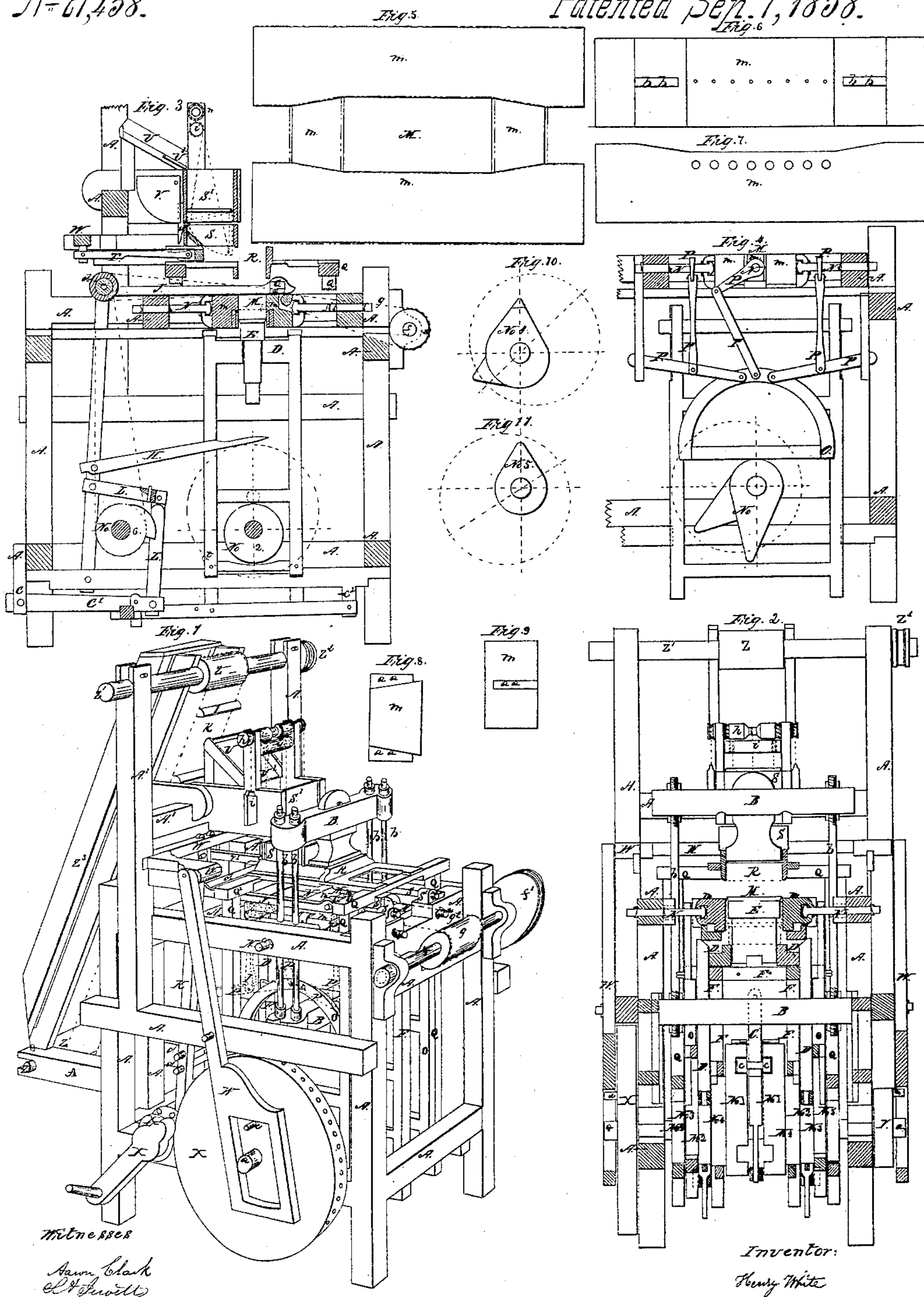


H. White, Brick Machine.

No 21,458.

Patented Sep. 7, 1858.



UNITED STATES PATENT OFFICE.

HENRY WHITE, OF CLEVELAND, OHIO.

BRICK-MACHINE.

Specification of Letters Patent No. 21,458, dated September 7, 1858.

