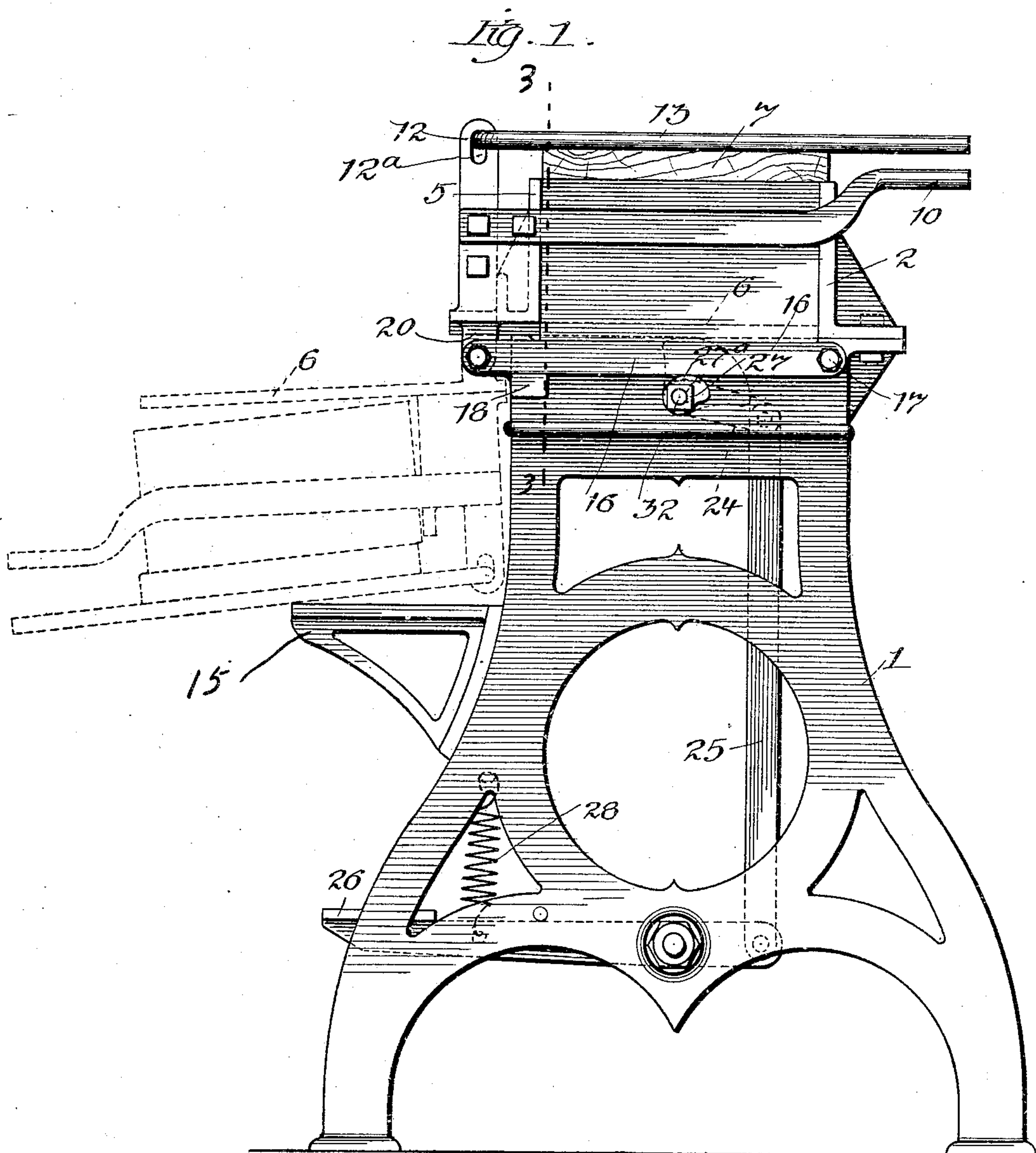


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BRICK MOLDING MACHINE.  
APPLICATION FILED NOV. 20, 1908.

931,154.

Patented Aug. 17, 1909.

