2 Sheets, Sheet 1.

Dorr, Hersey & Oldfield,

Brick Machine.

No. 16,907. Patented Mar. 31, 1857.

Fig. 2.

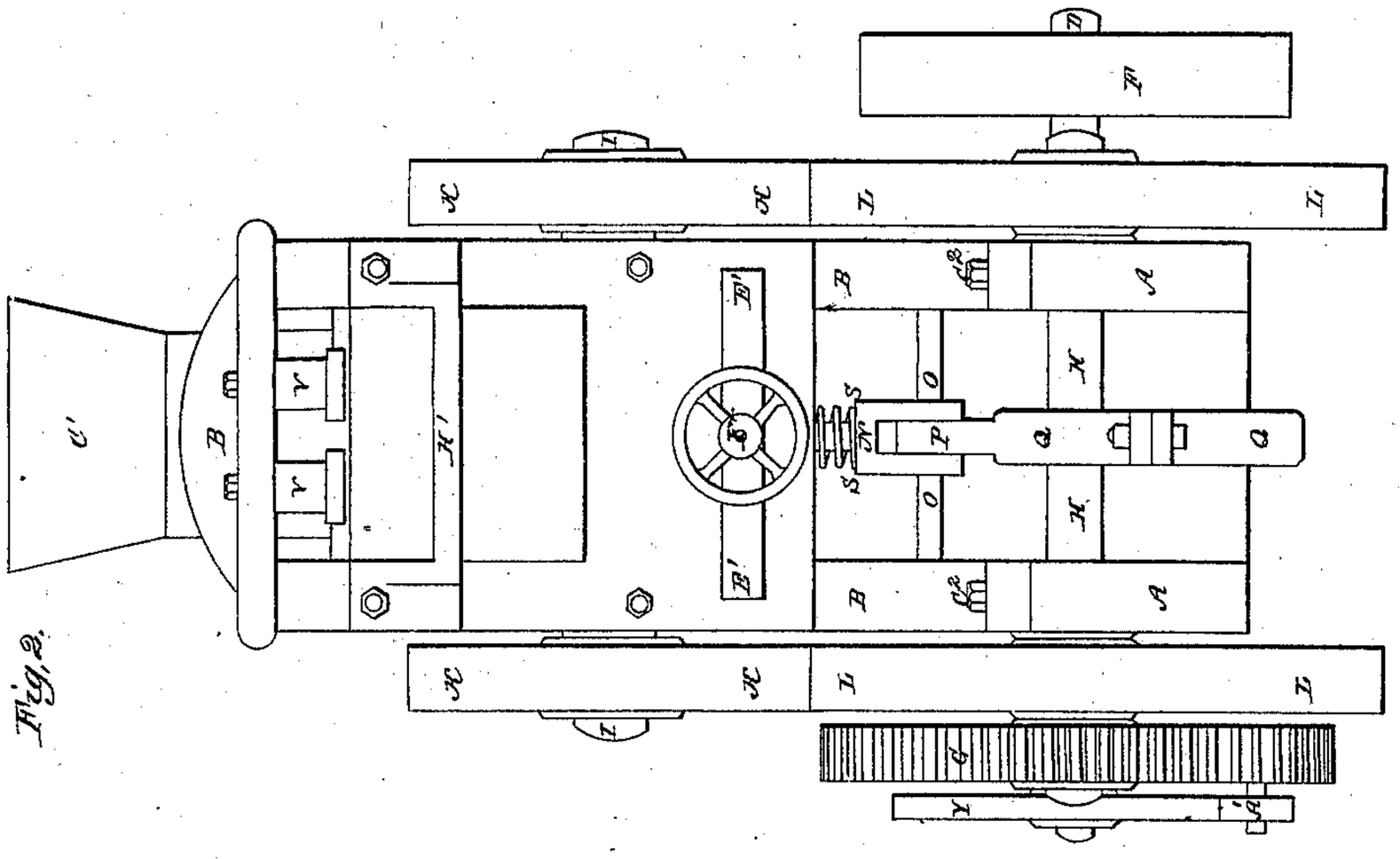
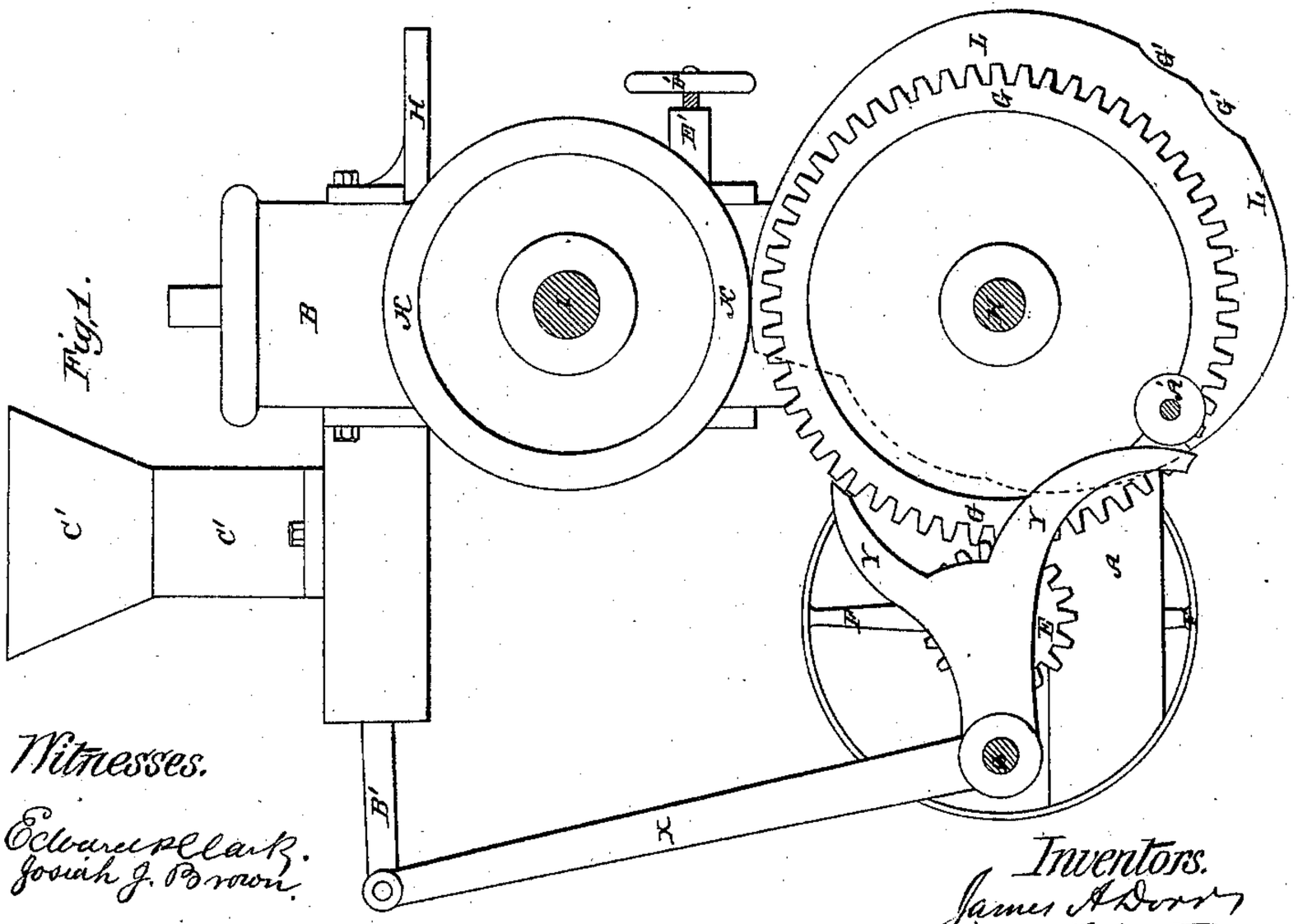


Fig. 1.



