

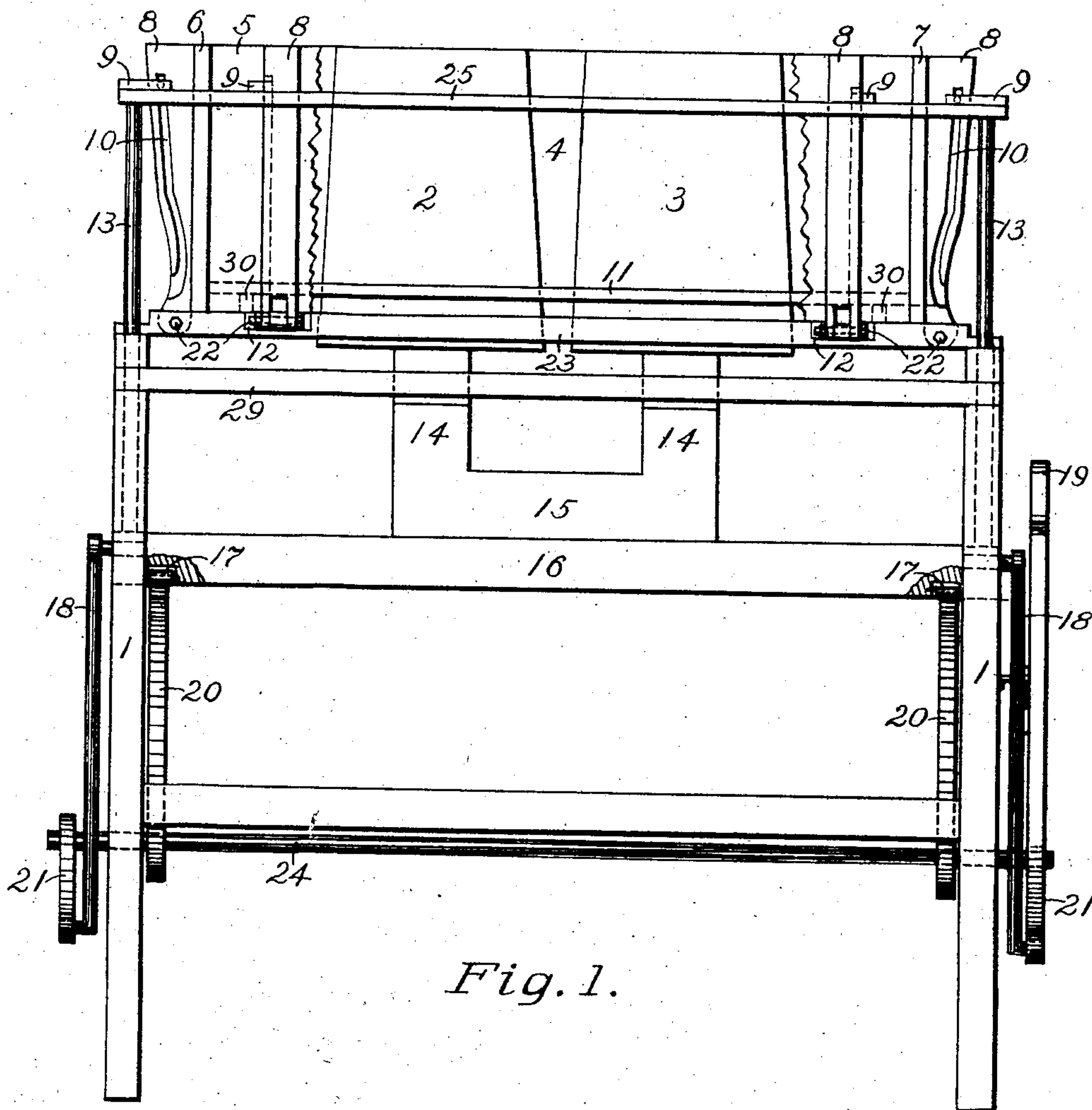
No. 786,249.

PATENTED MAR. 28, 1905.

J. F. DUNHAM.
MACHINE FOR FORMING CONCRETE BUILDING BLOCKS.

APPLICATION FILED JULY 21, 1904.