3 SHEETS—SHEET 1.



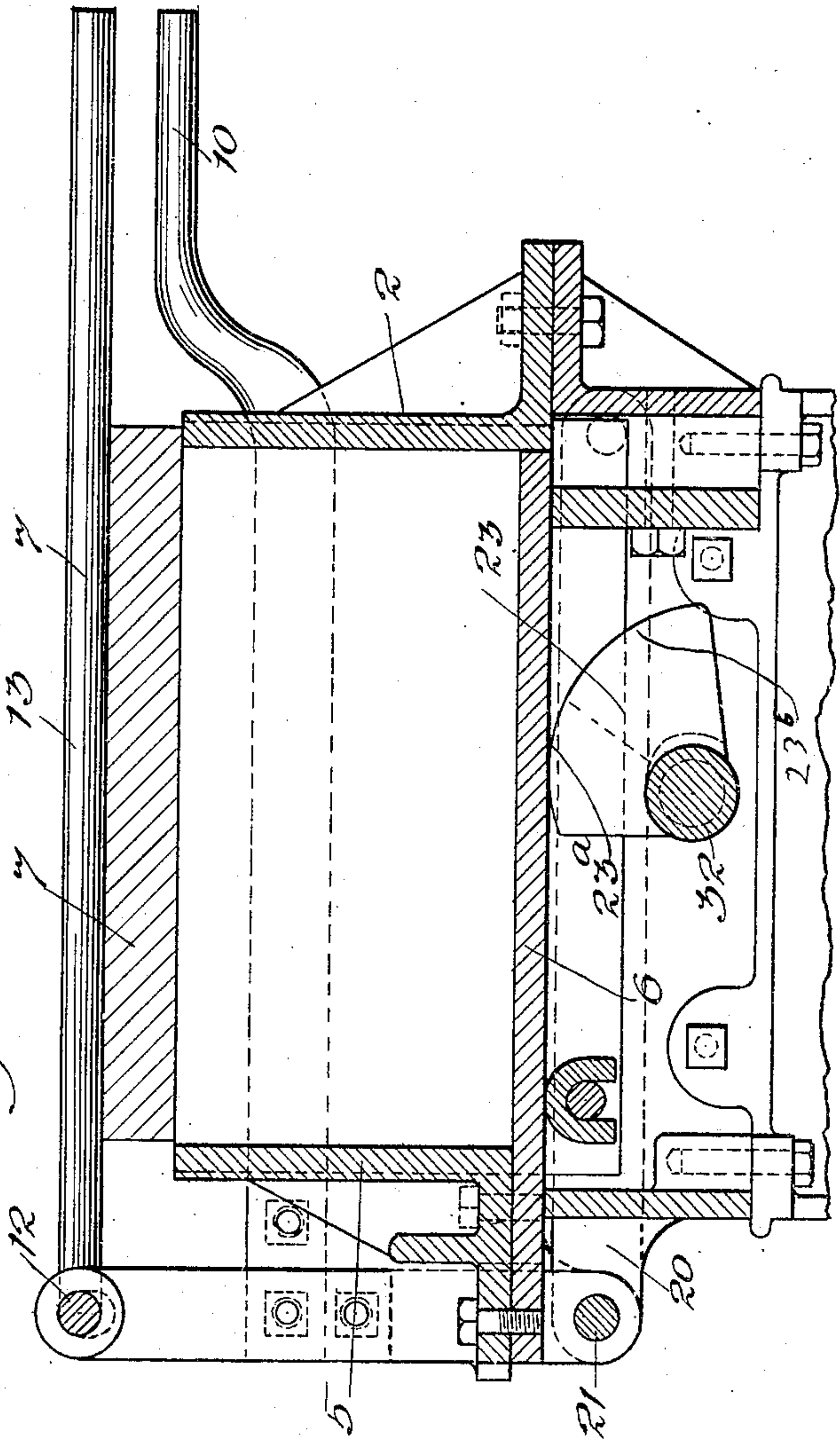
