

No. 819,054.

PATENTED MAY 1, 1906.

W. H. FISHER.  
PRESS FOR MOLDING ARTIFICIAL STONE OR THE LIKE.

APPLICATION FILED MAY 11, 1905.

3 SHEETS—SHEET 1.

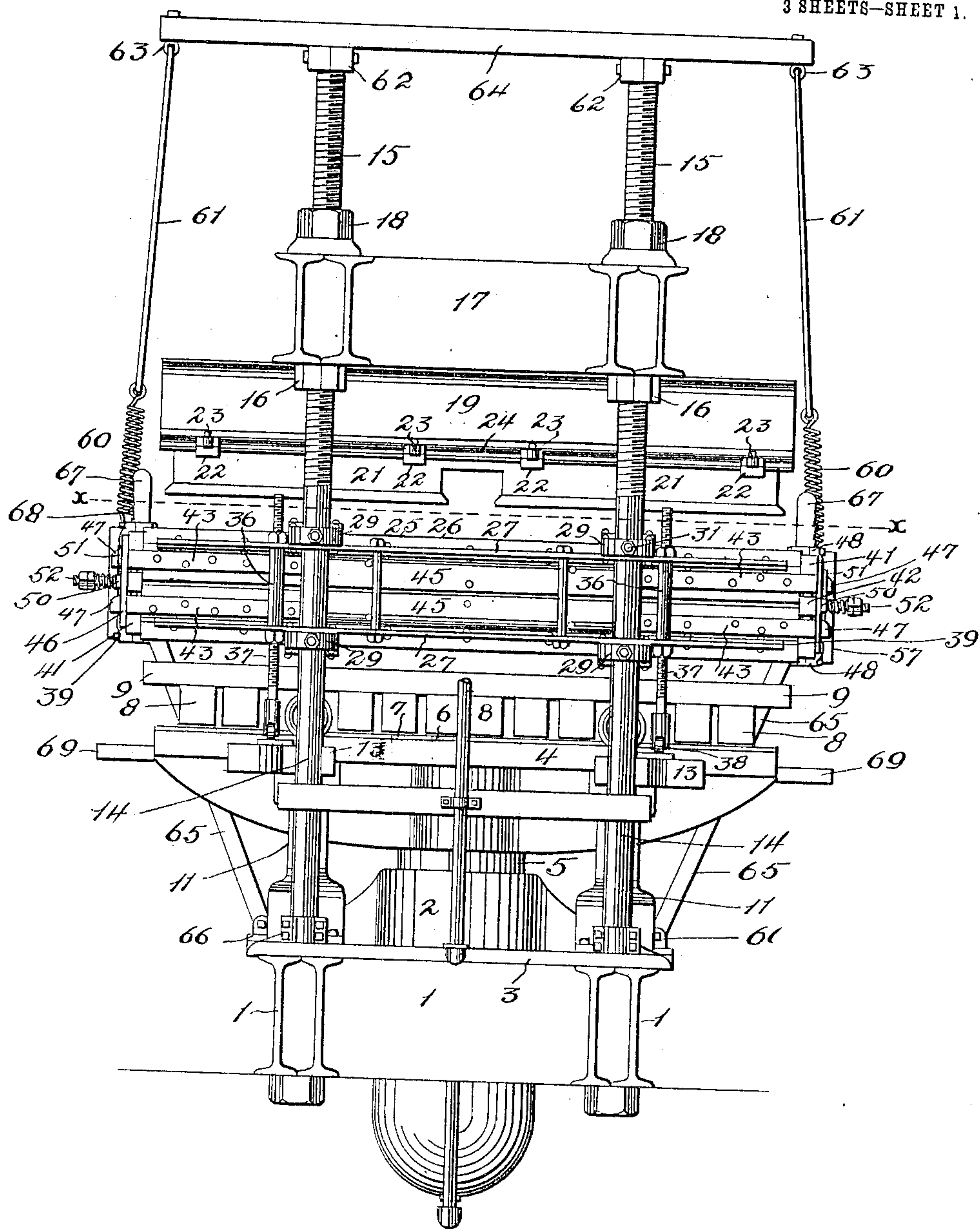


Fig. 1

WITNESSES:

