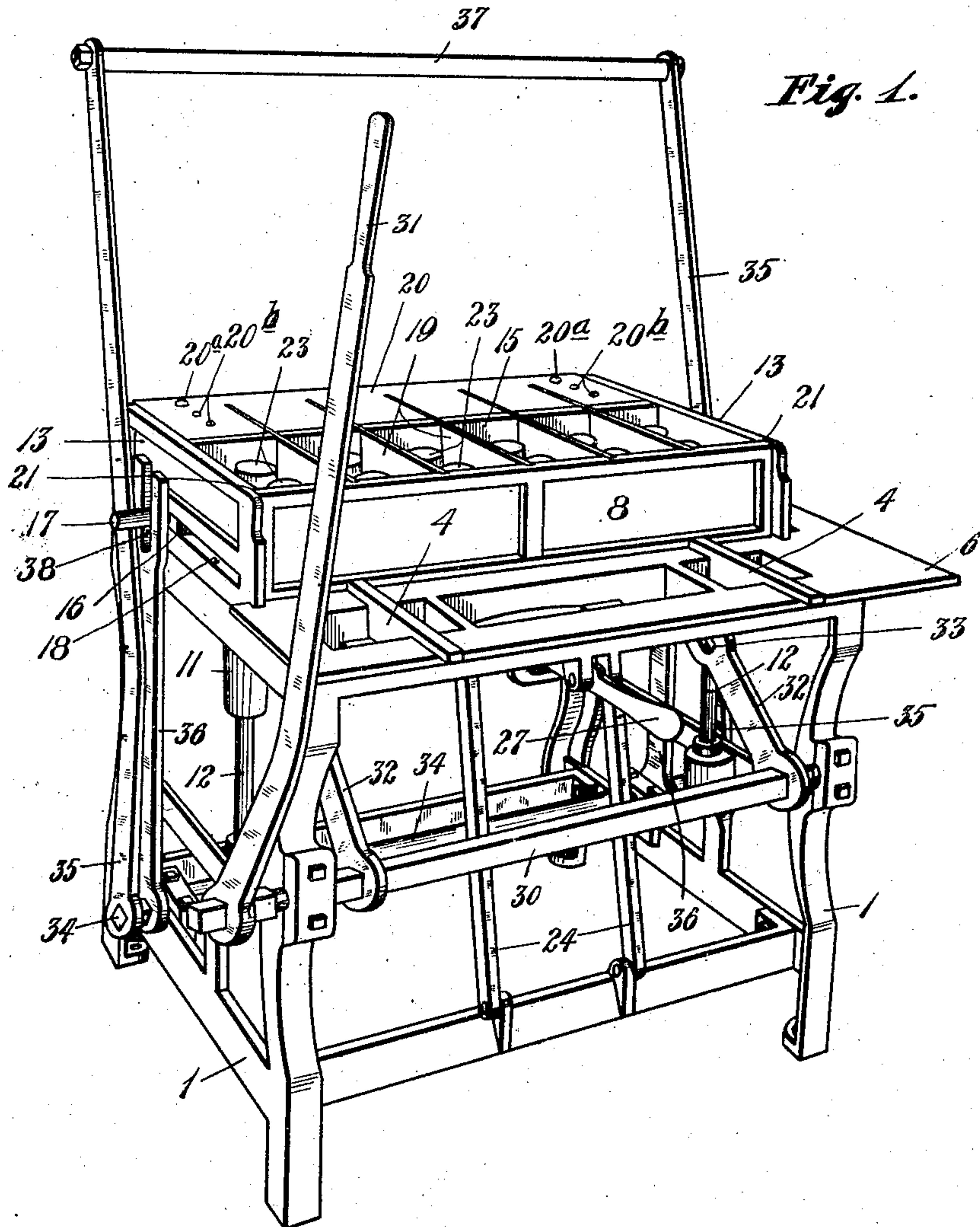


No. 842,412.

PATENTED JAN. 29, 1907.

J. MILLER.
BRICK MACHINE.
APPLICATION FILED MAR. 7, 1906.

2 SHEETS--SHEET 1.



Witnesses.

