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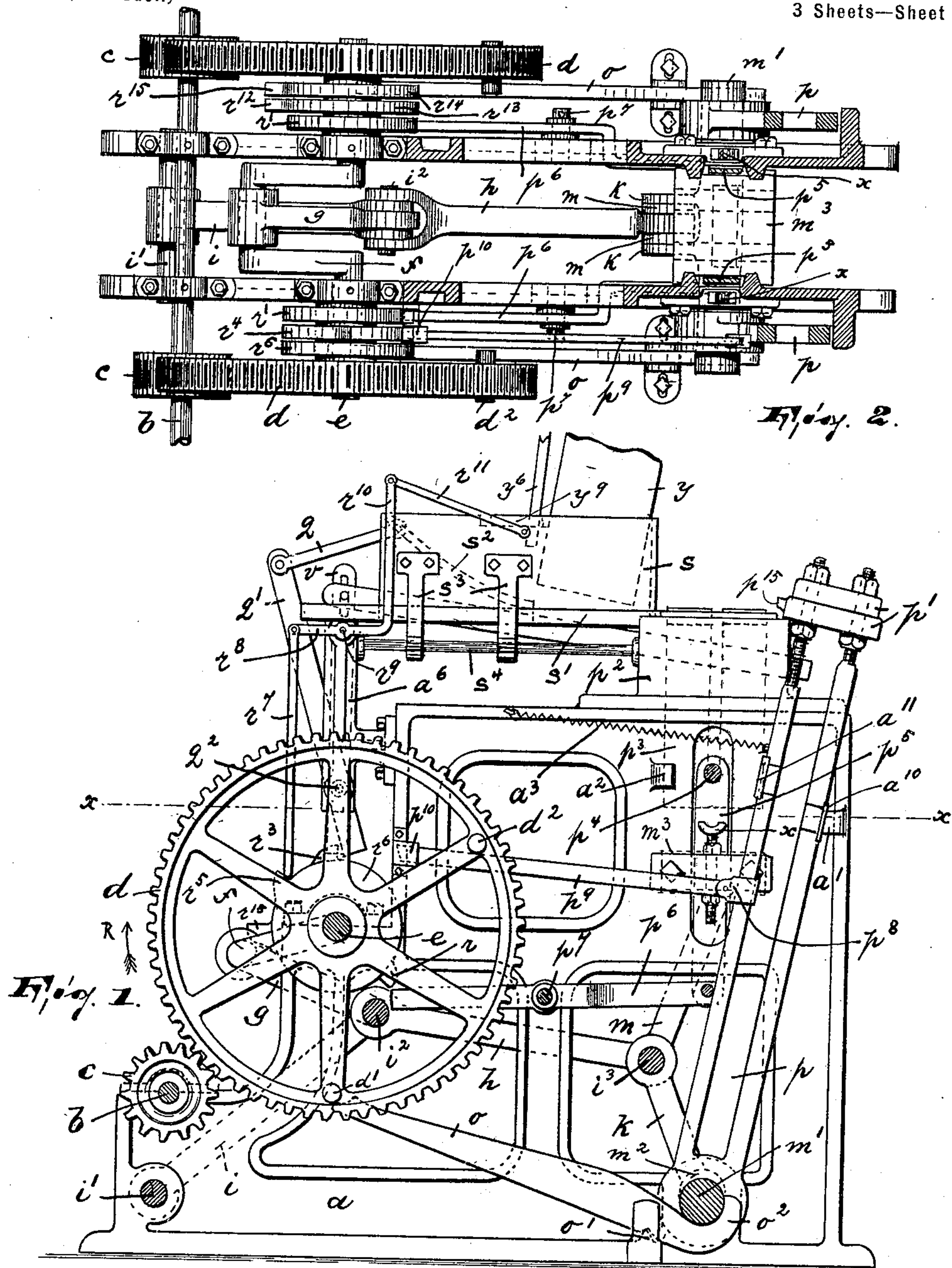
Patented July 19, 1898.

J. SHARPE.
BRICK MACHINE.

(Application filed Oct. 2, 1897.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

Wm. D. Bell.
Louise Snyder.

INVENTOR:

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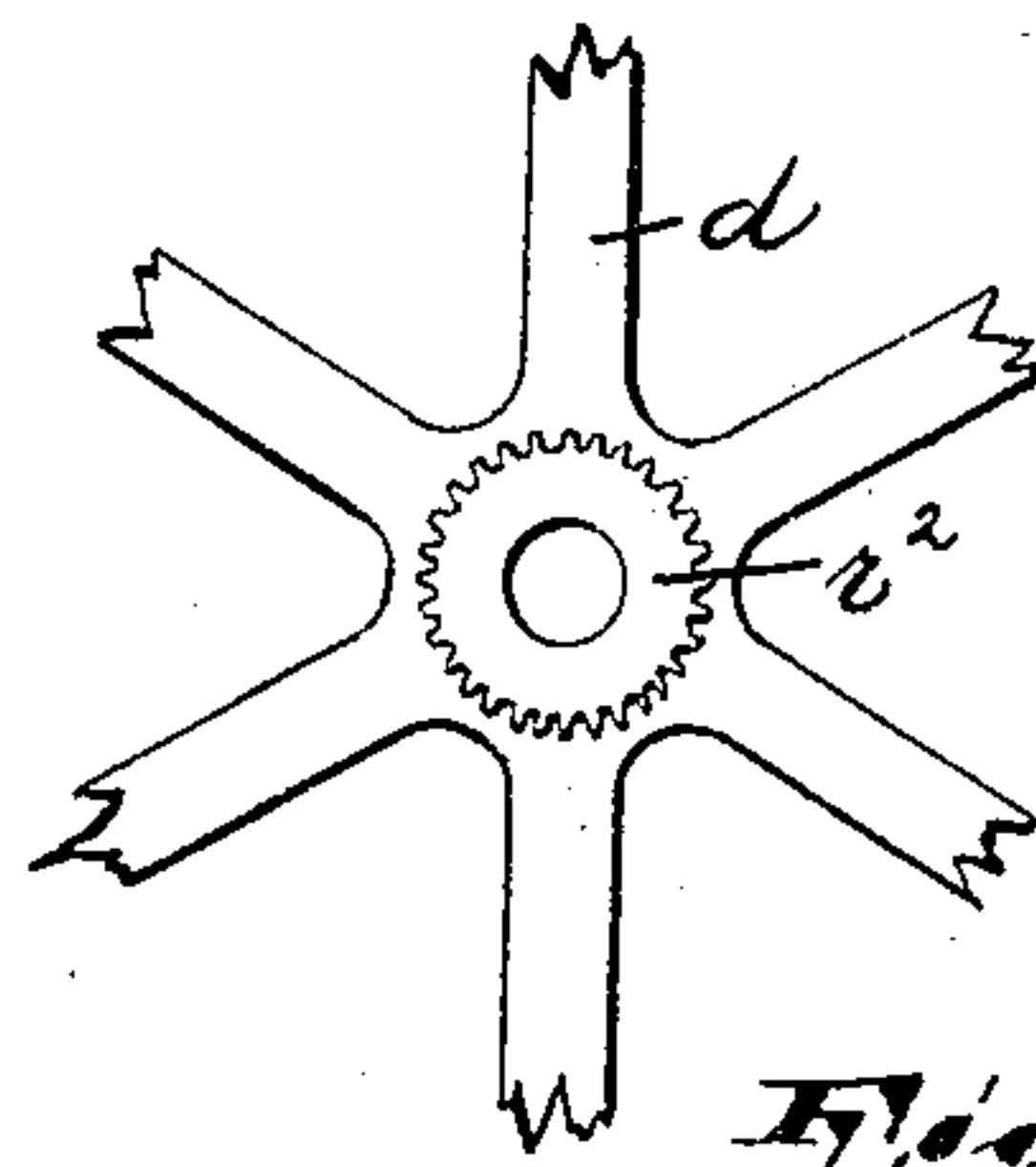
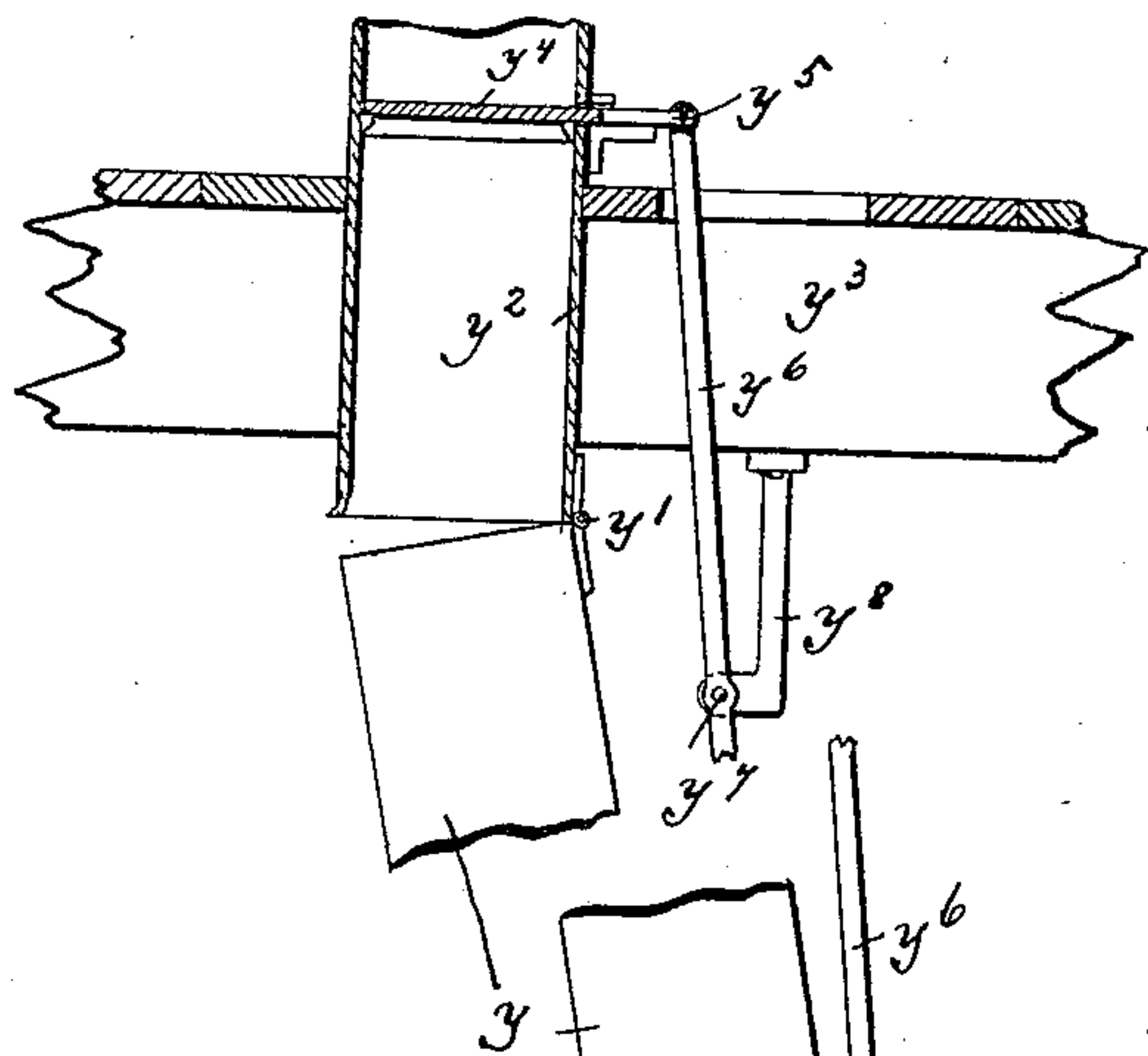


