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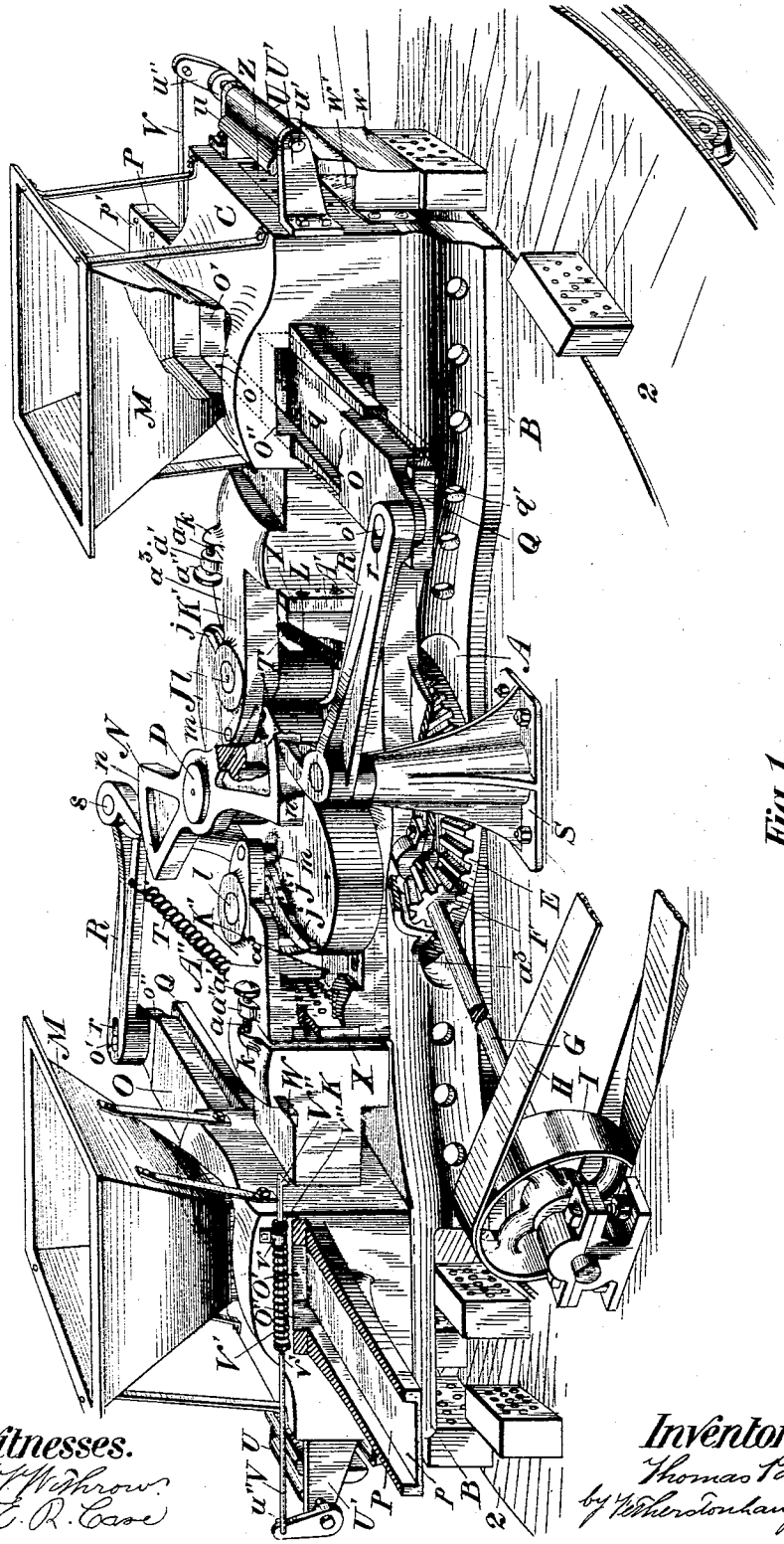

Fig. 1.

