

(No Model.)

6 Sheets—Sheet 1.

J. J. WHITTAKER.
BRICK MACHINE.

No. 510,493.

Patented Dec. 12, 1893.

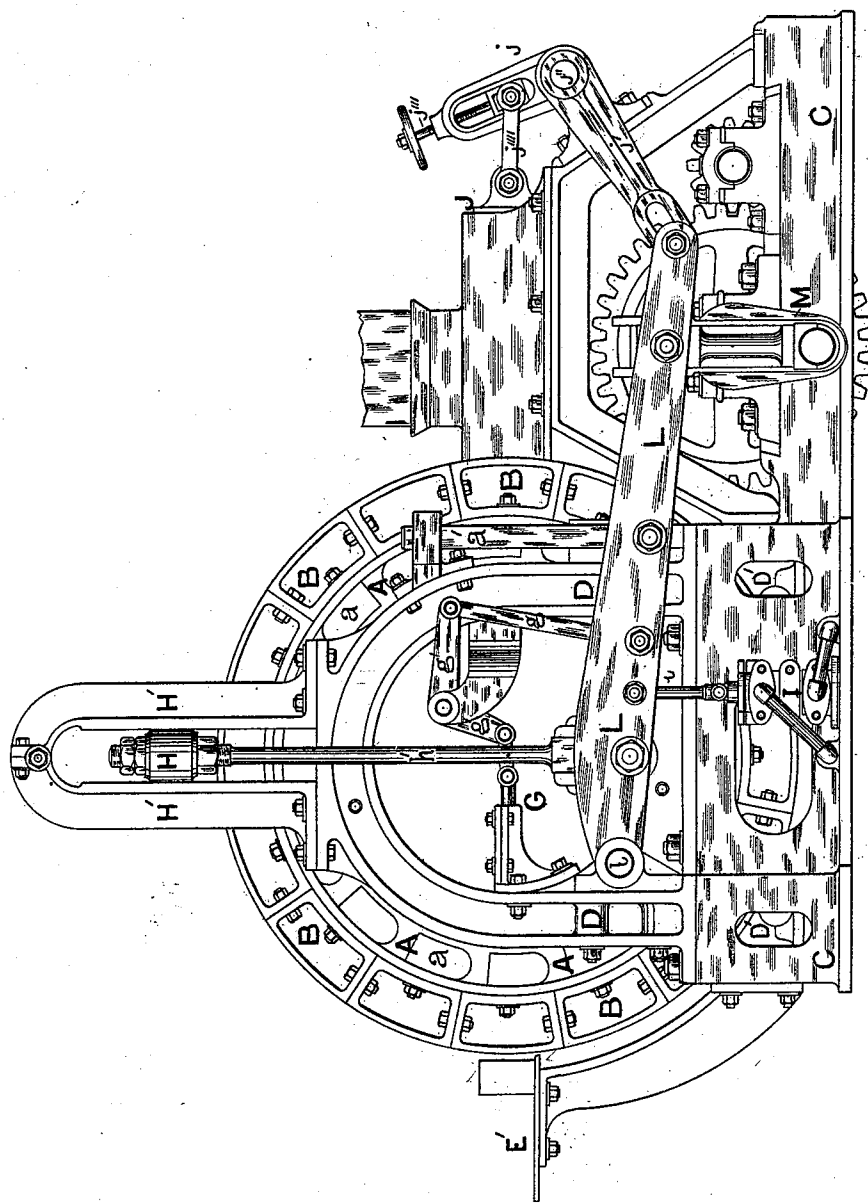


FIG. 1.

WITNESSES

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Joseph B. Bates

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(No Model.)