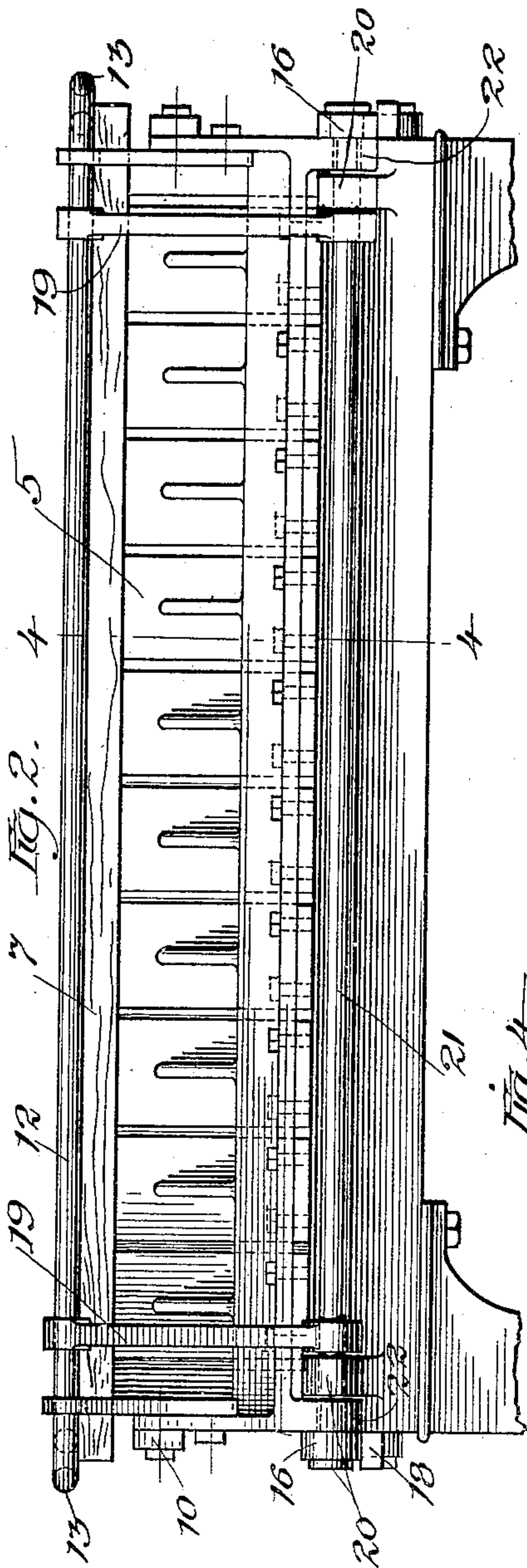
Witnesses:  
Frank J. Blanchard  
J. S. Abbott