2 SHEETS—SHEET 1.



WITNESSES:

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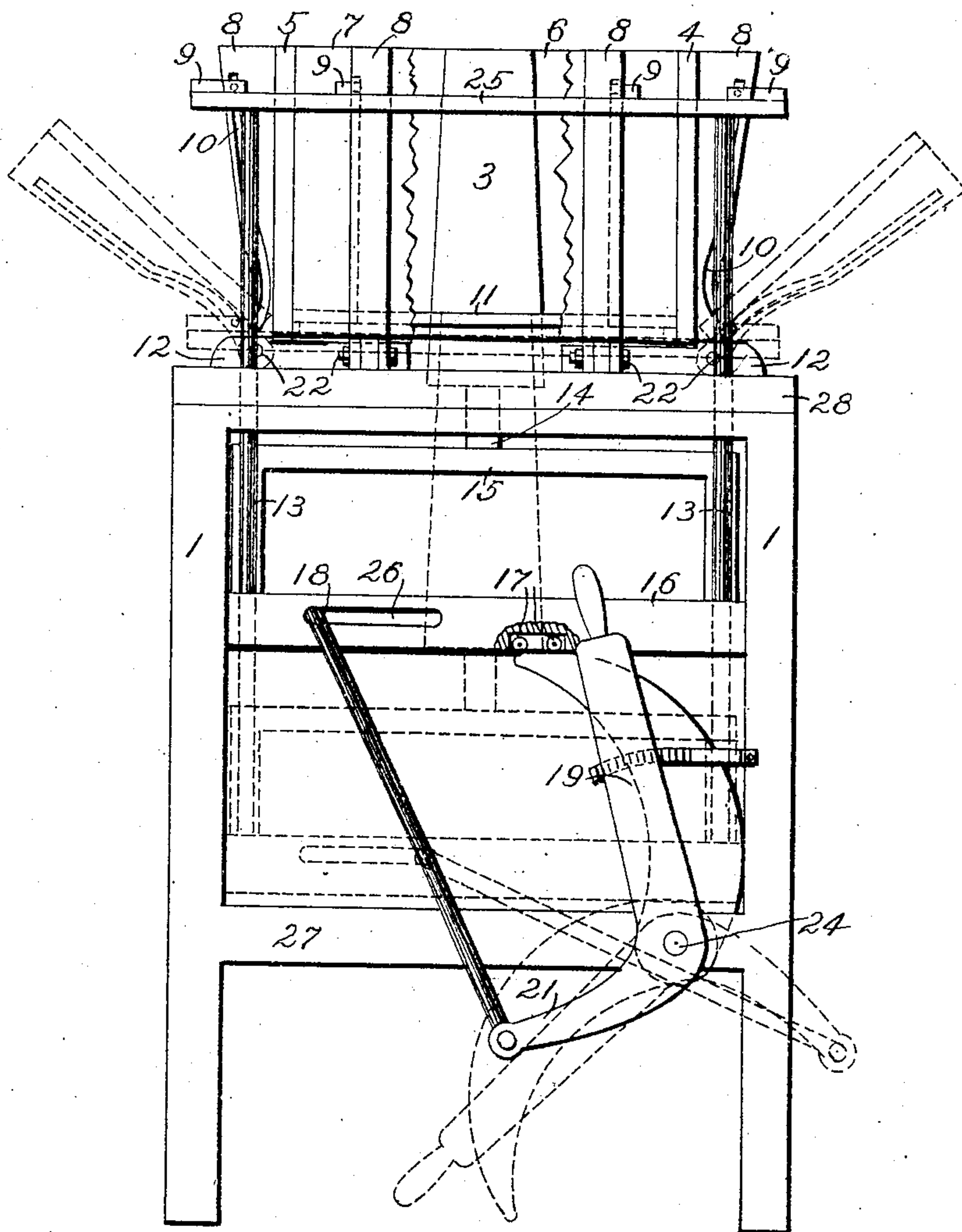


Fig. 2.

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UNITED STATES PATENT OFFICE.

JAMES F. DUNHAM, OF WATERLOO, IOWA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WATERLOO CONCRETE BRICK & BLOCK MACHINE COMPANY, OF WATERLOO, IOWA.

MACHINE FOR FORMING CONCRETE BUILDING-BLOCKS.

SPECIFICATION forming part of Letters Patent No. 786,249, dated March 28, 1905.

Application filed July 21, 1904. Serial No. 217,454.

To all whom it may concern:

Be it known that I, JAMES F. DUNHAM, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Machines for Forming Concrete Building-Blocks, of which the following is a specification.