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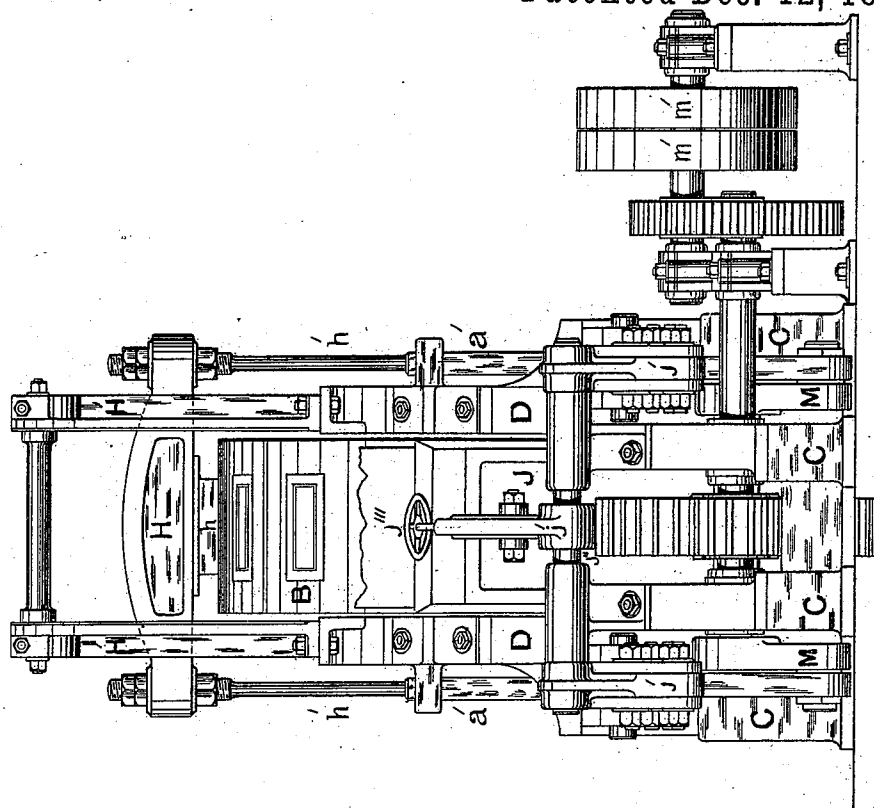


FIG. 3.

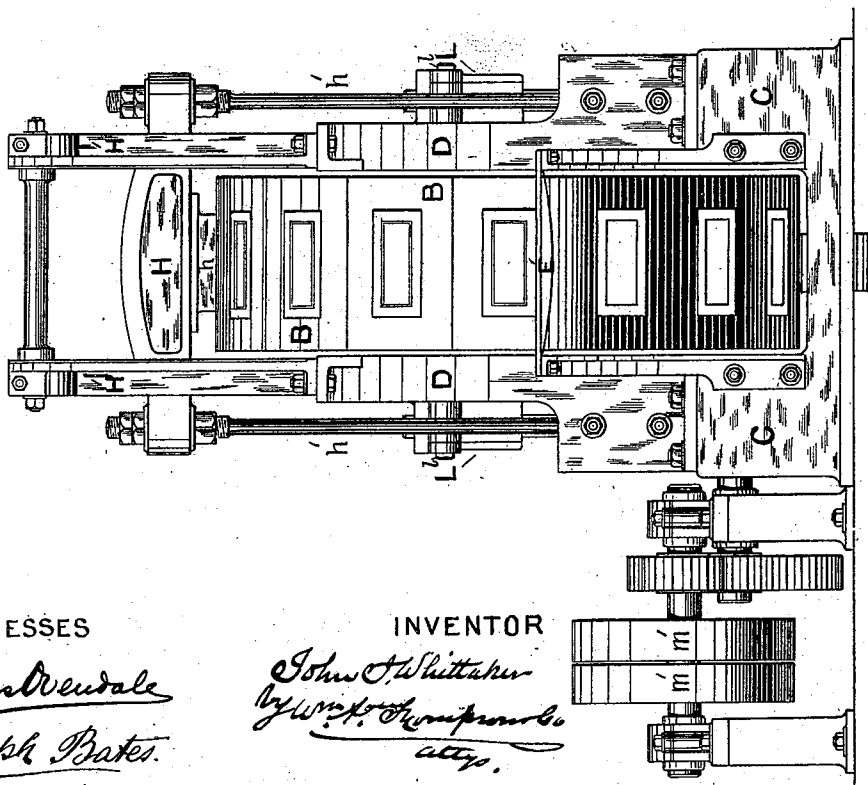


FIG. 2.

