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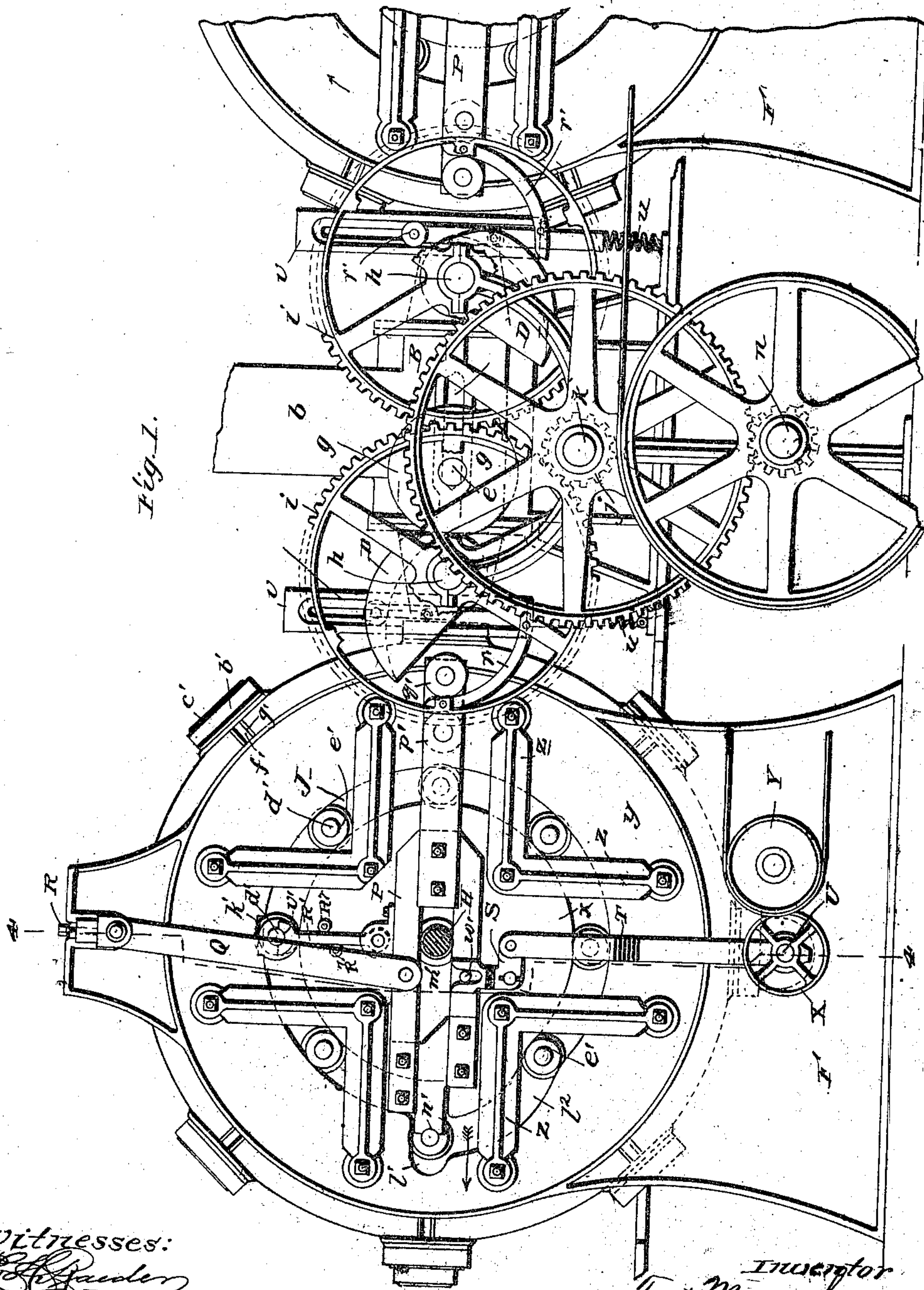
Patented May 30, 1899.

F. MACARTHY.
BRICK MACHINE.

(Application filed Feb. 11, 1889.)

(No Model.)

5 Sheets—Sheet 1.



Witnesses:
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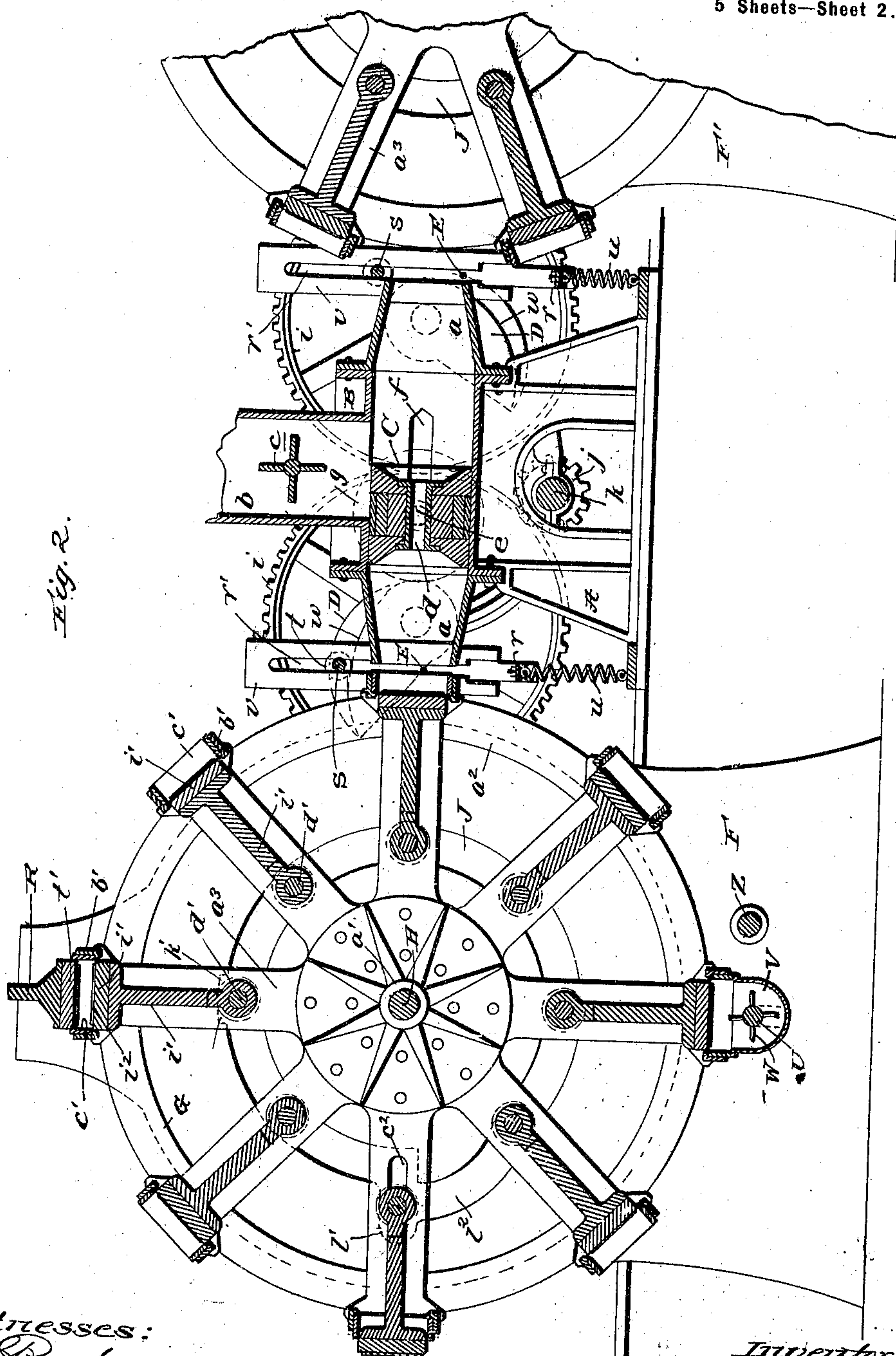
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5 Sheets—Sheet 2.



