

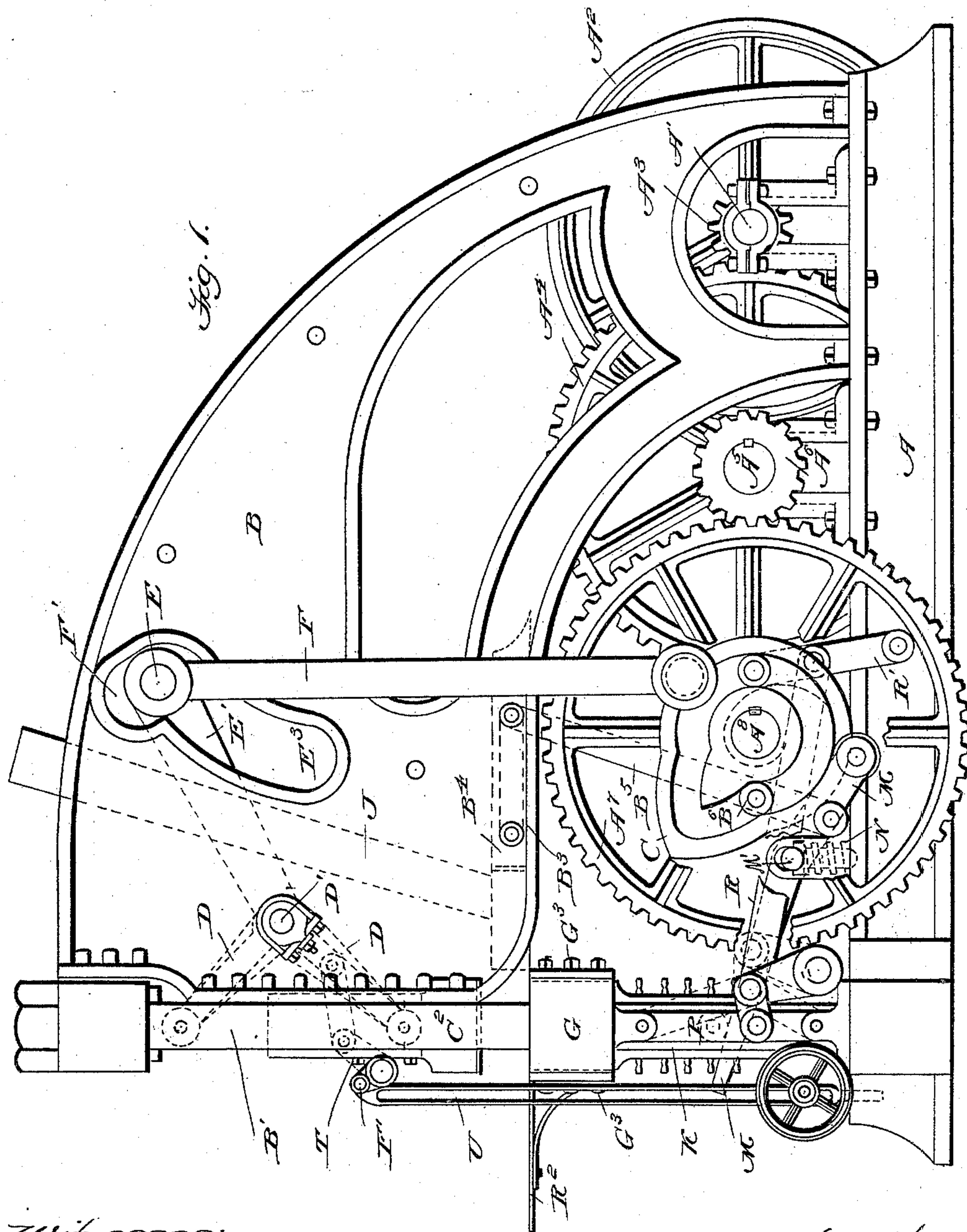
(No Model.)

3 Sheets—Sheet 1.

J. B. MOWRY.
BRICK MACHINE.

No. 489,974.

Patented Jan. 17, 1893.



Witnesses:

Wm. C. Cresswell.
Arthur L. Bryant.