Inventor:  
Charles Simpson  
By Burton & Burton  
his Attorneys.

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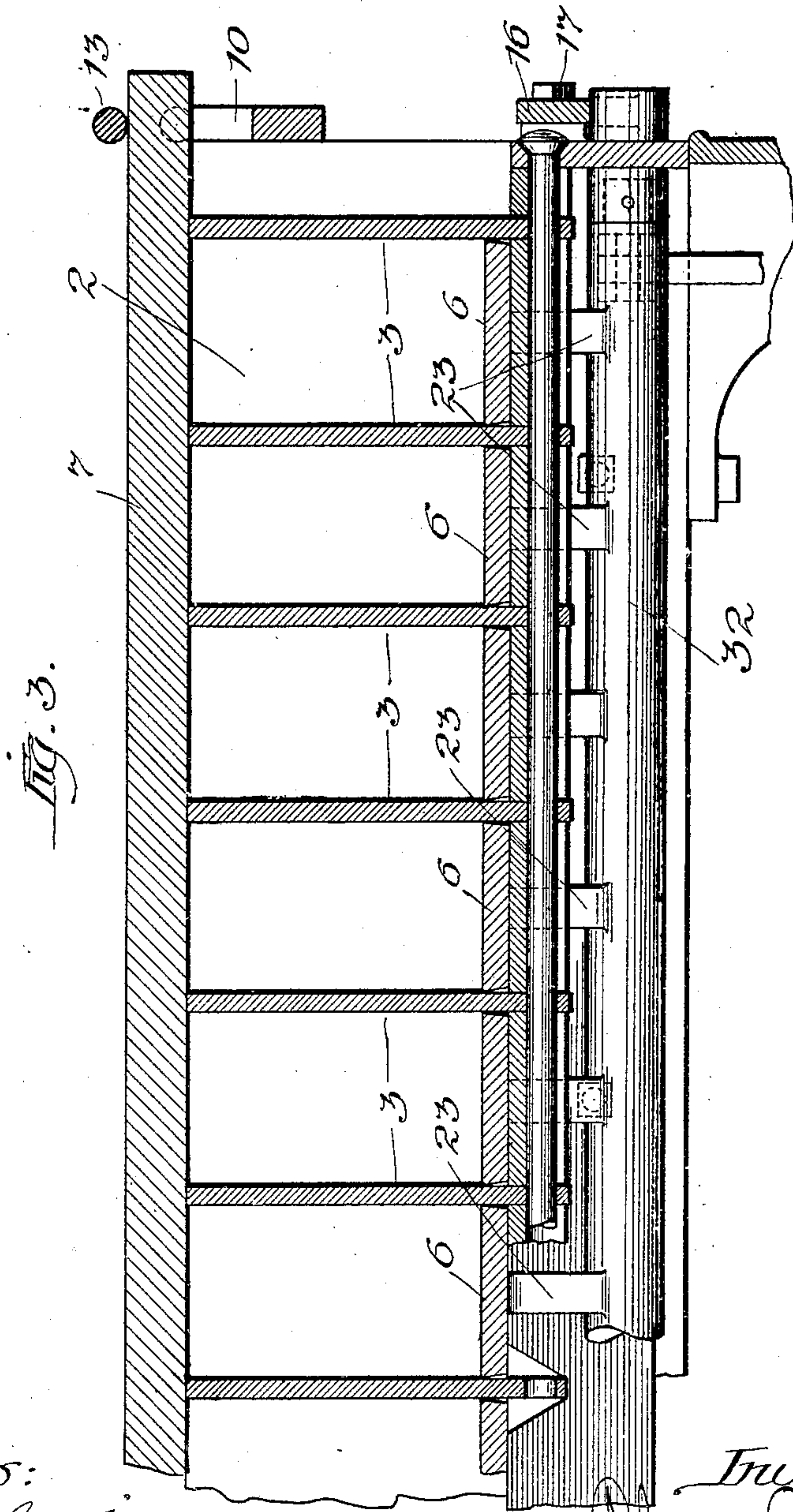
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# UNITED STATES PATENT OFFICE.

CHARLES SIMPSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO MIRACLE PRESSED STONE COMPANY, OF MINNEAPOLIS, MINNESOTA, A CORPORATION OF SOUTH DAKOTA.

## BRICK-MOLDING MACHINE.

No. 931,154.

Specification of Letters Patent.

Patented Aug. 17, 1909.

Application filed November 20, 1908. Serial No. 463,540.

*To all whom it may concern:*

Be it known that I, CHARLES SIMPSON, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented new and useful Improvements in Brick-Molding Machines, of which the following is a specification, reference being had to the drawings forming a part thereof.

This invention is an improvement upon a brick-molding machine of the general type shown in Patent No. 825,919, granted to A. P. Melton, July 17, 1906. It is designed to overcome certain defects observed in the operation of that machine when used with warped or imperfectly surfaced pallets, as hereinafter more particularly explained.

It consists of the features of construction shown and described as indicated in the claims.

In the drawings:—Figure 1 is an end elevation of a machine embodying this improvement. Fig. 2 is a front elevation of the same. Fig. 3 is a detail section at the line 3—3 on Fig. 1. Fig. 4 is a detail section at the line 4—4 on Fig. 2.

