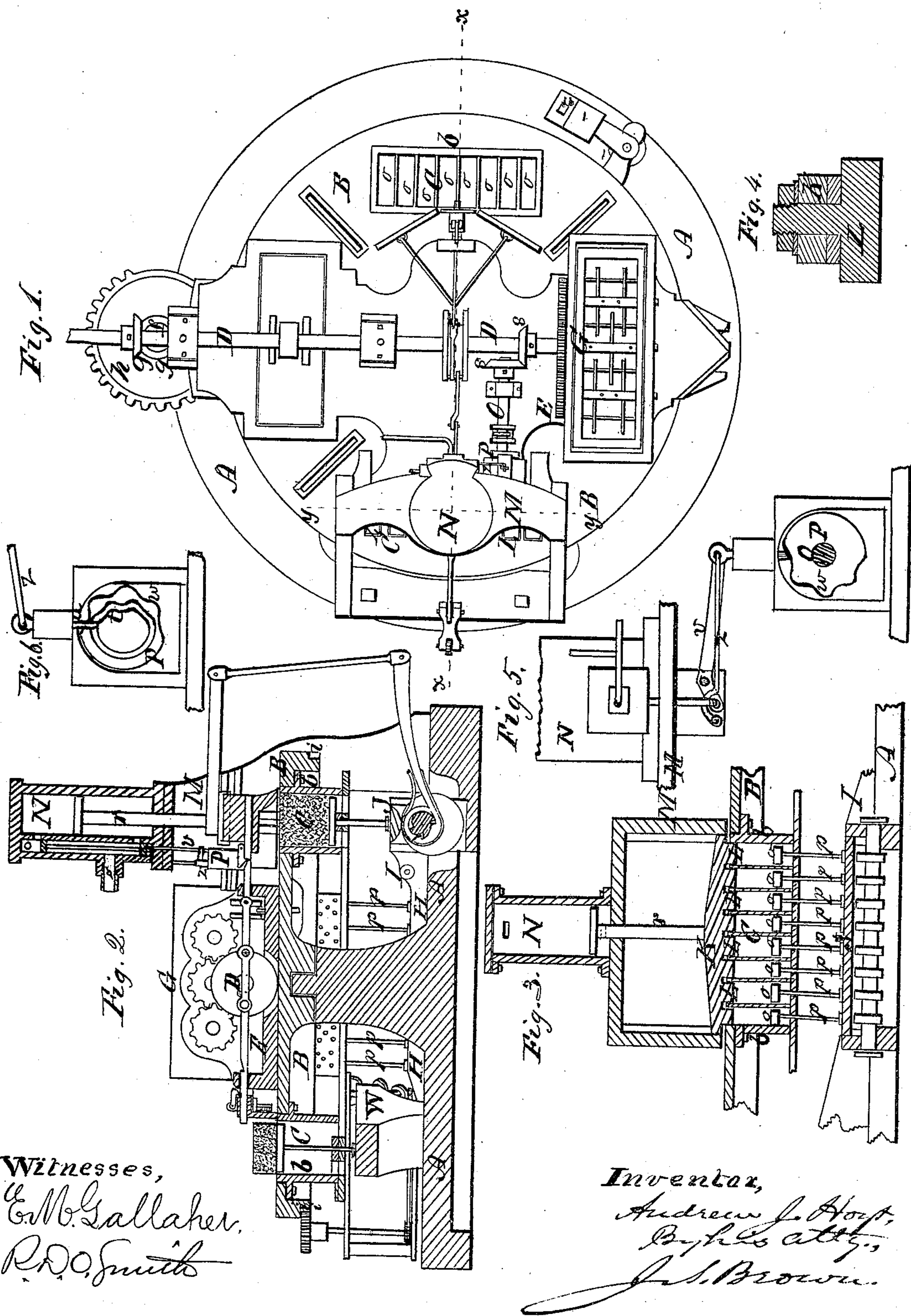


A. J. HOYT.
Brick-Machines.

No. 151,492.

Patented June 2, 1874.



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UNITED STATES PATENT OFFICE.

ANDREW J. HOYT, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN BRICK-MACHINES.

Specification forming part of Letters Patent No. **151,492**, dated June 2, 1874; application filed November 6, 1873.

To all whom it may concern:

Be it known that I, ANDREW J. HOYT, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented Improvements in Brick-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a plan of a brick-machine constructed with my improvements; Fig. 2, a central vertical section thereof, in a plane indicated by the line *x x*, Fig. 1; Fig. 3, a vertical section in a plane indicated by the line *y y*, Fig. 1; Figs. 4, 5, and 6, views of parts detached.

Like letters designate corresponding parts in all of the figures.

The machine to which my present improvements are applied is designed to make pressed bricks directly from untempered clay, the pressing being effected both by the blows of beaters or plungers and by simple compression; and my invention relates to the production of the blows of the beaters or plungers by the direct action of steam.