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2 Sheets—Sheet 2.

J. A. DORR, I. HERSEY & E. G. OLDFIELD.

BRICK MACHINE.

No. 16,907. Patented Mar. 31, 1857.

Fig. 4.

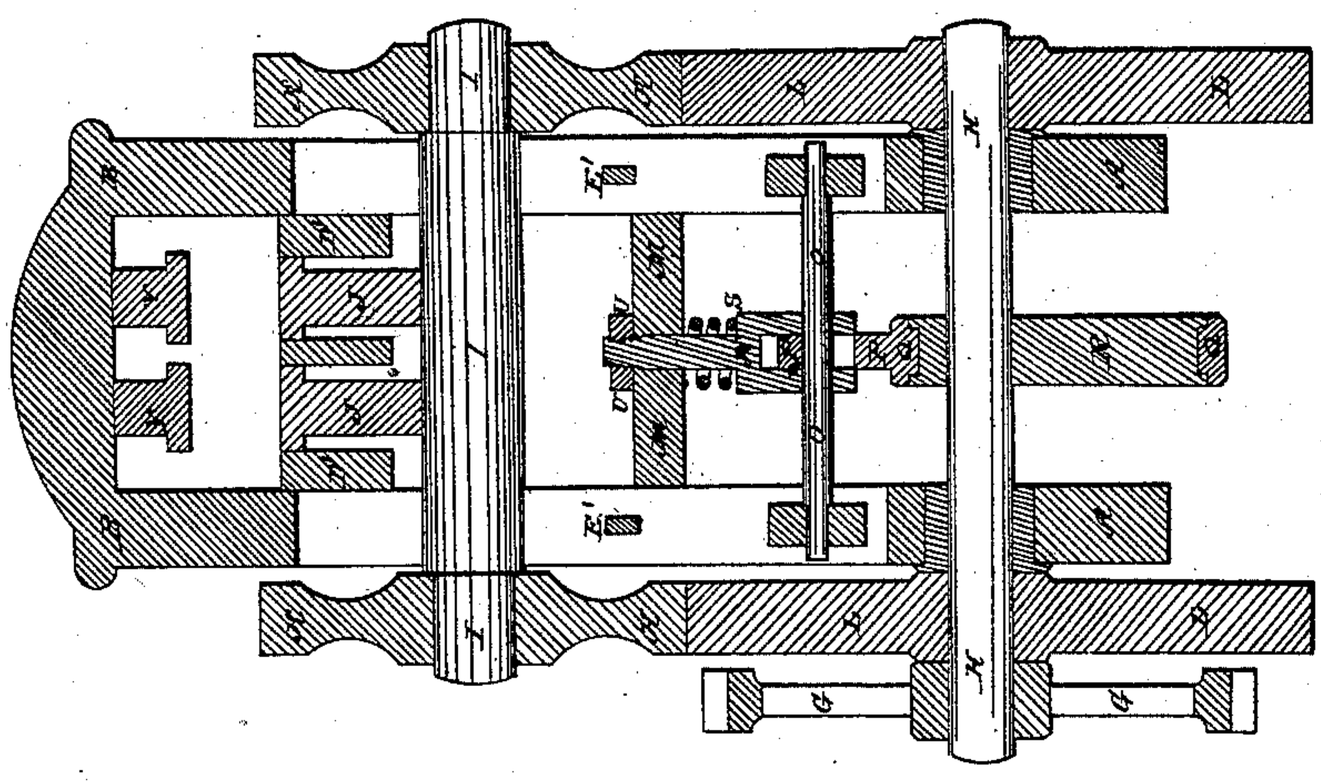


Fig. 5.

