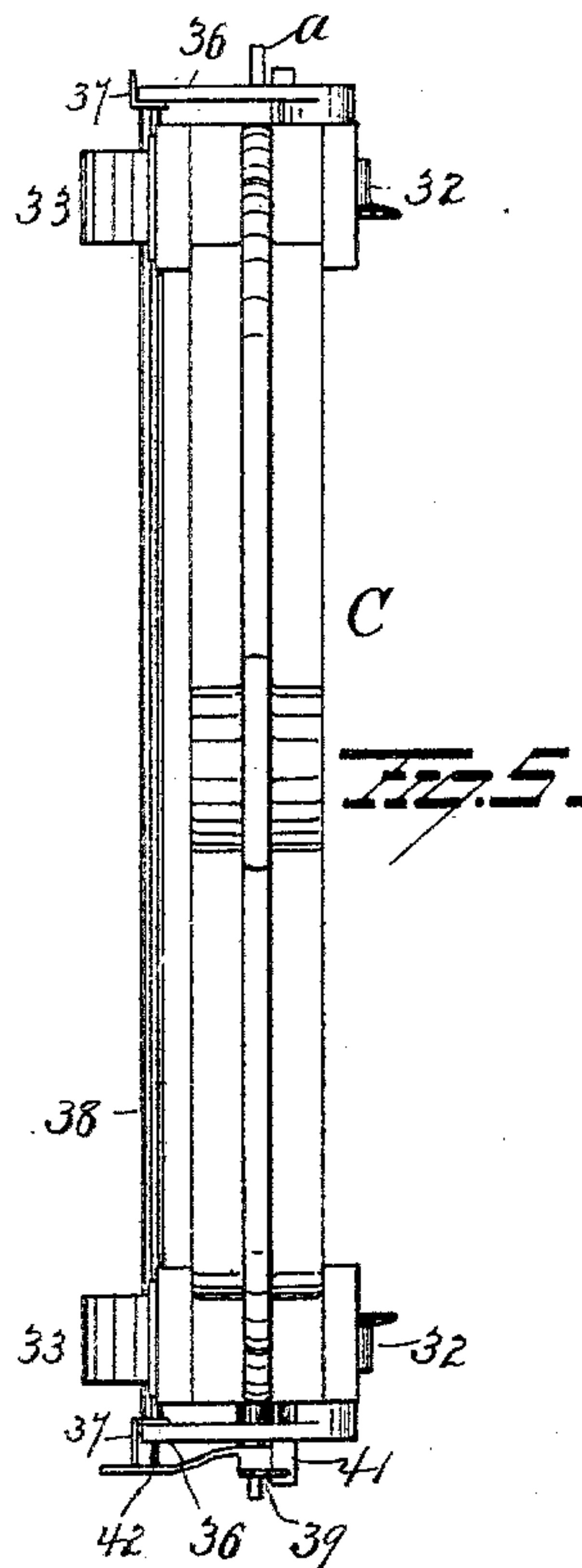
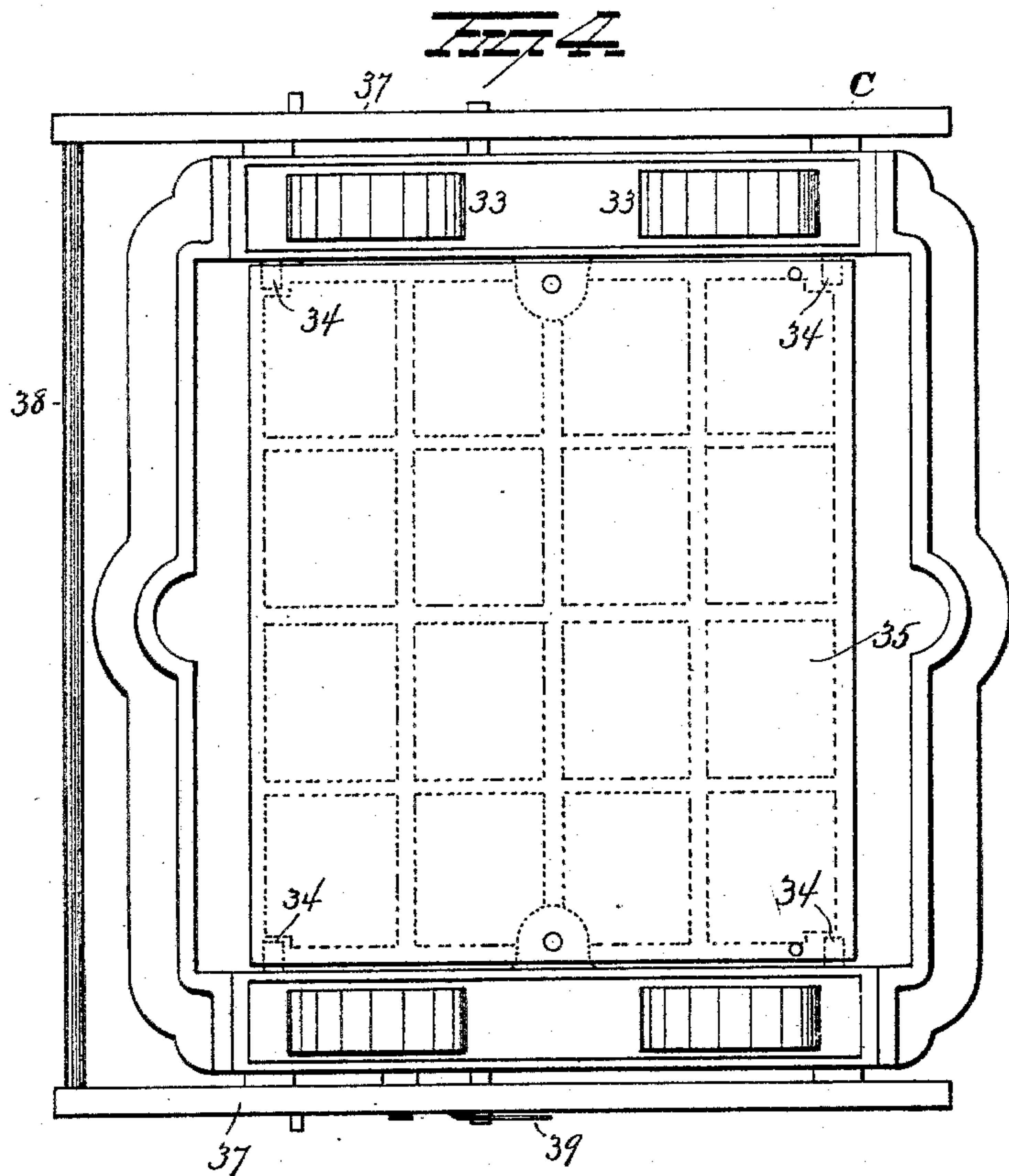
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*G. F. Downing*  
*S. G. Nottingham*

