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PATENTED FEB. 5, 1907.

S. H. RICKARD.
MACHINE FOR MOLDING BUILDING BLOCKS.

APPLICATION FILED AUG. 9, 1906.

3 SHEETS—SHEET 1.

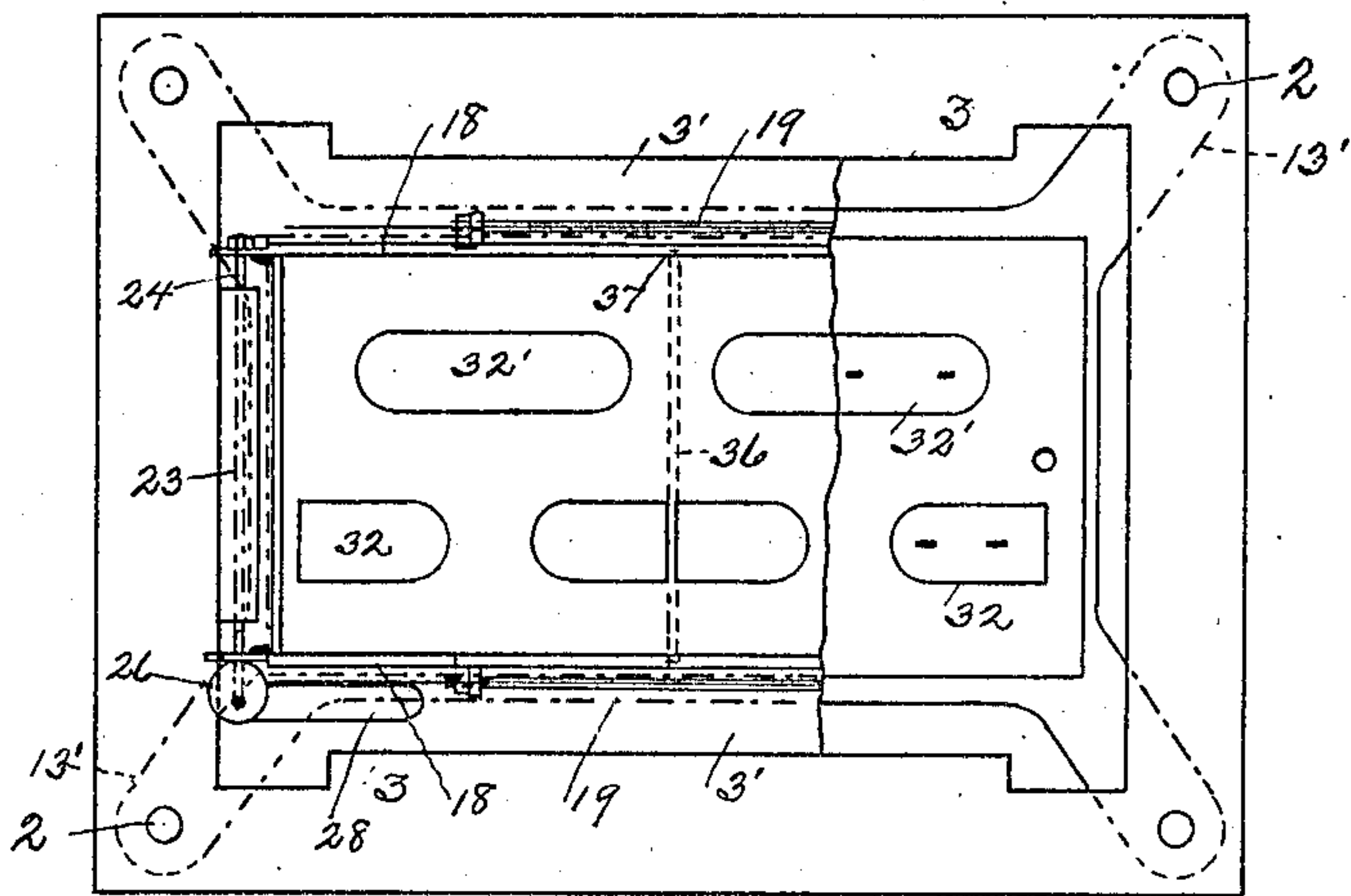


FIG. 2.