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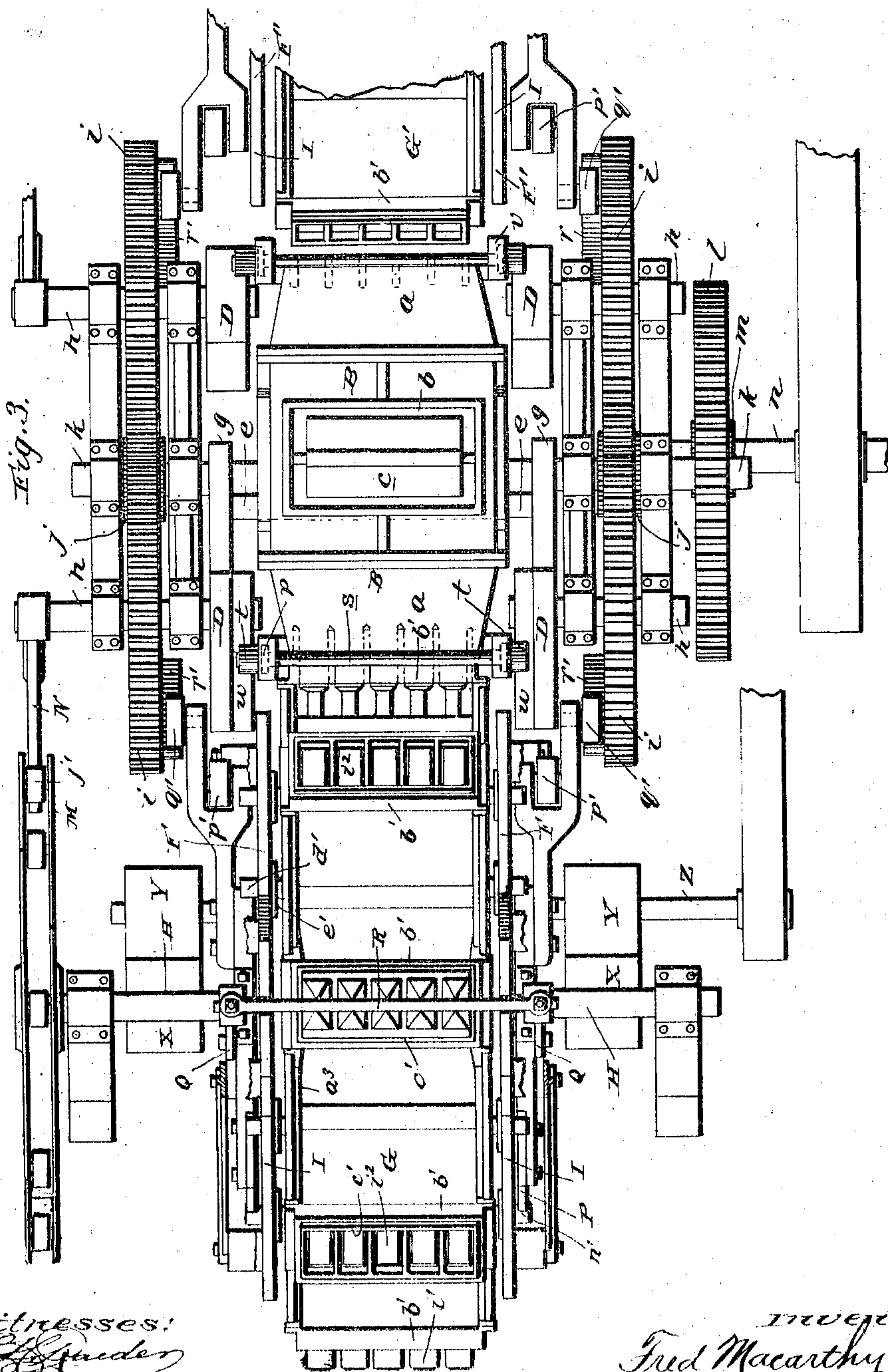
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(Application filed Feb. 11, 1899.)

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5 Sheets—Sheet 3.