Fig. 4.

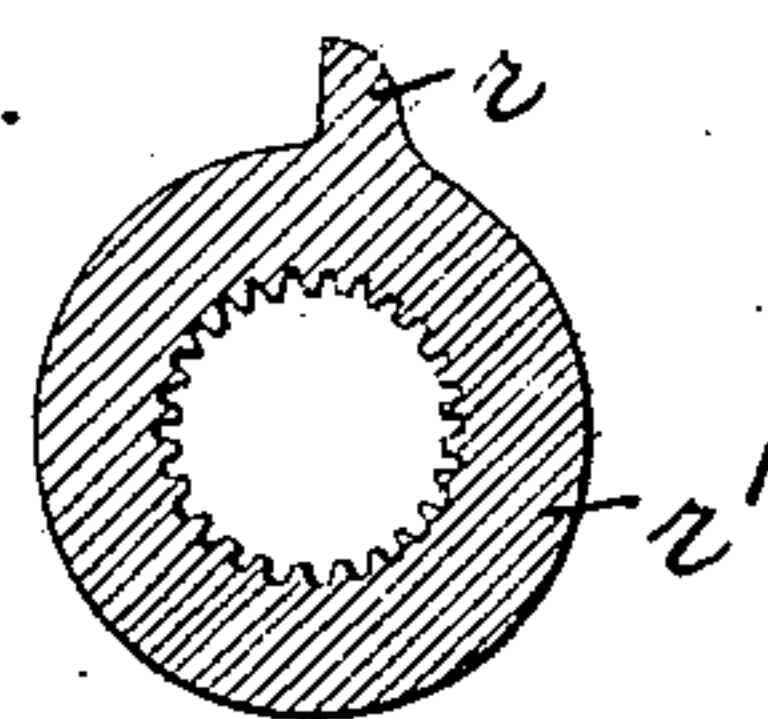


Fig. 5.

Fig. 3.