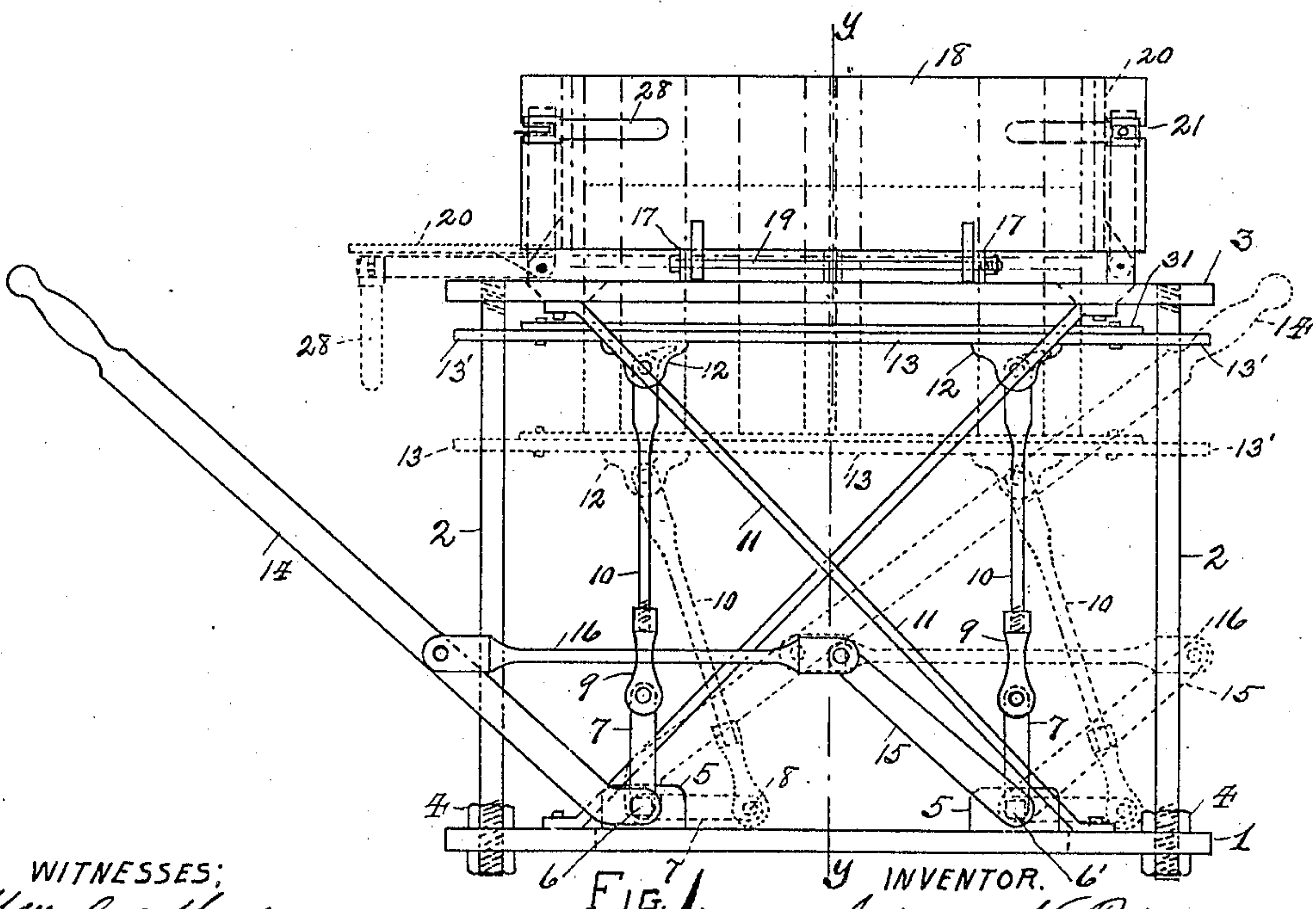


FIG. 1.

WITNESSES:

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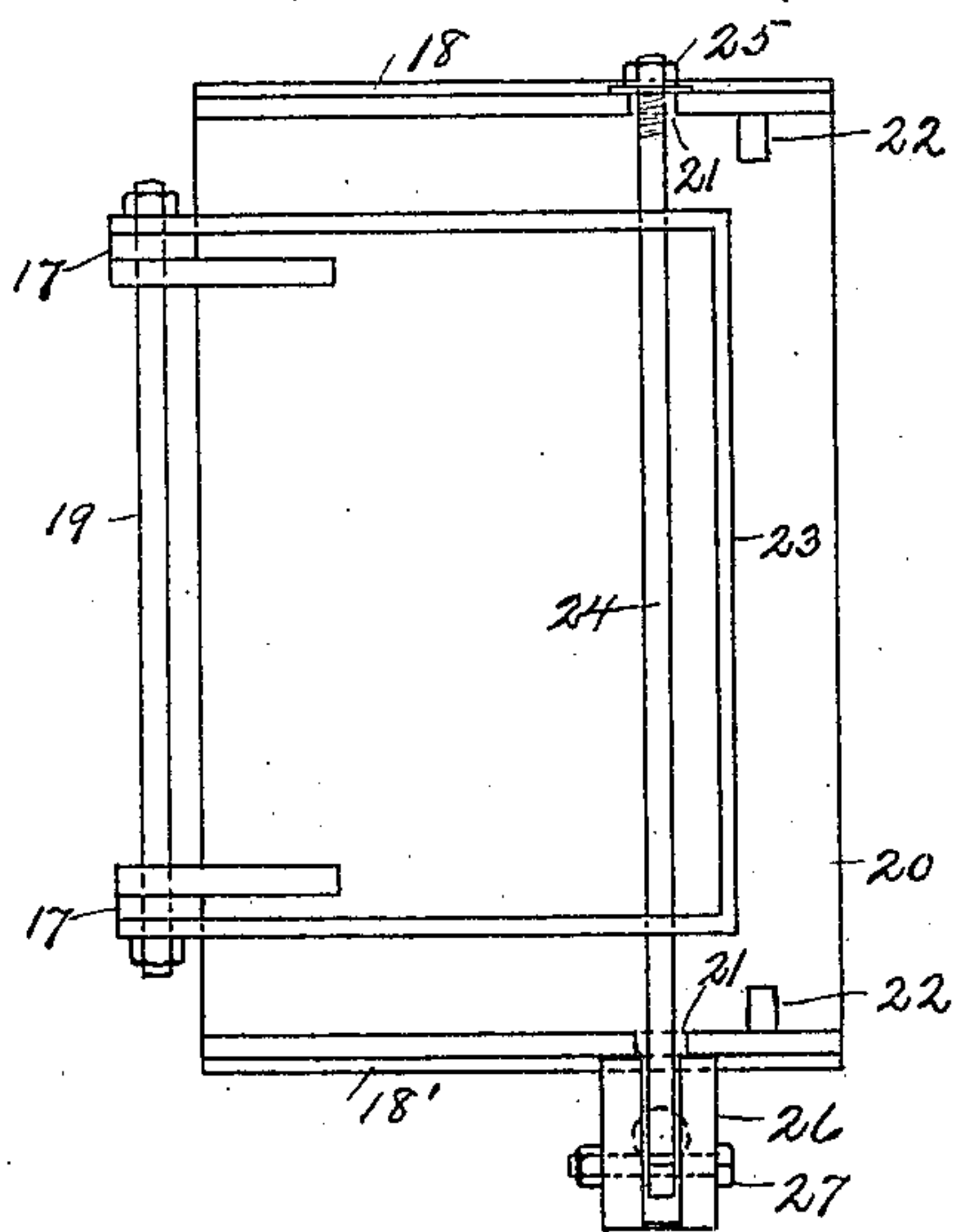