Е. В. Зерцалов.

A. H. Osahl.

Inventor:
John Miller.
By his Attorneys.

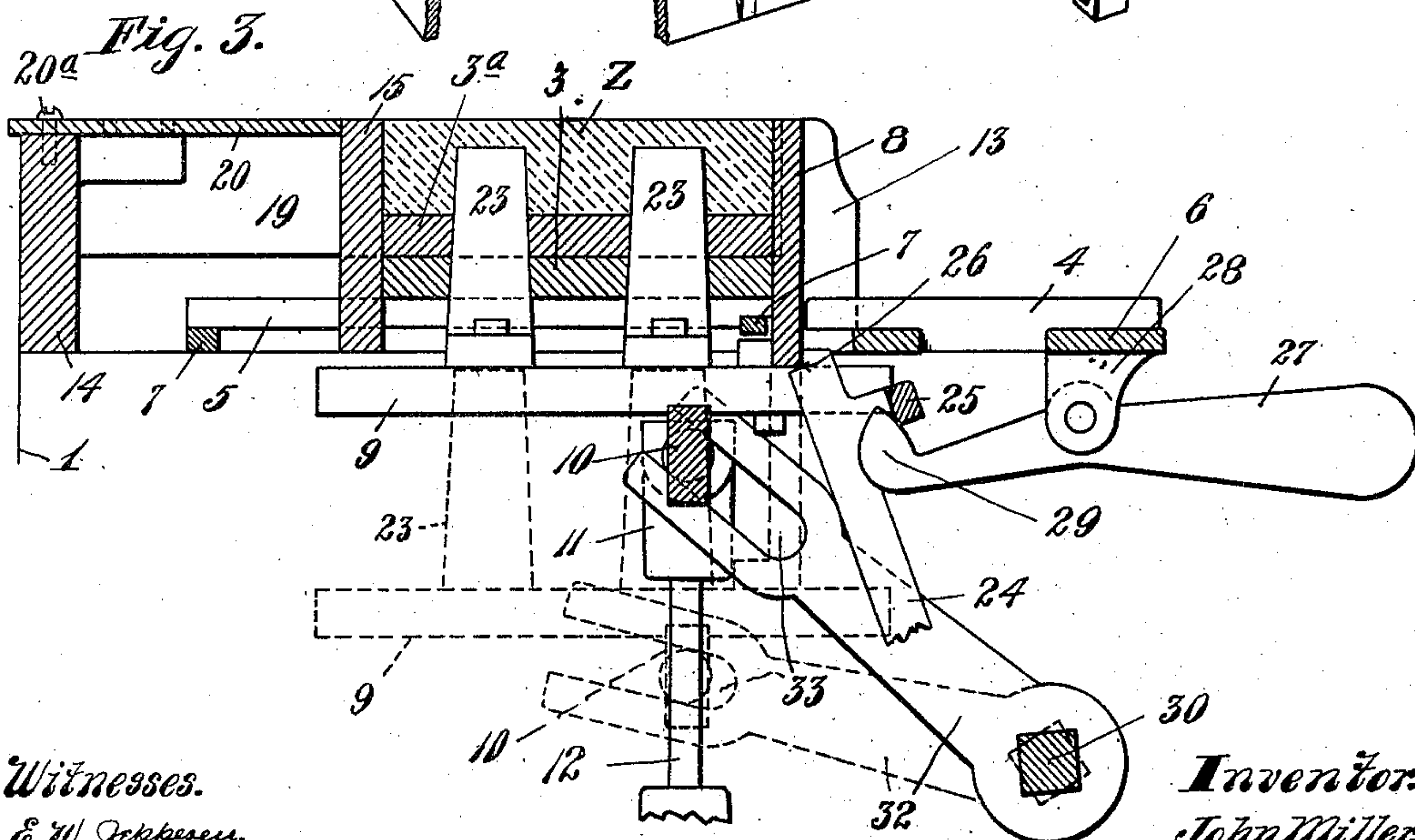
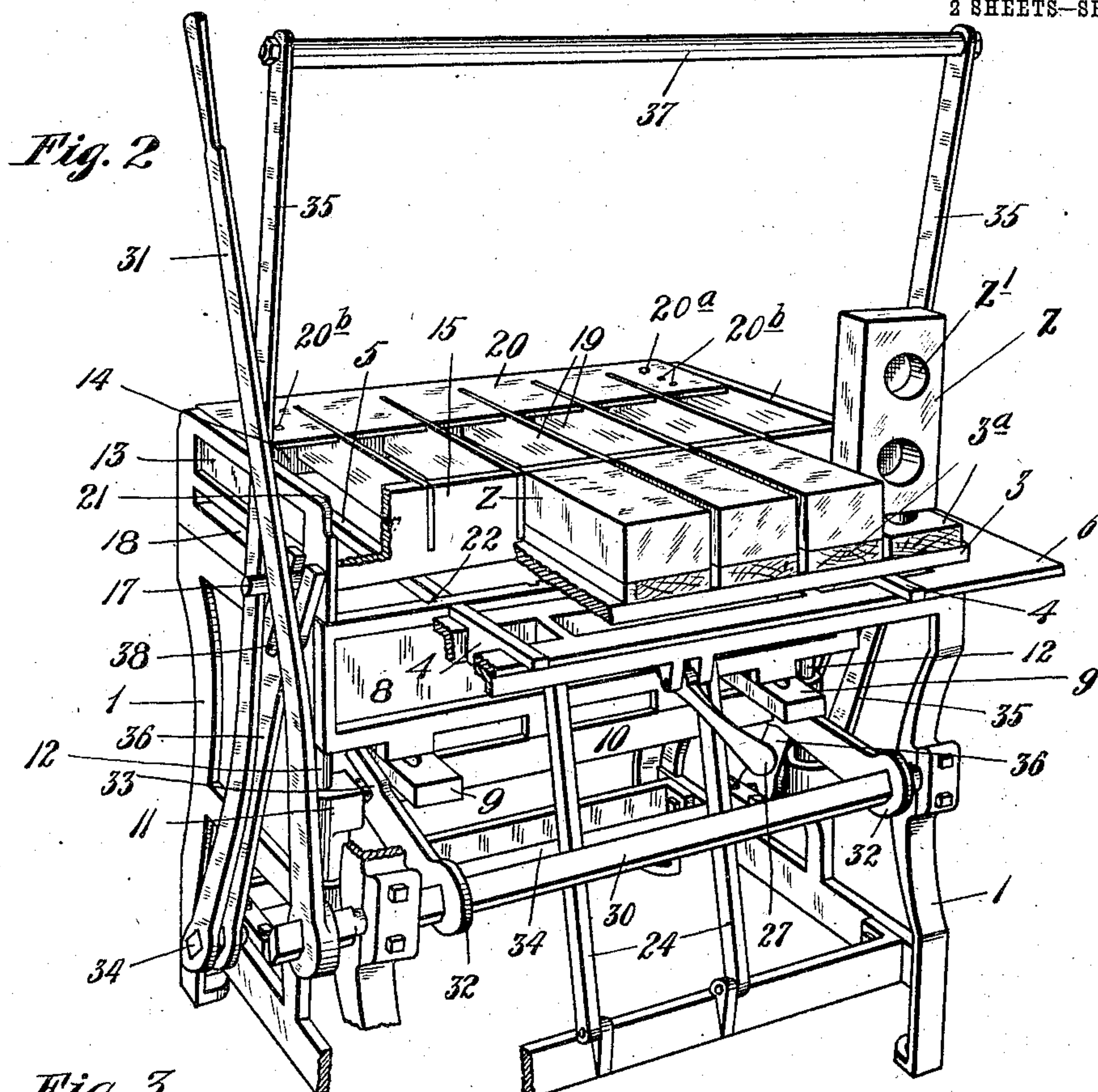
William Merchant