Inventor:

Jos. B. Mowry
By Edoon Bros.
Atty's.

(No Model.)

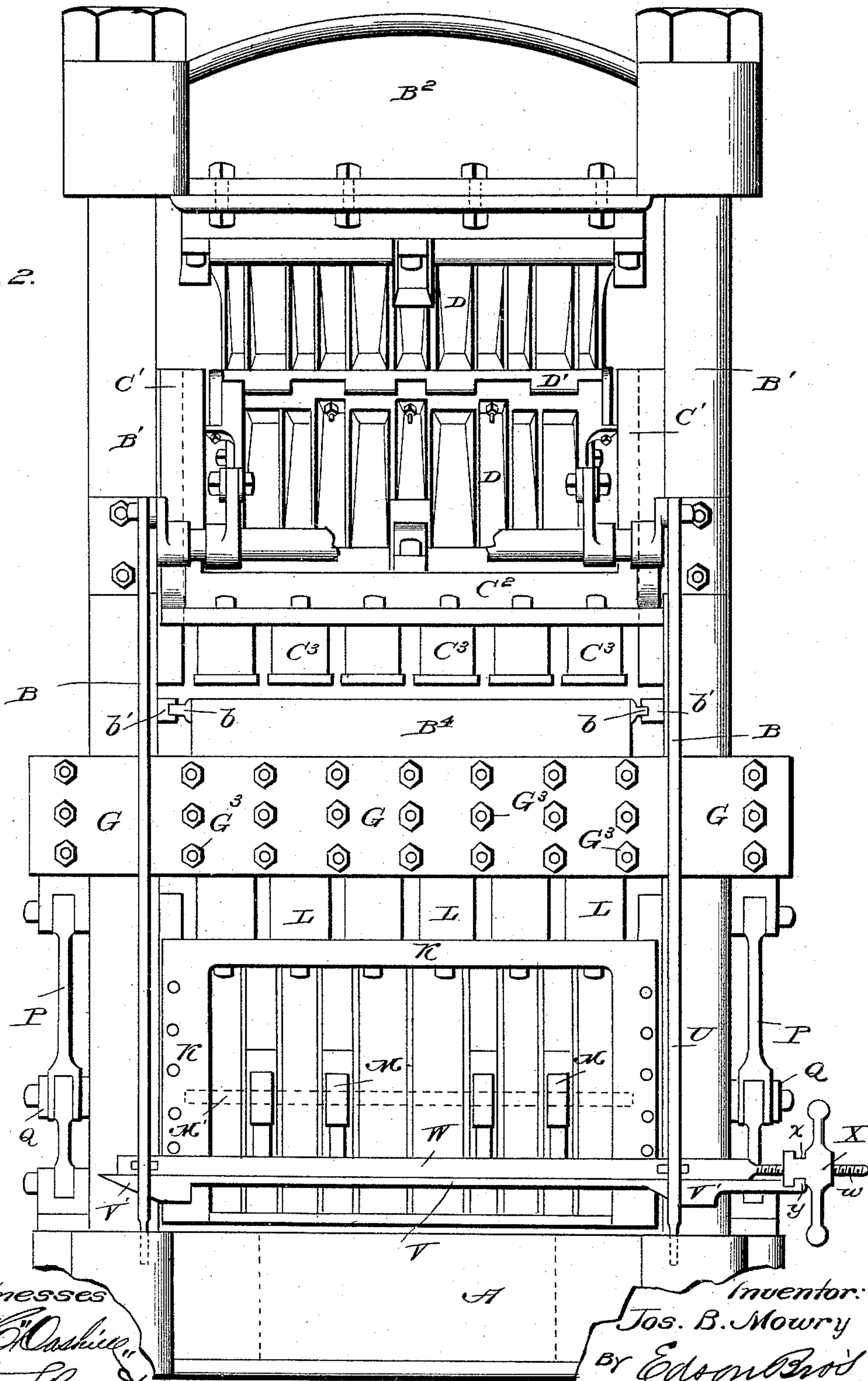
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J. B. MOWRY.
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No. 489,974.

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Fig. 2.