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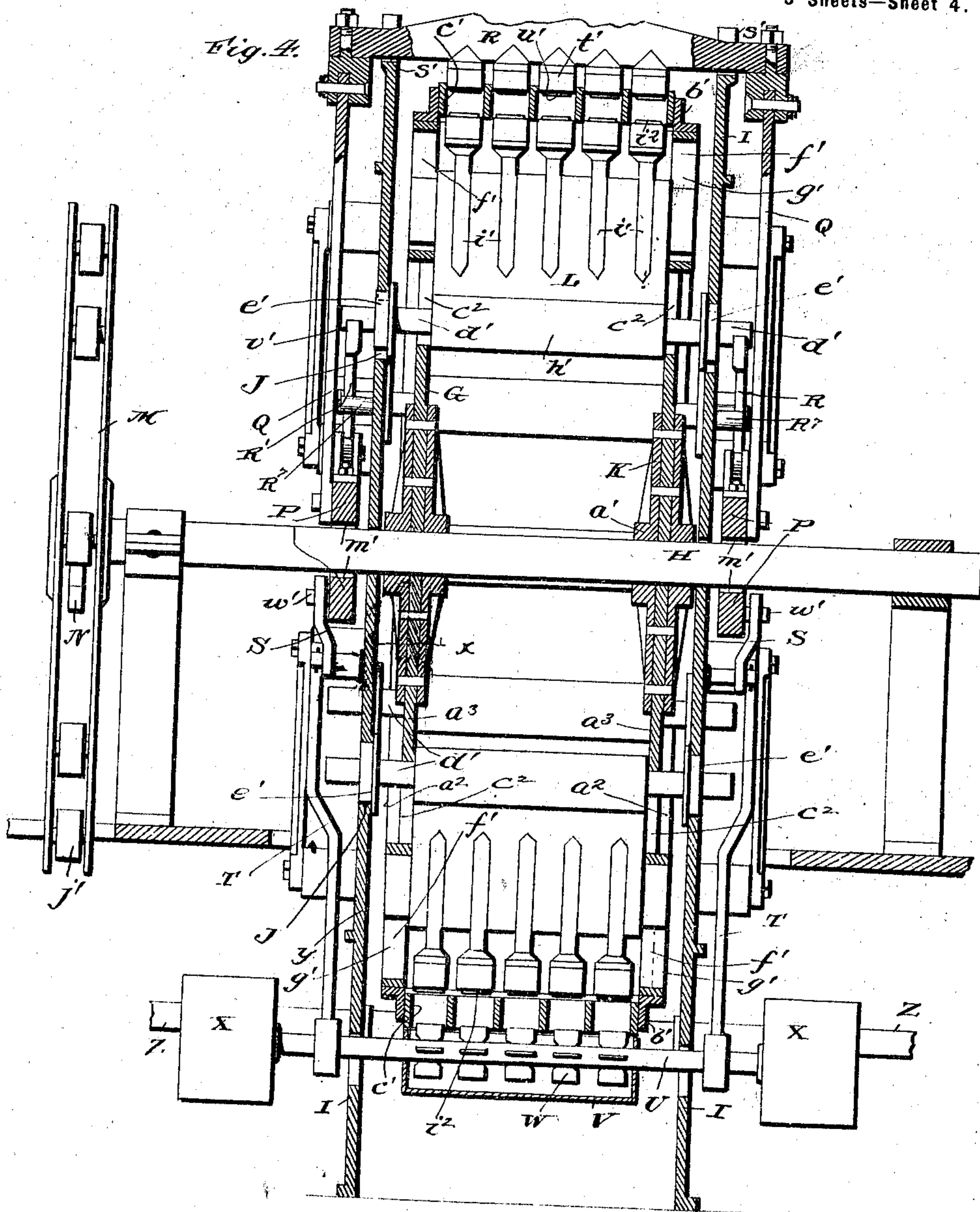
F. MACARTHY.
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(Application filed Feb. 11, 1899.)

(No Model.)