*E. C. Warfield*  
*J. M. Murre*

INVENTOR

*Willis H. Fisher*

BY

*Stewart & Stewart*  
ATTORNEYS

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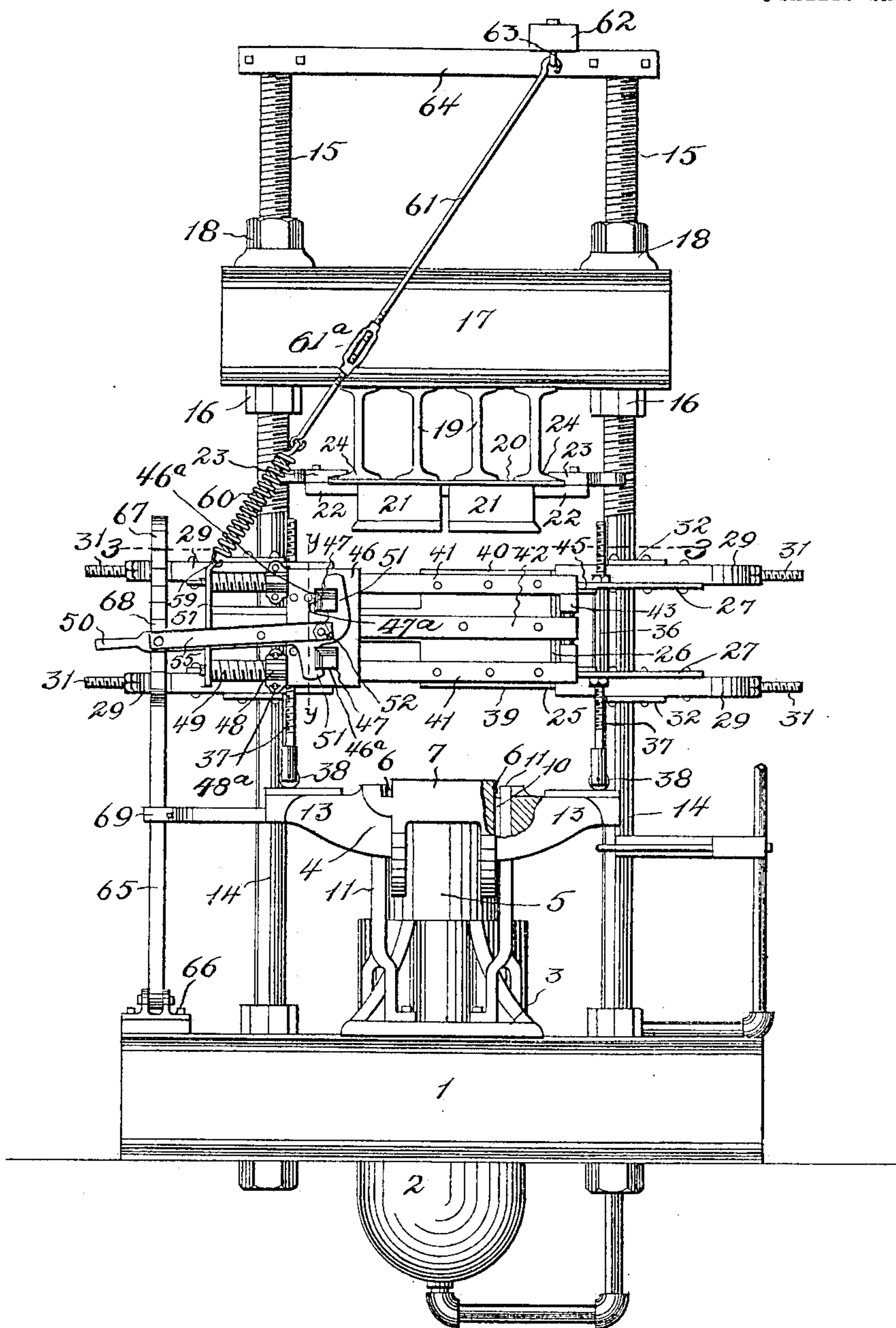


Fig. 2.

WITNESSES:

E. E. Warfield  
for Innie

INVENTOR

*Willis H. Fisher.*

BY

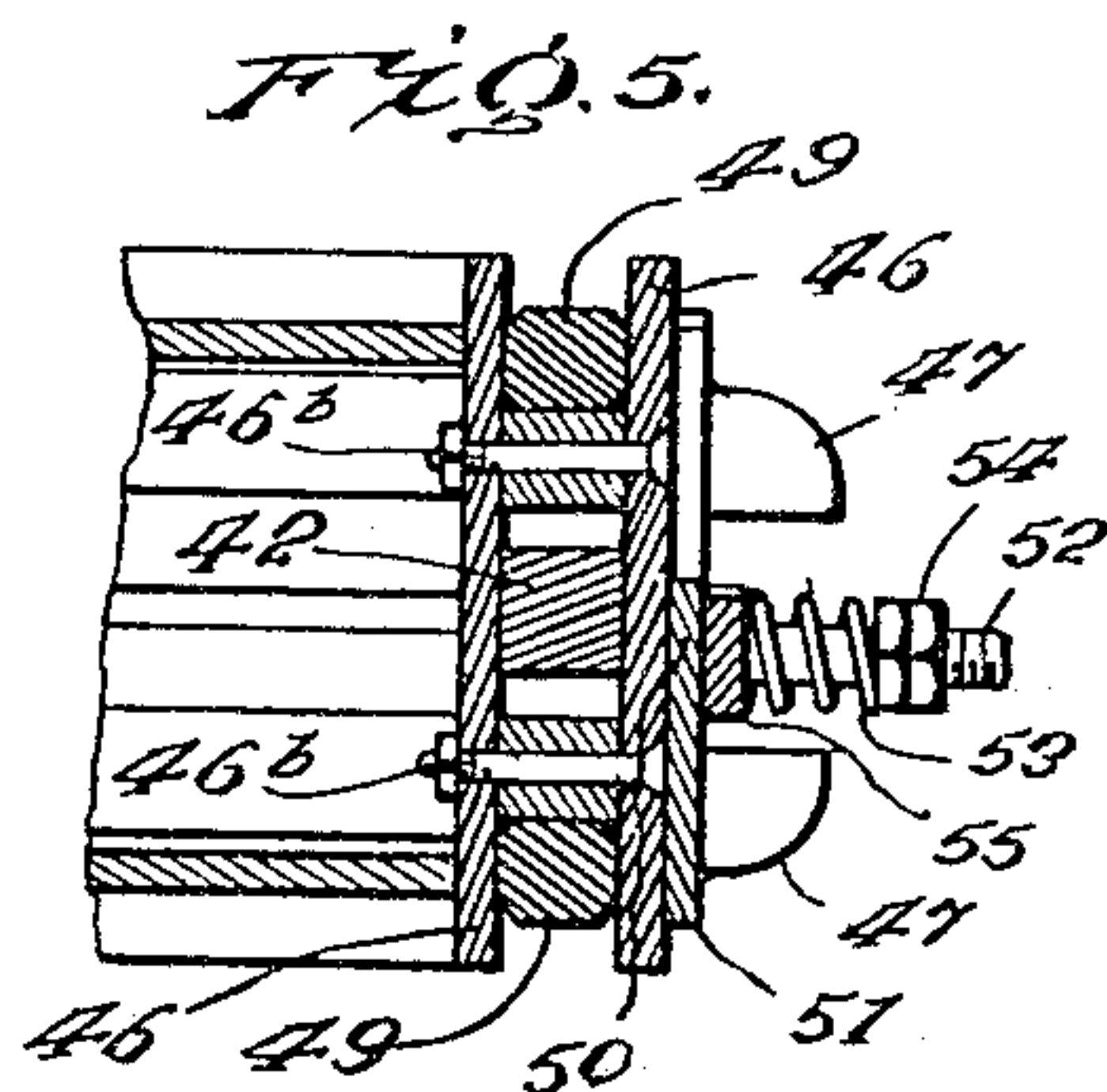
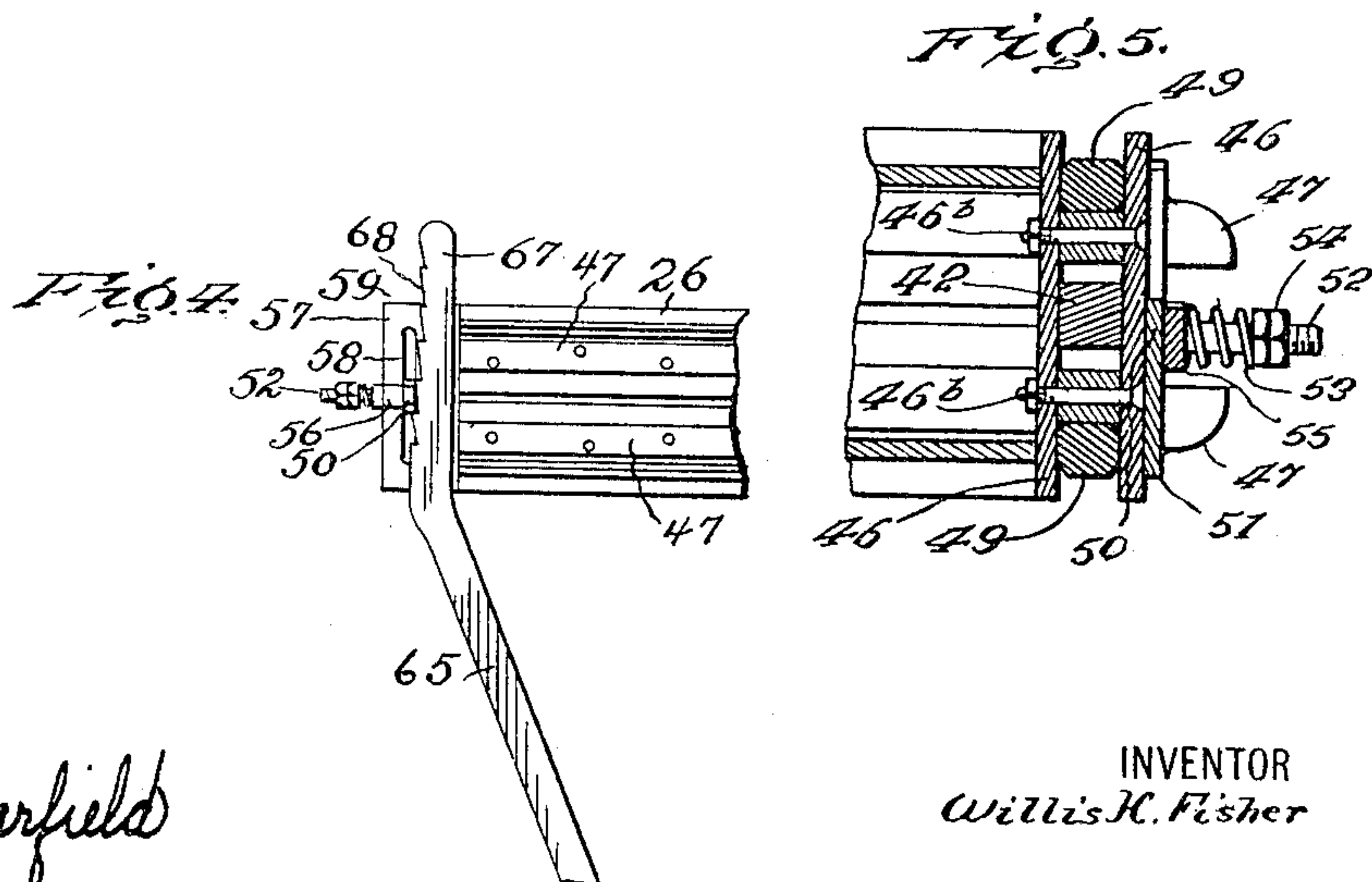