The typical features of the machine to which this invention is applied comprise a fixed element for a plurality of brick molds, consisting, in addition to the stand, 1, upon which it is mounted, of a vertical wall, 2, which forms one end of all the mold cavities, and parallel plates, 3, forming the side walls of the several cavities, and thus constituting partitions between the consecutive cavities which are ranged side by side. It comprises, in addition, a rocking member which consists of a plate, 5, forming the other end wall of all the mold cavities, and rigid therewith and extending at right angles thereto bottom plates, 6, adapted to enter between the vertical side and partition plates, 3. The oscillating member is pivoted for rocking with respect to the fixed member to carry the bottom plates, 6, together with the end plate, 5, up between the partition plates, 3, for stripping the bricks out of the mold, a pallet, 7, being first lodged upon the top of the entire group of molds resting upon the upper edges of the partition and side plates and being held in position on the edges of the molded bricks while the oscillating member is turned entirely over so that the bricks rest upon said pallet instead of the pallet resting upon the bricks when the reversion is com-

pleted. For rocking the oscillating member, it is provided with two operating handles, 10, one at each end, and for holding the pallet in position while the reversion is effected there is provided a device consisting of a rock shaft, 12, and two parallel arms or handles, 13, 13, rigid therewith, said device hereinafter referred to as the pallet clamp being pivoted by means of its rock shaft on the lugs of the oscillating member of the machine a little forward of the forward ends of the mold cavities, and at a position enough above the top of the mold to allow space between the same and the lever arms or clamp handles, 13, for a pallet board, 7, of the usual thickness, which is customarily about three-quarters of an inch.

In the ordinary operation of a machine of this type after the mold cavities are filled with the concrete properly tamped in, the pallet board, 7, is laid upon the top extending across all the mold cavities and covering them, and by means of the handles, 10, the oscillating member is rocked through 180 degrees to carry it from the full line position shown in Fig. 1 to the dotted line position at which said member is stopped against the forward side of the stand, holding the bottom plates, 6, extending horizontally, while the pallet by this time resting upon the handles, 13, of the pallet clamp drops until the said handles are stopped by the brackets, 15, with which the stand is provided for that purpose at the forward side, the molded bricks relieving from the end plates, 5, and bottom plates, 6, of the mold, and resting upon the pallet so that they may be carried away on the latter, which is readily withdrawn from off the handles, 13, of the pallet clamp. As machines of this type have heretofore been constructed, the handles, 10, have been located with their upper edges even with the top of the mold cavities,—that is, even with the upper edges of the partition plates, 6,—so that the pallet, 7, when lodged on the top of the mold was lodged also upon the upper edges of the handles, and was thereby definitely and unchangeably spaced from the bottom plates, 3, so that in the rocking movement for stripping out the brick, no compression of the molded brick could possibly occur between the bottom plates and the pallet. It has been found that when the pallet is warped or otherwise caused to be uneven, particularly if it be convex toward



the molded brick, which is exceedingly liable to occur in practice because the pallets are required in large quantity, are usually made of wood and cheaply constructed, and are exposed to changes of moisture as the moist brick are left upon them for curing, the molded brick when reversed so as to be lodged upon the pallet being unsupported except at the highest point of the convex pallet, usually at the middle of the width of the pallet and of the length of the brick, settling to the pallet at their ends are cracked over the high point of the pallet and rendered worthless. This defect is avoided in the structure shown by locating the mold-operating handles, 10, at such position that the pallet does not rest upon the handles at all, and is therefore not spaced rigidly and unvaryingly away from the bottom plates except by the partition plates, 5, and therefore only so long as the mold is in its original position at which the material is tamped in. If the pallet is suspected of being warped or otherwise formed so as to be liable to cause the brick to be cracked, the operator, by holding the pallet firmly down on to the brick by means of the pallet clamping arm, 13, while he begins the opening or rocking movement lifting the bottom plates, may compress the freshly molded brick while still contained within the walls of the mold up against the pallet, conforming its upper edge to the curvature or other irregularity of the latter, so that when the rocking movement is completed and the brick stripped out and carried over so as to rest upon the pallet, the danger of cracking from the cause indicated is avoided. If the rocking member is pivoted directly to the fixed member so as to have only a simple and direct rocking movement over its pivot, the compression of the brick by the means described to form it to the pallet would be effected at the expense of a slight distortion of the brick from its perfectly rectangular form, because the bottom plates would be able to move only about the pivot of the rocking member to the fixed member, and the brick would be reduced in vertical dimension or width at the rear side to the extent of the compression, but would not be reduced at the forward side. The amount of such distortion due to this cause would be negligible in common brick, but would be somewhat objectionable in brick of finer qualities. When it is desired to avoid this slight distortion while yet obtaining the advantage of conforming the upper edge of the bricks to the pallet before stripping them out of the mold, provision is made for allowing the rocking member of the mold to be advanced bodily upward while the pallet is held by the pallet clamp firmly against such advance before the rocking movement is commenced. The structure shown in the drawings for this purpose consists in pivoting

