

(No Model.)

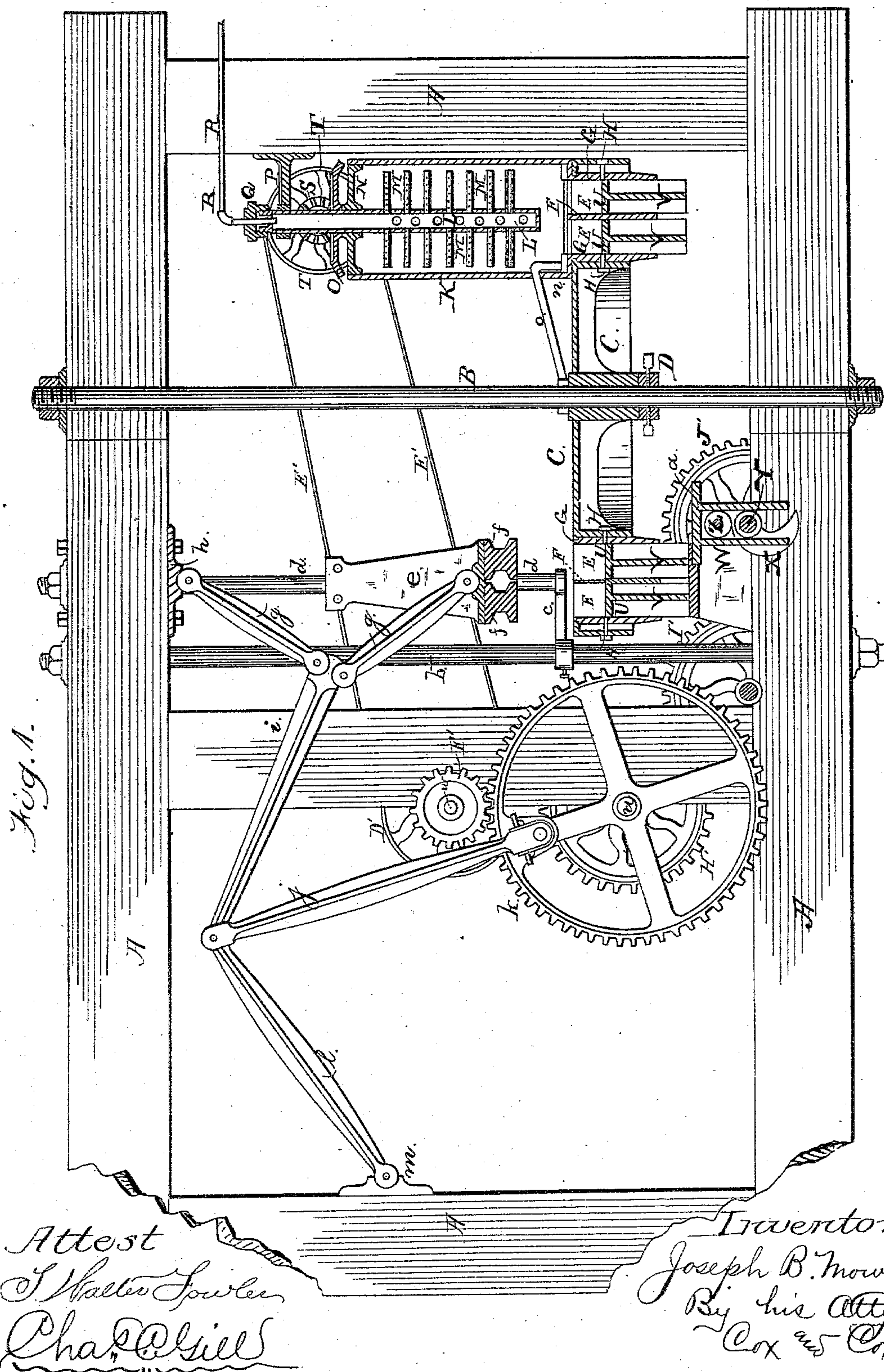
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J. B. MOWRY.

BRICK MACHINE.

No. 288,253.