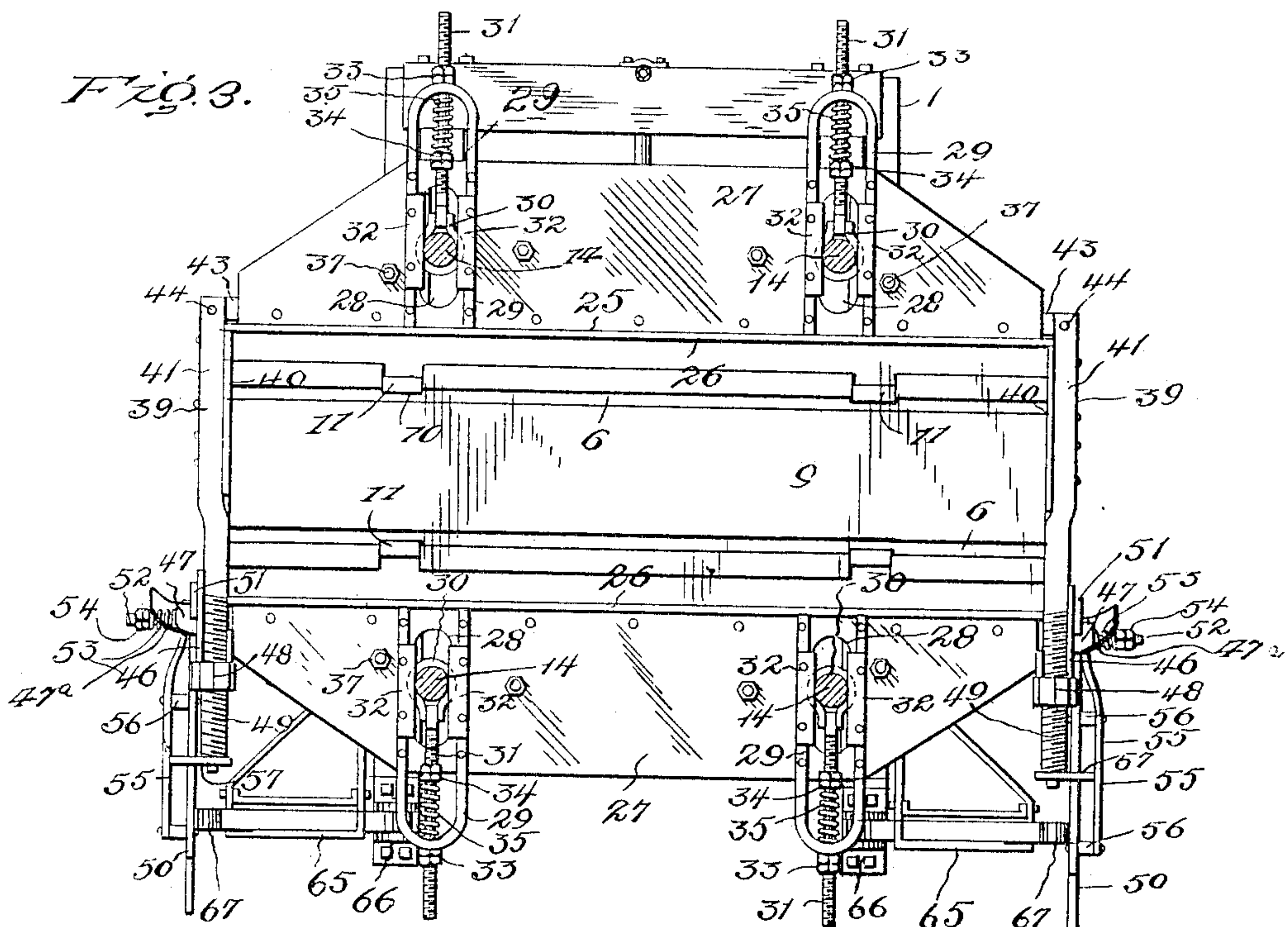
BY  
*Stewart & Stewart*  
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3 SHEETS—SHEET 3.