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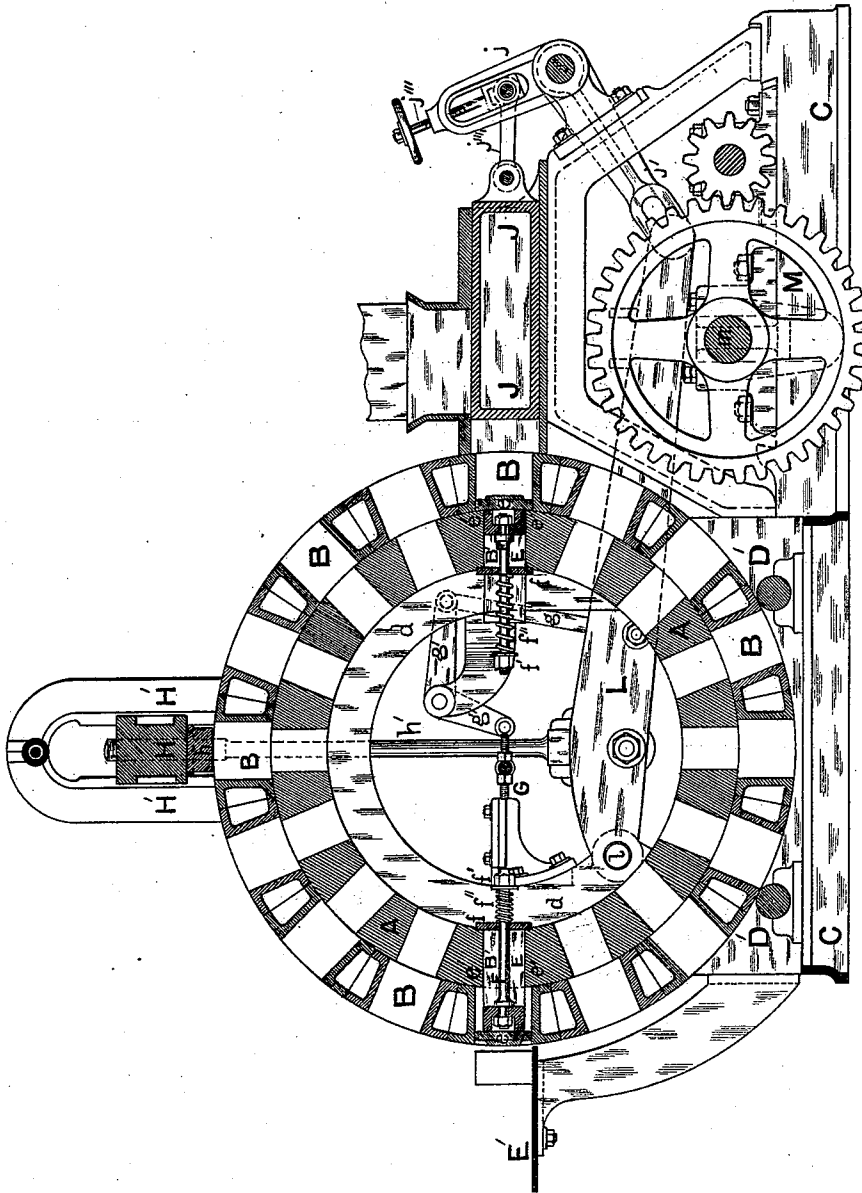


FIG 4.

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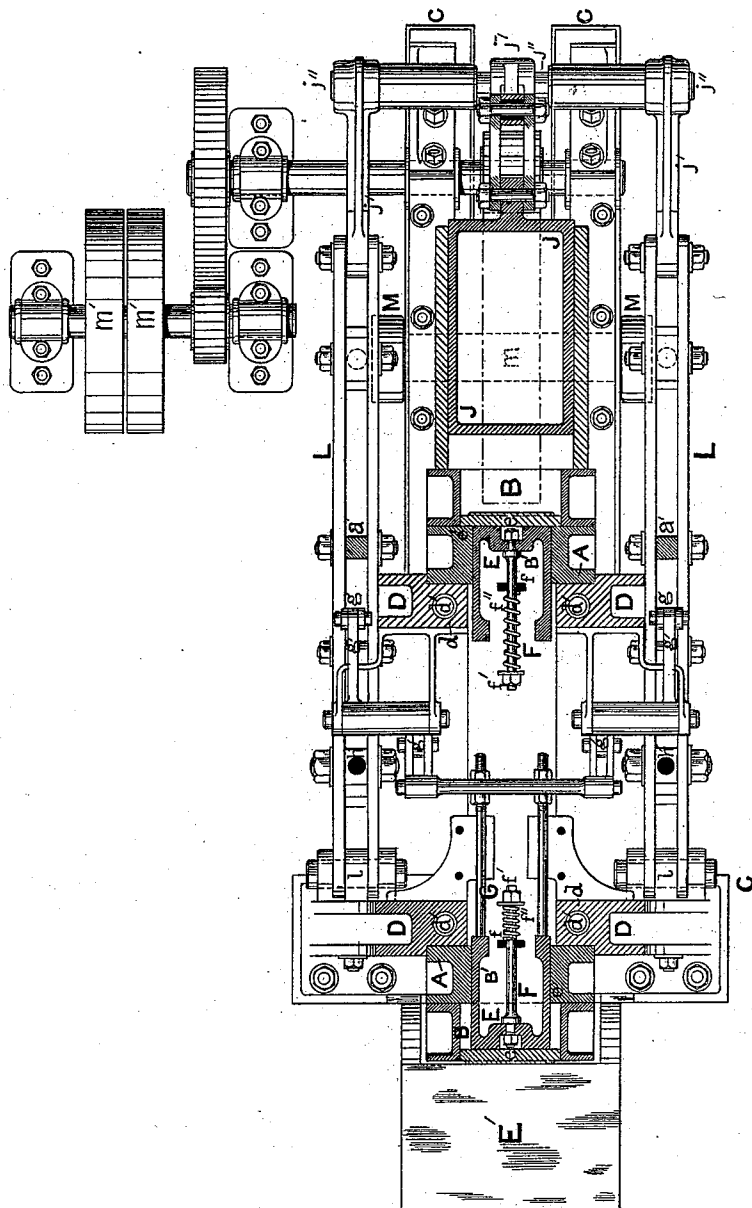