5 Sheets—Sheet 4.



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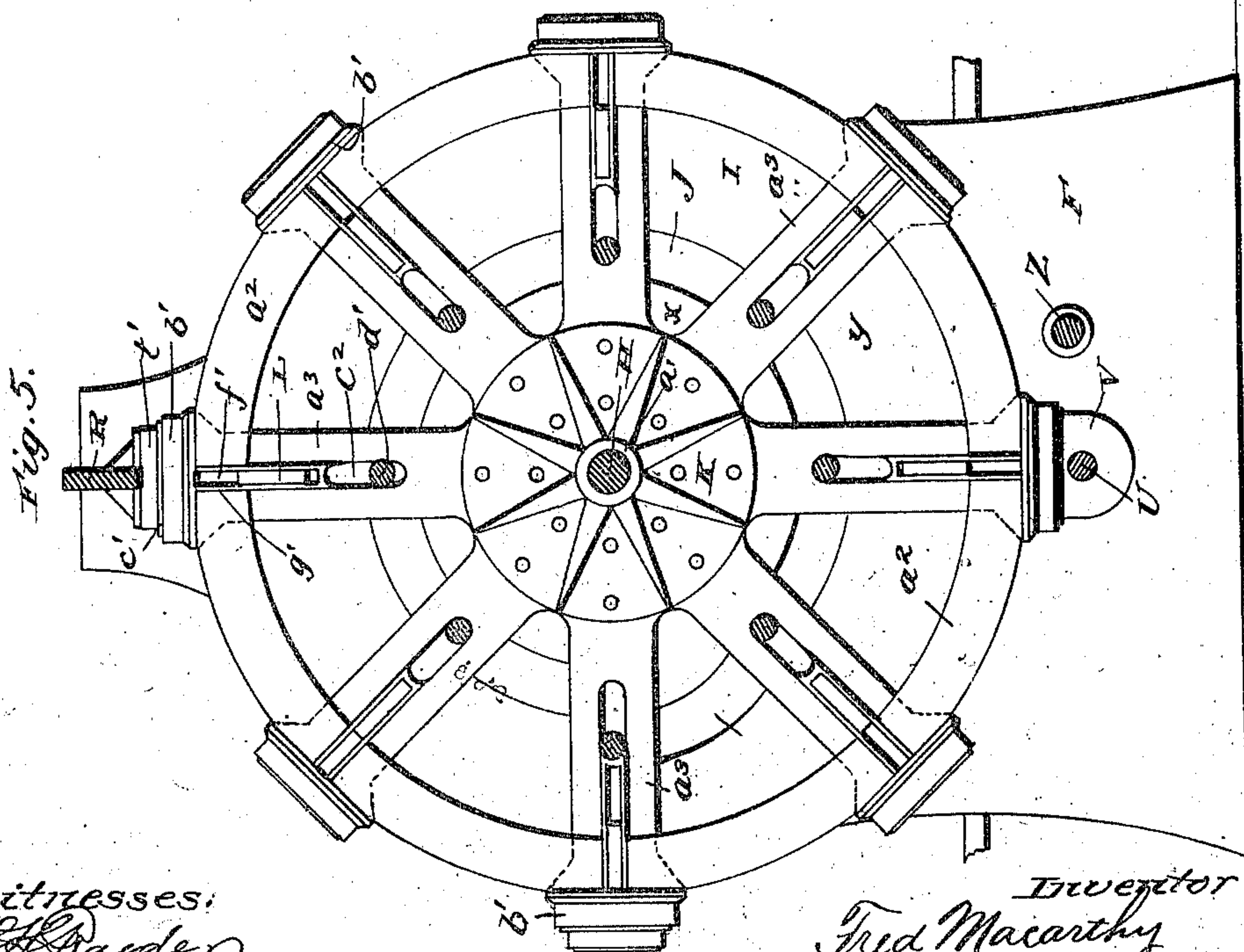
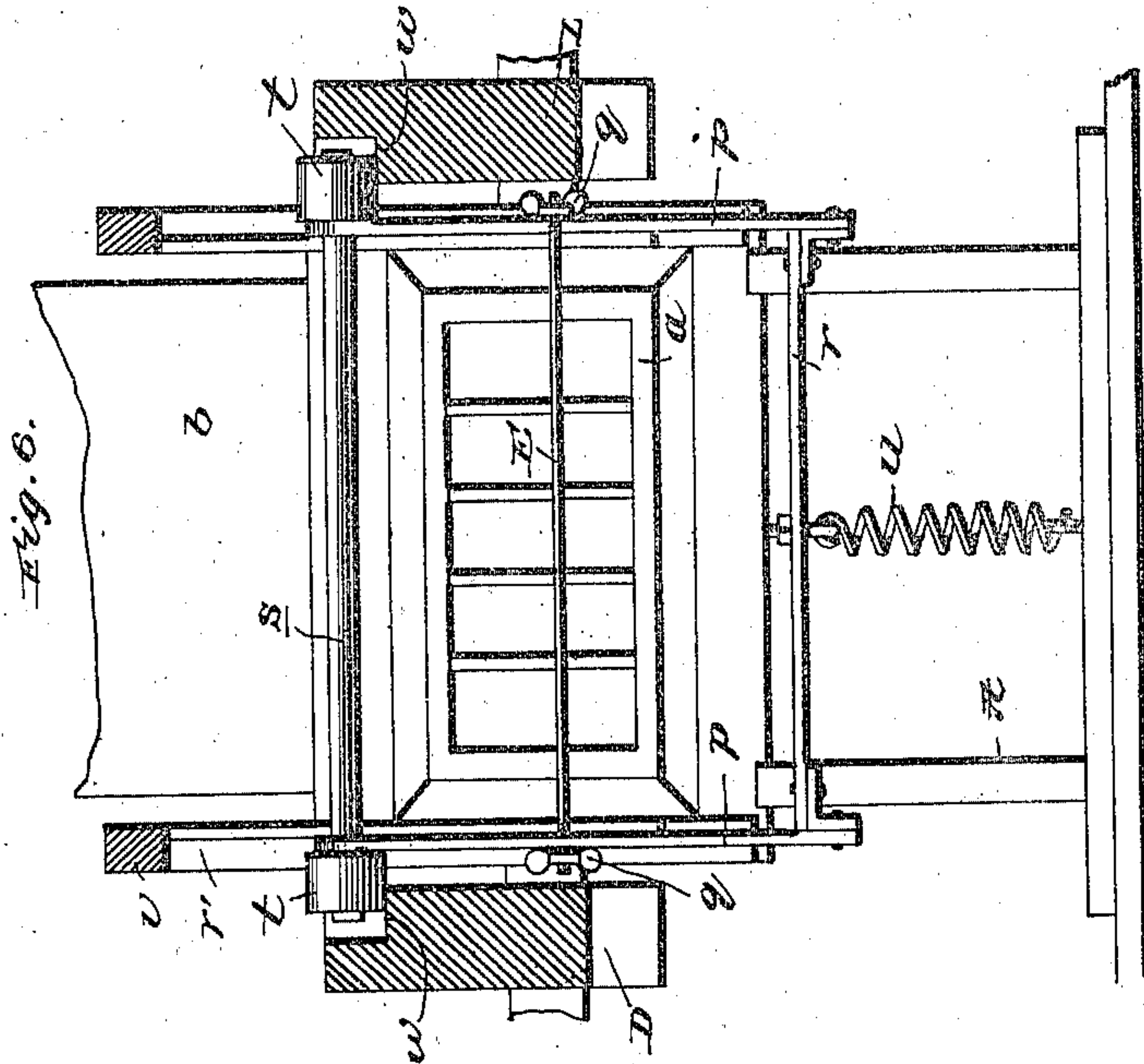
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(No Model.)

5 Sheets—Sheet 5.



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UNITED STATES PATENT OFFICE.

FRED MACARTHY, OF SAYREVILLE, NEW JERSEY, ASSIGNOR OF ONE-HALF
TO THE SAYRE & FISHER COMPANY, OF SAME PLACE.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 625,781, dated May 30, 1899.

Application filed February 11, 1899. Serial No. 705,279. (No model.)

To all whom it may concern:

Be it known that I, FRED MACARTHY, a subject of the Queen of Great Britain, residing at Sayreville, in the county of Middlesex and State of New Jersey, have invented new and useful Improvements in Brick-Machines, of which the following is a specification.

My invention relates to brick-machines, and has for one of its objects to provide a machine capable of making in wood molds what is known in the trade as a "stiff-mud" brick with sanded surfaces, as distinguished from the ordinary sanded soft-mud bricks made by machines in present use. The product of my improved machine—i. e., stiff-mud bricks with sanded surfaces—is sufficiently firm and otherwise adapted when they leave the machine to be immediately built up in hacks for drying, preparatory to being fired in kilns. This is not true of soft-mud bricks with sanded surfaces, such bricks having to be dried until they are sufficiently firm to adapt them to stand in hacks. Such drying of the soft-mud bricks is effected by laying the bricks on their flat surfaces on a floor; but this method is objectionable because of the large floor-space required and the delay which attends it. Another method of preparing soft-mud bricks for the kiln has been to place them on pallets, which are mounted in racks, there to remain until the bricks are sufficiently dry for firing. This latter method does not include arranging the bricks in hacks, and is objectionable, because it entails the employment of a large quantity of lumber, the initial and current costs of which are considerable.

The bricks made by my improved machine are, as before stated, adapted to be immediately built in hacks, and therefore it will be appreciated that the said machine contributes very materially to the cheapness of the production of the bricks.

A second object of the invention is to provide a brick-machine embracing molds having square side walls, which insure the formation of square bricks, movable mold-bottoms, and means for actuating the said bottoms at the proper time to positively eject the bricks from the molds.

A third object of the invention is to provide a brick-machine adapted to subject opposite

sides of bricks to great pressure and simultaneously make any desired design—such as a panel, trade-mark, or the like—in both sides of the flat of the bricks.