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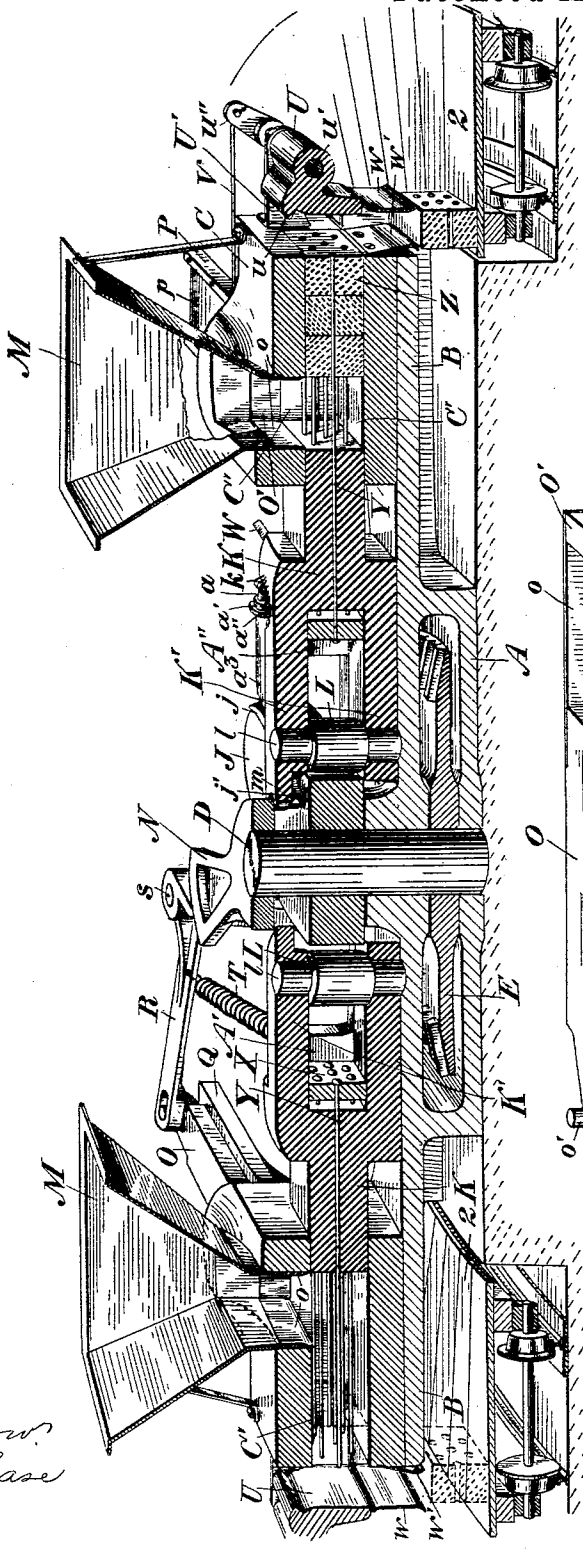

Fig. 2.

Fig. 5.