the rocking member for its rocking movement to the forward ends of controlling bars or links, 16, 16, one at each end of the machine, said links being pivoted at their rear ends to the fixed member at 17, 17, said links being lodged just back of the pivotal connection of the rocking member thereto on stops 18, projecting from the end standards.

The rock shaft, 12, of the pallet clamp is connected by links, 19, 19, with the fixed member on which at the forward side lugs, 20, 20, are formed, to which the lower ends of the links, 19, are pivotally connected by a rod, 21, extending through both said lugs and through the links which are respectively inside said lugs, the lugs, 22, by which the rocking member is pivoted to the links, 16, being positioned immediately outside the lugs, 20, 20, which thereby serve to position the rocking member longitudinally with respect to the fixed member. A rock shaft, 32, which extends longitudinally of the fixed member underneath the bottom plates, 6, and which is provided with cams, 23, for operating against the bottom plates to start them up in the opening movement of the mold, has a lever arm, 24, connected by a link, 25, with a pedal, 26, for giving rocking movement to the cams for the purpose stated. On this same shaft, outside the standards, there are mounted cams, 27, 27, on which the links, 16, 16, are lodged at substantially the middle point of the length of said links. A spring, 28, is preferably provided connected with the pedal 26, for yieldingly holding the rock shaft with the cams in the position which permits the mold to be completely closed,—that is, the bottom plates to be at their lowest position. The cams, 23 and 27, are each curved with slight eccentricity at their operating edge through an arc of about twenty degrees, said portions, 23<sup>a</sup> and 27<sup>a</sup>, respectively, of said cams being adapted in the rocking of the cam through that angle to force upward the parts upon which they respectively act a distance estimated to be sufficient to conform the upper edge of the brick to any irregularities or curvatures of the pallet which are liable to exist and which are not greater than will admit of the conformation of the brick thereto, generally speaking, but this distance may be from one-sixteenth of an inch to one-eighth of an inch. The increment or rise of the cam, 23, in the arc, 23<sup>a</sup>, is about double the increment of the cam, 27, in its corresponding arc, 27<sup>a</sup>, for a reason and with a result hereinafter stated. The remainder of the operating periphery of the cams, 27, is formed with unvarying radius about the axis of the rock shaft so that they serve through the remainder of the action of the rock shaft merely to uphold the levers, 16, at the position to which they are lifted by the first portion, 27<sup>a</sup>, of the cam. But the portion, 23<sup>b</sup>, of the cams, 23, suc-