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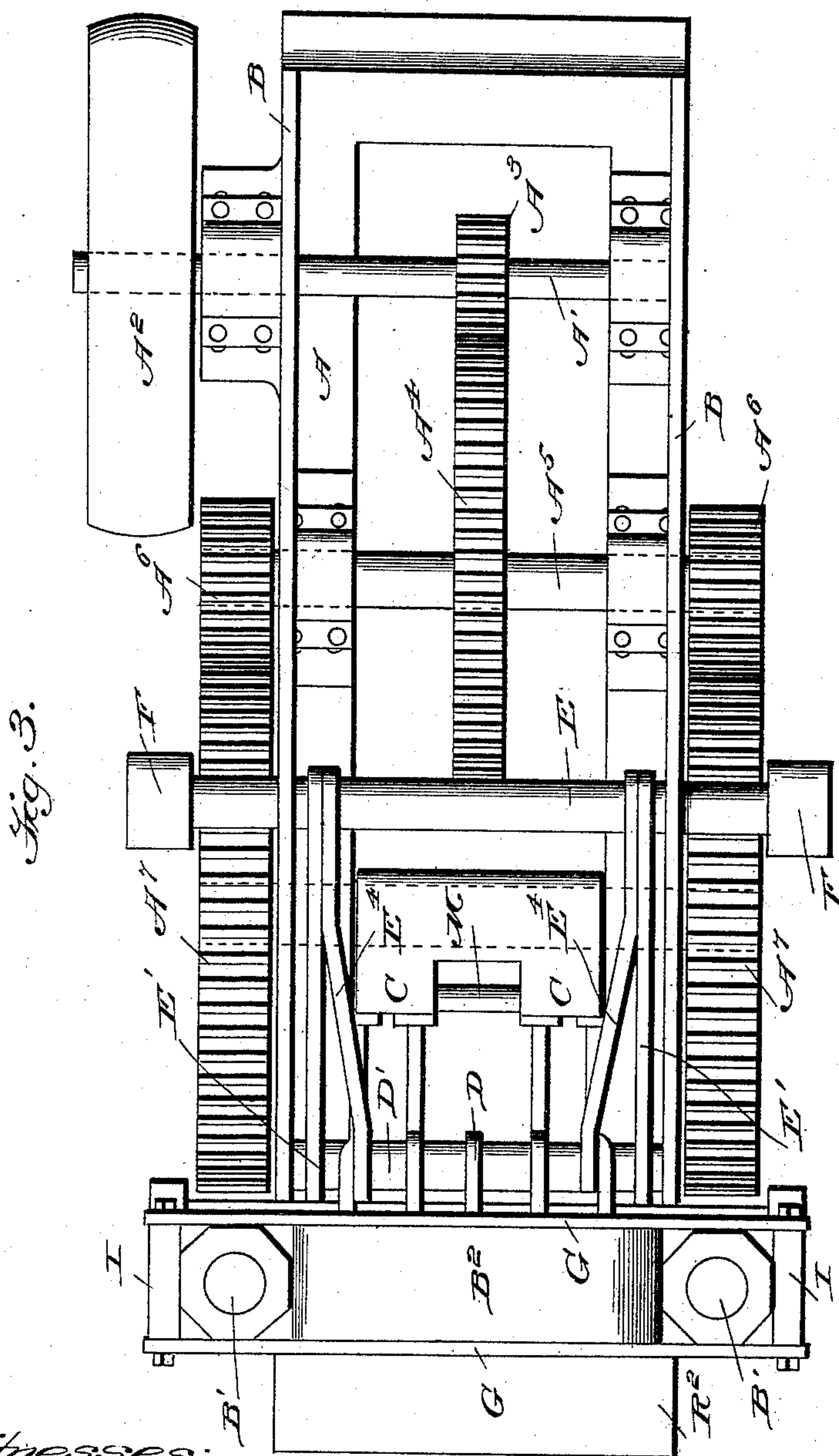
(No Model.)

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J. B. MOWRY.
BRICK MACHINE.

No. 489,974.

Patented Jan. 17, 1893.



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UNITED STATES PATENT OFFICE.