INVENTOR  
*J. B. Ramp*  
BY  
*H. Seymour*  
ATTORNEY.



# UNITED STATES PATENT OFFICE.

JOSEPH B. RAMP, OF WEST BURLINGTON, IOWA.

## MOLDING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 583,941, dated June 8, 1897.

Application filed November 16, 1896. Serial No. 612,317. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH B. RAMP, a resident of West Burlington, in the county of Des Moines and State of Iowa, have invented certain new and useful Improvements in Molding Apparatus; and I do hereby 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.

My invention relates to an improvement in molding apparatus; and it consists in certain novel features of construction and combinations and arrangements of parts, as herein-  
after set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation illustrating my invention. Fig. 2 is a view of a portion of the apparatus, partly in side elevation and partly in section. Fig. 3 is an elevation with the carriages omitted. Figs. 4, 5, 6, 7, and 8 are views illustrating details of the carriage. Fig. 9 is a detail view illustrating packing between head 5 and piston 9.

A represents a bed-plate on which standards 1 are located and adapted to support a cross-head B. Rods 2 pass through the bed-plate, standards, and cross-head, said rods being screw-threaded at their upper ends for the reception of nuts 3, by means of which and removable washers 4 the relation of the cross-head to the bed-plate can be readily adjusted.

A hollow cylindrical head 5 is secured to and depends from the cross-head B of the framework and is made with a peripheral groove 6 for the reception of a packing-ring 8, which latter bears against the inner face of a cylindrical piston 9. The piston or cylinder 9 normally incloses the head 5 and is provided on its lower end with a plunger 10. A pipe 11 extends through the head 5 and is adapted to conduct steam or other pressure to the cylindrical piston 9, so as to force the same down, and a portion of this pressure finds its way through ducts 7 to the packing-ring 8, thus insuring the proper engagement of said packing-ring with the inner face of the cylindrical piston 9. A safety blow-off 12 is provided for the piston 9 and is made to communicate therewith near its upper end. The supply of pressure to move the piston 9 can

be controlled by means of a valve 13 in the pipe 11, and exhaust is permitted through a pipe 14. In order to permit the apparatus to be operated by two attendants standing at opposite sides of the machine, the stem of the valve 13 is provided with a cross-bar 15, to the respective ends of which rods 16 17 are connected, the other ends of said rods being connected with hand-levers 18 19, located at the respective sides of the apparatus.

The cylindrical piston 9 is provided centrally with a rod 20, which passes upwardly through a hub 21 in the center of the head 5, through a stuffing-box 22, and into a cylinder 23, supported on a bracket 24, mounted on the cross-head B, and the upper extremity of said rod is provided with a piston 25, adapted to operate within the cylinder 23. The areas of the cylinder 23 and piston 25 are considerably less than that of the piston 9 and head 5, and said cylinder 23 is in constant and direct communication with the source of power, which may be either steam or compressed air.

In the drawing a pipe 26 conducts steam or other pressure from the pipe 11 to the cylinder 23, and in said pipe 26 I prefer to place a valve 27. The pressure exerted under the piston 25 will be sufficient to raise the cylindrical piston and the plunger 10, carried by said piston. From the above description it will be seen that the cylindrical piston 9 and plunger 10 are normally maintained elevated by pressure under the piston 25 and that when pressure is admitted to said cylindrical piston the latter (having greater area than piston 25) will be forced downwardly.

On the bed-plates tracks 28 are mounted and between these tracks a plate or enlargement 29 is located, the thickness of said plate being about equal to the height of the tracks. The bed-plate A is also provided with stops 30 and trips 31. On the tracks 28 two carriages C are adapted to run.

Each carriage C is preferably constructed of metal and its wheels 32 are inclosed by guards 33. At each corner of the carriage an eccentric 34 is mounted, said eccentrics being intended to receive a plate 35. From each eccentric an arm or lever 36 projects, the upper ends of which are connected, at each side of the carriage, to bars 37, and the latter are connected together at one end by a cross-bar



or rod 38. An L-shaped locking-lever 39 is pivotally attached to the carriage at one side thereof and one arm of this lever is made with a hook or shoulder 40, adapted to engage the stop 30 on the bed-plate. The stop 30 is also engaged by a lug 41 on the carriage. In other words, when the carriage is in position under the press the stop 30 will project between the lug 41 and the shoulder or hook 40 on the locking-lever, and thus the carriage will be held immovably.

The locking-lever will be operated in a manner presently explained by the engagement of a pin 42 on bar 37 with the upright arm of said locking-lever.