ceeding the slightly eccentric portion, 23<sup>a</sup>, is made with increased eccentricity so that as the cams are rocked through a further angle by the continued depression of the pedal lever, 26, the bottom plates, 6, are forced up and the brick are relieved from the adhesion of the mold, so that the operator can by means of the handles, 10, complete the swinging and reversing movement. It will be seen that in the first rocking movement which brings into action the portions, 23<sup>a</sup> and 27<sup>a</sup>, of the cams, the links, 16, are swung up about their pivots, 17, and thereby the pivotal connection of the rocking member to the forward ends of said links is lifted a distance about twice the increment of the cam in the arc, 27<sup>a</sup>. At the same time, the said rocking member is swung up by the cams, 23, about its pivotal connection to the arms, 16, a distance which at the point directly over the rock shaft, 22, is equal to the increment of the cams, 23, in the arc, 23<sup>a</sup>, and this increment being proportioned to the increment of the cam, 27, in the arc, 27<sup>a</sup>, as the distance between the two pivots of the link, 16, is to the distance from the fulcrum of the links at 17 to the points of action of the cam thereon,—the result is that the said bottom plates, and thereby the entire rocking member, are lifted equally at two points; and therefore bodily without angular change of position, the amount of the increment of the cams, 23, in the arc, 23<sup>a</sup>, this lifting occurring before any swinging or rocking movement of the rocking member with respect to the fixed member occurs. During this action of the cam produced by the operator with his feet upon the pedal, 26, the operator grasping the ends of the lever arms, 13, of the pallet clamp in his hands together with the ends of the handles, 10, and holding them firmly pressed toward each other, is able to hold the pallet firmly down upon the top of the fixed member of the mold,—that is, upon the top of the partition plates,—because his grasp will take up the movement upward of the handles, 10, which will rise with the upward movement mentioned of the rocking member; and the links, 19, constituting a positive connection of the rock shaft of the pallet clamp with the fixed member of the mold, prevent that end of the clamp from rising. The bricks will thus be compressed to the extent of the direct rising movement caused by the cams the amount of said increment, 23<sup>a</sup>, and will be thus forced into conformity with the under side of the pallet. The bearings of the rock shaft, 12, in the rocking member are elongated vertically, as seen at 12<sup>a</sup>, to accommodate the direct upward movement described of said rocking member.

I claim:—

1. A brick-molding machine comprising a stationary member having opposite side

walls and one end wall of the mold, and a movable member pivoted to the fixed member having the other end wall and the bottom of the mold; a pallet constituting the top of the mold and adapted to be lodged upon the fixed member without other positive support, and means for pressing the pallet toward the bottom of the mold.

2. A brick machine comprising a fixed member and a movable member pivoted thereto, the fixed member comprising opposite side walls and one end wall of the mold, the movable member comprising the other end wall and the bottom of the mold; a pallet which forms the top of the mold and adapted to be lodged upon the upper side of the fixed member without other positive support; means for pressing the pallet toward the bottom of the mold, the pivotal connection of the movable member with the fixed member being such as to permit said movable member to be moved directly upward a short distance before rocking at its pivotal connection, and means for so moving it.

3. A brick machine comprising a fixed member and a movable member pivoted thereto, the fixed member having two opposite side walls and one end wall of the mold, and the movable member having the other end wall and the bottom of the mold; a pallet forming the top or cover of the mold and adapted to be lodged upon the fixed member without other positive support; means for pressing the pallet toward the bottom of the mold, the pivotal action of the two members being such as to permit direct upward movement of the pivotal member without rocking; a cam located under the mold bottom adapted for crowding it upward, and means for operating the cam.

4. A brick-molding machine comprising a stationary member having opposite side walls and one end wall of the mold, and a movable member pivoted to the fixed member having the other end wall and the bottom of the mold; a pallet constituting the top of the mold and adapted to be lodged upon the upper side of the fixed member and otherwise unsupported, the pivoted member having handles for rocking it, and means for pressing the pallet toward the bottom of the mold.

5. A brick-machine comprising a fixed member and a movable member pivoted thereto, the fixed member comprising opposite side walls and one end wall of the mold, the movable member comprising the other end wall and the bottom of the mold; a pallet which forms the top of the mold and adapted to be lodged upon the upper side of the fixed member and otherwise unsupported, the pivoted member having handles for rocking it and means for pressing the pallet toward the bottom of the mold, the pivotal connection of the movable member to the



fixed member being formed to permit said movable member to be moved directly upward a short distance before rocking at its pivotal connection, and means for so moving it.

6. A brick machine comprising a fixed member and a movable member pivoted thereto, the fixed member having the two opposite side walls and one end wall of the mold, and the movable member having the other end wall and the bottom of the mold; a pallet forming the top or cover of the mold and adapted to be lodged upon the top of the fixed member and otherwise unsupported, the movable member having handles for rocking it and means for pressing the pallet toward the bottom of the mold, the pivotal connection of the two members being such as to permit direct upward movement of the pivoted member without rocking; a rock shaft extending under the bottom of the mold, and a cam thereon operating on the mold bottom for crowding it upward, and means for rocking the shaft to operate the cam.