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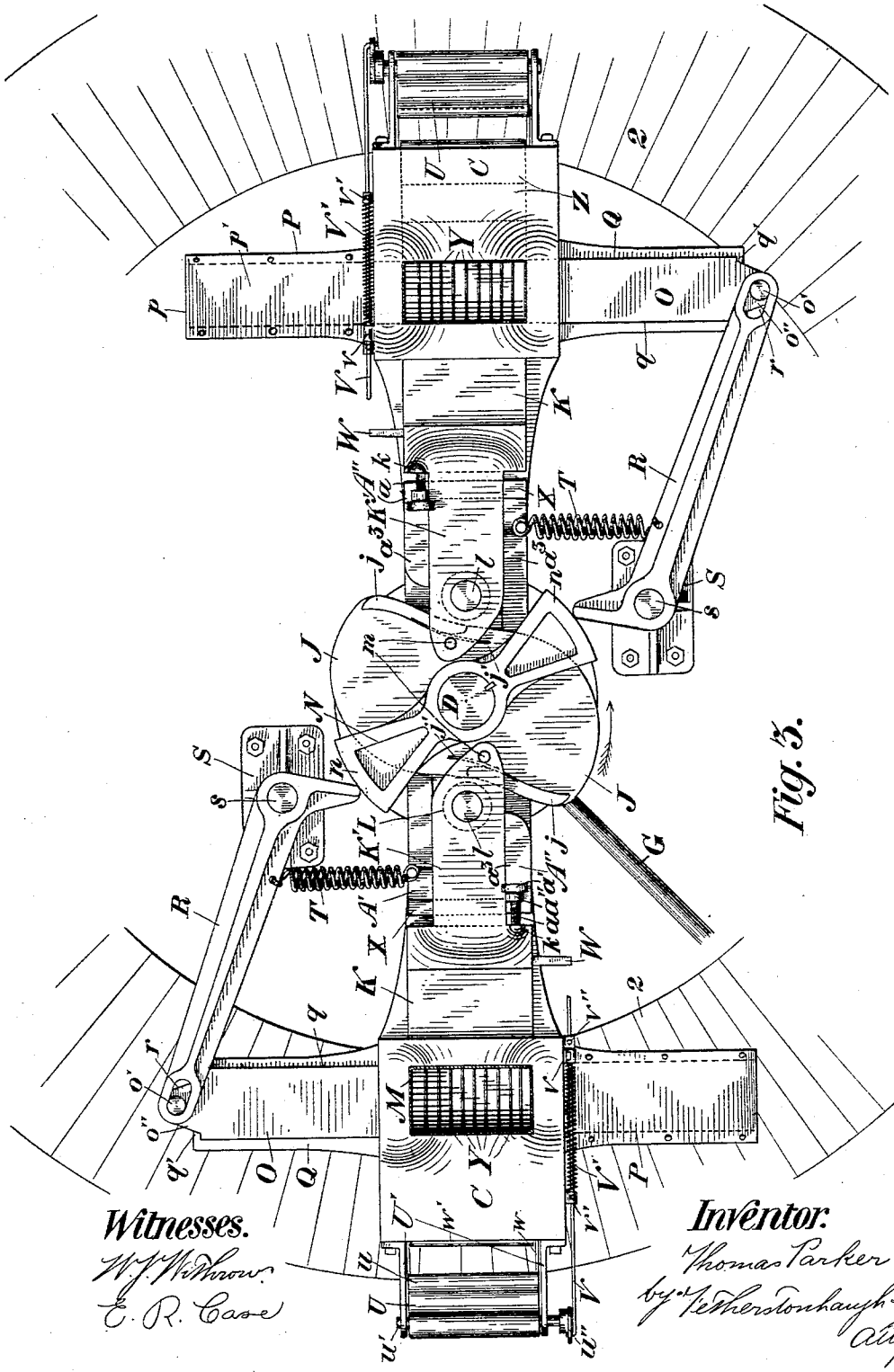

Fig. 3.