To all whom it may concern:

Be it known that I, HENRY WHITE, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and Improved Machine for Making Pressed Brick, the object of which improvement is the making of pressed brick from tempered clay of such temper that the bricks can be placed in the kiln directly from the machine; the construction of a mold whereby brick can be made and discharged therefrom without the abrading or wearing away thereof and by which the molds are rendered more durable and the brick made of a uniform size, and to feed the clay to the mold in such a manner as to render it necessary only to have a sufficient amount, and also to secure a more uniform density to the brick; and I 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 annexed drawings, making a part of this specification, in which—

Figure 1 is a perspective view, Fig. 2 a cross section, Fig. 3 a longitudinal skeleton section, and Fig. 4 a fractional section.

No. 1 is the main power cam that works the upper plunger. This cam is formed with two circular disks set face to face, at such distance apart as may be required for a pitman to work between them, the pitman to be made with a slot so as to pass over the shaft and of sufficient length to allow the cams to revolve, and also to work in a guide on the under side of machine. The pitman will have a pin through it, above the shaft, and a sheave on each end thereof, the sheaves to run in a groove sunk in the face of each disk, the shaft to be placed one inch from the inner edge of the groove on the one side, and seven inches therefrom on the opposite side thereof. The cam is made to give a rise of six inches to the pitman by which the plunger is thrown up from the mold and in its descent the clay is pressed into the mold by which device a heavy pressure upon the brick is obtained at that point on the cam nearest to the center of the shaft.

No. 2, is the second power cams by which the lower plunger is worked, and which is made to rise one and a half inches, the movement of which is reverse to that of cam No. 1; No. 3, cams to spread and contract the mold, the forms of which are seen in section Fig. 4; No. 4, cams to lift the brick from the mold; No. 5, cams to raise and lower the

feed box, all of which are placed on the main shaft *a*; No. 6, a cam on the shaft *b'* to throw forward the plane and gate K, and slide the brick off the plunger E when raised by cams No. 4.

A is the frame of machine; A', the frame that supports the elevator, grate, feed chute, and one hopper; M, the mold, which is constructed of four parts *m m m m*, put together with beveled joints, so that when the head or end is moved back or outwardly, the sides thereof will be forced back, by which the mold is enlarged each way without opening the joints thereof, as is shown in Fig. 5, which is a top view of the mold. The mold is made the proper size for the length and width of a brick and five inches deep, in the lower part of which the lower plunger is set, and is so arranged that when it is raised up in the process of pressing it will give the proper thickness to the brick from the top of mold. Each side of the mold is perforated with a series of holes for ventilation, to be arranged just below the top of plunger E, when raised to its highest point, as shown in Figs. 6 and 7, which are a face and bottom view of one side of mold. Figs. 8 and 9 are a top and end view of one end of mold.

a a are tongues that slide into the grooves *b b* of Fig. 6 to keep the parts in place; B, a gate that carries the upper plunger. It is attached to the pitman C, and thus to cam No. 1; the upper cross head piece is arranged to be raised or lowered by means of the screws and nuts on the rods *b*; D, the gate that carries the lower plunger E, which is worked on cams No. 2. The plunger is set in the top of gate D, having a shoulder on each side and end, by which it is raised. The shank of plunger passes through the top of gate D, and is attached to the top of gate F, which is worked on cams No. 4, the form of which is shown in Fig. 10. These cams sustain the plunger to the point raised by cams No. 2, until the upper surface of the brick is planed off and until the mold is spread by cams No. 3, and which requires the period of one revolution of the small gear wheel X', or a quarter revolution of the large gear wheel X. The planer G is set in the gate G', which is made to pass over the top of mold by the gate K, to which it is attached by the rods J J. K is hinged at the bottom near the shaft *b'* and is moved back by the pawl H and the pins *t* in the rim of each disk of cam No. 1, by which the