7. A brick machine comprising a fixed member and a movable member pivoted thereto, the fixed member having two opposite side walls and one end wall of the mold, and the movable member having the other end wall and the bottom of the mold; a pallet forming the top of the mold and adapted to be lodged upon the upper side of the fixed member and otherwise unsupported; the movable member having handles for rocking it and a pallet clamp for pressing the pallet toward the bottom of the mold having its handle ends in position to be grasped simultaneously with the rocking handles, the pivotal connection of the movable member to the fixed member being such as to permit direct upward movement of the pivoted member before rocking, and foot-operated means for giving the movable member such direct upward movement.

8. A brick machine comprising a fixed member and a movable member pivoted thereto, the fixed member having two opposite side walls and one end wall of the mold, and the movable member having the other end wall and the bottom of the mold; a pallet forming the top of the mold, adapted to be lodged upon the top of the fixed member and otherwise without positive support; the movable member having handles for rocking it; a pallet clamp pivoted at one side of the mold to the movable member and having handles extending in position to be grasped together with the corresponding rocking handles of said member, the pivotal connection of the movable member to the fixed member being adapted to permit direct upward movement of the pivoted member before rocking; foot-operated means for giving it such direct upward movement, the pivot

bearings of the pallet clamp being elongated vertically, and controlling links positively connecting the pivot of the clamp with the fixed member for preventing upward movement of the pivot when the movable member is moved upward.

9. A brick-molding machine comprising a fixed member and a movable member, the fixed member having two opposite side walls and one end wall of the mold, and the movable member having the other end wall and the bottom of the mold, the pallet constituting the top or cover of the mold and adapted to be lodged upon the fixed member and otherwise unsupported; links pivoted at one end to the fixed member and having the movable member pivoted to them at the other end and constituting the pivotal connection of the movable member to the fixed member; cams operating respectively upon said links and the movable member for forcing them upward, and means for operating the cams simultaneously; handles for rocking the movable member, and means for holding the pallet down during the action of the cams.

10. A brick-molding machine comprising a fixed member and a movable member, the former having two opposite sides and one end wall of the mold, and the latter having the other end wall and the bottom, the pallet constituting the top of the mold and adapted to be lodged upon the fixed member and otherwise without positive support; links pivoted at one end to the fixed member and having the movable member pivoted to them at the other end for rocking with respect to the fixed member; cams acting respectively upon the said links and the movable member to force them upward, and means for operating the cams; handles for rocking the movable member; a pallet clamp pivoted to the movable member, and links connecting its pivot positively with the fixed member, said pallet clamp having handles extending in position to be grasped simultaneously with the handles for rocking the movable member.

11. A brick machine comprising a fixed member and a movable member pivoted thereto, the fixed member having the two opposite side walls and one end wall of the mold, and the movable member having the other end wall and the bottom of the mold; a pallet forming the top or cover of the mold and adapted to be lodged upon the top of the fixed member and otherwise unsupported, the movable member having handles for rocking it and means for pressing the pallet toward the bottom of the mold, the pivotal connection of the two members being such as to permit direct upward movement of the pivoted member without rocking; a cam operating on the mold bottom for crowding it upward, and means for operating such cam.



12. A brick machine comprising a fixed member and a movable member pivoted thereto, the fixed member having the two opposite side walls and one end wall of the mold, and the movable member having the other end wall and the bottom of the mold; a pallet forming the top or cover of the mold and adapted to be lodged upon the top of the fixed member and otherwise unsupported; means for pressing the pallet toward the bottom of the mold; means for rocking the movable member about its pivot, the pivotal connection of the two members being such as to

permit a slight direct upward movement of the movable member without rocking; a device operating on the bottom of the mold for crowding it upward, and foot-operated connections for operating said device. 15

In testimony whereof, I have hereunto set my hand, in the presence of two witnesses, at Minneapolis, Minnesota, this 14th day of November, 1908. 20

CHARLES SIMPSON.

In the presence of—

C. E. STANLEY,

C. D. RUSSELL.