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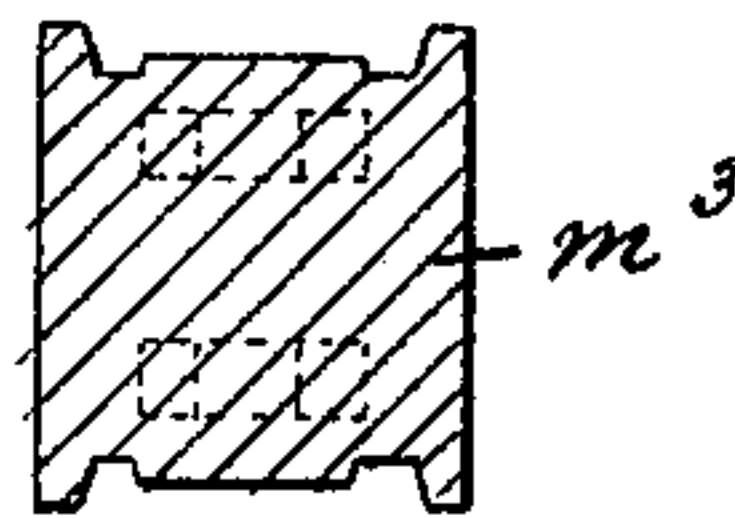
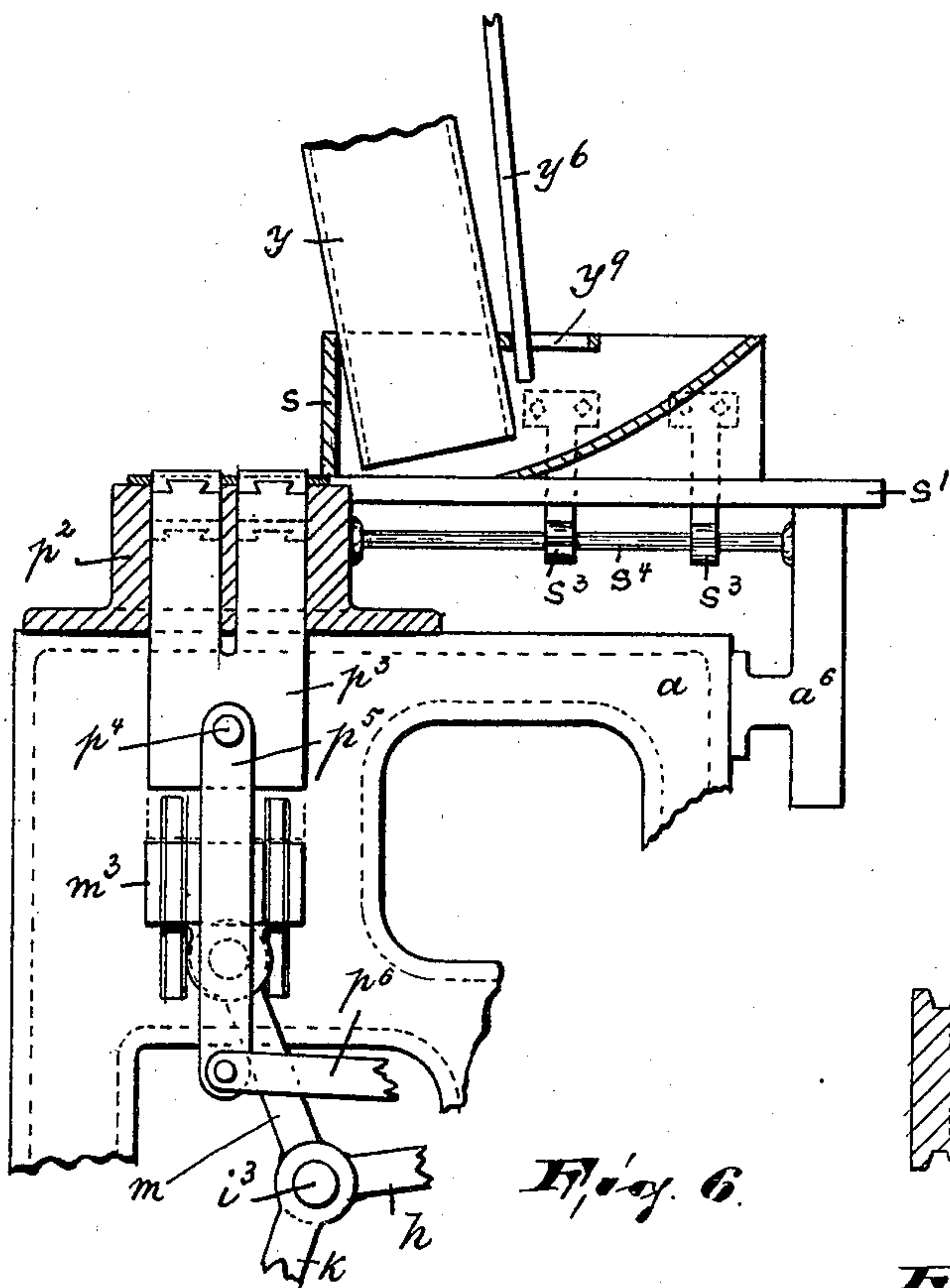