A fourth object of the invention is to provide a machine capable of cheaply and expeditiously producing what is known to the brick-making and brick-laying trades as "repressed stretchers."

Other objects and advantages of the invention will be fully understood from the following description and claims when taken in connection with the annexed drawings, in which—

Figure 1 is a side elevation of a machine embodying my invention, the same being shown as partly broken away. Fig. 2 is a longitudinal central section of the same. Fig. 3 is a plan view. Fig. 4 is an enlarged transverse section taken through one of the mold-wheels in the plane indicated by the line 4 4 of Fig. 1 and illustrating certain parts in elevation. Fig. 5 is a detail longitudinal section taken in a plane at one side of one of the mold-wheels. Fig. 6 is an enlarged detail transverse section illustrating the clay-cutting mechanism.

In the said drawings similar letters designate corresponding parts in the several views, referring to which—

A is a frame of the machine, which may be of any construction suitable to the purposes of the invention and may be placed on a floor or other base, and B is a longitudinally-disposed clay-chamber. This chamber has tapered dies *a* at its opposite ends and is designed to be charged with suitable mud or clay through a conduit *b*, in which is arranged an agitator *c*, the purpose of which is to accelerate the passage of clay to the chamber. In the clay-chamber is a reciprocatory follower C, which has for its purpose to alternately force the clay in opposite directions through the dies *a*, and thereby charge the molds hereinafter described. The follower has one or more openings *d*, disposed lengthwise of the chamber and connecting the portions of the same at opposite sides of the follower, and hence it will be seen that when there is more than enough clay at one side of the follower to charge the molds presented to one die the

surplus will be forced through the opening d to the opposite side of the follower, where it is left to be forced through the other die and into the molds presented to it on the return stroke of the follower. The follower is equipped with lateral arms e , extending through and movable in slots f in the side walls of the clay-chamber, and on the said arms are journaled antifriction-wheels g , as best shown in Figs. 1 and 3. These wheels g are disposed at opposite sides of the chamber B and are each arranged between two cams D, the said cams being of the shape shown in Fig. 1 and being fixed on shafts h . Also fixed on the shafts h are gear-wheels i , each pair of which is intermeshed, as shown in Fig. 1. One of each pair of the wheels i is also intermeshed with a pinion j on a transverse shaft k , which is provided with a gear-wheel l , intermeshed with a pinion m on a drive-shaft n .

From the foregoing it follows that when the machine is in operation the cams D at opposite sides of the wheels g will be rotated in opposite directions, and their peripheries acting alternately against the wheels g will reciprocate the follower.

The length of each column of clay expressed or expelled by each movement of the follower will be, in ordinary cases, not more than equivalent to the depth of the molds presently described and much less than the distance between the ends of the slots f and the extreme ends of the travel of the follower. At least two-thirds of the travel of the follower will be taken up in collecting the loose lumps of stiff clay that fall from a pug-mill (not shown) through conduit b , and the hollowed faces of the follower will serve to gather the clay inward or toward the longitudinal center of the clay-chamber. In consequence of this it will be seen that there is but little, if any, outward pressure of the clay incident to the travel of the follower over the distance covered by the slots f and but little liability of the clay escaping through said slots. The actual expression or expulsion of the clay through the dies a takes place after the follower has passed the ends of the slots f . When desirable, however, shields of metal connected to and adapted to travel with the follower may be provided to prevent any loose particles of clay from falling through the slots f . Such shields do not form an essential part of the machine, and I have therefore deemed it unnecessary to show the same in the drawings.

For the purpose of severing clods or gluts from the body of clay at the ends of the dies a I provide at each end of the clay-chamber a cutting mechanism, such as shown in detail in Fig. 6. This cutting mechanism comprises a blade E, which may be, and preferably is, a wire, vertically-movable upright bars p , thumb-nuts q , which serve to secure the ends of the wire in the uprights and hold the wire under suitable tension, a strut r , interposed between and connecting the lower ends of the

uprights and serving with the same to form a frame, a shaft s , journaled in the uprights adjacent to the upper ends thereof and having wheels t at its ends, a coiled spring u , connecting the strut r and the main frame A, and fixed guides v , attached to the clay-chamber and receiving the uprights p . The wheels t of the cutting mechanism are arranged in a position to be engaged by shoulders w of the cams D, and from this it follows that the frames carrying the blades E will be moved upwardly incident to each revolution of the cams and the same blades will be carried through the clay at points closely adjacent to the mouths of the dies a . The movements of the parts are so timed that the upward movement of each blade E will take place a little previous to the movement of the mold-wheel between which and one nipple of the clay-chamber the blade is arranged to move. Gravity may be depended upon to return the cutter-frames to their low position when the wheels t are released from the shoulders of the cams D; but I prefer to employ the springs u for the purpose, since they effect a positive and quick downward or return movement of the cutter-frames immediately following the release of the wheels t from the cams.

F F' are frames which are arranged adjacent to the ends of the frames A and are preferably extended below the floor-line and mounted on suitable supports, and G G' are mold-wheels arranged in the frames F F', respectively, and fixed on shafts H, journaled therein. The frames F F' and the mold-wheels G G' are similar in construction, and therefore a specific description of the frame F and wheel G will suffice to impart a full understanding of both frames F F' and both wheels G G'. The frame F comprises two upright parallel side walls I, in each of which is provided a cam-track J, the said track being formed between inner and outer wall portions x y , which are connected by angle-irons z after the manner best shown in Fig. 1. The wheel G is arranged between the side walls I of the frame F, and in the preferred embodiment of the invention comprises disks K, fixed on the shaft H and having hubs a^1 , outer rings a^2 , and eight (more or less) spokes a^3 , reaching from the hubs to the rings, and transverse frames b^1 , interposed between and connected to the rings of the disks. There are preferably eight of these frames b^1 , and they are open and flanged at their inner edges, as shown, in order to enable them to receive and hold mold-boxes c^1 of wood, each box preferably embracing five molds, as shown. The spokes a^3 of the disks are slotted, as indicated by c^2 , to receive transverse shafts d^1 , which carry flanged wheels e^1 , arranged and adapted to move in the cam-tracks J of the frame F, and said spokes a^3 are also slotted, as indicated by f^1 , and provided with flanges g^1 to receive and guide follower-bodies L. These bodies have sleeves h^1 , receiving the shafts d^1 , and are equipped with a number of

followers i' , corresponding to the number of molds in the mold-boxes, the said follower being connected to the bodies in any approved manner and being arranged in alinement with the molds and provided with faces i'' , of wood, which form the bottoms of the molds, as shown.