FIG. 4

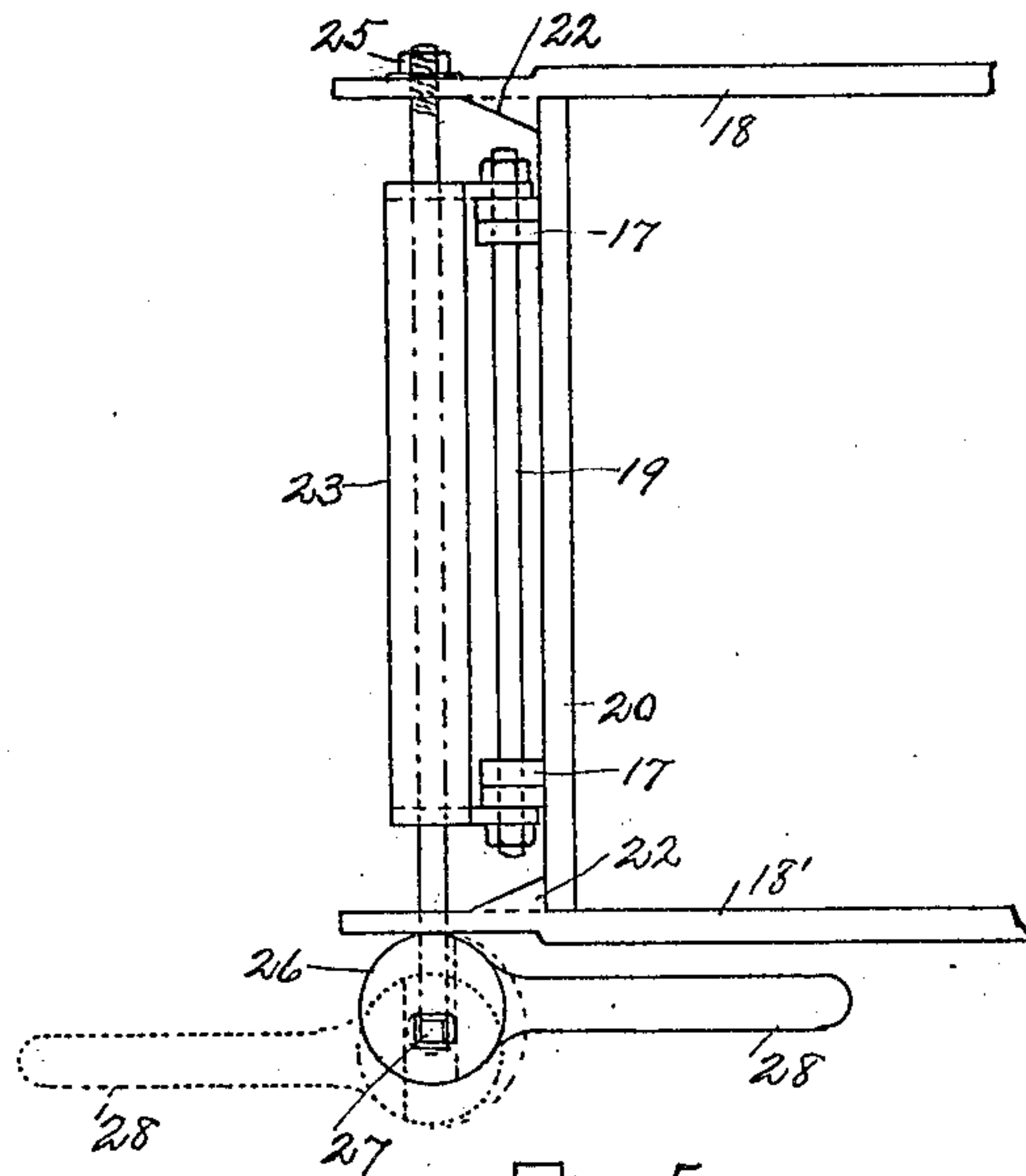


FIG. 5.