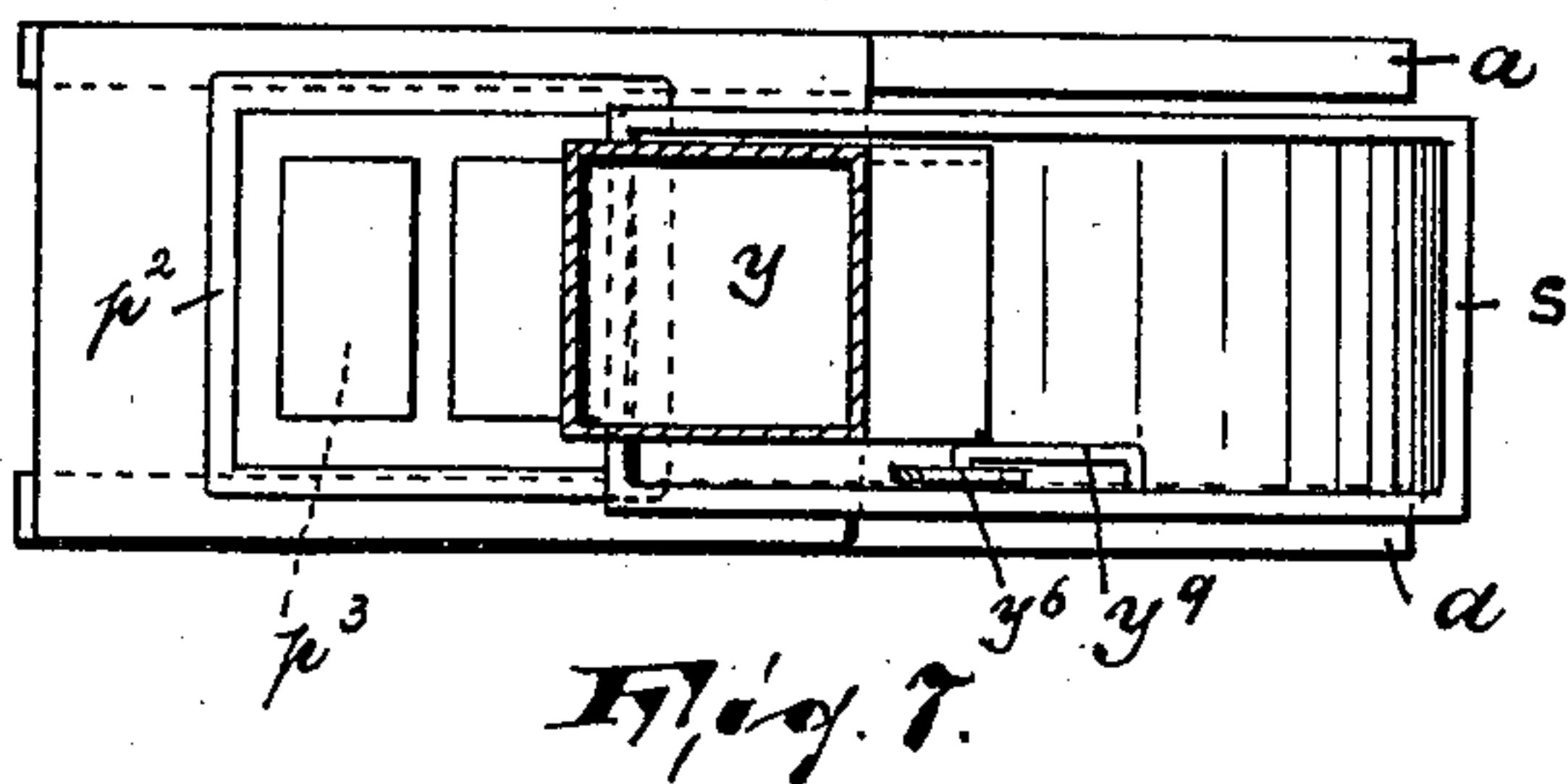
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UNITED STATES PATENT OFFICE.