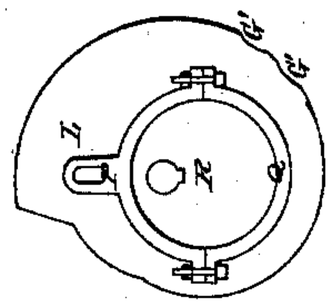


Fig. 6.

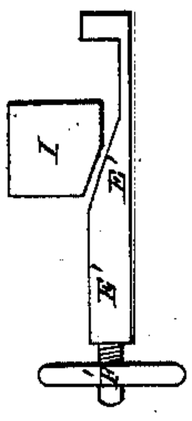
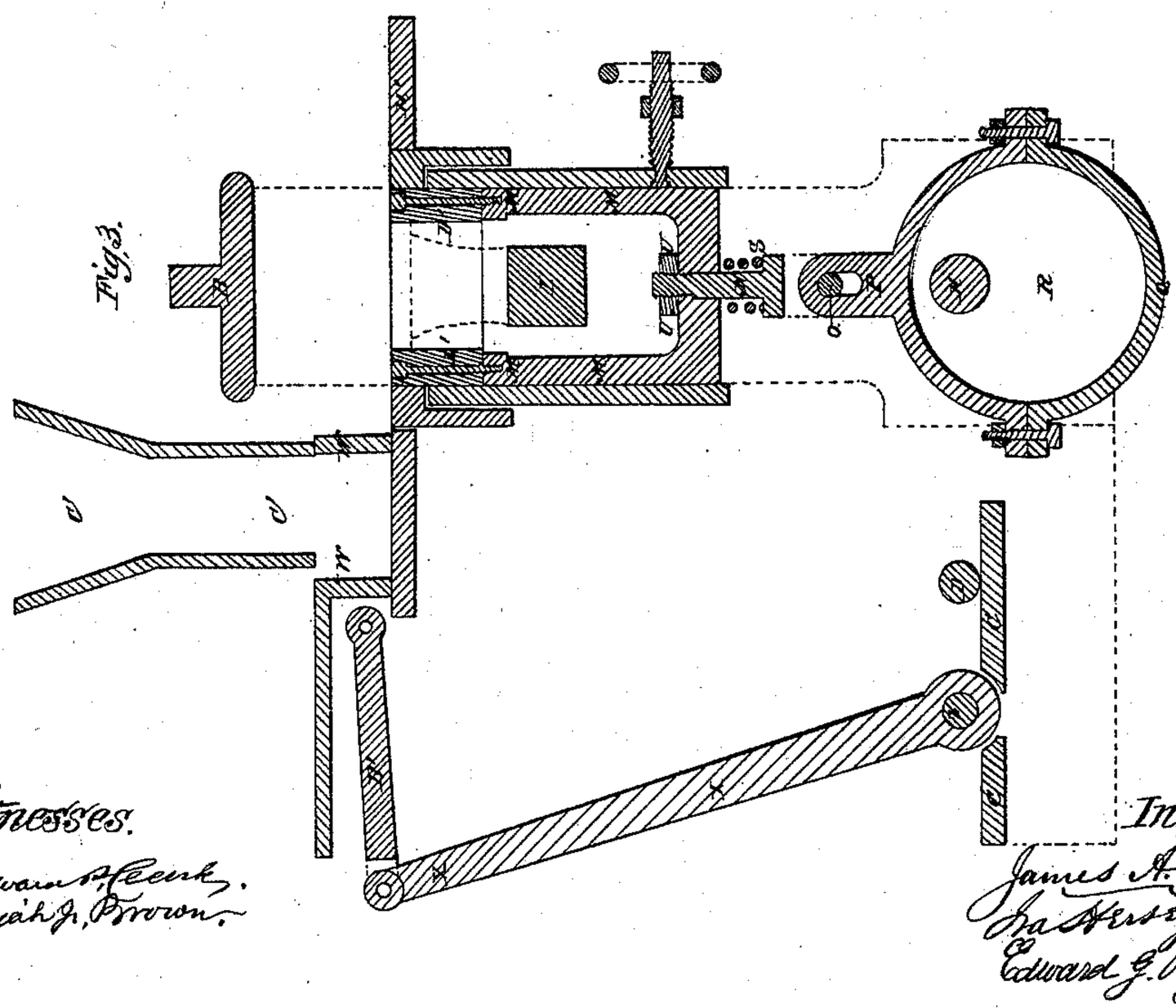