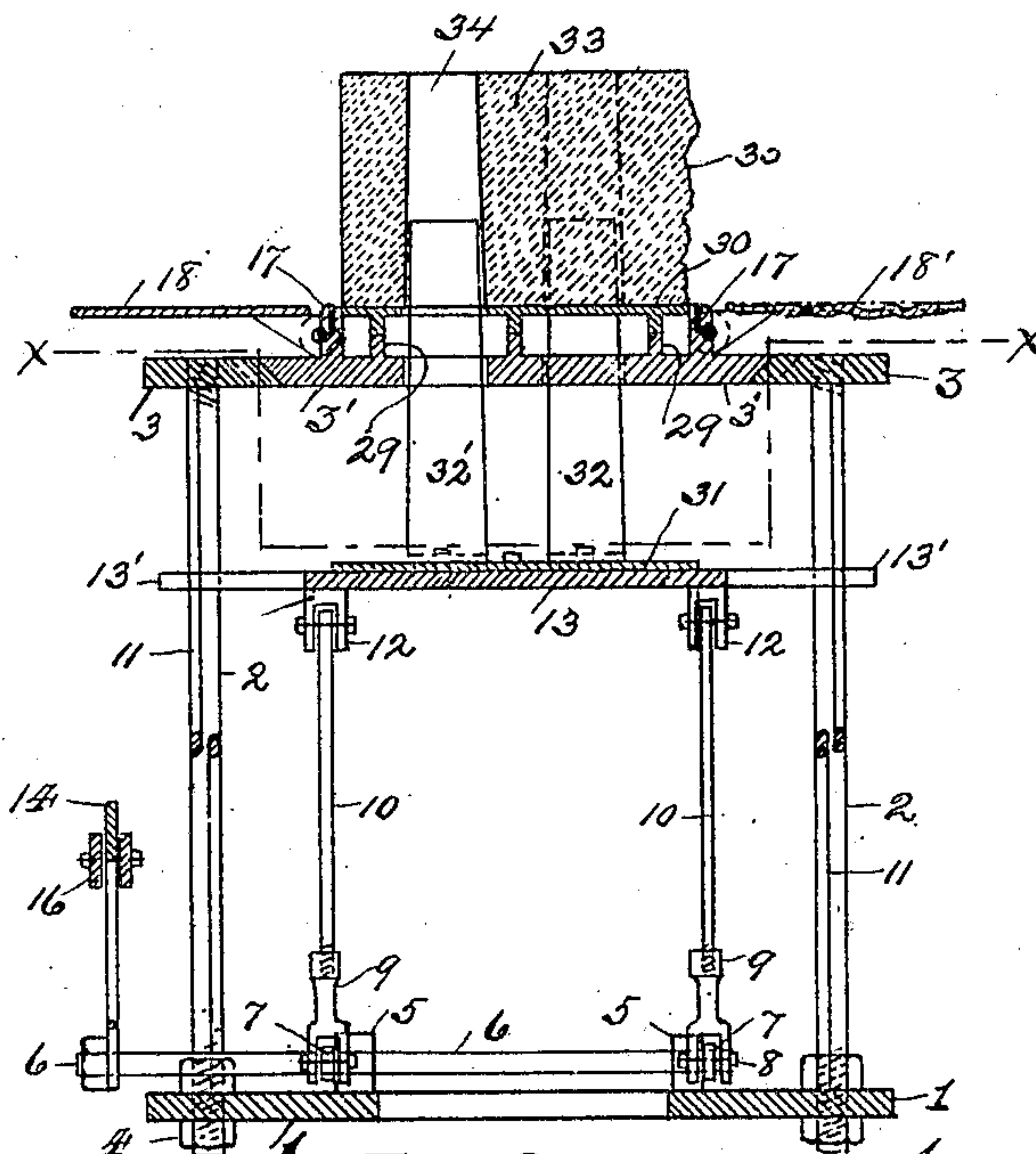


FIG. 3.

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SIMEON H. RICKARD, OF ALLEGHENY, PENNSYLVANIA.

MACHINE FOR MOLDING BUILDING-BLOCKS.

No. 843,176.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed August 9, 1906. Serial No. 329,817.

To all whom it may concern:

Be it known that I, SIMEON H. RICKARD, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Molding Building-Blocks, &c.; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to an improved machine for molding building-blocks, tile, bricks, and similar articles; and it comprises a frame supporting a table to which are attached hinged side and end walls to form a rectangular mold-box, a means for maintaining said walls in rectangular form, a removable follow-plate upon which the molded article is removed from the machine, a series of vertically-moving cores or partition-walls operating within said rectangular mold-box, whereby hollow blocks, &c., may be formed; and the invention further consists in the certain details of construction and combination of parts, as will be fully described hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of my improved apparatus for molding building-blocks, showing in dotted lines the altered position of the vertically-moving cores, together with the connected mechanism operating the same, the said apparatus being constructed and arranged in accordance with my invention. Fig. 2 is a sectional plan view of the same, said section taken on the line *x x* of Fig. 3. Fig. 3 is a sectional end elevation of the apparatus on the line *y y* of Fig. 1, showing the supplemental table in its lowered position. Fig. 4 is an enlarged end elevation of the mold-box, showing the means for holding the side and end walls in rectangular form. Fig. 5 is a plan view of the same. Fig. 6 is a perspective view of the mold-box separated from the apparatus in which vertically-moving partition or division walls or plates are used in place of cores, the mold in this form being adapted to the making of brick or tile. Fig. 7 is a similar view of a portion of the removable and interchangeable follow-plate used in this modified form of the mold. Fig. 8 is an inverted perspective view of the same.

Fig. 9 is an end elevation of the partition or dividing walls and follow-plate attached to the vertically-moving supplemental table.