M is a tappet-wheel fixed on the shaft H at one side of the frame F and carrying eight (more or less) equidistant antifriction-rollers j' , the same being properly arranged with respect to the mold-boxes of the mold-wheel, and N is a tappet, which, as best shown in Fig. 3, is fixed on the shaft h that is nearest to the wheel M and is arranged to engage the antifriction-rollers j' thereof. It follows from the foregoing that incident to each rotation of the shaft h the tappet N, acting against one of the rollers j' of wheel M, will cause the mold-wheel G to make one-eighth of a revolution, or, in other words, to rotate such a distance as will carry one mold-box a certain distance away from a position coincident with one die of the clay-chamber and bring the succeeding mold-box into a position coincident with the said die. Of course the tappets N for rotating the wheels G G' are so disposed with respect to each other that one wheel will be at rest, with one of its mold-boxes meeting one die of the clay-chamber B, while the other wheel is being partially rotated to carry one of its mold-boxes away from and another into register with the other die of the clay-chamber.

The cam-tracks J in the side walls of the frame F are for the greater part of their length concentric to the shaft H. They are provided, however, at a point above and in the same vertical plane as the shaft H with offsets k' in their outer walls. They are also provided at a point in the same horizontal plane as the shaft H and remote from the clay-chamber with outwardly-extending straight portions l' , from which short eccentric portions l'' extend downwardly and merge into the concentric portions, for a purpose presently described.

P are reciprocatory horizontal slides or thrust-bars, which are disposed at opposite sides of the frame F and are provided with elongated openings m' , receiving the shaft H, which supports them. These slides are provided at their ends remote from the clay-chamber with depressions or seats n' , and they are also provided adjacent to their opposite ends and at opposite sides with antifriction-wheels $p' q'$. (See Figs. 1 and 3.) The wheels p' , which are arranged in bifurcations of the slides, are designed for the engagement of the peripheries of cams D, which serve to move the slides P outwardly or in a direction away from the clay-chamber. The wheels q' on the slides P are designed for the engagement of cams r' on the gear-wheels i , the said cams r' having for their purpose to draw the slides inwardly or in a direction toward the clay-chamber and being beveled at their forward ends, as shown, to facilitate their engagement with the wheels q' .

Connected to the slides P and extending upwardly therefrom at opposite sides of the frame F are draft-bars Q. These bars at their upper ends are flexibly connected to a cross-head R, which is vertically movable in guides s' in the frame-walls I and is provided with five (more or less) pressers t' , the said pressers being arranged to enter the molds when the latter become coincident with the same and being provided with faces u' of wood.

Flexibly connected to the slides P and normally resting in a slightly-oblique position between antifriction-rollers or other stops R' on the sides of the frame F are pressers or thrust-bars R' , which are adapted under certain conditions to assume a vertical position. These pressers or bars R' extend upwardly from the slides and are provided at their upper ends with seats or depressions v' , designed to receive the extended ends of the shafts d' after the manner hereinafter described.

S are bell-crank levers fulcrumed on lateral arms connected to the frame-walls I and having bifurcations in their upper arms receiving lugs w' on the slides P, and T are hangers which are flexibly connected to the lower arms of the bell-crank levers. In the lower ends of the hangers T is journaled a transverse shaft U, which rests below the wheel G and preferably in the same vertical plane as the shaft H. Said shaft U supports a sand-box V of a width corresponding to that of the wheel G and is provided within the box V with blades W. It is also provided at points outside the hangers T with friction-wheels X, which are designed to be pressed against friction-wheels Y on a transverse shaft Z, the shaft Z being designed to be constantly rotated through the medium of a belt by a suitable motor or from any shaft of the machine. It follows from the foregoing that when the wheels X are carried into frictional contact with the wheels Y on the shaft Z the shaft U will be rotated and the blades W will throw sand up into the molds of the mold-box above it.

The appurtenances of the mold-wheel G are operated by the cams D and cams r' adjacent to said wheel in the same manner that the appurtenances of wheel G are operated by the cams D r' adjacent to it, and therefore a description of the operation of the wheel G and its appurtenances will suffice to impart a full understanding of the operation of both wheels and the appurtenances thereof.

As before described, the follower C is reciprocated to charge the molds of the wheel G that are presented to the contiguous die of the clay-chamber with clay, and the wheel is rotated step by step one-eighth of a revolution at a time and with an interval between each movement. While one set of molds are coincident with the die of the clay-chamber a previously-charged set are in a position immediately below the pressers t' of the

cross-head R; another previously-charged set are at a point diametrically opposite to the clay-chamber, and an empty set are immediately above the sand-box V. Incident to the movement of the follower C in the direction to charge the set of molds presented to the die of the clay-chamber the cams D, acting against the wheels p' of the slides or main thrust-bars P, move said slides or thrust-bars in the direction indicated by arrow in Fig. 1. This movement of the slides or main thrust-bars moves the lower ends of the draft-bars Q in the same direction, and thereby draws the cross-head R and the presser t' downwardly and presses the upper sides or flats of the bricks in the uppermost set of molds. It also causes the thrust-bars R' to engage the shaft d' of the upper follower-body L and assume a vertical position, and thereby simultaneous with the downward movement of the pressers t' forces the uppermost set of followers i' upwardly and presses the under sides or flats of the bricks in the uppermost set of molds. In other words, the movement of the slides or main thrust-bars in the direction stated moves the pressers t' and the followers i' in opposite directions, and thereby subjects the bricks in the uppermost set of molds to great pressure from above and below and renders the same very firm and stiff. Such movement of the slides or main thrust-bars P also serves by their depressions n' engaging the shaft d' of the follower-body L that is opposite to the clay-chamber to eject the bricks from the set of molds opposite the clay-chamber. It also serves by rocking the bell-crank levers S to raise the sand-box close against the empty lowermost set of molds and to carry the friction-wheels X against the friction-wheels Y on the constantly-rotating shaft Z, and thereby cause the blades W to raise sand from the box and thoroughly sand the lowermost set of molds.