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2 SHEETS—SHEET 2.



Witnesses.

E. W. Jeppesen.

A. H. Opsahl.

Inventor.

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UNITED STATES PATENT OFFICE.

JOHN MILLER, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO WINNER
BLOCK MACHINE COMPANY, A CORPORATION OF MINNESOTA.

BRICK-MACHINE.

No. 842,412.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed March 7, 1906. Serial No. 304,655.

To all wh. n it may concern:

Be it known that I, JOHN MILLER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Brick-Machines; 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 has for its especial object to provide an improved machine for making concrete or sand bricks and blocks; and to the above ends the invention consists of the novel devices and combinations of devices herein-after described, and defined in the claims.

The improved machine is illustrated in the accompanying drawings, wherein like characters indicate like parts throughout the several views.

Referring to the drawings, Figure 1 is a perspective view showing the machine with the parts of the flask or mold-box in position for molding. Fig. 2 is a similar perspective view, but with some parts broken away and showing the formed bricks forced out of the compartments of the flask; and Fig. 3 is a vertical section, taken from front toward the rear, through a portion of the machine, some parts being broken away.

The numeral 1 indicates a suitable skeleton framework, the top of which serves to support a removable pallet-board 3 and for that purpose is, as shown, provided with rails or bars 4 5. The rail-sections 4 are, as shown, rigidly secured on a table-like forward extension 6 of the frame 1, and the rail-sections 5 are, as shown, directly secured to transverse bars 7, which in turn are secured at their ends to the side brackets of the frame 1. The corresponding rail-sections 4 and 5 are alined with each other, but are spaced apart to permit the passage between them of a vertically-movable flask-plate 8. This flask-plate 8 is, as shown, rigidly secured to a pair of elongated blocks 9, which in turn are rigidly secured to a transverse bar 10. At its ends the bar 10 is provided with vertically-disposed bearing-sleeves 11, that slide loosely upon vertical guide-rods 12, rigidly secured at their upper and lower ends to the side brackets of the frame 1. The vertically-movable drop-plate 8 constitutes the front plate of the flask. The side plates 13 of the flask are, as shown, formed as extensions of the side

brackets of the frame 1, and they are rigidly connected at their rear ends by a vertical cross-plate 14. The rear plate 15 of the flask is mounted to slide from the rear toward the front of the machine, and vice versa, and to this end it is provided at its ends with reduced squared portions 16 and projecting trunnions 17. The squared portions 16 work in horizontal slots 18, formed in the plates 13, and hold the plate 15 in a vertical position through its movements from the rear toward the front of the machine, and vice versa.

The flask is divided into a plurality of small molds of the proper size to form the bricks *z* by means of vertically-disposed partition-plates 19, that are rigidly attached at their rear ends to the transverse plate 14, and they are braced to a considerable extent by a notched stop-plate 20, which is adjustably secured to said plate 14, as shown, by means of screws 20^a, that are adapted to be passed through any of several perforations 20^b in said plate 20. The laterally-movable flask-plate 15, as will hereinafter more fully appear, serves as a stripper or ejector to push the formed blocks out of the compartments of the flask. This ejector-plate 15 is provided with vertical slots that receive and closely fit the several partition-plates 19 and permit the said plate 15 to move laterally and all the time to maintain engagement with the said partition-plates. The drop-plate 8 at its ends works against shoulders 21, formed at the forward edges of the side plates 13, and on its inner face it is provided with notches 22, that receive the forwardly-projecting edges of the partition-plates 19 when said plate 8 is raised.

The bottom of the flask is formed by the detachable pallet-board 3, before noted, which board in the present instance is provided with a plurality of small pallets 3^a. The pallets 3^a are of the same size in plan as the bricks *z*, and they are spaced apart far enough to permit the lower edges of the partition-plates 19 to enter between them.

The bricks are preferably formed with cavities *z'*, and hence the cores 23 are provided. These cores 23, of which there are two for each brick-forming compartment in the flask, are secured in pairs to the vertically-movable supporting-blocks 9, and they are adapted to be passed through suitable perforations formed in the board 3 and pallets 3^a.