Patented Nov. 13, 1883.



N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.)

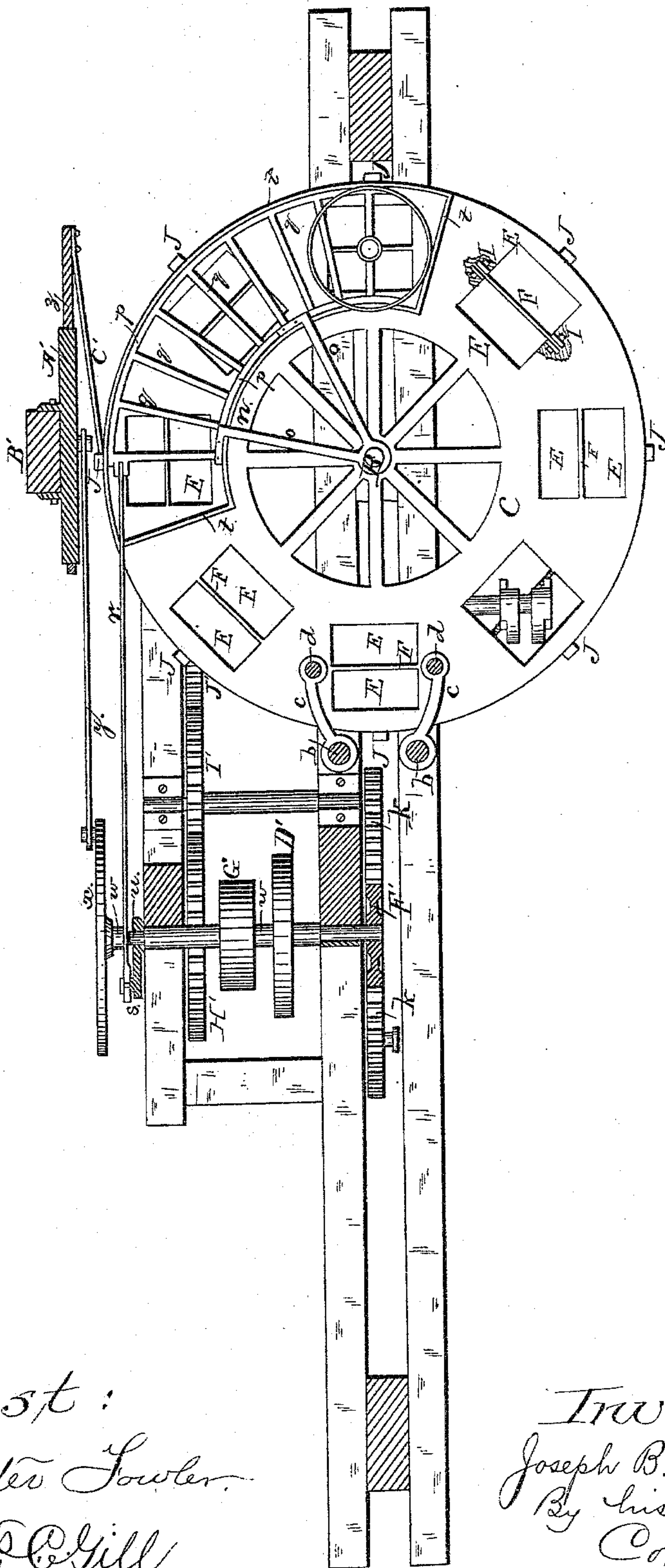
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Fig. 2.



Attest:
Shalter Fowler
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Inventor:
Joseph B. Mowry,
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UNITED STATES PATENT OFFICE.

JOSEPH B. MOWRY, OF MANSFIELD, OHIO.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 288,253, dated November 13, 1883.

Application filed January 12, 1883. (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.

The invention relates to an improvement in brick-machines; and it consists in the elements hereinafter described, and specifically pointed out in the claims.

The object of the invention is to produce perfect pressed bricks in a manner and by mechanism which will permit of their being produced in as rapid and economical a way as the present common molded bricks are manufactured.