WITNESSES:

E. C. Warfield  
J. M. Murre

INVENTOR  
Willis H. Fisher

BY  
Stewart & Stewart  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

WILLIS H. FISHER, OF MOUNT GILEAD, OHIO.

## PRESS FOR MOLDING ARTIFICIAL STONE OR THE LIKE.

No. 819,054.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed May 11, 1905. Serial No. 260,011.

*To all whom it may concern:*

Be it known that I, WILLIS H. FISHER, a citizen of the United States of America, and a resident of Mount Gilead, Morrow county, Ohio, have invented certain new and useful Improvements in Presses for Molding Artificial Stone or the Like, of which the following is a specification.

My invention relates to certain new and useful improvements in presses for molding artificial stone or the like; and the object of my invention is to produce a machine which is simple in construction and one in which the artificial stone or the like may be placed under high pressure, whereby high-grade stone will be produced and at the same time have the press operate rapidly and easily.

With these objects in view my invention consists in providing the press with a frame in which the mold-box is placed, the sides of the frame being drawn together in parallel planes when the frame is closed in order to firmly clamp the sides of the box to prevent the same from springing under pressure.

My invention also consists in certain improvements in the construction, whereby the sides of the mold-frame may be adjusted for different widths of mold-boxes.

My invention also consists in providing yielding means for supporting the sides of the mold-box frame in order that the same may be drawn into clamping engagement with the mold-box when the gates of the frame are closed.

My invention also consists in means whereby the sides will be drawn together to clamp the mold-box when the gates forming the ends of the frame are closed.

My invention also consists in providing means for automatically opening the gates of the frame when the pressing operation has been completed in order to facilitate the removal of the mold-box.

My invention also consists in certain other constructions and combinations, the preferred form of which will be first described and then the particular constructions and combinations pointed out in the claims.

Referring to the drawings, wherein I show the preferred form of my invention, and wherein the same part is designated by the same reference-numeral wherever it occurs, Figure 1 is a side elevation of the preferred form of my press, showing the mold-box in position and the frame closed, the parts be-

ing ready for the pressing operation. Fig. 2 is an end elevation of the press with the mold-box removed, the parts of the press being in the same position as that shown in Fig. 1. Fig. 3 is a horizontal sectional view taken on line 3 3 of Fig. 2. Fig. 4 is a detail side elevation of the gate-opening mechanism. Fig. 5 is a transverse vertical section of one of the end gates taken on line *yy* of Fig. 2.

1 designates the sills or bed of the machine, which, as shown, is formed of I-beams.

2 designates the hydraulic press of any suitable construction, which is shown as being supported on the sills or I-beams 1 by means of the flanges 3, extending laterally from the press.

4 is a platen mounted upon the upper end of the plunger 5 of the hydraulic press. The platen is provided upon its upper surface with the longitudinal grooves 6 6, which form tracks for the supporting-rollers of the mold-box. The platen is provided between the tracks with a raised portion 7, which is adapted to support the under portion or blocking 8 of a mold-box 9 when the platen is raised. In order to allow the truck of the mold-box to be readily placed on and moved off the platen when the platen is in its depressed position, I provide bars or crickets 11, which are mounted upon a stationary part of the machine, such as the flanges 3. These crickets are of such a height and size as to come flush with the track when the platen is in its depressed position, as shown in Fig. 2, thus filling up the openings 10 and completing the track. When, however, the platen is raised, the supports or crickets 11, being stationary, will permit the rollers to drop into the openings 10 and allow the mold-box to rest upon the raised portion 7 of the platen.

13 represents laterally-extending guides formed on the platen and adapted to engage vertical rods which support the fixed head of the machine, which construction I will now describe.

14 represents vertical rods or standards which extend upward from the sills 1 and are disposed in pairs at the ends of the sills. These rods at their lower ends are held in position in the sills by suitable bolts or other means. At their upper ends the rods are provided with threaded portions 15, upon which are placed the nuts 16.

17 is a rectangular frame, which is shown as



being composed of I-beams and adapted to be supported by the nuts 16. 18 represents nuts which are also mounted on the threaded portions 15 above the frame 17 and are adapted to clamp the frame in position between the nuts 18 and the nuts 16. By adjusting the nuts 16 and 18 the frame may be set at any desired height. Secured to the under side of the frame 17 is a second frame 19, which is shown as being formed of I-beams, to the under surface of which is secured a plate 20. This plate forms a stationary head which opposes the platen.

21 is a removable head which may be secured to the under side of the head 20. It is to be understood that various styles and sizes of heads 21 may be used in order to enable different styles of work to be done and to operate in conjunction with different forms and sizes of mold-boxes. Preferably the removable head 21 is formed with laterally-projecting bars 22 at each side, which project beyond the edges of the head 20, and upon the upper surface of the projecting portion of the bars 22 are pivoted clamping-levers 23, which are cut away, so as to project over the head 20 and engage the feet 24 of the I-beams of the frame 19. By this construction it will be readily seen that by moving the levers of the locks 23 the removable head may be readily attached to and detached from the head 20.

As it is necessary to prevent the sides of the mold-box from bulging under the pressure of the press and as it is not practicable to make these boxes of sufficient strength and rigidity to withstand this strain, I provide a frame 25, in which the mold-box is placed, the frame being adapted to be drawn around the mold-box when it is closed, so as to snugly fit it. This frame 25 comprises the side plates 26, from the exterior surface of each of which extend the double plates or truss-braces 27, supported and braced in position by the angle-irons 45, which are bolted to the inner faces of the trusses and to the side plates 26 between the trusses 27. By this construction the sides 26 are so braced by the trusses as to prevent any bulging of the plates 26, even under the enormous pressure which is used. The trusses 27 are provided with the elongated slots 28 at right angles to the sides 26, these slots being positioned so that the rods 14 will pass there-through.

29 represents U-shaped yokes which are secured to the trusses and extend out from the sides 26 at right angles thereto beyond the edges of the trusses 27 and having their parallel portions embracing the slots and the rods 14 adjacent to the slots 28. One of these U-shaped yokes is located above the upper truss and another below the lower truss. Surrounding each rod 14 is a clevis 30, to which is pivotally connected an I-bolt

31, the free end of which passes through a hole in the bow portion of one of the U-shaped yokes 29.