FIG 5.

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J. J. WHITTAKER.
BRICK MACHINE.

6 Sheets—Sheet 5.

No. 510,493.

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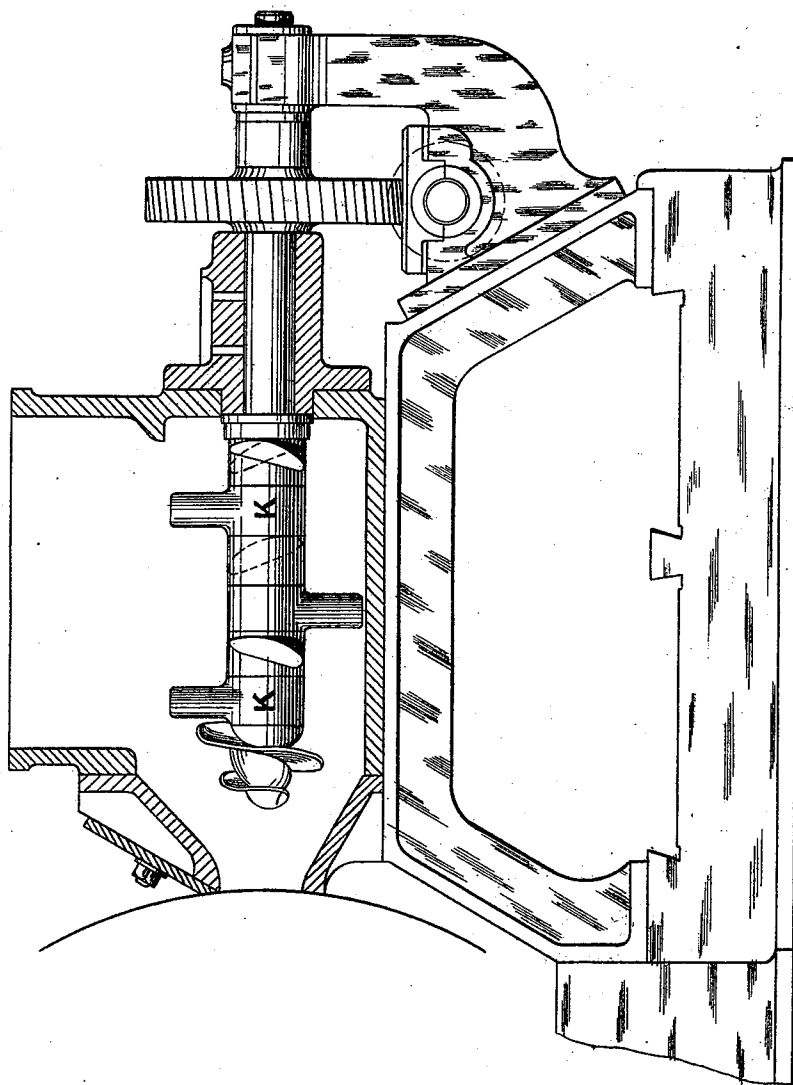


FIG 6.