The invention will be fully understood by the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical longitudinal section of a machine embodying the elements of the invention; and Fig. 2 is a top view, partly in section, of same.

A denotes the frame of the machine, which frame will be preferably constructed of heavy timber and suitably secured to form firm bearings for the mechanism employed in the construction of the machine.

Between the upper and lower portions of the frame, and at the right-hand end thereof, is secured the vertical shaft B, and upon this shaft is mounted the mold-wheel C, the collar D being provided upon the shaft B for the purpose of sustaining the mold-wheel at a proper elevation.

The mold-wheel C will be of usual circular form, and in the present instance I have provided it with eight double molds, E, by means of which sixteen pressed bricks will be made at each complete revolution of the table.

The molds E are constructed by forming suitable openings in the mold-table, and by lining said openings with sheet-steel G, and dividing them into two separate compartments by the central partition, F, which will

also be of sheet-steel. The pieces of sheet-steel G, forming the linings of the mold, will be secured by bolts H, and the partition F will be secured by bolts I, clamping its outer edges beneath the mold-table and at each side of the mold, as indicated in Fig. 2.

The base of the molds E consists of the followers U, formed of metal having a horizontal surface and depending vertical portions V, as indicated in section in Fig. 1. The followers project a suitable distance below the table C, to be acted upon by the mold-ejector cam and table, hereinafter described.

Upon the periphery of the mold-table will be secured, at regular intervals, the blocks J, in the present instance eight being employed. The purpose of the blocks J is to control the movement of the mold-table, as hereinafter described.

Over the right-hand portion of the mold-table C, and arranged to come directly over the molds as said table is revolved, is secured the pug-mill K, which is adapted to receive the clay after it has been ground and mixed and temper it.

The pug-mill K consists of a cylindrical casing or shell having a central vertical hollow shaft, L, provided with subordinate radiating arms M, the shaft being hollow and the arms perforated. The upper portion of the shaft L passes through a suitable cross-bar, N, extending across the top of the mill, thence through the gear-wheel O and bracket P, and has its upper extremity set in the packing-box Q, which is adapted to permit the rotation of the shaft L, and at the same time to have a steam-tight joint.

Leading through the packing-box Q into the upper end of the shaft L is the steam-supply pipe R, by means of which a current of steam is injected into the pipe L, whence it issues through the perforations in the subordinate arms M, and serves to moisten or temper the clay.

The beveled-gear wheel above mentioned meshes with the pinion S, secured upon the shaft of the band-wheel T, and thus, when the said band-wheel T is revolved, motion will be communicated through the said pinion and beveled-gear wheel to the hollow shaft L, the

effect being that the subordinate arms will thoroughly mix the ground clay, and the steam issuing therefrom will moisten it and render it in a suitable condition to enter the molds and be formed into bricks.

At the under side of the mold-table C, and at a point opposite to the pug-mill K, is arranged the mold-ejector W, which consists of the cam X, mounted upon the horizontal shaft Y, the small wheel Z, and the frame *a*, which encompasses the said wheel Z and shaft Y, as indicated in Fig. 1. At the proper time in the operation of the machine, after the material in the molds has been pressed, a revolution of the shaft Y causes the cam X to turn upward, which forces the wheel C and the frame or table *a* upward. The upward movement of the table or frame *a* carries the bases U U upward, whereby the pressed bricks are forced upward out of the mold at a point about on a level with the upper surface of the mold-table C.

To the left of the mold-table C are arranged the vertical shafts *b b*, upon which, adjacent to the upper surface of the mold-table, are secured, by suitable collars and screws, the horizontal arms *c*, which sustain the lower ends of the shafts *d d*, upon which is mounted the slide *e*, carrying on its lower portion the dies *f f*, which are of suitable size to fit the upper edges of the molds E when in operation, and serve to press the material to form the brick.

The slide *e* has a free vertical movement upon the rods *d*, and is operated through the toggled levers *g*, one of which is connected with the lower portion of the slide, the other with a lug on the collar *h*, hereinafter described, the two extending ends of the toggled levers being connected to one end of the lever *i*, the other end of which is secured in the upper end of the lever *j*, said last-mentioned lever being eccentrically secured to the gear-wheel *k*. In the upper end of the lever *j* is also secured one end of the lever *l*, the other end of which is secured in the bearing *m*, attached to the side of the frame A.