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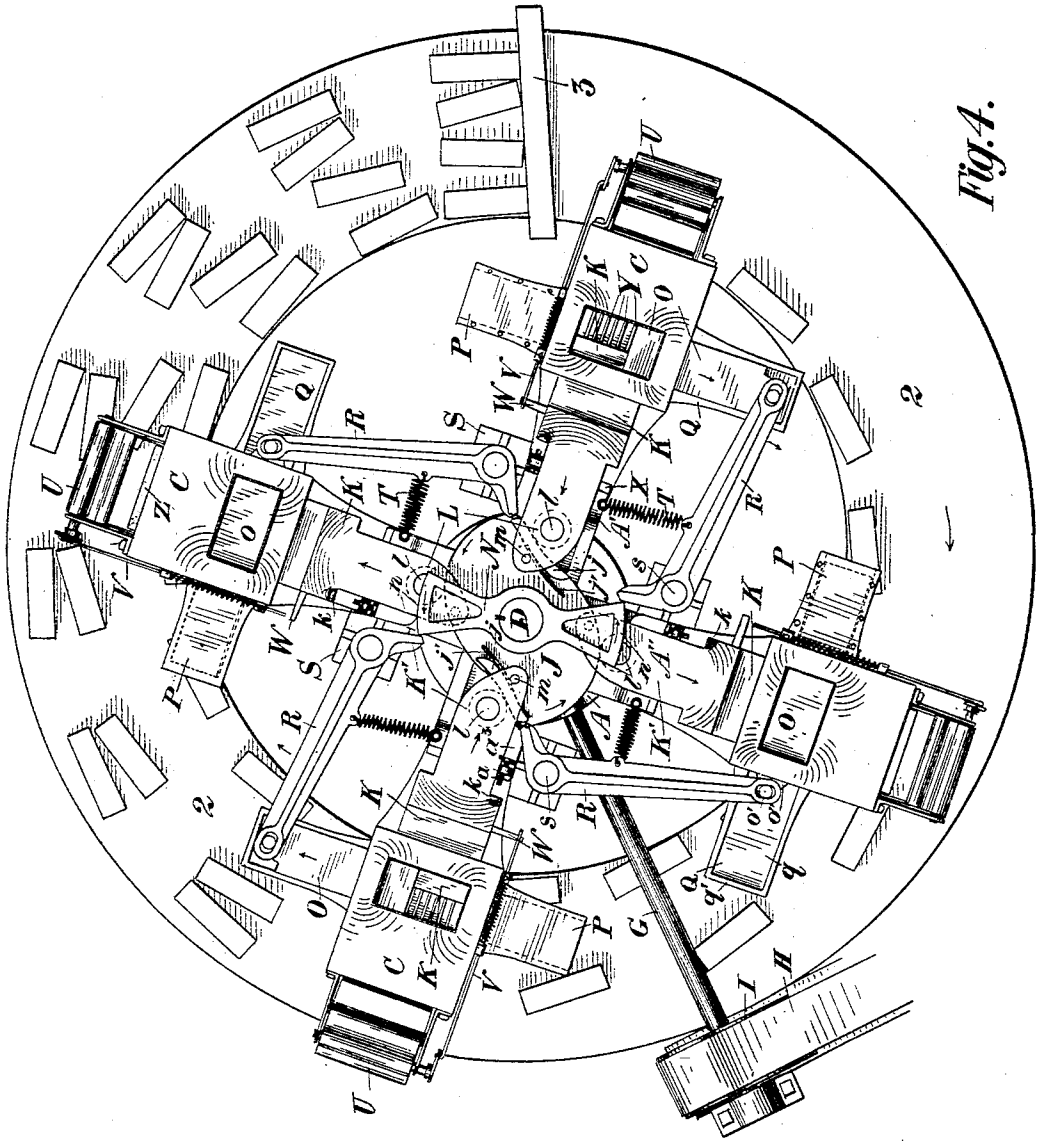

Fig. 4.

Witnesses.

W. J. Withrow

E. R. Case

Inventor:

Thomas Parker

by Fetherstonhaugh & Co.

Attys

UNITED STATES PATENT OFFICE.

THOMAS PARKER, OF TORONTO, CANADA, ASSIGNOR OF THREE-FOURTHS TO JOHN DOUGLAS WRIGHT AND ALEXANDER MAXWELL COLQUHOUN, OF SAME PLACE.

BRICK-PRESS.

SPECIFICATION forming part of Letters Patent No. 535,074, dated March 5, 1895.

Application filed February 1, 1894. Serial No. 498,753. (No model.)

To all whom it may concern:

Be it known that I, THOMAS PARKER, manufacturer, of the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Brick-Presses, of which the following is a specification.