JOSEPH SHARPE, OF PATERSON, NEW JERSEY.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 607,488, dated July 19, 1898.

Application filed October 2, 1897. Serial No. 653,786. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH SHARPE, a citizen of the United States, residing in Paterson, county of Passaic, and State of New Jersey, 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of my present invention is to provide a machine for making and pressing bricks of simple, strong, and durable construction, reliable and efficient in operation, and in which machine the feed-box and the damper or valve of the supply-spout are operated automatically. A further object is to provide said machine with a mold-box, a movable mold-cap, and with dies, whereby the bricks manufactured are rough on their large or connecting surfaces and smooth on their ends and faces.

The invention consists in the improved brick-machine, in the feed-box-operating mechanism, in the straining-bars and the means for operating the same, in the mechanism for automatically operating the damper or valve of the supply-spout, and in the combination and arrangements of the various parts, substantially as will be hereinafter more fully described, and finally embodied in the clauses of the claims.

Referring to the accompanying drawings, in which like letters of reference indicate corresponding parts in each of the several views, Figure 1 is a side elevation of my improved brick-making machine, the movable feed-spout being broken away; Fig. 2, a sectional view on the line $x x$ of Fig. 1; Fig. 3, an elevation of the opposite side of the machine as illustrated in Fig. 1; Fig. 4, a detail view of a portion of a certain spur-wheel and of its externally toothed or corrugated hub; Fig. 5, a sectional view of one of a series of cam-disks adapted to be adjustably arranged on the said toothed or corrugated hub of the spur-wheel; Fig. 6, a detail elevation of the upper portion of Fig. 3, the rear frame and certain operating parts being removed, the

mold-box and feed-box being shown in section; Fig. 7, a top plan view of the mold-box, the dies, the feed-box, the feed-spout, and of a portion of a coöperating lever; and Fig. 8, a sectional view of the follower.

In said drawings, a represents a frame, in the rear portion of which is journaled the main driving-shaft b , on which is mounted and on each side of the machine a pinion c , meshing into spur-wheel d , secured on the parallel crank-shaft e . The crank f of said crank-shaft e is connected by a pitman g with one end of the lever i , the other end of which is fulcrumed on the rod i' , suitably supported in the frame a and parallel with and below the main driving-shaft b .

On the connecting-pin i^2 is pivotally arranged one end of link h , while the other end of said link is connected by a pin i^3 with the upper forked portion of an arm k , the lower end of which terminates in an elongated hub m' , having its bearings in vertical elliptical slots m^2 in the frame a . On the pin i^3 is also pivotally secured one end of arm m , the other end of which is pivotally connected with the lower portion of the follower or reciprocating head m^3 , suitably guided in the frame a , as illustrated in Fig. 2.

On each spur-wheel d are arranged two horizontally-projecting pins or studs d' d^2 , adapted to engage and operate the longer arm of a lever o , fulcrumed, as at o' , adjacent to the hub m' and having its shorter curved arm engaging the said hub, as clearly illustrated in Figs. 1, 2, and 3 of the drawings.

On the hub m' and at or near each end thereof is mounted a double straining-bar p , to the screw-threaded upper portions of which is adjustably secured the mold-cap p' , adapted to engage and bear during certain stages of operation upon the top of the mold-box p^2 , which latter is suitably supported on the frame a and above the follower or reciprocating head m^3 .

Within the mold-box is arranged the reciprocating block p^3 , carrying at its upper end the dies in the usual and well-known manner. On each side of the block is pivotally arranged, as at p^4 , the upper portion of a link p^5 , the lower portion of which is jointed with one arm of lever p^6 , fulcrumed, as at p^7 , to the frame a and having its free end in the

path of and adapted to be operated by a cam r , arranged on a disk r' , which latter is adjustably secured on the hub r^2 of the spur-wheel d . Said hub is for that purpose provided with a series of elongated teeth or corrugations, while the internal bore of the disk r' is provided with a series of notches or corrugations snugly fitting upon the said series of teeth or corrugations on said hub.

The straining-bars p are limited in their forward motion by stops a' and in their rearward motion by stops a^2 , projecting from and preferably integral with the frame a . A spiral spring a^3 is secured with one end to the upper portion of its respective straining-bar, while its other end is secured to the said frame a , as clearly illustrated in Figs. 1 and 2.

Those portions of the straining-bars which are adapted to engage the stops a' and a^2 are provided with suitable elastic cushions a^{10} and a^{11} . To about the central portion of one of said straining-bars—that is to say, to the straining-bar on one side of the machine—is pivotally secured, as at p^8 , a bar or arm p^9 , having its rearward end slidingly arranged in a guide bracket or bridge p^{10} and adapted to be engaged by a cam r^3 , arranged on a disk r^4 , which latter is of similar construction to the disk r' and is also mounted on the hub r^2 of the spur-wheel d . On said hub r^2 and adjacent to the disk r^4 is mounted a disk r^6 , provided with a cam r^5 , adapted to engage and operate the depending rod r^7 , pivotally connected with the shorter arm r^8 of an angle-lever fulcrumed, as at r^9 , to an auxiliary bracket a^6 and having its longer arm r^{10} bent upward and pivotally connected through a link r^{11} with the feed-box s , which latter is slidingly arranged on the table s' and is provided in its bottom with an opening adapted to be brought in alinement with the mold-box p^2 .

The feed-box s is of ordinary construction and is provided with a partition s^2 , extending from the rear upper portion of said box to about the opening in the bottom thereof. On each side of the box are secured downwardly-extending brackets s^3 s^3 , having their lower portions slidingly arranged on rods s^4 s^4 , whereby additional steadiness is furnished to the feed-box while being moved or operated. To the rear upper portion and on one side of said feed-box s is pivotally secured a link q , the free end of which is jointed to the longer arm of a lever q' , fulcrumed, as at q^2 , on the auxiliary bracket a^6 and having its shorter arm in the path of and adapted to be operated by a cam r^{12} , projecting from a disk r^{13} , which latter is mounted on the hub r^2 of the spur-wheel and adjacent to the disk r' . A disk r^{14} , with cam r^{15} , is also arranged on said hub and alongside of the disk r^{13} and is adapted to operate the shorter arm of the lever v , fulcrumed as at q^2 and having the free end of its longer arm connected by a brace or rod v' with the straining-bar p , (on one side of the machine.)