32 represents plates which are secured to the yokes on each side of the rods 14 and by which the clevises 30 are held between the plates and trusses. On the outer ends of the bolts 31, outside each of the yokes 29, are the nuts 33, which determine the outward position of the side plates 26 in order to allow the side plates to be drawn together in order to clamp the sides of the mold-box. Surrounding the bolts 31 are coiled springs which bear against the yoke 29 and nuts 34 to press the sides 26 outward, the tension of the spring being adjusted by means of the nuts 34. It is obvious that by turning the nuts 33 and 34 of the bolts 31 the side plates 26 may be adjusted as desired in order to accommodate the frame to different widths of mold-boxes. The spring 35 permits the side plates to be drawn toward each other to clamp the box between them and to withdraw the plates from the box as soon as the frame has been unlocked, as will be hereinafter described. It is to be understood that there are a pair of these adjusting devices on each of the rods 14—that is to say, there is one carried by each of the trusses 27 for each of the rods 14.

In the operation of this machine it is necessary to maintain a uniform relation between the mold-frame and the platen of the press. Fig. 1 shows a carriage or truck on which the mold is mounted and which is interposed between the platen and the mold. The frame should therefore be maintained at the same distance above the platen as the mold, and for this purpose the frame is provided with adjustable supports 37, which are four in number, two for each side. They consist of bolts passed through the truss-plates 27 and are threaded.

36 is a sleeve surrounding the bolt and located between the trusses 27. The bolts 37 are provided with nuts above and below the trusses 27, which serve to secure the supports 37 to the sides of the mold-frame and also to permit of its vertical adjustment. The sleeves 36, which surround the support 37, serve the double purpose of permitting the supports to be locked in position, as well as to space the plates 27.

38 is a roller in the end of each of the supports which rests and rolls upon the upper surface of the laterally-projecting arms 13 of the platen.

At each end the mold-box frame is provided with a gate 39, both of which are adapted to be automatically opened at the end of the pressing operation. These end gates comprise plates 40, to which are secured the bars 41 42. 43 represents hinged members, which project out from one of the side plates 26, to which one end of the bars 41 and 42 are secured by means of the pintles



44. Mounted upon the bars 41 42 are adjustable latch-blocks 46, provided with openings 46<sup>a</sup>, through which project the latch-hooks 47. These latch-hooks project from the end of the frame and are provided with a cam-face 47<sup>a</sup>. The latch-blocks 46 are adapted to slide on the bars 41 and 42 in order to adjust the latch-block to different positions for different widths of mold-boxes. The outer ends of the bars 41 are threaded, as shown at 49, and upon the threaded portions are mounted the split nuts 48, which, as shown, are provided with the screws 48<sup>a</sup> for locking the same upon the threaded portion 49 when they have been set in their adjusted position. 46<sup>b</sup> represents bolts, which are passed through the plates 46 and which are adapted to draw the plates together to clamp the same upon the bars 41 42. By this construction it will be seen that the latch plates or blocks may be set in an adjusted position and then the bolts 46<sup>b</sup> set up tight and the nuts 48 screwed tight against the side of the block, when the block will be firmly held in its adjusted position. The side plates 26 of the frame are adjusted so as to freely admit the mold-box, and the latch blocks or plates 46 are so adjusted that the openings 46<sup>a</sup> will stand a little within the base of the latch-hooks 47, so that when the gates are closed the edges of the openings 46<sup>a</sup> will have to exert a camming action upon the beveled sides 47<sup>a</sup> of the latch-hooks 47 and draw the side plates together, causing them to clamp the sides of the mold-box and firmly hold the same. As before explained, the springs 35 will automatically return the side plates to their extended position when the gates are opened, and thus permit the mold-box to be readily removed.

50 represents latch-levers provided with oppositely-disposed tongues 51, the levers being pivoted upon bolts 52, projecting from the plates 46.

53 represents coil-springs encircling the bolts 52 between the nuts 54 and the latch-levers. The springs yieldingly hold the levers in position and prevent the hand of the operator being unduly jarred when the gates are closed. It will be seen that by swinging the latch-levers downward when the gates are closed the tongues 51 will engage the latch-hooks 47 and by raising the levers the tongues will be disengaged therefrom and permit the gates to be opened. For the purpose of guiding the latch-levers in their movement I provide a guard-strip 55, which is mounted on the outside face of each lever and supported therefrom by spacing-blocks 56. The inner end of the guard-strip 55 is bent down upon the latch-levers, and the bolt 52 passes through the end thereof to hold the same in position.

57 is a guide-plate mounted upon the ends of the bars 41 and provided with a vertical

slot 58, through which the lever 50 projects, the guard 55 impinging against the outer edge of said plate.

In order to support the outer end of the gates and take the weight off the hinges and at the same time to cause the gates to swing wide open when they have been partially opened by a mechanism to be hereinafter described, I provide a gate supporting and opening means, which in construction illustrated consists of a spring 60, which engages an I-lug 59 in the upper end of the guide-plate 57. The other end of the coil-spring is connected to a rod 61, provided with a turn-buckle 61<sup>a</sup>, by which its length can be adjusted. This rod extends diagonally upward and rearward from the plate 57 to an I-bolt 63, carried by a beam 62, supported by a cross-bar 64, which in turn is supported by the upper end of the rods 14.