My invention relates to improvements in machines for forming concrete building-blocks; and the objects of my invention are to greatly simplify the construction of the operating parts, and especially to adopt such a method of operation and form of inclosure as will perfectly actuate the movable parts of the mold, strengthen and support the mold sides and ends, and always render them certain and accurate in registration, free them from vibration or distortion when the contents of the mold are being tamped, and thus insure the making of blocks of the same exactness of form and measurement throughout. These objects I have attained by the mechanism which is hereinafter described and claimed and which is illustrated in the drawings hereto annexed, in which—

Figure 1 is a side elevation of my machine; and Fig. 2 is an end elevation of the same, parts being shown broken away in both views in order to better disclose the internal construction.

Similar reference-numerals refer to similar parts throughout both views.

The actuating parts of my said machine are, as I have heretofore stated, exceedingly simple and strong in their construction, and therefore not liable to breakage, while easily accessible and interchangeable. Said actuating parts are mounted upon and within a machine-frame made up principally of the uprights 1 and cross-bars 27, 28, and 29.

The mold consists of a removable bed-plate 11, resting on lugs 30, and of the pivoted drop sides 4 and 5 and of the pivoted drop ends 6 and 7. Cores 2 and 3, which are arranged to be reciprocated vertically, are projected upward into the interior of the mold through openings in the bed-plate 11. These cores are

supported upon uprights 14, which in turn are supported by the boxing 15 on the rectangular horizontal frame 16. The latter rests upon and is reciprocated vertically by the crescent-shaped cams or smooth-faced sectors 20, the latter being mounted at their lower parts on the shaft 24, which is rotatable in bearings in the cross-bars 27. Antifriction-rollers 17 are mounted in the lower part of the frame 16 in such a location as to form anti-friction-bearings for the said sectors' outer surfaces or circumferences. The said sectors are mounted within the frame; but, if desired, they could be otherwise placed, whether nearer the center of the machine or without its frame. In the latter case the frame 16 would be extended beyond the machine-frame 1. The short arms 21 are mounted on the outer ends of the shaft 24, and links 18, bearing studs on each end, have such studs respectively inserted in the slots 26 in the frame 16 and in the bearings in the outer ends of said arms 21. A handle 19 is connected to and extends upwardly from one of the short arms 21.

Each of the sides 4 and 5 and the ends 6 and 7 have supporting-ribs 8. Each of such ribs have on their outer sides a cam-shaped groove 10, within which work pegs or studs extending into them from the blocks 9 on the vertically-movable rectangular frame 25. Said frame 25 incloses or surrounds the mold and is spaced away a sufficient distance therefrom to permit the sides and ends of the mold to move and drop within it. The frame 9 is supported on uprights 13, which are arranged to be connected at their lower ends to the frame 16 and be reciprocated therewith. The ribs 8 are pivoted at their lower ends on bolts 22, set in the bearings 12. As will be seen, the side bearings 12 are removable, which permits a widening of the mold or change of sides.

The operation of my improved machine is as follows: To open the machine after the mold has been tamped full of the proper material and a block has been formed therein, the handle 19 is forced downward, when the movable parts assume the positions indicated by the dotted lines in Fig. 2. The frame 16

is lowered, with the cores 2 and 3, while simultaneously the frame 25 is dropped to the bases of the mold sides. The pegs on the blocks 9, traveling in the cam-grooves 10, 5 cause the gradual lowering of the sides and ends of the molds without shock or disturbance to the newly-formed block. When the handle has arrived at its lowest limit, the mold is fully opened and the block free and in position to be readily removed from the machine. 10 The machine is closed by raising the handle, thus reversing the process already described. It will be seen that when the frame 25 has arrived at its highest position its inner edges 15 coincide with and firmly contact with and hold together the outer portions of the wedge-shaped ribs 8. The result is that the strong support thus afforded to each end of each side and end plate of the mold causes them to register perfectly and make it practically impossible for the plates to give under the pressure caused by the tamping of the material in the mold. Blocks of exact form and measurement may be then certainly formed, which 25 cannot be done with other machines not so firmly supported, where the pressure is liable to and does nearly always distort the mold enough to cause a constant variation in the sizes of the blocks—a very unsatisfactory result for builders. 30

The method of actuating the machine by means of a smooth-faced sector (or a cam could be used in lieu thereof, if desired, to make the initial movement of the side and end 35 plates of the mold slower than the succeeding movement) has the effect of lessening friction and doing away with cogs, and when cog-wheels are used it has been found that the gritty material will lodge between the cogs, 40 greatly increasing friction and causing breakage and excessive wear.