My invention relates to improvements in brick presses and the object of the invention is, first, to provide a simple, readily fed, and cheaply operated machine of minimum size and weight and capable of turning out a maximum quantity of perfectly formed bricks, the plungers being arranged and operated so that there will be no side strain or thrust upon the main driving shaft, and, secondly, to provide a simple and efficient means for the delivery of the bricks from such machine; and it consists essentially, first, of constructing the bed plate of the machine with horizontal, outwardly projecting wings situated diametrically opposite to each other and having secured to them the molds in which the pulverized clay is pressed by horizontal radial plungers arranged in pairs diametrically opposite each other, both plungers of each pair being operated simultaneously from a double cam secured to the main shaft of the machine, the plungers being designed to co-act with compression blocks formed of bricks partially completed and completed, so as to deliver the bricks at the outer end of the machine, a cut-off plate for the clay being provided which is also operated from an arm on the main shaft and the clay being arranged to be fed into the top side of the mold, and, secondly, of providing an annular turn table which is set eccentrically to the axis of the main shaft and is rotated at a proper relative speed to the time consumed in compressing one set of bricks, so that each set compressed may be carried to a common point of delivery, the whole being arranged and constructed in detail as hereinafter more particularly explained.

Figure 1, is a perspective view of a portion of my machine showing the construction and means of operation as to one pair of molds. Fig. 2, is a perspective sectional view through Fig. 1. Fig. 3, is a plan view showing the construction and means of operating each pair of plungers. Fig. 4, is a plan view on a smaller scale with feed hoppers removed showing the construction and means of operating my machine when made with two pairs of molds. Fig. 5, is a detail of the cut off plate.

In the drawings like letters and numerals of reference indicate corresponding parts in each figure.

A, is the bed plate of the machine, which is supported upon any suitable foundation and is provided with outwardly extending wings, B, upon which are supported horizontal molds, C.

D, is the main shaft of the machine, which is vertically journaled in the bed plate, A, and has secured to it a bevel gear wheel, E, which is driven by a gear pinion, F, on the radial shaft, G, to which motion is communicated through the belt, H, and pulley, I. The shaft, G, is shown broken away in Fig. 1.

J, is a double cam secured to the main shaft, D, comprised of two gradual rises from the center and two quickly receding portions to the center from the two greatest radii. The rises and receding portions of the cam correspond exactly.

j, are guiding ribs forming part of the cam and extending along the edges of the receding portions.

j', are spring fingers secured to the end of the guiding ribs nearest the center and extending beyond such end as shown.

K, are the plungers, both plungers of each pair being set diametrically opposite each other, so that the plane passing through the axis of the shaft will pass laterally through the center of the plungers of each pair.

K', are the legs of plungers between which are journaled at their inner ends upon the studs, *l*, the friction rollers, L.

A', A'', are bearing plates which are attached to or form part of the bed plate, A. The legs, K', move between the plates, A', and, A''. The plate, A'', has inwardly extending projections, *a'''*, which are designed to receive the lateral pressure from the legs, K', of the plunger as they are being forced outwardly so as to bring the plunger into the

mold. The plane passing through the axis of the shaft will pass through the axis of the friction rollers of both plungers in each pair.

m, are friction rollers which are designed to pass within the guiding ribs, *j*, in order to pull back the plungers after they have compressed the brick.

C', are the sides of the mold, C, which are preferably slightly tapered from the inner end to the outer end. The upper side of the mold, C, is open and has secured above it the hopper, M, into which the pulverized clay is fed in any suitable manner.

C'', are the parallel sides of the mold which extend, from the opening into which the pulverized clay is fed, to the outer end of the mold which is open.

N, is a double arm secured to the main shaft, D, and provided with concentric ends, *n*.

O, is a cut-off plate which is designed to move in supporting brackets, P, and, Q, attached to or forming part of the mold box. The plate, O, has metal side strips, *o*, secured to the free end of the plate and extending outwardly to a supplemental plate, O', to which the ends of the metal strips are secured. The lower edges of the metal strips, *o*, are beveled from the inside outwardly to a thin edge. The block, O, is designed to be moved through openings, O'', made in the sides of the metal box immediately above the sides of the mold. The side strips, *o*, are of the same thickness as the bottom sides of the hoppers, M, underneath which they move. Each of the brackets, P, has a channel, *p*, as indicated by dotted lines in Figs. 3 and 4, and longitudinal perspective section in Fig. 1. The channel, *p*, is closed in at the top by a cover plate, *p'*. Each bracket, Q, has a longitudinal groove, *q*. The outer end of each groove is stopped by a bridge, *q'*.