JOSEPH B. MOWRY, OF MANSFIELD, OHIO, ASSIGNOR OF ONE-FOURTH TO
JOHN F. STINE, OF SAME PLACE.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,974, dated January 17, 1893.

Application filed April 28, 1892. Serial No. 431,000. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH B. MOWRY, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, 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 relates to improvements in dry clay press brick machines, and it consists generally in the combination with vertically movable upper and lower dies of a vertically movable mold box.

My invention further consists in the peculiar construction and arrangement of parts as will be hereinafter fully pointed out and claimed.

In the accompanying drawings; Figure 1 represents a side elevation of a brick machine embodying my invention. Fig. 2 is a front elevation of the same; Fig. 3 is a plan view.

Like letters of reference denote corresponding parts in all the figures of the drawings, referring to which:

A designates the base or bed of the machine which is made of any suitable size, and to this base or bed plate are rigidly attached the upright sides B, B.

A shaft A' is journaled in suitable bearings secured on the base or bed A, and on said shaft beyond one side of the machine is rigidly secured a driving pulley A² designed to be connected to the band wheel of an engine for the purpose of operating the machine in the manner and for the purpose to be hereinafter fully described.

A gear wheel A³ is rigidly secured on the shaft A' and said gear meshes with a similar wheel A⁴ secured centrally on a transverse shaft A⁵ journaled in suitable bearings on the bed A. On the shaft A⁵, near the ends thereof, are secured pinions A⁶ which mesh with gear wheels A⁷ carried by a shaft A⁸ also journaled in bearings secured to the base or bed of the machine.

The sides B of the machine are connected at their forward ends with the base or bed plate A by means of vertical parallel pillars or col-

umns B' which are connected at their upper ends by a cross beam B².

The pillars or columns B' and the side walls B of the machine are connected by a short horizontal, rearwardly extending platform B³, and on said platform is arranged the clay box or frame B⁴. This clay box or frame is provided on opposite sides with longitudinal guide rails or ribs b which fit in suitable ways b' on the inner faces of the side walls or plates B of the machine. The clay box B⁴ is adapted to be reciprocated back and forth in a horizontal line over the horizontal platform B³ below the lower end of a feed spout J by means of links or bars B⁵ which are pivotally connected at their lower ends to the bed A and are each provided at an intermediate point of their length with a roller B⁶ which fits or rides in one of the grooves of duplex cams C secured on the shaft A⁸.

On the inner faces of the vertical columns or pillars B', above the platform B³, are arranged vertical guide pieces or ways C' and a frame C², to the lower face of which the upper series of dies C³ are attached, is adapted to be moved vertically on said guides or ways. To the upper side or end of the sliding frame C² are attached the lower ends of the lower members of a series of toggle levers D, the upper ends of the upper members of said toggle levers being pivotally connected to the cross bar or beam B² which connects the upper ends of the vertical columns or pillars B'. The ends of the shaft D' by which the upper and lower members of the toggle levers D are connected, is connected at the ends with a transverse shaft E, by means of links E'. The ends of the shaft E ride in segmental slots E³ formed in the side walls B of the machine, near the top thereof. The links E' are braced and strengthened by means of braces E⁴. The ends of the transverse shaft E are connected with wrist pins attached to the gear wheels A⁷ by means of vertical links or levers F so that as said wheels A⁷ are rotated the rods F are reciprocated and the shaft E moved up and down in the segmental slots E³, and the frame C², and its attached dies, are reciprocated vertically between the pillars or columns B'. It will be noticed that the seg-

mental slots E^3 communicate at their upper ends with short slots F' in which the ends of the shaft E pass and remain at rest while the wrist pins, connecting the rods or links F to the wheels A^7 , are passing over the upper center.

G designates the mold box which consists of two parallel pieces or plates which extend transversely across the front of the machine on opposite sides of the pillars or columns B' and are connected at various points throughout its length by partitions to form the desired number of boxes corresponding in number to the number of dies carried by the vertically movable frame C^2 . The partitions of the mold box G are provided with a series of integral threaded tenons which extend through suitable apertures or mortises formed in the front and rear walls of the mold box; and said partitions or division walls are held firmly in place by means of nuts G^3 screwed on the outer threaded ends of the tenons.

