2 Sheets—Sheet 1.

J. A. FALCONER & R. GRAHAM.

Brick Machine.

No. 82,396. Patented Sept. 22, 1868.

Fig. 2.

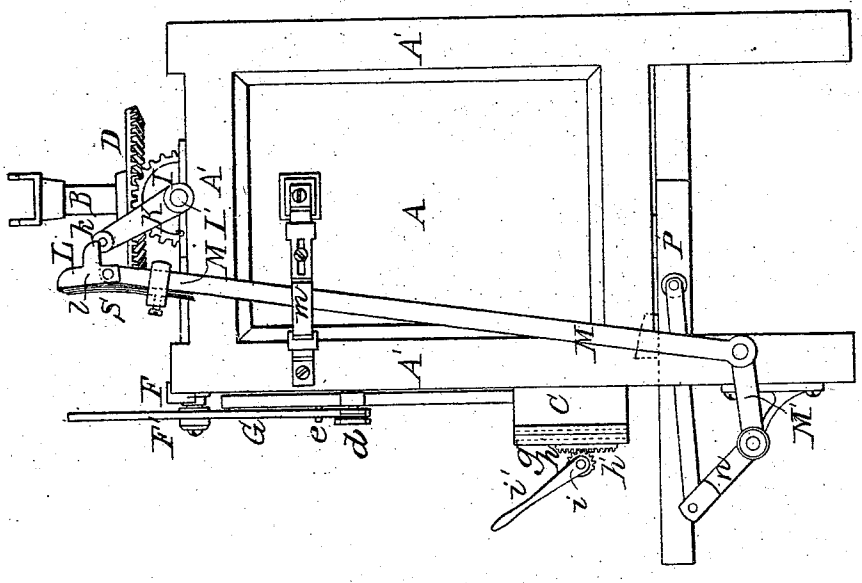
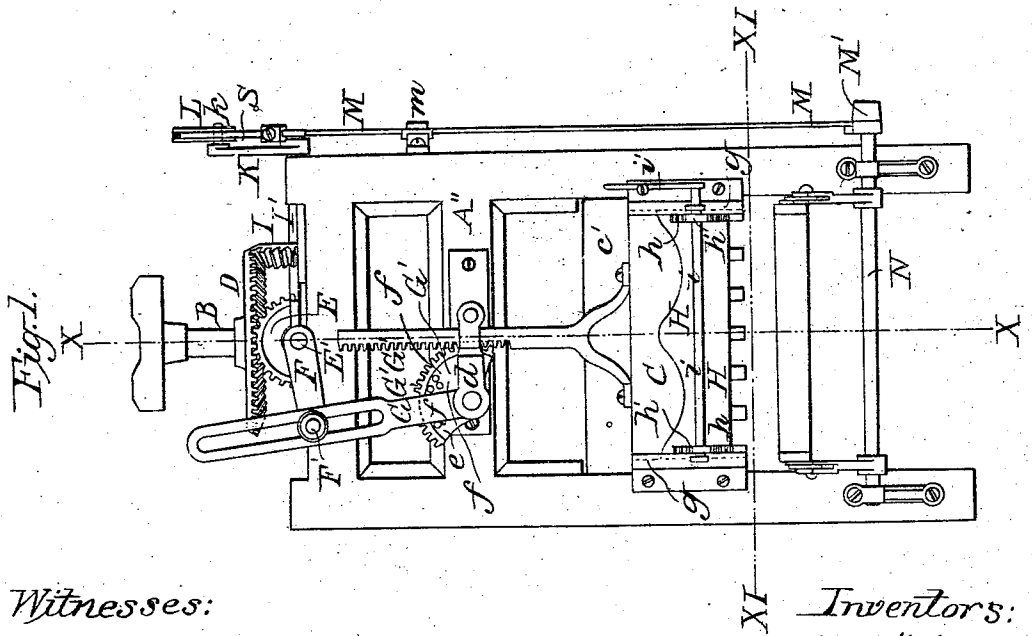


Fig. 1.



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2 Sheets—Sheet 2.

Brick Machine.

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Fig. 3.