In the drawings, A represents a circular frame; B, a horizontal revolving mold-wheel, having in its face oblong apertures *b b*, in which are inserted sets of molds C C, each containing any required number of mold-compartments; D, a horizontal driving-shaft, extending from the driving power over the center of the mold-wheel, having a frame-bearing, E, for its inner end, and communicating an intermittent motion to the mold-wheel by means of a vertical transmitting-shaft, *f*, bevel-wheels *g g*, and a partial pinion, *h*, which gears into cogs *i i* on the periphery of the said mold-wheel; G, the clay-feeding box or hopper; H, the lowest section (under the hopper G) of a track, upon which the followers *o o*, with their downwardly-projecting stems *p p*, travel, and which produces the upward movements of the followers; I, an inclined section of the track, whereon the followers pass one-fourth of a revolution, and thereby partially condense the clay in the molds, and J another section of the track, where the bricks are subjected to the action of the beaters for thoroughly compacting them in the molds. For this purpose

the direct action of steam is employed; and the method and means of applying the same are substantially as follows:

In a position directly over where the molds stop, a cross-head, K, provided with a series of beaters or dies; L L, has an up-and-down reciprocating movement in ways of an upwardly-extending frame, M, attached to the main frame or base. Centrally over this cross-head is located a steam-cylinder, N, attached firmly to the same frame M; and the piston-rod *r* thereof is joined to the middle of the cross-head. The steam-cylinder is of sufficient length to give the requisite length of stroke to the cross-head. The beaters or plungers L L fit, each, exactly over one of the mold-compartments of the molds, so that when the steam is suddenly let into the cylinder over the piston, the cross-head will be quickly forced downward, and will cause each beater to give a powerful blow to the brick beneath it. These blows are repeated as many times as necessary, and are produced automatically by the machine.

Each beater may be connected separately with the cross-head K by means of a stem thereon, which extends up through the cross-head, and is retained by a nut, as shown in Fig. 4; and a block of india-rubber, or its equivalent, is placed between the beaters and the cross-head, as represented in the same figure, to enable the beater to adjust and adapt itself elastically to unequal quantities of clay in the molds, and thus relieve the strain on the cross-head.

For producing the automatic movement, as shown in the drawings, a horizontal shaft, O, extends in a direction at right angles to the driving-shaft D, as shown, being geared thereto by bevel-gear wheels *s s*. On the shaft O is a wheel or disk, P, in the face of which is a cam-groove *t*, Fig. 6, of a zigzag or equivalent form, for giving a reciprocating up-and-down movement to a rod, *u*, connecting with a lever, *v*, which, by the vibratory motion thereby imparted to it, slides the valve in the steam-chest of the steam-cylinder N, so as to let in steam alternately above and below the piston. The cam-groove gives as many double vibrations to the valve as the number of blows desired to be given to the bricks by the beaters. In con-

nection with this automatic regulation of the valves of the steam-cylinder, timed exactly as required by the gearing which operates it, an automatic device for letting the steam into the steam-chest, and for regulating the pressure upon the piston, is employed. As represented in the drawings, this device consists of alternate projections and indentations *w* on the periphery of the cam-wheel or disk P, by which a lever, *z*, is vibrated for controlling the throttle or equivalent valve which lets the steam into the steam-chest. This peripheral cam device is so formed that it entirely excludes the steam from the steam-chest till the moment arrives for operating the beaters, and then introduces steam in quantity sufficient to raise the piston and beaters at ordinary speed; and, when the piston is fully raised, it suddenly lets in the full head of steam, whereby a sudden and forcible descent is given to the beaters. Finally, it admits just sufficient steam to raise the beaters out of the way of the subsequent movements, and then entirely cuts off the steam, leaving the piston partially raised. This variable admission of the steam corresponds exactly in time with the letting in of the steam above and below the piston, so that it decreases in ascending, and suddenly increases in descending. After the beating process has been completed, a knife or scraper is caused to pass over the tops of the molds, and to cut off the surplus clay. Then the mold-wheel carries the molds around one-fourth of a revolution,

to a position where the bricks receive the final compression, and then over an inclined section, W, of the track, which lifts the followers to the tops of the molds, from which the bricks are finally removed.

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

1. The combination of the revolving mold-wheel B, the beaters L L, for compacting the bricks in the molds, the steam-cylinder N, for driving the beaters, the valve-regulating shaft O, and the driving-shaft D of the machine, for automatically regulating the movement of the beaters in harmony with the movement of the mold-wheel, substantially as herein specified.

2. In combination with the revolving mold-wheel B, driving-shaft D, beaters L L, and steam-cylinder N, the cam surfaces or groove *t*, operating the port valve or valves of the steam-cylinder, and cam or cams *w*, controlling the throttle or steam-admitting valve of the said steam-cylinder, arranged and operating as described, for automatically determining the number of and mode of delivering the beats given to each set of bricks in the molds, substantially as herein specified.

Specification signed by me this 3d day of November, 1873.

ANDREW J. HOYT.

Witnesses:

WILLIAM QUIRK,
J. S. BROWN.