The parts of the machine are nearly all interchangeable, of simple form, and free from complexity, strong, and readily accessible.

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

1. A machine for forming concrete building-blocks, consisting of a mold having pivoted sides and ends, a removable bed-plate, 50 grooved ribs on said side and end plates, a frame surrounding said mold, studs connected to said frame and adapted to move within the grooves on said ribs, and means for reciprocating said frame, substantially as described. 55

2. A machine for forming concrete building-blocks, consisting of a mold having pivoted sides and ends, a removable bed-plate, 60 grooved ribs on said side and end plates, a frame surrounding said mold, studs connected to said frame and adapted to move within the grooves in said ribs, means for reciprocating said frame, and adjustable bearings for said side plates, substantially as described.

65 3. A machine for forming concrete build-

ing-blocks, consisting of a mold having pivoted drop sides and ends, a removable perforated bed-plate, movable cores in said mold, means for reciprocating said cores through the perforations in said bed-plate, grooved 70 ribs on said side and end plates, a frame surrounding said mold connected to and reciprocated by the same means as the cores, and studs connected to said frame adapted to move within the grooves in said ribs, substantially 75 as described.

4. A machine for forming concrete building-blocks, consisting of a supporting machine-frame, a mold having pivoted drop sides and ends, a plurality of ribs thereon, a removable perforated bed-plate, movable cores in said mold, a slotted frame-support for said 80 cores, a shaft mounted in the machine-frame, arms affixed to said shaft, links pivoted at their lower ends to said arms and having their 85 upper ends provided with studs adapted to slide in the slots in said frame-support, sectors mounted on said shaft and adapted to reciprocate said frame-support, means for rotating said shaft, uprights connected to said 90 frame-support, a frame surrounding said mold and supported by said uprights and arranged to contact slidably with the ribs on said mold, substantially as described.

5. A machine for forming concrete building-blocks, consisting of a supporting machine-frame, a mold having pivoted sides and ends, a plurality of grooved ribs thereon, a removable perforated bed-plate, movable 95 cores in said mold, a slotted frame-support for said cores, a shaft mounted in the machine-frame, arms affixed to said shaft, links pivoted at their lower ends to said arms and having their upper ends provided with studs adapted to slide in the slots in the said frame-support, 105 sectors mounted on said shaft and adapted to reciprocate said frame-support, means for rotating said shaft, uprights connected to said frame-support, a frame surrounding said mold supported by said uprights and being provided with studs adapted to move within the 110 grooves in the ribs on said mold, substantially as described.

6. A machine for forming concrete building-blocks, consisting of a supporting machine-frame, a mold having pivoted drop sides and ends, a plurality of grooved ribs thereon, a removable perforated bed-plate, movable 115 cores in said mold, a slotted frame-support for said cores, a shaft mounted in the machine-frame, arms affixed to said shaft, links pivoted at their lower ends to said arms and having their upper ends provided with studs adapted to slide in the slots in the said frame-support, sectors mounted on said shaft and 125 adapted to reciprocate said frame-support, antifriction-rollers between the said sectors and the said frame-support, means for rotating said shaft, uprights connected to said frame-support, a frame surrounding said 130

mold, supported by said uprights and provided with studs adapted to move within the grooves in the ribs on said mold, substantially as described.

5 7. A machine for forming concrete building-blocks, consisting of a supporting machine-frame, a mold having pivoted drop sides and ends, a plurality of grooved ribs thereon, adjustable bearing-blocks for said ribs, a re-
10 movable perforated bed-plate, movable cores in said mold, a slotted frame-support for said cores, a shaft mounted in the machine-frame, arms affixed to said shaft, links pivoted at their lower ends to said arms and having their
15 upper ends provided with studs adapted to slide in the slots in the said frame-support,

sectors mounted on said shaft and adapted to reciprocate said frame-support, antifriction-rollers between the said sectors and the said frame-support, means for rotating said shaft, 20 uprights connected to said frame-support, a frame surrounding said mold, supported by said uprights and provided with studs adapted to move within the grooves in the ribs on said mold, substantially as described. 25

Signed at Waterloo, Iowa, this 15th day of July, 1904.

JAMES F. DUNHAM.

Witnesses:

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L. R. BENNETT.