The reciprocating block p^3 , carrying the

dies, is limited in its downward movement by stops x , adjustably arranged in brackets projecting from the side of the frame a .

On a platform or floor y^3 above the machine is mounted the fixed feed-spout y^2 , to the lower portion of which is hinged, as at y' , the movable spout-section y , extending with its lower end into the feed-box s .

The fixed feed-spout y^2 is provided with a valve or damper y^4 , to the outwardly-projecting arm of which is jointed, as at y^5 , one end of lever y^6 , fulcrumed, as at y^7 , to a bracket y^8 , and having its free arm loosely and slidingly arranged in a bridge or bracket y^9 , mounted on the inside of the feed-box s , all as clearly illustrated in Figs. 3, 6, and 7 of the drawings.

On the mold-cap p' is arranged a nose or projection p^{15} , adapted to engage the front portion of the feed-box s to thus start the latter in its rearward movement, which projection may be used either alone for that purpose or in connection with the link q , fulcrumed lever q' , and cam r^{12} of disk r^{13} , or, if desired, can be dispensed with, in which case the last-mentioned link-and-lever connection will perform the desired operation.

In operation the spur-wheel d is rotated in the direction of the arrow R , Figs. 1 and 3. The cam r^5 operates the depending rod or lever r^7 and thus the fulcrumed angle-lever r^8 r^{10} , whereby the feed-box s is moved from left to right, Fig. 1—that is to say, the opening in its bottom is brought in alinement with and over the dies in the mold-box p^2 . Simultaneously the fulcrumed lever y^6 is being operated—that is to say; its lower end comes in contact with the rear portion of the bridge or bracket y^9 , whereby the upper portion of said lever is moved from left to right, Fig. 3, thus opening the valve or damper y^4 and allowing a certain amount of molding material to enter from the fixed feed-spout and through the movable spout into the feed-box s and from there into the mold-box p^2 and upon the top of the dies. The shaft e in its further rotation causes the cams r^{12} and r^{15} to engage the shorter arms of the levers q' and v , respectively, while simultaneously the projecting pins d^3 of the spur-wheels d depress the longer arms of the fulcrumed levers q , thereby raising the hub m' and straining-bars p and thus the mold-cap p' over the corner or edge of the mold-box p^2 . The straining-bars are now moved backward, Fig. 3, by means of the connecting brace or rod v' and fulcrumed lever v , while simultaneously the feed-box s is returned to its original position, the damper y^4 being closed. The mold-cap p' is thus brought upon the mold-box p^2 , and simultaneously the toggle-levers exert pressure upon the follower or reciprocating head m^3 and thus move the latter upward, which in turn operates the reciprocating block p^3 and the dies carried thereby, thus forming the bricks, as will be manifest. About that time the pins d' of the spur-wheels d have again depressed

the levers o and thus raised the mold-cap p' sufficient to allow it to return to its normal position, which return movement is started by the cam r^3 of disk r^4 engaging the free end of sliding bar or arm p^9 , and thus swinging the straining-bars p backward, Fig. 1, which latter thereafter return gradually against the action of the spiral springs a^3 to their normal position by gravity. Simultaneously the cam r operates the fulcrumed lever p^6 , which in turn raises the links p^5 and thus forces the reciprocating block upward until the dies are above the plane of the mold-box, when the finished bricks can be conveniently removed. The heretofore-described operation is then repeated.

The advantages of the double straining-bars are obvious: An equal strain is exerted over both molds and so prevents either of the bricks from having a feather-edge or of being of unequal thickness, while the spiral spring a^3 and elastic cushions in conjunction with the stops a' and a^2 reduce the jar of said straining-bars when falling back to their normal position by gravity or their own weight.

I do not intend to limit myself to the precise construction shown and described, as various alterations can be made without changing the scope of my invention; but What I claim as new, and desire to secure by Letters Patent, is—

1. In a brick-machine, the combination with the mold-box, of a slidable feed-box provided in its bottom with an opening adapted to register with said mold-box, mechanism for operating said feed-box, a fixed or supply spout above the mold-box, a movable feed-spout leading from said fixed spout to and within the feed-box, a damper or valve slidably arranged in the fixed feed-spout, a bridge or bracket in the feed-box, and a fulcrumed lever connected with one end to the sliding valve or damper and engaging with its other end the said bridge or bracket and adapted to be operated thereby, substantially as and for the purposes described.