In order to open the end gates at the completion of the pressing operation when the platen and mold-box frame are moving downward, I provide levers 65, pivotally mounted upon brackets 66, carried by the sills 1 at the sides of the machine. These levers extend forward and upward at an angle and are provided at their upper ends with vertical rack-bars 67, having their teeth 68 arranged to engage the levers 50. The levers 65 extend through guide-frames 69, supported by the lugs 13 of the platen. These guide-frames prevent lateral play of the levers 65 and limit the outward movement thereof. When the mold-box frame and platen are in their lowest position, the levers 50 are in engagement with the teeth at the lower end of the rack-bars 67, when, owing to the inclined position of the levers, the weight of the levers 65 is thrown against the latch-levers 50. It will readily be seen that as the mold-box frame is moved upward during the pressing operation the latch-levers 50 will slide over the teeth 68, so that when the upward stroke of the platen is completed the latch-levers will be in engagement with the upper teeth of the rack-bars. When now after the desired pressure has been obtained and the platen and mold-box frame are moved down, the latch-levers 50, being held by the teeth 68, will be swung upward, which action disengages the latch-tongue 51 from the latch-hooks 57. As soon as the latch-tongues are disengaged from the latch-hooks the weight of the lever 65 causes them to swing forward, opening the gates and starting them on their outward movement. The levers 65 are, however, arrested in their forward movement by the guide-arm 69. As, however, the rods 61 are pivoted to the rear of and slightly in front of the hinge of the gates, the spring 60 will, because of the position of the pivot 63, cause the gates to continue their movement until they have swung entirely open. This is due to the fact that the swinging of the



gates under the action of the levers 65 puts the springs 60 under tension, and when the levers 65 have completed their operation the arcs described by the end of the gates will allow the springs 60 to exert their pull in such a direction as to cause a continuance of the swinging movement of the gates.

The operation of my press is as follows: A mold-box having been filled with the material from which the blocks are to be formed, the box is run into the press on the platen 4 until the wheels of the truck of the box rest upon the crickets 11. The end gates 39 are now closed, which causes the side frames 26 of the mold-box frame to be drawn together and firmly clamp the sides of the mold. When the end gates are closed, the lever 50 moved down to cause the latch-tongue 51 to engage the latch-hooks 47, the lever will stand against the lower teeth 68 of the bar 67. The hydraulic ram is now operated, which causes the platen to move upward, when its raised portion 7 will engage the underblocking of the mold-box and allow the wheels of the box to rest on the openings 10, as the crickets 11 have been left behind by the movement of the platen. The mold-box frame moves up in unison with the platen because of its clamping the sides of the mold and because of the fact that it is supported by the bolts 37 upon the platen. By the upward movement of the platen the mold-box is carried up into contact with the head 21, whereby the material in the mold is compressed into blocks as desired. As this upward movement of the platen takes place the latch-levers 50 are slipping upward over the teeth 68 of the rack-bar 67. When the desired amount of compression has been obtained and the parts have reached the limit of their upward movement, the pressure in the hydraulic ram 2 is relieved and the parts allowed to descend. The mold-box frame moving downward causes the levers 50, which have been in contact with the teeth 68 of the bar 67, to move upward, and thus unlatch the end doors of the frame. As soon as the doors are unlocked the weight of the levers 65 swings the end doors outward until the levers 65 are arrested by coming in contact with the ends of the frame 69. As before described, the springs 60 and their connection 61 cause the end gates to continue their outward swing until they have been completely opened. The mold-box may now be removed from the press, as the crickets 11 have filled up the openings 10, which allows the mold-box to be readily shoved out. The mold-box may be run onto a suitable track and removed, and another box which has been loaded while the pressure was in operation may now be inserted in the mold-box frame and the operation repeated. It will thus be seen that a continuous operation

may be had and the blocks formed rapidly and with practically no loss of time.

While I have described what I believe to be the preferred form of my invention, I desire to have it understood that the machine herein shown and described merely constitutes one form of my invention and that my invention is not to be limited by the mechanisms and constructions herein described, as many changes may be made in the form, construction, and arrangement of parts without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a press, the combination with supports, of a movable platen guided by said supports, means for moving said platen, a head supported by said supports, a mold-box frame, means for adjusting said frame, and cushioning means for said frame.

2. In a press, the combination with supports, a movable platen, means for moving said platen, a head supported by said supports, a mold-box frame provided with guides engaging the supports and cushioning means carried by the guides.

3. In a press, the combination with supports, of a movable platen, means for moving said platen, a head supported by said supports, a mold-box frame, guides for the mold-box frame engaging the supports, means for permitting the frame to be moved in relation to its guides to permit the sides of the mold-box frame to be drawn together and means to draw the sides thereof together.

4. In a press, the combination with supports, of a movable platen, means for moving said platen, a head supported by said supports, a mold-box frame, guides for the mold-frame engaging the supports and yielding means connecting the guides and the frame.

5. In a press, the combination with supports, of a movable platen, means for moving said platen, a head supported by said supports, a mold-box frame, guides encircling the supports, a bolt projecting from one side of the guides, a projection on the frame through which the bolt passes and a spring mounted on the bolt and adapted to be put under tension by the movement of the frame in one direction.

6. In a press, the combination with supports, of a movable platen, means for moving said platen, a head supported by said supports, a mold-box frame, a guide mounted upon the supports, a bolt pivoted at one end to the guide, a projection on the frame through which the bolt passes, and means for permitting movement between the bolt and the projection on the frame.

7. In a press, the combination with operating means, of a vertically-movable platen connected thereto, said platen being adapted to receive a wheeled truck, openings in the



platen, crickets projecting through the openings and normally engaging the wheels of the truck for supporting the body of the same above the platen, but allowing the wheels of the truck to project into the openings and the body of the truck to contact with the platen when the platen is raised.