Incident to the movement of the cams D to move the follower C in a direction away from wheel G the cams r' on gear-wheels i act against the antifriction-wheels q' on the slides or main thrust-bars, and thereby move said slides or bars in the direction opposite to that indicated by arrow in Fig. 1, and thereby return the draft-bars Q, the thrust-bars R, the hangers T, and sand-box V to their normal positions. As the wheel G is partially rotated subsequent to the operations mentioned, the wheels e' of the follower-body L that effected the ejection of the bricks from the set of molds opposite to the clay-chamber traverse the portions l^2 of the cam-tracks J, and thereby return the said body L and the followers thereof to their normal position before the set of molds reach a position above the sand-box V.

In order to receive the bricks as they are forced out of the sets of molds at the point diametrically opposite the clay-chamber B, I contemplate providing at such point a metal plane or shelf, which I have deemed it un-

necessary to illustrate. Such plane or shelf may or may not be lubricated; but I prefer to have it lubricated in order to enable a set of bricks ejected from a set of molds to push before them a previously-ejected set of bricks. The bricks may, when desired, be pushed in this way onto an off-bearing truck to be taken away to hacks or walls for drying.

I prefer in practice to provide the faces of the pressers t' and the faces of the followers i' with a trade-mark, panel, or the like, as indicated by i^4 and t^4 , respectively, since when they are so equipped they are enabled to press or re-press the bricks and at the same time form a trade-mark, panel, or any ornamentation in the flats of the same.

When desirable, a main frame common to the clay-chamber and the mold-wheels may be employed without departing from the scope of my invention; but I generally prefer to provide separate frames for the clay-chamber and mold-wheels, as illustrated.

It will be appreciated from the foregoing that my improved machine automatically molds, presses, and ejects the bricks and also automatically sands the molds in a thorough manner prior to the charging of the same with clay. It follows from this that the machine when in operation requires but little attention, which is an important advantage. It will also be appreciated from the foregoing that while the machine is quick-operating its output of bricks is sufficiently stiff and firm to adapt it to be immediately built up into hacks.

I prefer to have my improved machine embrace two mold-wheels disposed at opposite ends of a clay-chamber, as shown and described; but I do not desire to be understood as confining myself to this embodiment of the invention, as there are certain parts of my improvements that are susceptible of advantageous use in a single-acting machine—that is to say, a machine having a clay-chamber provided with a single discharge and a single mold-wheel arranged adjacent to the said discharge. I also do not desire to be understood as confining myself to the specific construction and relative arrangement of parts herein shown and described, as such changes and modifications may be made in practice as fairly fall within the scope of the invention.

Having thus described my invention, what I claim is—

1. In a brick-machine, the combination of a clay-chamber, having outlets at opposite ends and an inlet at an intermediate point of its length, and a follower movable in the chamber and having an opening or openings connecting the portions of the chamber at opposite sides of the same, substantially as specified.

2. In a brick-machine, the combination of a clay-chamber having dies at its opposite ends, mold-wheels arranged adjacent to the mouths of the dies and having molds at intervals of their peripheries, means for mov-

ing one mold-wheel while the other is at rest with one of its molds meeting the mouth of a die, and a follower movable in the clay-chamber and having an opening connecting the portions of the chamber at opposite sides of the same, substantially as specified.

3. In a brick-machine, the combination of a frame, a wheel mounted in the frame and having a circular series of molds, a thrust-bar, a presser movable in the frame, followers arranged in the wheel in alinement with the molds, means operated by the thrust-bar for simultaneously moving the presser in the frame and the follower on the wheel that is opposite said presser in opposite directions, a constantly-rotating friction-wheel, and a sand-box operated by the thrust-bar and provided with a sand-throwing device and a friction-wheel connected with said device and arranged, when the sand-box is moved, to engage the constantly-rotating friction-wheel, substantially as specified.

4. In a brick-machine, the combination of a clay-chamber having discharge-mouths at its opposite ends, a follower movable in the chamber and having a lateral arm extending outside the chamber and equipped with a wheel, clay-cutters movable across the mouths of the chamber, and oppositely-movable cams disposed at opposite sides of the wheel and arranged to alternately engage the wheel and move the follower in opposite directions and also arranged to engage and alternately actuate the cutters, substantially as specified.

5. In a brick-machine, the combination of a clay-chamber having discharge-mouths at its opposite ends, a follower movable in the chamber, clay-cutters movable across the mouths of the chamber, oppositely-movable cams for moving the follower in opposite directions and alternately actuating the clay-cutters, mold-wheels disposed at opposite ends of the clay-chamber, tappet-wheels fixed with respect to the mold-wheels, and tappets connected with the cams so as to turn therewith and arranged to engage the tappet-wheels, substantially as specified.

6. In a brick-machine, the combination of a clay-chamber having a discharge-mouth, a clay-cutter, a follower movable in the chamber, cams for moving the follower and cutter, a mold-wheel, a tappet-wheel fixed with respect to the mold-wheel, and a tappet fixed with respect to the cams and arranged to engage the tappet-wheel, substantially as specified.

7. In a brick-machine, the combination of a clay-chamber having a discharge-mouth, a follower movable in the chamber, a cam for moving the follower, a mold-wheel, a tappet-wheel fixed with respect to the mold-wheel, and a tappet fixed with respect to the cam and arranged to engage the tappet-wheel, substantially as specified.

8. In a brick-machine, the combination of a clay-chamber, a follower movable therein, a frame, a wheel mounted in the frame and hav-

ing molds at intervals of its periphery, a presser movable in the frame and with respect to the mold-wheel, a thrust-bar, a draft-bar connecting the presser and the thrust-bar, and a cam for moving the follower and thrust-bar, substantially as specified.

9. In a brick-machine, the combination of a clay-chamber having a mouth, a follower movable therein, a frame, a wheel mounted in the frame and having molds at intervals of its periphery, a presser movable in the frame and with respect to the mold-wheel, a thrust-bar, a draft-bar connecting the presser and the thrust-bar, a cutter movable between the mouth of the clay-chamber and the mold-wheel, and cams for moving the follower, thrust-bar and cutter, substantially as specified.

10. In a brick-machine, the combination of a clay-chamber, a follower movable therein, a frame, a wheel mounted in the frame and having molds at intervals in its periphery, a tappet-wheel fixed with respect to the mold-wheel, a presser movable in the frame and with respect to the mold-wheel, a thrust-bar, a draft-bar connecting the presser and the thrust-bar, a cam for moving the follower and thrust-bar, and a tappet connected with the cam for engaging the tappet-wheel and rotating the mold-wheel, substantially as specified.