To construct a molding-machine in accordance with my invention, whereby building blocks, bricks &c., may be molded from a mixture of sand and cement to form artificial stone, I provide a bed-plate 1, rectangular in form and of a suitable size and construction, to which are attached vertically-arranged standards 2, located at each angle of said plate and preferably attached by nuts 4, fitted to threaded ends of said standards. Connected to the upper ends of these standards 2 and supported thereon is a skeleton table comprising an oblong frame 3, the center being open to receive a removable plate 3', said plate being formed with inwardly-inclined or beveled edges which rest on registering inclined surfaces formed on the inner periphery of said skeleton table. The purpose and construction of said removable plate will be more fully described hereinafter.

Arranged in bearings 5, formed on the bed-plate 1, are two parallel horizontally-arranged rock-shafts 6 and 6', each of which is formed with two cranks 7, which are pivotally connected to adjusting-links 9, attached by screw-threads to bars 10, the upper extremities of which are journaled to bifurcated bearings 12, formed integral with a supplemental table 13, located beneath and parallel with the upper table 3 3'. This supplemental table is capable of vertical movement and is guided and supported laterally by extension-pieces 13' at each angle thereof, said extensions being formed with circular openings to engage with and move freely along the standards 2. This vertical movement of the supplemental table 13 is accomplished by fitting the rock-shaft 6' with a crank 15 and providing the other rock-shaft 6 with a hand-lever 14, said crank and lever being connected the one with the other by a connecting-bar 16 in such manner that by a movement of the hand-lever 14 to the position shown in dotted lines on Fig. 1 of the drawings the supplemental table will be brought down to a position also indicated on the same view or said table brought back to its normal position by a reverse movement of said hand-lever.

The removable and interchangeable plates 3', supported on the table 3, consists of an approximately rectangular piece of metal

formed with openings or slots at predetermined positions, through which cores or partitions freely pass, said cores comprising tapering hollow castings 32 32' of various shapes and form, which when elevated into the mold-box will form openings 34 in the building-blocks 33 for a purpose well known in the art. These cores or partition-plates are attached to a base-plate 31, which is secured to the supplemental table 13 by two bolts in such manner that they may be easily and quickly removed and other forms of cores or plates substituted to suit various styles of blocks or products of the machine.

Formed on the top surface of these above-mentioned removable plates 3' are longitudinally-disposed ribs 29, which support a follow-plate 30, said plate comprising a thin piece of metal which is formed with openings corresponding in contour, size, position, and number with the size, &c., of the cores or partitions for dividing or making hollow places in the blocks. At each side and end of the removable plate 3' and at proper positions are hinge-lugs 17, which are integral with said plate, said lugs being for the purpose of hinging sides 18 18' and end pieces 20 to form the mold-box. Each of these sides and ends of the mold-box are hinged by bolts 19 and are adapted to assume a horizontal position (as at Fig. 3 by dropping away from the molded block 33) or to be confined in box form, as at Fig. 1 of the drawings. This latter position is maintained by means of clamps of peculiar construction, which are located at each end of the mold-box and engage with the side walls of the same by means of eccentric-levers. Each of these clamps comprises a swinging strap 23, bent in U form, the two ends being loosely connected to the hinge-rod 19, the said strap loosely supporting a horizontally-placed rod 24, fitted with a nut 25 at one end and with a pivoted eccentric 26 at the other, said eccentric being formed with a hand-lever 28. This horizontally-placed rod 24 is adapted to enter slots 21, formed in the extended ends of the side plates 18 18' of the mold-box, and when thus entered and the eccentric 26 revolved to the position shown at Fig. 5 the sides and ends of said box are rigidly clamped in rectangular form, the end plates 20 being prevented from swinging outwardly by stops or rests 22, formed on the inner walls of the said plates, as will be best seen by reference to Figs. 4 and 5 of the drawings.

The above-described apparatus, which is shown at Figs. 1 to 5, inclusive, is adapted to the manufacture of large-sized building-blocks with cavities or openings through the same, and the operation of said apparatus is as follows: A suitable mixture of certain proportions of sharp sand and cement with water to moisten the same is made. The side walls 18 and 18' and end walls 20 are clamped