It is obvious that the revolution of the gear-wheel *k* will be communicated through the two sides of the toggled levers to cause the slide *e* to have a free vertical movement upon the rods *d*.

The upper ends of the vertical shafts *d* extend through the side of the frame A, being secured at the upper end by a nut and at the lower side of the frame by the block *h*, which is secured in place by the bolts, whereby firm bearings are formed.

Upon the upper surface of the mold-table C, and arranged to cover about one-fourth of the circumference of the same, is arranged the frame *n*, which consists of the V-shaped arms *o o*, radiating from the vertical shaft B, and sustaining in their ends the bent bars *p*, connected by the round cross-bars *q*. The frame *n* will be inclosed by a casing, *t*, arranged over

the mold-table, and being about four inches in height. The lower edges of the casing *t* rest directly upon the mold-table. The purpose of the frame *n*, arranged within the casing *t* and over the molds E at one side of the pug-mill K, is to fill the molds with the material. The cross-bars *q* of the frame *n* move through the clay close to the upper surface of the molds, and serve to compact by their reciprocating movement the clay into the molds, whereby all the parts of the same are filled with the material before the table is moved from under the frame. The frame *n* gets its reciprocating movement from the connecting-rod *r*, the end of which is secured to the crank *s*, connected with shaft *u*. The revolution of the shaft *u* operates to draw the rod *r* back and forth, which movement is communicated to the frame *n*, with the result hereinbefore described.

Upon the outer end of the shaft *w* is placed the crank-wheel *x*, to which is eccentrically secured one end of the connecting-rod *y*, the other end of which is secured to the slide *z*, as indicated in Fig. 2. The slide *z* is encompassed by the casing A', which is secured to the standard B' of the frame A. When the shaft *w* is rotated, the crank-wheel *x* will impart reciprocating movement through the rod *y* to the slide *z*, which, through the spring part C', will cause an intermittent rotation of the mold-wheel C. The free end of the spring-bar C' impinges the periphery of the mold-table and comes in contact with the blocks J, hereinbefore described, as shown in Fig. 2. The reciprocating movement of the slide *z* toward the left of the machine forces the spring-pawl C' against the block J, which is in contact with its end, and causes the mold-table to rotate one-eighth of a revolution, whereby another mold is carried beneath the pug-mill K, and a full mold is brought in a direct line below the dies *f f*. The blocks J are arranged with such relation to the spring-pawl C' and the slide *z* that each full movement of the slide will cause the mold-table to revolve one-eighth of a revolution.

The timing of the slide *z* and the movement of the table C, as well as the timing of the other parts of the machine, may be varied at will, according to the number of molds employed, the size of the machine, and other circumstances.

Upon the shaft *w* is arranged the belt-wheel D', which is connected by a belt, E', with the similar wheel, T, mounted above the pug-mill, and by means of which connection power is communicated from the shaft *w* to the vertical hollow shaft L, inclosed in the mill.

Upon the end of the shaft *w*, opposite to the crank *s*, is secured the pinion-wheel F', the teeth of which mesh with the teeth of the gear-wheel *k*, to which the toggled levers hereinbefore described are connected. Upon the shaft *w* is also secured the band-wheel G', to which power is applied for setting the machine in operation. Motion is communicated through the

wheel G' and shaft *w* to the band-wheel D', and thence to the band-wheel T, whereby the pug-mill and its connecting devices are set in motion. Power is also communicated from the belt-wheel G' and shaft *w* to the crank *s* and slide *z*. The motion of the slide *z*, as hereinbefore recited, operates to revolve the mold-table C. The motion imparted to the wheel G' is communicated through the shaft *w* to the pinion F', and thence to the gear-wheel *k* and its connecting toggled levers, the operation of which levers is to impart vertical reciprocating movement to the slide *e* and dies *f f*, the effect of which vertical movement of the dies *f f* will be hereinafter set forth.

