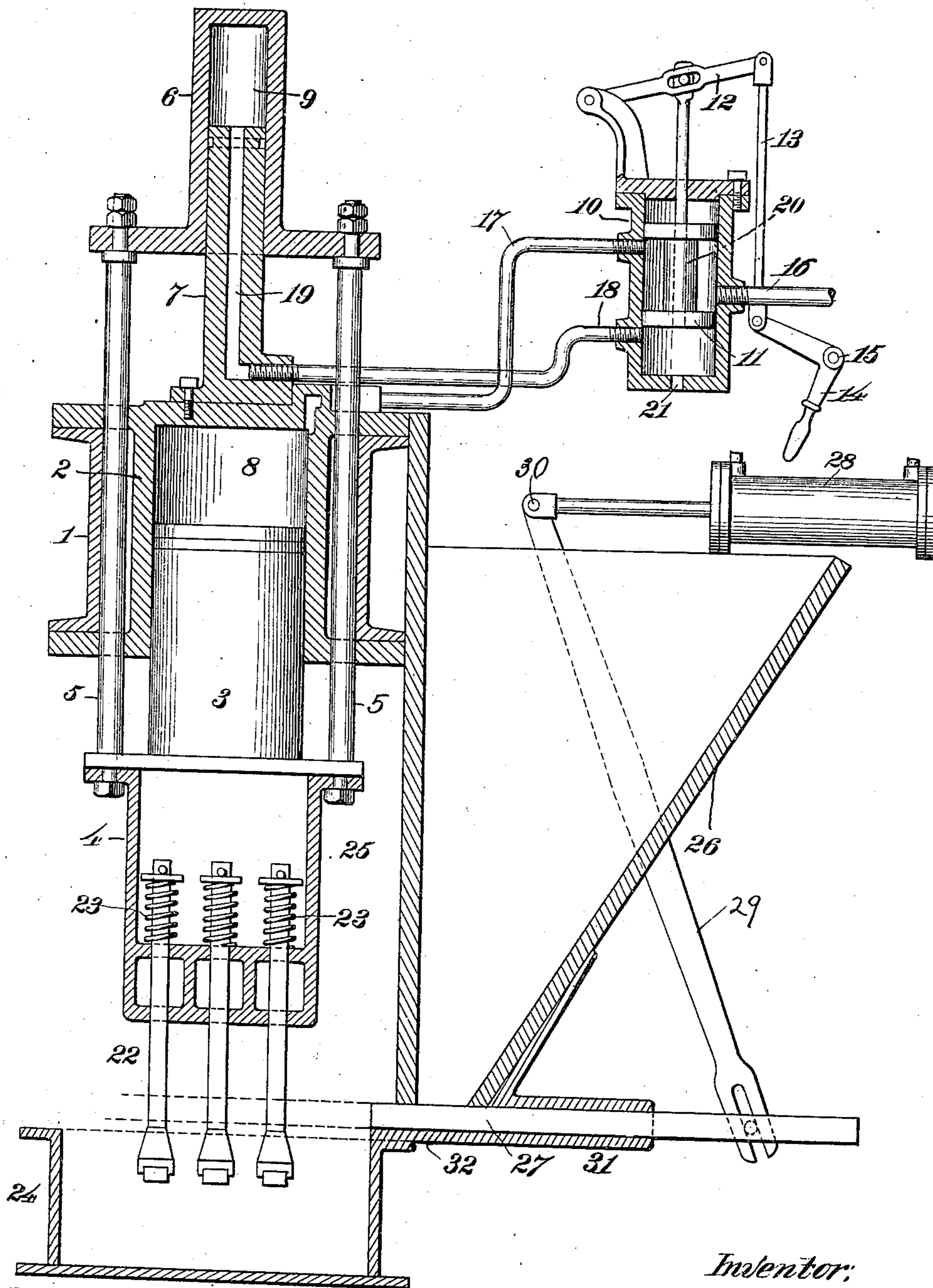


F. W. HUDSON.
POWER RAMMER.
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995,678.

Patented June 20, 1911.



Witnesses:

H. S. Austin
Walter M. Fuller

Inventor:

Frank W. Hudson

by

Offield Towle & Luthricum
Attys.

UNITED STATES PATENT OFFICE.

FRANK W. HUDSON, OF EAST ST. LOUIS, ILLINOIS, ASSIGNOR TO AMERICAN STEEL
FOUNDRIES, OF NEW YORK, N. Y., AND CHICAGO, ILLINOIS, A CORPORATION OF
NEW JERSEY.

POWER-RAMMER.

995,678.

Specification of Letters Patent. Patented June 20, 1911.

Application filed February 28, 1908. Serial No. 418,395.

To all whom it may concern:

Be it known that I, FRANK W. HUDSON, a citizen of the United States, residing at East St. Louis, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Power-Rammers, of which the following is a specification.

The invention relates to power rammers for compacting sand in molds, and has for its objects; to provide a rammer which will accommodate itself to the shape of the patterns and cores whereby the placing of uneven pressure on any parts of such cores or patterns is avoided; to provide a power rammer in which the blows may be very rapidly delivered without undue force; to provide a rammer in which the action is free and yielding and devoid of sharp jars and shocks, and finally, to provide a means for supplying the molding sand expeditiously to the mold.