in box form by means of the eccentric-levers and the cores brought to their elevated position, such as at Fig. 1, the top surface of said cores being even or in the same plane with the top edges of the mold-box. The mixture above mentioned is now thrown into the mold and compressed by tamping with a suitable tool, after which time the surplus material is removed from the top by a scraper or straight-edge and said top surface smoothed by a flat-surfaced trowel. The hand-lever 14 is now thrown forward to the position shown in dotted lines at Fig. 1 of the drawings, by which movement, through the action of the cranks and connected levers, the supplemental table 13 is partly withdrawn, moving the cores 32 32' downward, leaving them entirely free and away from contact with the molded block by reason of their tapering form. The eccentrics 26 are now revolved to a position such as shown in dotted lines at Fig. 4, releasing the clamps. The side walls 18 and 18' are first lowered to a horizontal position and then followed by the end walls 20. The block 33, together with the follow-plate 30, is now carefully lifted from the machine, care being taken to elevate the same clear of the cores, and said block set aside to be treated with moisture and dried to the consistency of stone. Another follow-plate 30 is now placed in position, the end plates 20 elevated, then the side plates, the whole clamped, as before described, and the cores elevated, at which time the mold is ready for another operation.

In the molding of "half" or sectional blocks the inside walls of the side plates 18 are formed with vertically-placed grooves 37, which support cross-partitions 36 and divide the block, the said partition being allowed to remain in the molded article until solidification has partly taken place, at which time said partition may be removed without injury to the blocks.

Various sizes of building-blocks are made by substituting one removable and interchangeable plate for another, in which the hinge-lugs 17 are located to correspond with the size of the block desired.

The inside surfaces of the side and end plates of the mold-box may be plain or "rock-faced" or ornamented to represent carved or cut stone, as is obvious.

This apparatus, as above described, may be used in the manufacture of brick, tile, or small rectangular blocks by simply removing the cores 32 32' and substituting therefor a series of partitions or division-strips, as will be seen by reference to Figs. 6, 7, 8, and 9 of the drawings. In this modified form of the apparatus the mold-box is substantially the same as before described, the hinged sides 18 and 18' and end walls 20 using the same clamps to maintain the rectangular or box form of the mold. The inner walls of the

sides 18 18' of the mold are formed with a series of oppositely-disposed vertically-arranged grooves 40 and the vertically-moving supplemental table 13 fitted with an equal number of partitions 39, which register in said grooves and divide one brick or block from the other. The follow-plate 30' (see Figs. 7 and 8) in this case is formed with a series of transverse slots 42, through which said partitions operate. With this modified form of apparatus a number of bricks or blocks are molded at one operation. The partitions 39 are first elevated after placing the follow-plate 30' in position in the bottom of the mold-box. The ends 20 are brought into position and care being taken to have the sides 18 18' register with the partitions. The mixture is now thrown into the mold, tamped, scraped, and top-finished, as in molding the building-block previously described. The partitions 39 are now withdrawn from the mold-box by means of the lever 14, the sides and ends lowered to a horizontal position, and the several bricks or blocks, together with the supporting follow-plate, removed from the machine.

Various slight modifications and changes may be made in the details of construction without departing from the spirit of the invention. Therefore I do not wish to confine myself to the exact construction shown and described, but wish to claim all such modified forms as would come properly within the general scope of the invention.

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

1. In a machine for molding building-blocks, the combination consisting of the table fitted with a removable and interchangeable section, of a follow-plate supported upon said section, end and side pieces hinged to said section to form a mold-box, means comprising eccentric-clamps to maintain said end and side pieces in rectangular form, a removable and interchangeable follow-plate

forming the bottom of said mold-box, a supplemental table carrying cores arranged beneath said table and a means comprising rock-shafts and lever connections for elevating and lowering said supplemental table to place said cores within the mold or withdraw the same from the finished block, as described.

2. In a machine for molding building-blocks, a skeleton table supporting a removable and interchangeable plate, said plate adapted to support a follow-plate and provided with means for pivotally connecting the sides and ends of the mold-box.

3. In a machine for molding building-blocks, the combination consisting of the table fitted with a removable and interchangeable section, end and side pieces hinged to said section to form a mold-box, means, said means comprising straps hinged to the end plates of said mold-box, horizontally-arranged bars loosely mounted in said straps, said bars being provided at one end with a stop and at the other with an eccentric and adapted to enter slots in the end walls of the side plates of the mold-box, for maintaining said end and side pieces in rectangular form, the inner walls of said side plates being formed with a plurality of vertically-disposed grooves, a removable and interchangeable follow-plate having a plurality of slots arranged in parallel relation to register with the grooves in the side plates and form the bottom of the mold-box, a supplemental table carrying a plurality of partitions operating in said slots and grooves and a means for simultaneously withdrawing said partitions from said mold-box, as and for the purpose described.

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

SIMEON H. RICKARD.

Witnesses:

W. G. WALTER,
O. A. HENSEL.