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(No Model.)

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J. J. WHITTAKER.
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Patented Dec. 12, 1893.

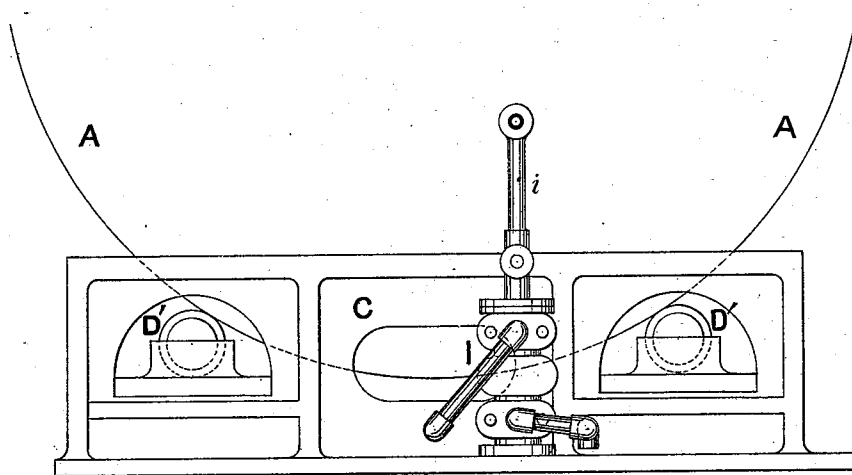


FIG. 7.

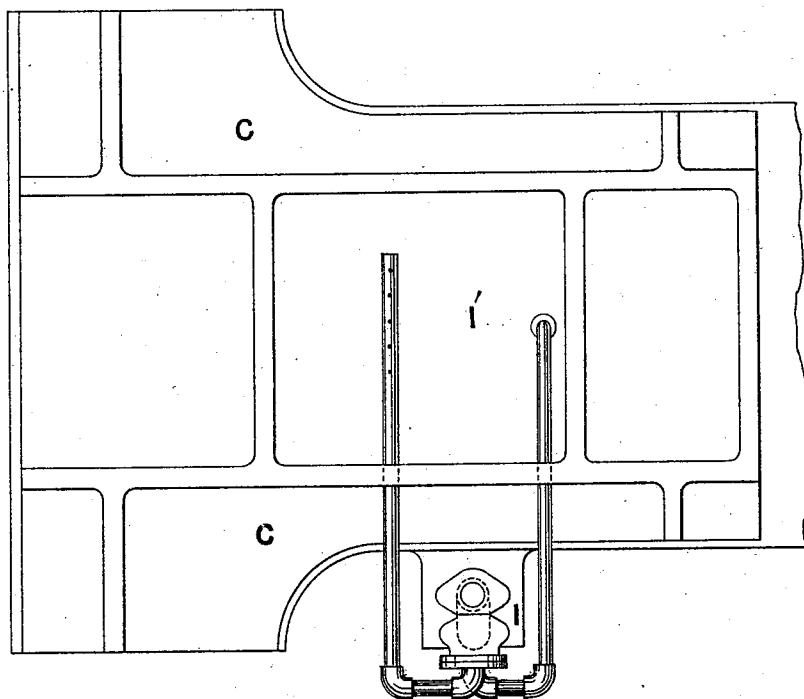


FIG. 8.

WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN J. WHITTAKER, OF ACCRINGTON, ENGLAND.

BRICK-MACHINE.

SPECIFICATION forming part of Letters Patent No. 510,493, dated December 12, 1893.

Application filed February 27, 1893. Serial No. 463,934. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAMES WHITTAKER, a subject of the Queen of Great Britain, residing at Accrington, in the county of Lancaster, England, have invented certain new and useful Improvements in Brick-Machines, of which the following is a specification.

This invention relates to that class of machines in which the molds or mold boxes wherein the bricks are compressed are carried round the periphery of a rotating drum or cylinder and each provided with a reciprocating piston the compression being effected by a presser or piston, which enters the molds successively as the cylinder rotates. It is designed with the object of providing a machine in which the wear and tear will be reduced to a minimum by simplifying the arrangement and construction of the several parts; the movements being either rotatory or reciprocal and the parts easy of access and not liable to derangement. I also provide for automatic lubrication of the moving parts and for the heating of the molds by steam to prevent clogging.

The invention will be fully described with reference to the accompanying drawings.