R, are bell-cranks pivoted at, *s*, on the top of the standard brackets, S. The ends of the short arms of the bell-cranks, R, co-act with the concentric ends, *n*, of the double arm, N, so as to withdraw the plate, O, and thereby bring the opening between the strips, *o*, directly above the mold and beneath the hopper, M.

r, are slots made in the ends of the long arms of the bell cranks and, *o'*, are pins which extend from the lugs, *o''*, at the outer end of the cut-off plates, O, into the slots, *r*.

T, are spiral springs connecting the long arms of the bell cranks, R, to the upwardly extending plates, A', forming part of the bed plate, A.

In order to provide for the ejection of the brick after it has been compressed I provide the following mechanism:

U, is a stop block substantially angular in cross section and provided with a lip, *u*, at its inner upper end. The stop block, U, is secured to the spindle, *u'*, which is journaled in the brackets, U', secured to the end of the mold box. *u''*, is an arm secured at one end of the spindle, *u'*. The arm, *u''*, has connected to it a rod, V, which extends inwardly through a bracket, *v*, secured in the side of the mold box.

V', is a spiral spring extending between the bracket, *v*, and a collar, *v'*, on the rod, V.

v'', is a stop collar secured on the rod, V, to the inside of the bracket, *v*, and is designed to limit the outward movement of the rod.

V'', is an enlarged inclined inner end of the rod, V, and, W, is a block with an inclined face corresponding to the inclined face of the end, V''.

The bracket, *v*, through which the rod, V, passes has a hole sufficiently large to permit of a vertical movement of the rod at this end. It will now be seen upon the plunger being thrown outwardly so as to completely compress a brick that upon the full throw being completed the end, V'', will come in contact with the inclined block, W, and ride upon and pass over it. Immediately upon the plunger being brought back the enlarged end, V'', will draw upon the rod, V, so as to throw the lip, *u*, downwardly and thereby cause the brick which is ejected from the mold to fall into the bottomless box, *w*. The box, *w*, is provided with a spring side, *w'*. When the brick is caused to drop into the box by the lip, *u*, the weight of the brick forces the spring side, *w'*, inwardly gradually in its descent, the pressure of the spring side being maintained until the top of the brick has passed the bottom of the box, *w*, when the brick will drop a slight distance on to the turn table hereinafter described.

As it is necessary to provide means whereby the amount of clay to be deposited in the mold may be gaged in order to produce a brick of greater or less degree of denseness or hardness I provide a set screw, *a*, provided with a thumb nut, *a'* which passes through a lug, *a''*, forming part of the upwardly extending bracket, A''. The outer end of the set screw *a*, is brought against a lug, *k*, formed on the plunger, K. By screwing the thumb nut, *a'*, to the right or left the distance which the inner end of the plunger extends into the mold may be adjusted to a nicety, so that such end may always assume such position at the commencement and finish of each stroke. In order to compensate for this adjustment I have provided as hereinbefore described the spring fingers, *j'*, which extend beyond the end of the ribs, *j*, the spring fingers of course being of sufficient strength to overcome the weight of the plunger, K.

In order to provide for the perforation of the brick, so that it may be more readily burned I use the following device:

X, is a plate, which is secured to the inner ends of the upwardly extending plates, A', and, A''. The plate, X, is an easy fit within the legs, K', of the plungers, so that the said plungers readily pass outwardly and inwardly.

Y, is a series of rods the inner ends of which are secured in the plate, X. The rods Y, extend through the plunger, K, through

the mold into the compression blocks, Z. As there are always a number of blocks within the parallel portion, C′, of the mold, C, it will be understood that the outer ends of the rods, Y, are always supported in exactly the same position.

In starting the machine there will of course be compression blocks placed in the parallel portion, C″, of the mold so that the plunger would have blocks with a frictional resistance to press against when forming each brick. This is the principle which I follow out in my invention, the end of the mold being left open as shown.