One embodiment of the invention is shown in the accompanying drawing, in which the figure is a transverse section through the center of the apparatus.

I have illustrated only those parts of the construction which I consider new, but in order to indicate clearly the relation in which I intend ordinarily to use the rammer, attention is directed to my prior Patent #723,529, March 24, 1903, in which the rammers are mounted on a movable frame so that the machine will be carried bodily over any desired mold. My device is preferably so mounted, although it will be apparent that it might be stationary if so desired.

As shown in the drawings, 1 is the frame of the machine, which frame carries rigidly secured thereto the rammer cylinder 2 provided with the plunger 3, which plunger carries the rammer head 4. The plunger is connected by means of the connecting rods 5 with a supplementary cylinder 6, which cylinder is adapted to move up and down upon the stationary plunger 7 rigidly secured to the top of the cylinder 2. It will be seen that by this construction a chamber 8 is provided into which air pressure may be admitted to force the plunger 3 down, and a chamber 9 by means of which when pressure is admitted the supplementary cylinder 6 may be raised, thereby lifting the plunger 3. The controlling valve for admitting pressure to the cylinders 2

and 6 is located at the right of the drawing, and comprises a casing 10, a piston 11, operating rods 12 and 13, and a handle 14 pivoted at 15. Fluid pressure is supplied by means of the admission pipe 16, while the pipes 17 and 18 lead to the cylinders 2 and 6 respectively, the admission opening leading from the pipe 18 to the chamber 9 being marked 19. The piston 11 is also provided with a port 20 leading longitudinally therethrough, and the casing 10 is provided with an exhaust port 21.

It will be seen that when the parts are in the position indicated in the drawing air pressure is being supplied to the top of the plunger 3 by means of the pipes 16 and 17, and the reduced central portion of the valve 11, and that as the supplementary cylinder 6 is being moved down the air from the chamber 9 is permitted to exhaust through the passages 19 and 18, and the exhaust port 21. When the plunger 3 reaches its lower limit the valve 11 is depressed, thereby admitting pressure to the supplementary cylinder 6 by means of the passages 16, 18 and 19, and the connection in the valve formed by the reduced central portion thereof, and exhaust occurs from the cylinder 2 by means of the pipe 17 and the port 20 in the valve and the exhaust port 21.

One of the features of my invention resides in the rammer head 4 secured to the plunger 3. This rammer head consists of a casing provided with a plurality of ramming members 22, which members are freely reciprocable in the casing, and are spring supported from the underside by means of the springs 23. It will be seen from this construction that when the plunger 3 descends the ramming members 22 are not positively driven, but simply operate by virtue of their weight, so that the driving force for all the plungers 22 is uniform. It therefore follows that no undue strain will be put upon the pattern in the mold box 24. It will also be apparent that the force of the blows delivered by the members 22 will be the same irrespective of the rapidity with which the plunger is reciprocated, and that a large number of blows may be struck without any liability of any blow being too severe. The springs 23 serve to take up all jar on the backward movement of the plunger, so that the device will operate smoothly. It will be seen that by reason of the play

allowed for the members 22, the height of the sand in the mold box 24 may be varied without in any way affecting the operation of the machine, as the play of the member 5 22 is sufficient to permit of the reciprocation of the rammer head 4 at different heights above the mold box 24 without any positive engagement between the tops of the members 22 and the rammer head.

10 Another feature of my invention relates to the sand box carried by the machine, and adapted to fill the mold boxes, as desired. This sand box comprises a vertical wall 25 and an inclined wall 26, thereby constituting 15 a hopper from the bottom of which the sand may be fed by gravity. The two members 25 and 26 are slotted adjacent the bottom, and the slot forms the feeding opening for the sand. This feeding opening is controlled 20 by a slide 27, which may be reciprocated by fluid pressure from the cylinder 28 by the lever 29 pivoted at 30 and having a pin and slot connection at its lower end with the slide 27. This arrangement constitutes an 25 effective feeding means, as the vertical side 25 can be brought adjacent the side of the mold, and by simply opening the slide a gravity feed will occur into the mold box. It will be seen that there is no danger of 30 clogging in this construction, as the slide 27 fits tightly in the socket 31, and moves over the smooth surface 32, thereby keeping such surface clean, and when pushed to the closed position as indicated in the drawing, the

feeding slot is cleaned. This feature of my 35 invention will be claimed in a separate application.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent, is the fol- 40 lowing:

1. In combination in a ramming machine, an upright rammer head, means for reciprocating it, and ramming means spring supported against downward movement and 45 freely reciprocable in the rammer head.

2. In combination in a ramming machine, an upright rammer head, means for reciprocating it, and ramming means comprising a plurality of freely reciprocable independent 50 ramming members spring supported against downward movement.

3. In combination in a ramming machine, a rammer comprising a casing and a plurality of independent ramming members guided 55 longitudinally therein and provided with stops for engaging the casing and spaced to permit free movement of the ramming members within the limits of the stops, and means for reciprocating the rammer. 60

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

FRANK W. HUDSON.

Witnesses:

W. H. CAMERON,
GEO. A. SCHAEFER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