When the drop-plate 8 is raised, as shown

in Figs. 1 and 3, it is held in that position by a latch-frame 24, which is pivoted at its lower portion to a transverse bar of the frame 1 and is, as shown, provided with a pair of prongs, the upper ends of which are tied together by a bar 25, and are provided with notches 26, which notches engage with the lower edge of said plate 8, as clearly shown in Fig. 3. Gravity serves to throw the latch-frame 24 into operative position; but to release the same from the plate 8 I provide a trip-lever 27, pivoted to lugs 28 on the table-section 6 of the frame 1. At its inner end the lever 27 is provided with a cam-nose 29, that engages the bar 25 of the latch-frame 24, so that when the outer end of said lever 27 is pressed downward said latch-frame will be forced into an inoperative position, and thereby permit the plate 8 and cores 23 to drop into inoperative position. (Shown by dotted lines in Fig. 3 and by full lines in Fig. 2.) By reference to Fig. 3 it will be seen that when the plate 8 is in normal position it is passed upward between the abutting ends of the rail-sections 4 and 5.

Extending transversely of the machine, below the table 6 and journaled in suitable bearings in the frame 1 is a rock-shaft 30, which at one projecting end is provided with an operating-lever 31 and at its intermediate portion is provided with a pair of arms 32, having slotted free ends 33, that engage with the rounded portions of the vertically-movable bar 10. By a forward movement of the lever 31 the bar 10, and hence the drop-plate 8 and cores 23, will be raised to normal positions. (Shown by full lines in Fig. 3.) Also extending transversely of the machine and mounted in suitable bearings on each lower portion of the frame 1 is another rock-shaft 34, which at each end is provided with a long arm 35 and a shorter arm 36. The free ends of the two arms 35 are connected by a tie-rod 37, so that said arms and rod constitute a bail by means of which the shaft 34 may be rocked. The upper ends of the arms 36 are slotted at 38 and engage with the projecting trunnions 17 of the ejector-plate 15.

By reference to Fig. 3 it will be seen that when the cores 23 are in their raised positions they stand considerably below the upper edge of the flask made up of the plates 8, 13, 15, and 19. It will also be seen that said plates all terminate at their upper edges in the same horizontal plane. With this construction, therefore, the cavities z' in the bricks z will not extend completely through the bricks, but will leave the upper faces of the bricks flat or unbroken.

When the parts are in the position shown by full lines in Fig. 3, the flask is ready to be filled with the concrete or brick-forming material, which will usually be a wet mixture of sand and cement. The upper surfaces of the

several bricks may then be leveled off and smoothed down by a trowel, board, or other suitable device. (Not shown.) The bricks being thus formed, the operation of opening up the mold and discharging the several bricks therefrom is as follows: First, by pressing down on the free end of the trip-lever 27 the latch-frame 24 is thrown into an inoperative position, thereby releasing and allowing the drop-plate 8 and the cores 23 to drop into the inoperative position. (Shown by dotted lines in Fig. 3.) This being done, the next operation is to take hold of the bar 27 and by drawing the same forward cause the ejector-plate 15 to move forward into the position shown in Fig. 2. This forward movement of the ejector-plate 15 forces the board 3 and its pallets 3^a, together with the bricks that are formed in the several pallets, out of the several molds formed between the partition-plates 19. The bricks, together with the pallet-board, should then be carried away and the bricks set to dry. This being done, the ejector-plate 15 should be returned or moved backward to its normal position by a rearward movement of the arms 35 and 36. Then an empty pallet-board of the same character as that above described should be again forced into position to form the bottom to the flask, as shown in Fig. 3. Then by a forward movement of the lever 31 the plate 8 and cores 23 should be raised to their normal positions, where they will be again locked by the latch-plate 24. The flask of the machine is of course then ready for filling.

A machine above described has in practice been found extremely efficient for the purposes had in view. It is easy to operate, and bricks may be very rapidly formed therewith. It is important to note that the brick formed with the machine above described has four finished faces—to wit, one finished end, one finished flat face, and two finished edge faces. The finished end face is formed by a downward movement of the drop-plate 8, the finished flat or upper face is formed by a troweling action, and the two finished edge faces are formed by a forward movement of the brick against the engaging partition-plates 19 in certain instances and against one of the partition-plates and one of the end plates 13 in other instances. Generally stated, the machine is capable of producing high-grade bricks at a rapid rate of speed and at small cost.