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAS. A. DORR, IRA HERSEY, AND EDW. G. OLDFIELD, OF NEW YORK, N. Y.

BRICK-MACHINE.

Specification of Letters Patent No. 16,907, dated March 31, 1857.

To all whom it may concern:

Be it known that we, JAMES A. DORR, IRA HERSEY, and EDWARD G. OLDFIELD, all of the city, county, and State of New York, have invented new and useful improvements in machines for compressing granulated clay and other compressible materials and applicable to the manufacture of bricks and other articles; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, drawn upon a scale of one sixth of an inch to the inch, and in which—

Figure 1 is a side elevation of the improved machine. Fig. 2 is a front end elevation of the same. Fig. 3 is a view of a vertical section made transversely through the middle of the machine. Fig. 4 is a front view of a section made through the middle of the same. Fig. 5 is an elevation partly sectional of the cams and eccentric of the same. Fig. 6 is a side elevation of the adjusting wedge, and its adjusting screw.

The same letters represent corresponding parts in all the figures.

The nature of our invention consists, in constructing machines for compressing granulated clay, &c., in which cams (L, L,) an eccentric (R,) and a slotted projection (P,) attached to a strap (Q,) are combined with friction rollers (K, K,) a beam (I,) and lower pistons (J, J,) of the machine, the result of the improvements being greater simplicity, directness of action, compactness, strength, lightness, convenience of repair and cheapness of construction than have been before attained in such machines.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

For greater convenience we will speak of the improved machine in its application to the manufacture of bricks, such a machine being commonly called a dry clay brick machine; iron being used as the material preferred in the construction of the machine.

The frame of the machine consists of two pieces or parts, viz, the iron bed A, A and the upright B, B, the bed of the frame, being sufficiently long to allow of the requisite driving gearing, viz., the box C, the driving shaft D and the pinion wheel E, being properly placed on the bed of the frame, which must be firmly secured to a solid foundation. At right angles to this frame-bed, the upright of the frame B, B is firmly attached by the bolts C^2, C^2, and the upright includes the pistons, molds, feeding, and delivery tables.

The machinery is driven by a belt carried around the pulley F, F, fixed upon the shaft D carrying the pinion E, which gives motion to the spur wheel G G, keyed upon the main shaft H. This shaft carries two similar cams L L one on each side of the upright of the frame and an eccentric R, R, which is placed directly under the mold frame M M and is keyed on the shaft H, the cams and the eccentric are represented in Fig. 5. Above the main shaft H and parallel with it is a bar or beam I, supporting the lower pistons J, J, the outer ends of this beam are turned, and upon them friction rollers K K are fitted which are moved vertically with the beam by means of the cams L L.

For the purpose of giving motion to the mold frame M, M, the eccentric R, R, immediately under it is connected with it by means of the strap of the eccentric Q, Q, which is connected with the connecting rod N, N, by means of the cross pin O and the slotted projection P of the strap Q. The use of the slot is to release the mold from motion during a portion of the action of the cams L L and to leave the molds at rest during the time of delivery of the bricks and of the filling of the mold with clay. The rod N, N, is connected with the mold-frame M by means of a vertical hole in the bottom of the mold-frame sufficiently large to allow the rod N to slide freely in the hole. On the connecting rod N above the slotted projection P, P, is a shoulder S, S, upon which rests a spiral spring of steel T, T, encircling the rod N and carrying the mold-frame M and during a portion of the time also the lower pistons J, J. On the upper end of the rod N a thread is cut, and a nut U is affixed, for the purpose of pulling down the mold frame by the downward pull of the eccentric, and its strap.