2. In a brick-machine, the combination with the frame and the main driving-shaft, of a crank-shaft parallel with the main driving-shaft and operated thereby, disks mounted on said crank-shaft and each provided with a cam projection, a mold-box supported by said frame, a feed-box provided in its bottom with an opening slidably arranged on said frame and adapted to register with said mold-box, an angle-lever suitably fulcrumed on the frame, a link connecting one arm of said angle-lever with the feed-box, a rod depending from the other arm of said angle-lever and adapted to be operated by the cam projection on one of said disks, a lever suitably fulcrumed on the frame and having its shorter arm in the path of the cam projection on another of said disks and adapted to be operated thereby, and a link connecting the longer arm of said last-mentioned fulcrumed lever with the

feed-box, substantially as and for the purposes described.

3. In a brick-machine, the combination with the frame and the main driving-shaft, of a crank-shaft parallel with the main driving-shaft and adapted to be operated thereby, a spur-wheel on said crank-shaft and on each side of the machine and provided with two horizontally-extending studs or pins, a fulcrumed lever adapted to be operated by said studs or pins, a hub supported by said fulcrumed levers, double straining-bars on said hub, a mold-cap carried by said straining-bars, a mold-box on the frame and adapted to be engaged by said mold-cap, a series of disks mounted on the crank-shaft and each provided with a cam projection, a fulcrumed vertically-arranged lever adapted to be operated by the cam projection on one of said disks, a rod or brace connecting the other arm of said vertically-arranged fulcrumed lever with one of said straining-bars, an arm pivotally connected to about the central portion of one of said straining-bars, and having its free end in the path of the cam projection on another of said disks and adapted to be operated thereby, and a bridge or bracket projecting from the frame for guiding the free end of said last-mentioned pivoted arm, substantially as and for the purposes described.

4. In a brick-machine, the combination with the frame and the revolving crank-shaft mounted therein, of a mold-box on said frame, a reciprocating block carrying the dies in said mold-box, a link on each side of the reciprocating block and pivotally connected thereto, a fulcrumed lever on each side of the frame and having one end pivotally connected with the free end of its respective link, disks mounted on the crank-shaft and each provided with a cam projection adapted to operate the free ends of said last-mentioned fulcrumed levers, a hub suitably supported in the frame, a double straining-bar mounted on each side of said hub, a mold-cap on said straining-bars, means for operating said straining-bars to move the cap into and out of engagement with the mold-box, a reciprocating head or follower below the reciprocating block, and a series of links, arms and levers connecting the crank-shaft with the hub and with the follower or reciprocating head, substantially as and for the purposes described.

5. In a brick-machine, the combination with the frame and the main driving-shaft, of a crank-shaft parallel with the main driving-shaft and operated thereby, disks mounted on said crank-shaft and each provided with a cam projection, a mold-box supported by said frame, a feed-box provided in its bottom with an opening slidably arranged on said frame and adapted to register with said mold-box, an angle-lever suitably fulcrumed on the frame, a link connecting one arm of said

ing from the other arm of said angle-lever and adapted to be operated by the cam projection on one of said disks, a lever suitably fulcrumed on the frame and having its shorter arm in the path of the cam projection on another of said disks and adapted to be operated thereby, a link connecting the longer arm of said last-mentioned fulcrumed lever with the feed-box, a feed or supply spout above the mold-box, a movable feed-spout leading from said fixed spout to and within the feed-box, a damper or valve slidingly arranged in the fixed feed-spout, a bridge or bracket in the feed-box, and a fulcrumed lever connected with one end to the sliding valve or damper and engaging with its other end the said bridge or bracket and adapted to be operated thereby, substantially as and for the purposes described.

6. In a brick-machine, the combination with the frame and the main driving-shaft, of a crank-shaft parallel with the main driving-shaft and operated thereby, a spur-wheel on said crank-shaft and on each side of the machine and provided with an externally toothed or corrugated hub, two pins projecting horizontally from each spur-wheel, fulcrumed levers adapted to be operated by said horizontal pins, a hub supported by said fulcrumed levers, a double straining-bar mounted on each side of said hub, a mold-box on the

frame of the machine, a mold-cap adjustably arranged on said double straining-bars and adapted to be moved into and out of engagement with said mold-box, a series of disks having their central bore toothed or corrugated adjustably arranged on the toothed or corrugated hubs of the spur-wheels, each of said disks being provided with a cam projection, a fulcrumed lever adapted to be operated by the cam projection on one of said disks, a rod or brace connecting the other arm of said fulcrumed lever with one of said straining-bars, an arm pivotally connected to about the central portion of one of said straining-bars and having its free end in the path of the cam projection on another of said disks and adapted to be operated thereby, a bridge or bracket projecting from the frame for guiding the free end of said last-mentioned pivoted arm, a slidable feed-box provided with an opening in its bottom and adapted to register with the mold-box, and means for operating said feed-box, substantially as and for the purposes described.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of September, 1897.

JOSEPH SHARPE.

Witnesses:

ALFRED GARTNER,
S. W. VORTYERN.