11. In a brick-machine, the combination of a clay-chamber, having a mouth, a follower movable therein, a frame, a wheel mounted in the frame and having molds at intervals in its periphery, a clay-cutter movable between the mouth of the clay-chamber and the mold-wheel, a tappet-wheel fixed with respect to the mold-wheel, a presser movable in the frame and with respect to the mold-wheel, a thrust-bar, a draft-bar connecting the presser and the thrust-bar, a cam for moving the follower and the clay-cutter, and a tappet connected with the cam for engaging the tappet-wheel and rotating the mold-wheel, substantially as specified.

12. In a brick-machine, the combination of a clay-chamber having a discharge-mouth, a follower movable in said chamber, a frame, a wheel mounted in the frame and having a circular series of molds, a clay-cutter movable between the clay-chamber and mold-wheel, followers carried by the mold-wheel and arranged in alinement with the molds, a thrust-bar, a presser movable in the frame and with respect to the mold-wheel, means operated by the thrust-bar for simultaneously moving the presser in the frame and the follower in the wheel that is opposite said presser in opposite directions, means for moving the follower in the clay-chamber, the clay-cutter and the thrust-bar, and means for partially rotating the mold-wheel subsequent to the movement of the follower toward the discharge-mouth of the clay-chamber, substantially as specified.

13. In a brick-machine, the combination of a clay-chamber having a discharge-mouth, a follower movable in said chamber, a frame, a

wheel mounted in the frame and having a circular series of molds and followers arranged in alinement therewith, a clay-cutter movable between the clay-chamber and the mold-wheel, a presser movable in the frame, a thrust-bar adapted at one end to directly engage and move one of the wheel-followers so as to eject a brick from the mold in alinement therewith, means operated by the thrust-bar for simultaneously moving the presser in the frame and the follower in the wheel that is opposite the same in opposite directions, a friction-wheel, means for constantly rotating said wheel incident to the operation of the machine, a movable sand-box, a shaft journaled in the sand-box and carrying a friction-wheel for engaging the constantly-rotating friction-wheel, a connection between the sand-box and the thrust-bar, means for returning the followers of the mold-wheel to their normal position after they have been moved to eject bricks, means for moving the follower in the clay-chamber, the clay-cutter and the thrust-bar, and means for rotating the mold-wheel, substantially as specified.

14. In a brick-machine, the combination of a frame, a wheel mounted in the frame and having molds at intervals of its periphery, a presser movable in the frame, pressers or followers arranged in the wheel in alinement with the molds, a thrust-bar adapted at one end to directly engage and move one of the wheel pressers or followers so as to eject a brick from the mold in alinement therewith, and means operative by the thrust-bar for simultaneously moving the presser in the frame and the presser in the wheel that is opposite the same in opposite directions, substantially as specified.

15. In a brick-machine, the combination of a frame having a cam-track comprising a concentric portion, an offset k' , an offset l' and an eccentric portion connecting the offset l' and the concentric portion, a wheel mounted in the frame and having molds at intervals of its periphery, a presser movable in the frame in vertical alinement with the offset k' of the cam-track and with respect to the wheel, pressers or followers arranged in the wheel in alinement with the molds and having wheels movable in the cam-track, a thrust-bar adapted at one end to directly engage and move one of the wheel pressers or followers so as to eject a brick from the mold in alinement therewith, and means operative by the thrust-bar for simultaneously moving the presser in the frame and the presser in the wheel that is opposite the same in opposite directions, substantially as specified.

16. In a brick-machine, the combination of a frame having a cam-track comprising a concentric portion, an offset k' , an offset l' and an eccentric portion connecting the offset l' and the concentric portion, a wheel mounted in the frame and having molds at intervals of its periphery, a presser movable in the

frame in vertical alinement with the offset k' of the cam-track and with respect to the wheel, pressers or followers arranged in the wheel in alinement with the molds and having wheels movable in the cam-track, a main thrust-bar adapted at one end to directly engage and move one of the wheel pressers or followers so as to eject a brick from the mold in alinement therewith, a draft-bar connecting the presser in the frame and the main thrust-bar, and a thrust-bar connected to the main thrust-bar and arranged to engage the pressers or followers in the wheel as they come in alinement with the presser in the frame, substantially as specified.

17. In a brick-machine, the combination of a frame having a cam-track comprising a concentric portion, an offset k' , an offset l' , and an eccentric portion connecting the offset l' and the concentric portion, a wheel mounted in the frame and having molds at intervals of its periphery, a presser movable in the frame in vertical alinement with the offset k' of the cam-track and with respect to the wheel, pressers or followers arranged in the wheel in alinement with the molds and having wheels movable in the cam-track, a thrust-bar adapted at one end to directly engage and move one of the wheel pressers or followers so as to eject a brick from the mold in alinement therewith, means operative by the thrust-bar for simultaneously moving the presser in the frame and the presser in the wheel that is opposite the same in opposite directions, a bell-crank lever fulcrumed on the frame and engaging the thrust-bar, a sand-box connected by a hanger with said lever, a shaft journaled in the sand-box and provided with one or more blades and also with a friction-wheel, a friction-wheel arranged to be engaged by that of the sand-box shaft, means for rotating the last-named friction-wheel, a clay-chamber, a follower therein, a cutter movable between the chamber and mold-wheel, a cam for moving the follower, the cutter and the thrust-bar, a tappet-wheel fixed with respect to the mold-wheel, and a tappet movable with the cam and arranged to engage the tappet-wheel, substantially as specified.

18. In a brick-machine, the combination of a mold-wheel, a thrust-bar, a friction-wheel, means for constantly rotating said wheel incident to the operation of the machine, a movable sand-box, a shaft journaled in the sand-box and carrying a friction-wheel for engaging the constantly-rotating friction-wheel, and a connection between the sand-box and thrust-bar, substantially as specified.

19. In a brick-machine, the combination of a mold-wheel, a thrust-bar, a friction-wheel, means for constantly rotating said wheel incident to the operation of the machine, a movable sand-box, a shaft journaled in the sand-box and carrying a friction-wheel for engaging the constantly-rotating friction-wheel, a bell-crank lever fulcrumed on the frame and

engaging the thrust-bar, and a hanger connecting the bell-crank lever and the sand-box, substantially as specified.

20. In a brick-machine, the combination of
5 a mold-wheel, a thrust-bar, a constantly-rotating friction-wheel, and a sand-box connected and movable with the thrust-bar and provided with a sand-throwing device and a friction-wheel connected with said device and
o arranged, when the sand-box is moved, to en-

gage the constantly-rotating friction-wheel, substantially as specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRED MACARTHY.

Witnesses:

FREDERICK M. TOWNLEY,
J. S. THORN, Jr.