Figure 1, is a side elevation. Fig. 2, is a front elevation. Fig. 3, is a back elevation. Fig. 4, is a longitudinal sectional elevation. Fig. 5, is a sectional plan. Fig. 6, is a longitudinal sectional elevation of a modified form of apparatus for feeding the clay into the molds; Fig. 7, a side elevation of lubricating pump I in detail; Fig. 8, a plan of same.

The cylinder or barrel A is constructed as is usual in this class of machines with a number of molds or mold boxes B formed in it at intervals preferably equal distances apart around the periphery, and it and the other parts of the apparatus are mounted upon a bed plate or foundation plate C. The cylinder A is supported and maintained in position by two frames D one on each side. The side frames D are constructed with two projecting rings or hollow trunnions *d* over which the cylinder is fitted and upon which it rotates. The weight of the cylinder is further supported on rollers or pulleys D'. The projecting rings *d* are preferably formed with a chamber or cavity *d'* through which steam can be passed to heat the cylinder and molds. The

chamber is preferably formed as shown with a pipe inserted therein with steam inlet and outlet conveniently arranged.

The mold boxes B around the periphery of the cylinder are each fitted with a reciprocating piston or plunger E and die plate *e* upon which the bricks are compressed. The pistons or plungers E are fitted in a second chamber B' in the cylinder in which they are moved to and fro the chamber B' being preferably somewhat smaller than the mold box B so that the plate *e* bears upon the ledges or shoulders *e'* which sustain the pressure while the clay is being forced in and being compressed. Behind each of these pistons or plungers E is fitted a short piston rod or stud F projecting radially toward the center of the cylinder. The piston rods or studs F pass through holes or slots in a metal plate or ring *f* and are provided on the outer end with a nut and washer *f'*. Upon each piston rod or stud F is placed a spiral spring *f''* which bears between the metal ring and the nut or head on the end of the piston rod or stud for the purpose of drawing the die and piston back into position after a brick has been discharged.

In the interior of the cylinder A are mounted two reciprocating rods or bars G (or a sliding cross head or its equivalent) opposite to which at each movement or partial rotation of the cylinder one of the pistons or plungers E is brought. The ends of the rods G as they are moved to and fro engage with the inner side of one of the pistons or plungers E moving it forward and thereby discharging the finished brick from the mold B onto the table E'. The piston or plunger E is drawn back again, after the brick is expelled, by the spring *f''* and the mold is then ready to receive the next charge of clay.

The presser H for compressing the bricks is mounted upon slides H' fitted above each of the side frames D and consists of a cross head provided with a suitable die or plunger *h* for the purpose.

Each side of the cylinder A is provided with a number of notches or ratchet teeth *a* by which it is rotated at intervals as required by means of a reciprocating rod or pawl *a'*, the notches or recesses *a* corresponding with the mold boxes so that the cylinder is moved

forward the proper distance to bring one of the mold boxes in a position to receive the charge of clay, another under the presser H and a third opposite the reciprocating bars G by which the brick is discharged. A small pump I Fig. 1 is placed near the bottom of the cylinder A by which a jet of oil or other liquid is forced from the oil well I' into each mold box successively in order to lubricate the sides of it to prevent the clay sticking thereto.

The clay is fed into the molds B in the cylinder A by means of a reciprocating plunger J or by means of a screw K (Fig. 6) or from any pugmill of suitable construction.

At the side of each side frame D is pivoted a beam lever L mounted at one end upon a fixed fulcrum l forming part of the side frame, or raised from the bed plate. The beams L receive a reciprocating motion from double cranks M in a shaft m which is connected and driven by suitable gearing and pulleys such as m' from any motive power. The motion of the beams L is conveyed by means of connecting rods or levers to the several operative parts of the machine. The plunger J by which the clay is fed into the molds B in the cylinder is connected to the ends of the beams L by levers j, j' affixed to the shaft j'' in the form of a bell crank whereby the raising and lowering of the beams L move the plunger J to and fro. The travel of the plunger is regulated and adjusted by means of the screw j''' by which the end of the connecting link j'''' is raised and lowered. The cylinder or barrel A which carries the molds B and their pistons or plungers E is connected to the beams L by the bars a' which at their upper ends each carry a pawl or its equivalent which engages with the notches a forming a ratchet in the sides of the cylinder so that at each upward stroke of the beams L the cylinder is moved forward a space equivalent to the distance between the center of one mold and the next. The bars G which actuate the pistons or plungers E for discharging the bricks are connected to the beams L by the connecting rods g through the bell crank levers g' the downward stroke of the beams causing the bars G to engage with the plungers E and move them forward to force out or discharge the finished brick. The cross head of the presser H which compresses the clay in the molds B is connected to the beams L by the connecting rods h' whereby the presser H is drawn down into the mold B at each downward stroke of the beams. The pump I is connected to the beams L by the rod i which moves to and fro with the beams. Where a screw K is employed for feeding the clay into the molds it is actuated by a worm and worm wheel as shown in Fig. 6.