2, is a turn table, which is arranged eccentric to the main driving shaft, D. The turn table, 2, passes beneath three of the wings as indicated in Fig. 4, and is supported in turning upon rollers or wheels, which rest on a circular track, suitable means being provided for driving the turn table from the motive power. It will consequently be seen that the bricks from each mold will be deposited upon a different position on the turn table, 2. For instance on reference to Fig. 4, it will be seen that the brick ejected from the mold on the left hand side of this figure will be deposited near the outer circumference of the turn table and the brick ejected from the mold at the right hand side in this case will be deposited upon the turn table near the inner circumference, the brick delivered from the mold shown at the top of this figure will be ejected and deposited upon the turn table in the position near to the innermost brick deposited and the brick of the mold shown at the bottom of this figure will be ejected and deposited upon the turn table near the position of depositing of the outermost brick. As the bricks are deposited it will be seen that the turn table, which of course is arranged to rotate at a certain ratio to the cam on the main shaft, will as indicated in Fig. 4, bring the bricks to a common point of delivery namely the stop bar, 3, so that four bricks may be removed by the attendant of the machine at the same time, thereby avoiding the attention that would be necessary if such a delivery as my turn table were not provided.

In the operation of my machine it will be seen that the cam, J, operates on both plungers of each pair simultaneously, the plungers being thrown into the mold as the rises in the cam pass the frictional rollers, L, and out of the mold after the greatest radius has been reached by the friction rollers, M, passing within the guiding ribs, *j*. It will be noticed that midway between the receding position and the rise of the cam there is a short concentric portion during which the cam does not operate upon the plungers but allows of their resting for a moment during the period that the plate, O, is being drawn and held out by crank, R, co-acting with the concentric portion, *n*, of the double arm, N, so as to bring the open portion of the plate, O, directly above the top of the mold and thereby give time for the feeding of the pulverized clay, which passes down into the mold past and around the rods, Y. Immediately however before the rollers are caused to ascend upon the rise of the cam the short end of the bell-crank, R, has passed the concentric portion, *n*, of the double arm, N, and the spring, T, has thrown the crank arm inwardly, so as to throw the plate, O, directly above the top of the mold and completely close it, thereby completely shutting off the clay and allowing of the perfect pressure of the brick by the plunger. When the cut-off plate has been thrown outwardly it of course carries with it the clay in the opening underneath the cover plate, *p′*, of the bracket, P, and this clay is thrown back again upon the return of the opening in the plate, O, directly beneath the feed hopper and such clay passes down into the mold before the clay from the feed hopper. It will be seen from this description that as my plungers act in pairs upon corresponding portions of the cam simultaneously that there is no side strain or thrust upon the main shaft of the machine as is common in all brick presses of which I am aware. It will consequently be seen that the shaft operating the plungers may be made of much less diameter than it otherwise would if there was a side strain as well as torsion upon the shaft. It will also be seen that the size of the machine and the parts thereof will be comparatively small and the manner in which the brick are fed and delivered very advantageous both as to rapidity of pressure and delivery.

I find in practice that after the brick has been compressed and forms a compression block for the next brick the bricks pass out of the open ended mold adhering together, but a slight knock completely separates the end brick without in any way detrimentally affecting the perfect formation of the brick, thus dispensing with any necessity of closing the end of the mold.

What I claim as my invention is—

1. The combination with the horizontally moving plungers, means for reciprocating the same, the open mouth molds, the bottomless box adjacent thereto, and means for separating and discharging the bricks into said box, substantially as described.

2. The combination with the radial plungers, K, arranged in pairs horizontally and provided with legs, K′, in which are journaled the friction rollers, L, and the molds also arranged horizontally, fed from the side, and provided with open ends, of a cam J, provided with two rises and receding portions and guiding ribs, *j*, made on the edge of the receding portion and designed to co-act with the friction rollers, *m*, on the end of each leg as and for the purpose specified.

3. The combination with the radial plungers, K, arranged in pairs horizontally, and provided with legs, K′, in which are journaled the friction rollers, L, and the molds also arranged horizontally, fed from the top

side, and provided with open ends, of a cam, J, provided with two rises, receding and concentric portions, guiding ribs, *j*, secured to the cam, J, and having inwardly extending spring fingers, *j'*, attached thereto, which are designed to bring the leg, K', of each plunger against the end of the set screw, *a*, suitably supported in the frame as specified.