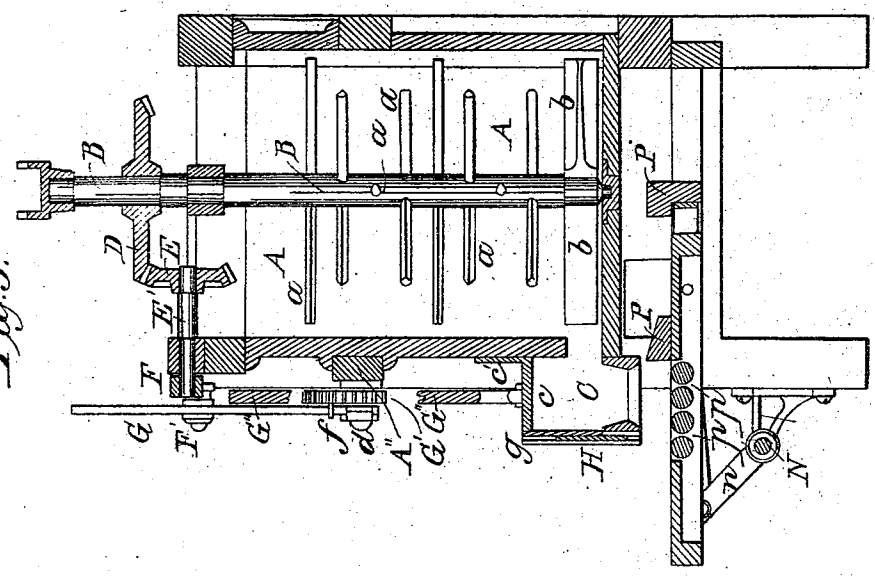
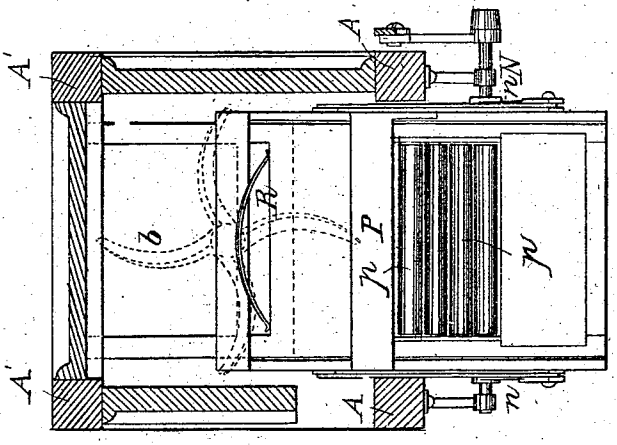


Fig. 4.



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Letters Patent No. 82,396, *dated September* 22, 1868.

IMPROVED BRICK-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, JOHN A. FALCONER and ROBERT GRAHAM, of Jersey City, Hudson county, in the State of New Jersey, have invented certain new and useful Improvements in Machines for Making Bricks; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is an elevation of that side of the machine from which the moulds are taken away by the bearers.

Figure 2 is an elevation of the contiguous side.

Figure 3 is a vertical section on the line X–X of fig. 1; and

Figure 4 is a horizontal section on the line XI–XI of fig. 1.

In all the figures like parts are indicated by the same letters of reference.

In the drawings—

A is a box or chest, supported by the uprights and braces A′ A″, in which, attached to the vertical shaft B, revolve the knives *a*, for thoroughly mixing the wet clay which has been fed in at the top.

At the bottom of the shaft B, and firmly attached thereto, are the curved arms or wipers *b*, which, as they turn, wipe or force the clay which is at the bottom of the chest A, and is in a proper condition, into the press-box C. This press-box is on the outside of the chest A, as shown in figs. 2 and 3, and is closed on its front side, or that side which is farthest from the chest A.

The bottom, which is open, is crossed and divided by grate-bars, which correspond in width and position with the partitions in the moulds used, which separate the bricks.

The press-box is fitted with a plunger or follower, *c*, which fills its length and breadth, and which will be more particularly described hereafter.

The back of the press-box, or side next the chest A, is open, except when closed by the descent of a gate, *c′*, forming part of the plunger *c*.

The moulds may be of wood or any other suitable material, and are of dimensions to suit the locality where the bricks are made, and may each have as many spaces for bricks as the capacity of the machine and convenience will allow.

The shaft B is driven by any convenient means or power, and it is furnished, near its top, with a fixed bevel-cog wheel, D, gearing into and giving motion to another cog-wheel, E, fast on one end of the horizontal shaft E′. The other end of this shaft carries a crank, F, the wrist or pin F′ of which has free play in the slot of the slotted lever G, swinging loosely on the arbor *d*, secured to one of the braces of the frame A′ A″ of the machine.

Loose on the same arbor, *d*, is a segment-toothed wheel, G′, the teeth of which take into a rack, G″, attached to and forming the stem of the plunger *c*, fitting the press-box C.

As the lever G is vibrated by the crank and pin F F′, it comes in contact with a pin, *e*, permanently fixed in and projecting from the segment G′, so as to cause this last to turn on the arbor *d*, in a direction that will lift the rack G″ and the plunger *c*.

Another pin, *f*, is inserted in one of a number of adjusting-holes, *f′*, in the segment G′, on the opposite side of the lever G from the pin *e*, so that the lever shall be between the two pins, which pin, *f*, by contact with the lever G, causes the segment G′ to move, so as to depress the rack G″ and plunger *c* as the revolution of the crank F continues. The holes *f′* are made at variable distances from the pin *e*, so that the lever G may vibrate through a longer or shorter arc, before acting on either of the pins.