Bricks of different length may be made in the machine, and to set the ejector-plate 15 in the different normal positions for this purpose the stop-plate 20 should be set in different positions on the plate 14, so as to partly intercept the rearward movements of the said plate 15. The thickness of the brick may be varied either by vertical adjustments of the rails 4 and 5 or by providing pallets 3^a of different thickness. Hence it

will be seen that so-called "Roman" bricks, which are long and thin, as well as bricks of standard dimensions, may be made in the machine.

5 What I claim is—

1. In a machine of the kind described, a flask having movable side plates, one of which is movable into a position out of line with the mold to permit the molded material to be ejected, and the other of which is movable laterally to eject the molded material, substantially as described.

2. In a machine of the kind described, a molding-flask having one wall-plate mounted to move vertically to and from operative position and having an opposite plate mounted to move laterally to and from operative position, its movement from operative position serving to eject the molded material, substantially as described.

3. In a machine of the kind described, a flask having one wall-plate mounted to move vertically to and from operative position, and having an opposite wall-plate mounted to move laterally to and from operative position, in combination with means for effecting a movement of said laterally-movable wall-plate to eject the molded material, while said vertically-movable wall-plate occupies its lower inoperative position, substantially as described.

4. In a machine of the kind described, a flask having fixed end plates and fixed partitions, and having movable side plates, one of which is movable vertically to and from operative position, and the other of which is movable laterally to eject the molded bricks while the first occupies its lower position, substantially as described.

5. In a machine of the kind described, the combination with a flask having one side plate mounted to move vertically, and an opposite side plate mounted to move laterally, of independent lever-actuated rock-shafts having connections to said two movable side plates, for imparting the respective movements thereto, substantially as described.

6. In a machine of the kind described, the combination with a flask having opposite side plates, one of which is movable vertically, and the other of which is movable laterally, of a latch for normally holding the vertically-movable plate in operative position, and independent lever-actuated rock-shafts having connections to said two movable side plates, for imparting the respective movements thereto, substantially as described.

7. In a machine of the kind described, the combination with a flask having opposite side plates, one of which is movable vertically, and the other of which is movable laterally, of a latch for normally holding said vertically-movable plate in operative position, a

trip-lever for releasing said latch-frame, and lever-actuated connections for imparting the respective movements to said two movable side plates, substantially as described.

8. The combination with a frame having sectioned platen-supporting rails, of a flask on said frame above said rails, said flask having fixed end plates and partitions, and movable side plates, one of which is movable vertically, between the sections of said rails, to and from operative position, and the other of which is movable laterally to eject the formed bricks and is slotted to embrace said partitions, and means for imparting the respective movements to said two movable side plates, substantially as described.

9. In a machine of the kind described, the combination with a frame and a flask mounted thereon, said flask having fixed end plates and partitions, and movable side plates, one of which is movable vertically through the platen-supporting portion of said frame, and the other of which is movable laterally to eject the bricks and the platen supporting the same, independent lever-actuated rock-shafts having connections for imparting the respective movements to said movable side plates, and a latch for normally holding said vertically-movable side plates in operative position, substantially as described.

10. In a machine of the kind described, the combination with a suitable framework adapted to support a platen, of a flask having fixed end plates and partitions, and movable side plates, said end plates having horizontal slots, one of said side plates being movable vertically through the platen-supporting portion of said frame, and the other of said side plates having angular portions working in the slots of said end plates, and being slotted to embrace the said partitions, a lever-actuated rock-shaft having parallel arms connected to the depending portions of said vertically-movable side plate, a second lever-actuated rock-shaft having parallel arms connected to end projections of the other movable side plate for moving the same laterally, and a latch normally holding said vertically-movable side plate in operative position, substantially as described.

11. In a machine of the character described, a molding-flask having one wall-plate mounted to move vertically to and from operative position, and having an opposite plate mounted to move laterally to eject the formed bricks, and an adjustable stop for variably intercepting the return movements of said laterally-movable ejector-plate, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN MILLER

Witnesses:

MALIE HOEL,
F. D. MERCHANT.