8. In a press, the combination with operating means, of a vertically-moving platen connected thereto and provided with tracks and openings in the tracks, said platen being adapted to receive a wheeled truck, crickets projecting through the openings normally engaging the wheels of the truck for supporting the body of the same above the platen, but allowing the wheels of the truck to project into the openings and the body to contact with the platen when the platen is raised.

9. In a press, the combination with a platen, means for operating the platen, a head, a mold-box frame comprising two sides and two end gates pivoted to the sides, means for adjusting the sides toward and away from each other, latching means carried upon the end gates adapted to engage cooperating parts carried by the sides and means for moving the latching means transversely of the end gates.

10. In a press, the combination with a movable platen, means for operating the same, of a head, a mold-box frame supported by the platen comprising two side plates and end gates hinged to the side plates, means for adjusting the side plates toward and away from each other, a latching means carried by the end gates adapted to engage cooperating parts carried by the sides for securing the free ends of the gates to the sides and means for moving the latching means transversely of the end gates.

11. In a press, the combination with a platen and a head, a mold-box frame supported upon the platen consisting of two sides and two ends hinged to the sides, means for adjusting the sides toward and away from each other, a plate adjustably mounted upon the ends and means for securing the ends and sides together carried by the plate.

12. In a press, the combination with a platen and a head, of a mold-box frame supported upon the platen, consisting of two sides and two ends hinged to the sides, means for adjusting the sides toward and away from each other, a plate adjustably mounted upon the ends and latching means for the ends mounted upon the plate.

13. In a press, the combination with a platen and a head, of a mold-box frame supported upon the platen, consisting of two sides and two ends hinged to the sides, means for adjusting the sides toward and away from each other, latch-hooks projecting from the side plates, a plate adjustably mounted upon the end gates and a latch carried by said plate

whereby said latch can engage the latch-hooks when the side plates are in different positions of adjustment.

14. In a press, the combination with a moving platen, operating means in connection therewith and a head, of a mold-frame supported by the platen, comprising side plates, end gates pivotally supported from the side plates, latching means carried upon the end gates, and pivoted rack-bars engaging the latching means and adapted to release the same when the mold-frame is moved in one direction.

15. In a press, the combination with a movable platen, means for operating the same, a head, a mold-box frame supported by the platen comprising side plates and end gates hinged to the side plates, latching means carried by the end gates, pivoted rack-bars engaging the latching means and adapted to release the same when the mold-frame is moved in one direction and means independent of the bars for causing the gates to swing after they have been released and started by the rack-bars.

16. In a press, the combination with supports, and a moving platen, of a mold-frame adjustably supported from the platen, stiffening and strengthening means projecting on the frame, and means for adjusting the frame connected to the supports and arranged on the stiffening means.

17. In a press, the combination with a movable platen and means to operate the same, of a head, a mold-box frame comprising two sides and two ends, and means for automatically causing the sides to move toward and away from each other by the opening and closing of the ends.

18. In a press, the combination with a movable platen, of a mold-box composed of two sides, end gates hinged to the sides and automatic means for moving the sides toward each other to decrease the size of the frame to clamp a mold, said means being operated by the closing of the gates.

19. In a press, the combination with supports and a moving platen, of a mold-frame having adjustable sides, end gates mounted upon the frame and adapted to draw the sides together when they are closed, and resilient means for withdrawing the sides when the gates are opened.

20. In a press, the combination with a platen, and a head, of a mold-box adapted to be pressed by the platen against the head, a frame having two sides movable toward and away from each other in parallel planes and ends hinged to the sides to open and close the frame, said frame being provided with means to cause the sides to move toward each other when the ends are closed.

21. In a press, the combination with a platen and a head, of a mold box adapted to be pressed by the platen against the head, a



frame having two sides movable toward and away from each other in parallel planes and ends adapted to close the frame and means actuated by the motion of the ends to move the sides toward each other.

22. In a press, the combination with a platen and a head, of a mold-box adapted to be pressed by the platen against the head, a frame having two sides and two ends, one end and one side being hinged together and automatic means for moving the sides toward each other to decrease the size of the frame to clamp a mold-box, said means being operated by the closing of the ends, and means for locking the ends and sides together.

23. In a press, the combination with a platen and a head, of a mold-box adapted to be pressed by the platen against the head, a frame having two sides and two ends, one side and one end being hinged together, means for securing the free ends of the sides and ends together and simultaneously causing the sides to approach each other in parallel planes.

24. In a press, the combination with a platen and a head, a mold-box adapted to be pressed by the platen against the head, a frame having two sides and two ends; means for automatically moving the sides away from

each other when the frame is opened and means for causing them to approach each other when the frame is closed.

25. In a press, the combination with a platen and a head, of a mold-box adapted to be pressed by the platen against the head, a frame having two sides and two ends, means for adjusting the sides toward and away from each other, means independent of the adjusting means for causing the sides to approach each other and means for moving the sides away from each other.

26. In a press, the combination with a platen, and a head, of a mold-box adapted to be pressed by the platen against the head, a frame having two sides and two ends, the sides being adapted to move toward and away from each other in parallel planes, means for moving the sides toward each other when the frame is closed and automatic means for moving the sides away from each other when the frame is opened.

Signed by me at Baltimore, Maryland, this 4th day of May, 1905.

WILLIS H. FISHER.

Witnesses:

GEO. W. HAULENBEEK,  
JNO. P. BULLINGTON.