The rollers D' are set so that the peripheries of the mold boxes bear upon them and thus serve to bear the additional weight or strain

that is applied by the pressure of the top presser H upon the clay. At each end of these rollers there may be applied brake blocks to prevent the cylinder moving after being moved forward into position until the compression of the bricks has taken place.

The machine is operated by strap on the strap pulleys m' from any motive power and the motion is conveyed therefrom by the cranks M to the oscillating beams L. As these beams rise, the reciprocating pawls a' engage in the notches or recesses a in the sides of the cylinder A and rotate it the distance of one mold box carrying one full box of clay under the presser H, one box in which the clay has been compressed opposite the delivery table, and an empty mold box opposite the reciprocating plunger J. As the lever beams L fall they actuate the reciprocating plunger J through the levers j, j' and shaft j'' to charge one of the mold boxes B with clay, the presser H through the connecting rod h' drawing it down and compressing the clay in one mold box, and the reciprocating plunger E through the reciprocating bars G, and connecting levers g to discharge the pressed bricks, and the pump I which delivers a jet of lubricating liquid to one of the mold boxes. As the cylinder moves forward the reciprocating plunger E is drawn back by the spring f''.

What I claim, and desire to protect by Letters Patent, is—

1. In a brick making machine the combination with a rotating cylinder provided with molds in its periphery and reciprocating pistons or plungers therein, of side frames D provided with projecting rings forming hollow trunnions d which support the cylinder and upon which it rotates, steam cavities d' therein, roller bearings D' for supporting the cylinder against the thrust for compressing the brick, the presser H by which the bricks are compressed, the slides H', the reciprocating beams L one at each side which communicate motion to the several working parts, and the connecting rods a' which engage with ratchet notches formed in the side of the cylinder to move it forward at each stroke substantially as described.

2. In a brick making machine constructed with a cylinder carrying molds round its periphery and reciprocating pistons or plungers therein the combination with the mold boxes B and reciprocating plungers E of the reciprocating bars G by which the plungers are actuated the beams L and the connecting levers g by which the bars are connected to the beams substantially as described.

3. In a brick making machine constructed with a cylinder carrying molds round its periphery and reciprocating pistons or plungers therein the combination with the mold boxes B and reciprocating plungers E of the rods or studs F by which they are drawn back, the plate f through which the rod F passes

and an actuating spring f'' which bears between the plate f and the washer f' on the end of the stud substantially as described.

4. In a brick making machine the combination with a rotating cylinder provided with molds in its periphery and reciprocating pistons or plungers therein of the presser H by which the clay is compressed in the molds B, the guides H' in which the cross head slides the connecting rod h' and the beams L to which it is connected and by which it is drawn down into the molds substantially as described.

5. In a brick making machine the combination with a rotating cylinder provided with molds in its periphery and reciprocating pistons or plungers therein of the pump I by which a jet of a lubricating liquid is successively injected into the mold boxes substantially as described.

6. In a brick making machine constructed with a cylinder carrying molds round its periphery and reciprocating pistons or plungers therein the combination with the lubricating pump I of the connecting rod i and the beam L substantially as described.

7. In a brick making machine constructed with a cylinder carrying molds round its periphery and reciprocating pistons or plungers therein the combination with the reciprocating plunger J by which the clay is fed into the molds B of the levers j, j' affixed to the shaft j'' and the beams L by which they are actuated substantially as described.

8. In a brick making machine the combination of a cylinder A provided with mold boxes in its periphery, side frames D upon which the cylinder rotates, reciprocating plungers E which force the clay from the molds a presser H which compresses the clay in the molds, feeder for forcing the clay into the molds and oscillating beams L to which the several operating parts are connected and by which they are actuated substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN J. WHITTAKER.

Witnesses:

JAMES HAWORTH,
RICHD. B. FOOTE.