Upon the shaft *w* is mounted the gear-wheel H', which meshes with the intermediate gear-wheel, I', which latter wheel meshes with the wheel J', mounted upon the end of the axle Y, carrying the ejector-cam X. When the machine is in operation, movement is also communicated from the wheel G' through the shaft *u*, pinion F', gear-wheel *k*, shaft *w*, and gear-wheel H' to the intermediate gear-wheel, I', and the gear-wheel J', which in turn imparts motion to the shaft Y, and thence to the ejector-cam X, whereby said cam is made to elevate or descend and to eject the pressed brick from the mold or to permit the bases of the mold to lower, in order to receive a fresh supply of material from the pug-mill.

The operation of the machine is as follows: The clay, after being ground, is placed in the pug-mill K, and steam admitted through the pipe R to the hollow shaft L and its subordinate arms M. The machine being set in motion, as hereinbefore described, the hollow shaft L will revolve in the mill, and its action, in connection with the steam issuing from its subordinate arms, will thoroughly mix and prepare the clay for the molds. The clay leaves the mill at its lower end and enters the mold E, which is directly beneath it. After the said mold has been filled, the movements of the machine, as before stated, will cause the said mold to pass from under the mill and beneath the frame *n*, the effect of which is to pack the clay in the mold, as above set forth. This movement of the mold away from the mill will bring another mold below the same, which will be filled, and the mold-table will then take another one-eighth of a revolution, carrying this mold away from the mill and conveying another one beneath it. In this manner the molds are filled, and the table has an intermittent movement, which brings a full mold directly between the shafts *d d* and directly below the dies *f f*, while an empty mold is being filled with clay at the opposite side of the mold-table. At the time when the mold comes beneath the dies *f f* the revolution of the gear *k* will, through the toggled levers, cause the dies to descend upon the clay in the mold and thoroughly press it into a solid, compact form, whereby two bricks of the best

quality will be formed. The continuing revolution of the gear-wheel *k* causes the toggled levers to elevate the dies from the mold in which the clay has just been pressed. The mold-table will now take another one-eighth of a revolution, which will bring the mold containing the two pressed bricks above the cam-ejector X, which at this time will turn upward, elevating the bases of the mold and ejecting the two pressed bricks, which will be removed from the machine by a suitable conveying-belt or otherwise. At every one-eighth of a revolution of the mold-table C the dies *f f* will descend, pressing two bricks, and an empty mold will be filled with clay from the pug-mill.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The radiating arms *o o*, supporting the frame consisting of the bars *p* and cross-bars *q*, inclosed by the casing *t*, the said frame being connected with a crank-actuating device by the rod *r*, whereby the said frame is given a reciprocating movement, substantially as set forth.

2. The mold table C, having projections J upon its periphery, in combination with the bar-spring C', arranged to engage said projections and to receive a reciprocating motion from the slide *z*, rod *y*, and wheel *x*, substantially as specified.

3. In a brick-machine, the rods *d d*, supported over the mold-table by the bars *c c*, in combination with the slide *e*, adapted to have a vertical movement on said rods above the mold-table and carrying the dies for pressing the bricks, substantially as set forth.

4. In a brick-machine, the mold-table having double molds E, in combination with the rods *d d*, supported over the table by the bars *c c*, and the slide *e*, carrying dies *f f*, and adapted to have a vertical movement from toggled levers actuated by the wheel *k*, substantially as set forth.

5. In a brick-machine, the rotary mold-table and dies for pressing the brick, in combination with the ejector located to one side of the vertical line of the dies, and consisting of the frame *a* and cam X, mounted upon a revolving shaft, substantially as set forth.

6. In a brick-machine, the rotary mold-table having a series of double molds provided with movable bases U U, in combination with the dies *f f*, for pressing the brick, and with the ejector located to one side of the vertical line of the dies, and consisting of the frame *a* and the cam X, mounted upon a revolving shaft, substantially as set forth.

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

JOSEPH B. MOWRY.

Witnesses:

THOS. E. BARROW,
NORMAN M. WOLFE.