In operation a follow-board is placed on the plate 35 on eccentrics 34 and sustained by the latter in its highest position, at which time the levers 36 attached to the eccentrics will be inclined away from the operator. The flask is now placed upon the follow-board, and the sand is placed upon the pattern in the usual way and, if necessary or desired, a board of equal size with the internal capacity of the flask may be placed upon the top of the sand. The carriage is now run by the operator under the press. The lug 41 will strike the stop-pin 30 and bring the carriage to a full stop, the hooked end of the locking-lever also engaging the other side of said stop, and the carriage will thus be held from movement in either direction. One of the rear levers 36 (or a pin *a* thereon) strikes the trip 31, which causes the levers 36 to assume vertical positions and the eccentrics 34 to partially revolve, bringing their short radii up under the plate 35, thus allowing the latter to rest upon the plate or enlargement 29 and free from any pressure upon the carriage. One of the operators will then open the valve 13 and admit pressure to the cylindrical piston 9 and cause the latter and the plunger 10 to descend upon the sand or the plate, in case one is used, which in turn presses upon the sand and the sand is thus thoroughly pressed upon every part of the pattern with a uniform amount of pressure. The operator then shuts off the pressure to the cylindrical piston and the piston 25 will at once rise, carrying with it the cylindrical piston 9 and plunger or follower 10. The operator will then pull the cross-bar or rod 38 toward himself, which will act to reverse the eccentrics, raise the plate and follow-board, and release the automatic catch or locking-lever. The carriage is then pulled out and the pattern removed in the ordinary way, and the attendant at the opposite side of the apparatus will run his carriage under the press and repeat the same operations.

My improvements are simple in construction and effectual in all respects in the performance of their functions.

Various slight changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to

limit myself to the precise details herein set forth.

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

1. In a molding apparatus, the combination with a frame, a head secured thereto, a cylindrical piston inclosing said head, a plunger or follower carried by said piston, means for conducting fluid-pressure to said piston, an independent smaller cylinder, and a piston in said smaller cylinder in line with said cylindrical piston and a rod rigidly connecting the two pistons together, substantially as set forth.

2. In a molding apparatus, the combination with a frame, of a head secured thereto, a movable cylindrical piston inclosing said head, a plunger or follower carried by said piston, means for conducting fluid-pressure to said piston, means for controlling the supply of said fluid-pressure, an independent smaller cylinder disposed in line with the cylindrical piston, means for supplying a constant fluid-pressure to the smaller cylinder, a piston in said smaller cylinder and a rod rigidly connecting said last-mentioned piston with the cylindrical piston, substantially as set forth.

3. The combination with a bed-plate and tracks and an enlargement thereon, of a carriage, eccentrics mounted in said carriage adapted to receive a plate and remove the same from pressure on the carriage, and means adjacent to the track for automatically operating said eccentrics as the carriage moves on the track, substantially as set forth.

4. In a molding apparatus, the combination with a bed-plate and a press, of a carriage adapted to be run under said press, eccentrics mounted in said carriage and adapted to receive a plate, a plate or enlargement on the bed-plate under the press and adapted to receive the carriage-plate when the eccentrics are turned in one direction, arms or levers secured to said eccentrics, devices connecting said arms or levers, and a stop on the bed-plate for automatically operating said arms or levers whereby to turn the eccentrics and lower the carriage-plate, substantially as set forth.

5. In a molding apparatus, the combination with a bed-plate and a press above the same, of a carriage adapted to be run under the press, eccentrics mounted in said carriage, and adapted to receive a plate, means for operating said eccentrics whereby to lower the plate onto the bed-plate under the press or raise it therefrom, a stop on the bed-plate, a lug on the carriage to engage said stop and a locking-lever attached to the carriage and also adapted to engage said stop, substantially as set forth.

6. In a molding apparatus, the combination with a bed-plate, tracks thereon and a press above the bed-plate and tracks, of a carriage adapted to run on said tracks, ec-



centrics on said carriage and adapted to support a plate, a plate on the bed-plate between said tracks to receive the carriage-plate when the eccentrics are turned in one direction, 5 arms secured to said eccentrics, bars connecting said arms, a cross-rod connecting said bars, a stop on the bed-plate, a lug on the carriage to engage said stop, a locking-lever pivoted to the carriage and also adapted to 10 engage said stop, a pin on one of said bars and adapted to engage the locking-lever, and

a trip on the bed-plate and adapted to be engaged by one of the arms of the eccentrics, substantially as set forth.

In testimony whereof I have signed this 15 specification in the presence of two subscribing witnesses.

JOSEPH B. RAMP.

Witnesses:

CHAS. C. CLARK,  
EFFIE J. RAMP.