The upper pistons V V are securely bolted to the crown of the upright of the frame, and the bolts are provided with washers and packing so that the upper pistons may be raised or lowered a little and adjusted as desired.

The filling box or charger W W is pushed forward and pulled back horizontally by a

lever X, X, this reciprocatory movement is effected by means of a peculiarly forked or two pronged lever Y, Y, which is attached to a subsidiary rock shaft Z, upon which the forked lever Y, Y, is secured and the lever is placed in line on the shaft with the outer edge of the spur wheel G, G. In line with the forked lever Y, Y, a small roller A^1, A^1, is secured to the side of the spur wheel G G near its circumference by means of a stud. The rollers A^1, A^1, in its revolution with the spur wheel G will strike alternately the prongs or projections of the forked lever Y, Y, which moves the lever X, X, which is connected by the joint link B^1, B^1, with the filling box or charger W, W, and it is evident that during a large portion of the time of revolution of the spur-wheel G the forked lever Y, Y, will not be acted upon by the roller A^1, and the forked lever and the charger W W will be at rest. And it is also evident that during the time that the roller A^1, is passing from the lower prong or projection of the forked lever Y to the upper prong or projection, there will be an interval of rest of the forked lever Y, and of the charger W W, and during this interval of rest the charger W will stand over the mold and deposit the clay in the mold. A hopper C^1, C^1, above the charger W supplies it with clay.

The molds D^1, D^1 are attached securely by bolts to the top of the mold frame M, M.

E^1, E^1, are adjusting wedges which support the lower pistons at their point of lowest depression. The wedges are pushed in and drawn out by the screw, with a hand wheel, F^1, F^1, and thus the lowest point of descent, of the lower pistons is regulated and thus the quantity of clay in the molds is also regulated. The farther the wedges are drawn out the lower the pistons will descend and the more clay the molds will hold.

Having thus described the several parts of this machine we proceed to describe its action when in motion. Considering the machine as shown in Fig. 1 in its state of rest or at the commencement of its action, motion being given to the pulley F, F, it is transmitted through the pinion E, E, to the spur wheel G G upon which the friction roller A^1 is fastened, which strikes the lower prong or projection of the forked lever Y Y and through the medium of the lever X X pushes forward the filling boxes W W, which have received their supply of clay from the hoppers C^1, C^1, and which slide upon a table or platform. The outside cams L L, now allow the dropping of the friction rollers K K and of the bar or beam I I and the lower pistons J, J, until they rest upon the adjusting wedges E^1, E^1, which regulate the maximum depression or descent of the pistons J, J, and so regulate the depth of the molds and the quantity of clay which they will contain. The roller A^1 now strikes the upper prong or projection of the forked lever Y, Y, which thus by the medium of the lever X X draws back the charger W, W, to its original position under the hopper C^1, C^1. The eccentric R, R, during this time having taken up the slot in the slotted projection of the strap Q, Q, now commences by the pressure of the bottom of the slot upon pin O, to lift the connecting rod N, and so by means of the shoulder S and the spring T to lift the mold frame M and molds D^1 D^1 and while the molds D^1 D^1 are thus ascending by means of the upward throw of the eccentric and of the spring T, the end of the rod N reaches the bar or beam I, I, and lifts the beam together with the lower pistons J, J. When the clay in the molds has thus been compressed by the ascent of the molds and lower pistons to a certain point and by the entrance of the stationary pistons V V into the molds to a certain point the tension of the clay in the molds will overcome the power of the spring T, and the mold-frame will gradually cease to rise, and the molds also will gradually cease to rise, and will be subject to the elastic pressure of the spring T, and it will be noticed that the effect of this upward movement of the lower pistons and molds supported by the spring T, upon the clay in the molds is precisely the same as though the lower pistons and molds were stationary and the upper pistons were moved downward with the elastic pressure of a spring and by this upward movement of the lower pistons and molds the upper portions of the clay in the molds or the top of the brick will be compressed very much more than the lower portion of the clay, or the bottom of the brick. The eccentric is assisted in lifting the lower pistons by the cams L, L, acting upon the friction rollers K K which hold and lift the ends of the beam I, I, which carries the lower pistons. The eccentric R, R having completed its upward throw, the rod N will cease to act on the lower pistons, and the cams L L will continue to raise them by the independent action of the cams; and as the molds will be held stationary or nearly stationary by the tension of the clay, the motion of the lower pistons will compress the lower portion of the clay in the molds or the bottom of the brick, and the brick is thus compressed to nearly its desired thickness. The downward throw of the eccentric now first takes up the slot of the slotted projection P of the strap Q, Q, before it acts upon the pin O, and during this interval of rest the molds, the cams L L being in this part made slightly waving as at G^1, G^1, alternately slightly reunite and again renew and increase the pressure upon the brick by their action