The front and rear walls of the mold box are connected beyond the sides of the machine by pieces or blocks I , and to these blocks are connected the upper sections or members of toggle levers P . The lower ends of the lower members of the toggle levers P are connected to the base or bed plate A .

The toggle levers P are connected at the point of connection between their members, to one member of each of a series of toggle levers Q the other members of said levers being connected to the base or bed plate A . These toggle levers Q are connected to rearwardly extending arms R which are in turn attached to arms R' pivotally attached to the base or bed plate A and provided near their upper ends with rollers which contact with the duplex cams on the shaft A^8 . So that as the said shaft is rotated the arms R are reciprocated and the toggle levers Q, P , operated to move the mold box vertically on guides or ways attached to the pillars or columns B' . To the front of the mold box is attached a projecting shelf or bracket R^2 .

Below the horizontal platform B^3 is arranged a frame K which is mounted on suitable guides or ways attached to the pillars or columns B' and is adapted to be reciprocated vertically on said guides or ways by mechanism to be hereinafter fully pointed out. On the upper surface of the frame K are mounted the lower dies L which dies correspond in number to the upper dies and the compartments of the mold box G within which compartments the said lower dies always remain.

The frame K and its attached dies L are reciprocated vertically by levers M fulcrumed on a transverse shaft M' . The shaft M' is journaled in suitable bearings secured on the base or bed plate A of the machine and beneath said shaft are arranged any desired number of coiled cushion springs N to allow of a limited vertical movement of said shaft. Near their rear ends, the levers M are each

provided with a laterally projecting roller which rollers contact with the cams C on the shaft A^8 .

To the lower members of the toggle levers on opposite ends of the series of levers D are connected the upper ends of the upper members of toggle levers T . The fulcrum shaft F' of the levers T is connected at its ends to two longitudinally slotted parallel depending hangers U which extend downwardly in front of the mold box G .

Through the slotted hangers U is passed a horizontal bar V provided near its ends with inclined wedge shaped surfaces V' . A bar W extends through the slotted hangers U above the bar V and said bar is provided at one end with a reduced threaded portion w . On the threaded reduced end w of the bar or rod W is fitted a hand operating wheel X which wheel is provided in its hub with an annular groove or recess x in which fits snugly a lug y on the bar or rod V so that as said wheel is turned the rod V will be moved longitudinally and the bar or rod W raised in the slots in the hangers U as the inclined or wedge shaped surface V' on the bar V contacts with the bottom of the slots in the hangers. On the bar W rest the free outer ends of the levers M which support the frame K and the lower dies L and by adjusting the bars V, W , said frame and dies are maintained in proper positions with relation to the vertically movable mold box G .

The operation of my improved machine is as follows: Clay is introduced into the clay box or frame through the spout J . The band wheel or pulley A^2 is connected with the band wheel of an engine and the motion thus communicated to the shaft A is transmitted through the train of gears A^3, A^4, A^6 , and A^7 to the main shaft A^8 . As the shaft A^8 revolves the clay box is reciprocated back and forth over the horizontal platform B^3 , and the clay contained in such box is deposited in the various divisions or compartments of the mold box G on the lower dies L which are supported within such compartments by the levers M resting on the bar W . After the clay contained in the box B^4 has been deposited in the various compartments of the mold box on the lower dies therein the shaft E begins to move down in the segmental slots E^3 and operates the series of toggle levers D to force the upper dies C^3 downwardly into the various compartments of the mold box G and the clay contained therein as compactly pressed between the upper and lower dies. As the levers D descend the slotted hangers attached to the lower members of said levers descend and the frame K and dies L also descend slightly. The mold box also is moved downwardly through the action of the duplex cams on the shaft A^8 , on the rearwardly extending arms R . When the upper dies have reached their lowest point and are being raised by the connecting links E and the rods F the arms R are moved forward by the operating cams on