The position of the pin *f* thus regulates the length of the stroke of the plunger *c*, and the length of time it will be at rest between its upward and downward movements.

A gate, *c′*, forming part of the plunger *c*, and setting at right angles with it, descends with the plunger

and closes the back of the press-box against the admission of clay, while the plunger is exerting its pressure on the clay in the moulds beneath it.

On the front of the press-box is a gate, H, fitted closely to the front of the box, and sliding up and down in guides, *g*, at each end of the press-box. The gate H is furnished at each end with a short rack, *h*. Into each of these racks meshes a small segment-toothed wheel, *h'*, on each end of a rock-shaft, *i*, which has its bearings in brackets on the press-box C, and is vibrated by the lever *i'* when it is necessary to lift the gate H, for the purpose of clearing the press-box of stones or anything that may interfere with the proper action of the machine.

The bevelled-cog wheel D, at the upper end of the shaft B, engages with another bevelled-cog wheel, I, fixed on the horizontal shaft I', which shaft carries at its outer end a crank, K, having a crank-pin or wrist, *k*. As the crank K revolves, the pin *k* comes in contact with and catches under the hook L, attached by a joint, at *l*, to the upper end of the connecting-bar M, which is kept in a position to be engaged by the pin *k*, by the adjustable bridle and guide *m*. As the pin revolves, it lifts the hook L and bar M, and, as the lower end of the bar is connected with a lever, M', on the end of the rock-shaft N, this last has a vibration given to it, due to the proportions of the crank K and lever M.

The rock-shaft, which extends across the front of the machine, under the mould-bed or platform, has its bearings in brackets attached to the upright, A', of the machine, and has two arms, *n n*, which extend upwards as high as the mould-bed *o* in each side of it, and are then connected by links or rods to a pusher, P, extending across the mould-bed, and sliding freely over it.

It will be seen that, as the pusher is brought forward, which happens while the plunger *c* is down, the empty mould, which has just been placed between the pusher and the one that was last filled, will be carried under the press-box to be filled at the next depression of the plunger *c*, and will push out the one already filled from under the press-box, to be taken away by the bearer, when another empty mould will be placed between the receded pusher P and the mould now under the press-box. This operation is repeated for every revolution of the cog-wheel I and crank K.

The frame of the pusher P is provided with a spring, R, shown in blue in fig. 4, which is slightly compressed when the pusher is forcing a mould forward, and whose elasticity helps to send the pusher back when combined with the weight of the bar M, to cause the rock-shaft to return after the hook L is relieved from the pin *k* of the crank K.

The platform on which the moulds rest, and over which they are impelled by the pusher P, is composed of a number of rollers, *p p*, so nearly flush with but a little above the platform or mould-bed that the moulds will run over them with the least possible friction, while, at the same time, they present a sufficient amount of resistance to the pressure of the plunger *c*.

It may happen that, by a failure to properly insert the empty mould, by the interposition of a stone or lump of clay, or some other accident, the pusher might be checked in its motion when it or the mould would be liable to be broken, or the rock-shaft N, or some of its adjuncts, would give way, causing serious inconvenience, and a stoppage of the machine.

As a guard against any such difficulty, the hook L is hinged to the upper end of the connecting-bar M by the joint *l*, and is kept in the proper position for the action of the pin *k* on the crank K, by a spring or series of springs, S, which acts on the back of the hook L, in nearly the same manner as the spring at the back of a penknife acts upon the blade. The spring may be composed of a number of bars or laminæ, according to the degree of stiffness required, and is secured to the bar M by a clamp and screw, as seen in fig. 2, or by any other equivalent device. The stiffness of the spring may, moreover, be further regulated by changing the position of the clamp, which holds them to a greater or less distance from the hook, thus lengthening or shortening the spring.

If anything should happen to check the movement of the rock-shaft N, the spring S will allow the hook L to vibrate on the joint *l*, until the pin *k* of the crank K shall have cleared the hook and passed it, when it (the hook L) will instantaneously return to its proper position for renewed action, which will be repeated without danger to the machine, until the obstruction shall have been removed.

Having thus fully described our invention, what we claim therein as new, and desire to secure by Letters Patent, is—

1. The hinged hook L, in combination with the spring S, connecting-rod M, and crank-pin *k* of the crank K, connected with the driving-power of the machine, substantially as and for the purpose described.

2. In combination with the hinged hook L, spring S, connecting-rod M, and crank-pin *k* of the crank K, the adjustable clamp *m*, all constructed and arranged substantially as and for the purpose set forth.

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