4. The combination with the radial plungers, K, arranged in pairs horizontally, of a double cam, J, secured to the vertical driving shaft, D, the open ended molds, C, designed to receive the ends of the plungers and provided with top side openings for the feeding of the clay, the plate, O, for each mold supported in suitable guides and the bell-crank, R, one end of which is slotted to receive the pin *o'*, and the other end of which is designed to co-act with the concentric end, *n*, of the double cam, N, and the spiral spring T, connecting the long arm of the bell-crank to the frame as and for the purpose specified.

5. The combination with the radial plungers, K, arranged in pairs horizontally, the double cam, J, secured to the vertical driving shaft, D, the open ended molds, C, designed to receive the ends of the plungers, the compression blocks or bricks, Z, having frictional contact at the side of the mold and the plates, O, deriving a lateral reciprocating movement, of the stop blocks, U, provided with lips, *u*, and means whereby the lips are thrown downwardly as and for the purpose specified.

6. The combination with the radial plungers, K, arranged in pairs horizontally, the double cam, J, secured to the vertical driving shaft, D, the open ended molds, C, designed to receive the ends of the plungers, the compression blocks or bricks, Z, having frictional contact at the side of the mold and the plates, O, deriving a lateral reciprocating movement, of the stop blocks, U, provided with lips, *u*, suitably journaled in the brackets, U', having arms, *u''*, secured in the end of the spindle, *u'*, rod, V, having inclined ends, V'', bracket, *v*, spring, V', and the inclined block, W, secured to the plunger, K, as and for the purpose specified.

7. The combination with the radial plungers, K, arranged in pairs horizontally and moving within side bearing plates, A' A'', the plate, A'', of which has inwardly extending projections, *a'''*, of the double cam, J, open ended molds, C, and plate, O, arranged as shown and for the purpose specified.

8. The combination with the radial plungers, K, arranged in pairs horizontally and moving within side bearing plates, A', A'', and the cam, J, operating the plungers, of the open ended molds and the rods, Y, secured to the plate, X, fastened to the guiding plates, A', A'', and passing through the plungers and mold into the compression blocks Z, as and for the purpose specified.

9. The combination with the radial plungers, K, arranged in pairs horizontally and moving within suitable bearing plates and the cam operating the plungers, of the open ended molds, the stop blocks, U, supported in suitable bearings and provided with a lip, *u*, and means for actuating the stop block, and the bottomless box, *w*, provided with spring sides, *w'*, as and for the purpose specified.

10. The combination with the radial plungers, K, arranged in pairs horizontally and moving within suitable bearing plates and the cam operating the plungers, of the open ended molds, stop blocks, U, supported in suitable bearings and provided with lips, *u*, and means for actuating the stop blocks, the bottomless boxes, *w*, provided with spring sides, *w'*, turn table, 2, arranged eccentric to the main shaft and designed to receive the bricks from the bottomless boxes, *w*, and means for rotating the turn table, 2, as and for the purpose specified.

11. The combination with the radial plungers, K, arranged in pairs horizontally and moving within suitable bearing plates and the cam operating the plungers, of the open ended molds, stop blocks, U, supported in suitable bearings and provided with lips, *u*, and means for actuating the stop blocks and the turn table, 2, arranged eccentric to the main shaft and designed to receive the bricks, and means for rotating the turn table as and for the pupose specified.

12. The combination with the radial plungers, K, arranged in pairs horizontally and moving within suitable bearing plates and the cam operating the plungers, of the open ended molds, stop blocks, U, supported in suitable bearings and provided with lips, *u*, means for actuating the stop blocks and the turn table, 2, arranged eccentric to the main shaft and designed to receive the bricks from the bottomless boxes, means for rotating the turn table and the stop bar, 3, extending across the turn table as and for the purpose specified.

THOMAS PARKER.

Witnesses:
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H. G. S. YOUNG.