the shaft A⁸ and the mold box raised until its top is in the same horizontal plane as the horizontal platform B³. At the same time the cams operate to depress the inner rear ends of the spring fulcrumed levers M; and thus elevate the forward ends thereof and the frame K and dies L carried thereby. The bricks which have been formed in the different compartments of the mold-box G are thus forced upwardly, being held all the time between the upper and lower dies, until said lower dies reach the top of the mold box G when at the next forward movement of the clay box B⁴ the pressed bricks are moved off onto the shelf or bracket in front of the mold box. When the bricks have been removed the lower dies move downwardly in the mold box, as the various compartments are receiving a fresh supply of clay from the box B⁴, until the levers M contact with or rest on the upper edge of the bar W. The position of the bar W serves to regulate the quantity of clay admitted to each compartment of the mold box. By placing coiled springs under the shaft on which the levers M are fulcrumed, the lower dies and bricks carried thereby will be moved upwardly even if the operating cams failed to accomplish that result. In case the upper dies should not begin their upward movement at the exact time that the lower dies begin their upward movement the coiled springs just referred to will move the lower dies, brick and upper dies.

I am aware that changes in the form and proportion of parts and details of construction of my invention can be made without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make such changes and modifications as fairly fall within the scope of the same.

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

1. In a brick machine, the combination of a suitable frame provided with parallel segmental slots in its sides, a transverse shaft journaled in said segmental slots, connections between the transverse shaft and a train of gears, a frame mounted on guides or ways attached to the frame of the machine and carrying the upper dies, a series of toggle levers connected to said frame and to the frame of the machine, connections between said toggle levers and the transverse shaft, a vertically movable mold box, and vertically movable lower dies, substantially as described.

2. In a brick machine, the combination of a base or bed plate, the parallel sides, on said bed plate provided near their tops with segmental slots, vertical pillars or columns connecting the front ends of the sides with the base plate, the upper dies attached to a frame mounted on vertical guides on the pillars, toggle levers connected to said die-carrying frame and to the frame of the machine, a transverse shaft passing through the segmental slots in the sides of the machine and connected to said

toggle levers and to a train of gears, a mold box arranged below the upper dies, a horizontal reciprocating clay box arranged above the mold box, a series of lower dies, and connections between the toggle levers, operating the upper dies, and the lower dies for holding the lower dies at all times within the mold box, substantially as described.

3. The combination with a train of gears, of a series of vertically movable upper dies, a mold box, toggle levers connected to said mold box and to the bed of the machine, arms attached to said toggle levers and extending rearwardly, cams carried by one of the shafts of the train of gears and adapted to operate said rearwardly extending arms to reciprocate the mold box, and a series of levers fulcrumed on a spring supported shaft and supporting a series of lower dies, the rear ends of said levers being in contact with the cams on one of the shafts of the driving gear, substantially as described.

4. In a brick machine, the combination of a train of gears, a driving shaft, A⁸, gear wheels carried by said shaft and meshing with the train of gears, a pair of duplex cams carried by said driving shaft, a shaft supported in segmental grooves in the sides of the machine and connected, at its ends, with the wheels on the driving shaft, and with toggle levers adapted to operate a series of upper dies, a mold box, toggle levers, P, connected to said mold box and to the bed plate of the machine, toggle levers, Q, connected to the levers P and to the bed of the machine, arms R connecting the levers Q with arms, R', pivotally attached to the bed of the machine and provided with rollers which contact with the duplex cams on the driving shaft, a series of lower dies supported by levers fulcrumed on a spring supported shaft and adapted to be operated by the duplex cams on the driving shaft, a horizontal reciprocating clay box, and means for holding the lower dies within the mold box, substantially as described.

5. In a brick machine, the combination of the vertically movable upper dies, the vertically movable mold box, a horizontal reciprocating clay box, the slotted hangers connected to the supporting means of the upper dies, the bar, V, extending through the slotted hangers and provided near its ends with the inclined surfaces, the bar, W, extending through the slotted hangers and having one end threaded, an operating wheel fitted on said threaded end and provided with an annular groove which receives a lug or stud on the bar V, and the lower dies supported within the mold box by the bar W, substantially as described.

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

JOSEPH B. MOWRY.

Witnesses:

R. BRINKERHOFF, Jr.,
LEWIS S. WHITING.