upon the lower pistons, thus facilitating the escape of condensed air from the brick. The eccentric having now taken up the slot P, makes a direct downward pull upon the mold frame and molds by means of the nut U, affixed to the end of the connecting rod N, and during this motion of the molds downward another slight increase of pressure is given by means of the cams L L upon the lower pistons, and this pressure is retained until the molds are drawn down within a little distance of exposing the brick. At this point the cams L, L, cease their action and allow the friction rollers K, K, the beam I I and the lower pistons J, J, to descend by their gravity until the faces of the lower pistons are upon a level with the delivery table H^1, H^1, the molds at the same time have been drawn down by the eccentric until the tops of the molds are on a level with the delivery table, and the faces of the lower pistons, and thus the pressed brick stands exposed upon the face of the lower piston ready for delivery. At this point the friction roller A^1 strikes the lower prong or projection of the forked lever Y, Y, as before described, moves forward the charger W, W, which by its front end or side pushes the brick from the face of the lower piston and delivers it upon the table H^1, H^1, and having done this the charger remains for an instant stationary while the lower pistons descend to their lowest point of rest upon the supporting adjusting wedges E^1, E^1, and the clay descends gently and without shock into the molds.

We would suggest that the machine herein described though called a dry clay brick machine is applicable to pressing many things besides clay or bricks, for instance coal and other material for fuel which it may be desired to press into certain shapes—and we claim the use of our invention in all its applications. We would also suggest that instead of two molds as represented by the drawings this machine may be constructed with one or three or more molds, as may be considered most advantageous in particular circumstances. We would also suggest that in many cases a convenient and economical arrangement of these machines is to make them double, that is to say, two machines placed back to back with one frame bed. And we would also suggest that in some cases it may be economical and desirable to make double machines one above the other, the upper machine resembling in all respects the machine herein before described, and the lower machine being similar to the upper placed upside down, with certain equivalent or necessary and obvious changes easily made by any skillful workman: the two machines thus placed one over the other being moved by one main shaft and one set of cams placed between the two machines. In such an arrangement the upper delivery table might be say about four feet high from the ground, more or less, and the lower delivery table about a foot more or less below the ground, and this inconvenience might be remedied by the use of a platform suitably placed below ground for a boy to stand upon, who should take off the bricks and hand them up, or place them upon a higher table.

Having thus described the nature of our invention and the construction and operation of the same, what we claim and desire to secure by Letters Patent is—

The combination of the cams L, L, eccentric R, and slotted projection P, attached to strap Q, with the rollers K, K, beam I, and lower pistons J, J, when said parts are constructed and arranged in the manner and for the purpose herein set forth.

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