gate G' is carried over the top of mold and about an inch beyond the plunger. The planer G, which is a cylinder with knives thereon, is made to revolve continuously, the motion to which is given by the pulleys O O, on the shaft *b'* and the pulleys O' and O² in gate K, and the belts *q* and *q'*. The plane is intended to cut away all the surplus clay above or from the top of mold, by which the brick is cut to its proper thickness, when the mold being spread the lower plunger E is raised through the top of D by gate F and cams No. 4 up to and about a quarter of an inch above the top of mold, when by the reversed movement of gate G' the brick is pushed off from the plunger on to the endless apron and carried from the mold. The reversed or forward stroke of the gate G' is made by cam No. 6, the form of which is seen in Fig. 3 on shaft *h'* and its action is regulated by the levers *c* and *c'* and the gate D, to the lower end of which *c* is attached, and also to the fulcrum *c*². *c'* is attached to fulcrum *c*³. When the gate D is lowered it carries the lever C and C' down, when the pawl L, (which is attached to K, and by the coupling rods L' to *c'*), is brought down so that cam No. 6 strikes L, at every fourth revolution thereof, and at the second revolution after K has been thrown back, and carries the gates K and G' forward and with it the brick. The top of E, is made to project over the body of plunger and beveled up so as to show an edge of about one eighth of an inch, the object of which is to give freedom to the working of the plunger and to prevent it from fouling with the clay. N arms by which the parts of the mold are held together laterally and endwise, and which by means of cams thereon and of cams No. 3 are made to spread the mold for discharging the brick and to contract it again to its proper size after the plunger has fallen to its place. The cams on the arms N, can be placed on one end thereof, and attached to the inner side of the frame, or the arms may extend through the frame, with the cams on each side thereof, as shown in the drawings. The cams must be made to move the several parts of the mold the exact distance required and to hold them together with great firmness when closed for use. The arms N are worked by the gates O and the levers P, the coupling rods P', and levers P², and cams No. 3, and must be arranged to spread the mold immediately after the brick have been cut, and to contract it again when the plunger E has fallen to its place after lifting the brick from the mold. Q two gates, and Q' two cross pieces that support the feed box R, and hopper S. They are made to rise up about three inches and remain up while the brick is being cut and discharged from the mold, and also for being refilled

when it is lowered again. They are worked by cams No. 5, the form of which is seen in Fig. 11.

The feed box R is set over the mold, and about a quarter of an inch above the top thereof when down, and through which the upper plunger works. The clay is fed into the box R from the hoppers by means of the sliding head T. The hopper S is filled from the supply hopper S', by means of a swing bottom, which is hung with pivots on one side and sustained by the weights *j* on the opposite side. When the amount of clay, by weight, has been fed into the hopper from the chute U, the bottom falls on the check *v*, by which it is held until the hopper S is raised up, which stripes the tongue of check *v* (which is held forward by the balance V) and forcing it back the bottom of S' falls and the clay is emptied into the hopper S, and is deposited in front of the slide T, which is then drawn back, and as the hopper S and feed box R fall the bottom of S' is again raised up by the weights *j*. When the bottom of S' falls on the check *v* the leaf U', in the bottom of chute U, is raised up and checks the feed, but when the bottom falls into the hopper S the leaf U is raised up so as to cut off the feed until it is again lowered by the same motion that raises the bottom of S'. The weights *j* and the leaf U' are adjusted on the pulley *h* and *i* and the weights are graduated to give necessary quantity of clay to make a brick. The sliding head T, the rod T', the sliding gate W and the levers W' are worked by the cams formed with the pins *e* and the projecting ends of the main shaft *a* on the driving wheel X and the disk Y by which the head T is drawn back when the feed box is being raised up and thrown forward again when it is lowered. Z², pulley; Z¹, axle, and Z Z the drums that carry the elevator by which the clay is carried up and thrown into the chute U. Over the elevator there is a grate for the purpose of separating the clay into fragments. It is constructed with rods lengthwise of the frame. Set about one and a half inches apart, and each rod is to have a spike about once in eight inches on the upper side thereof, the spike to be about two inches high and made sharp, and also spikes crosswise of the rods to project a half inch on each side thereof, to be placed immediately between the spike on the upper side, the spike to be sharp, the grate to be secured crosswise in a suitable manner. *g*, the drum; *f*, the axle, and *f'* the pulley that carries the endless apron for discharging the brick; *g'*, the pulley on one side of mold that carries the upper end of apron. The endless apron and the elevator are driven by pulleys on the shaft *b'*, the size of each to be graduated according to the speed required. The power is applied to the machine by a

pulley on the shaft *b'* alongside the small gear wheel, and it is intended to place a series of machines side by side, the power to be connected, but every mold must have its own
5 distinct arrangement as above set forth, the machines to be constructed of iron or wood and iron with steel facings if required for the molds. The large gear wheel must be four times the size of the small gear wheel.
10 *Mode of operation.*—The clay having been properly prepared in the usual or in any known way, care being taken to remove the stones, and the clay or pug having become
15 sufficiently dry to break up into fragments under a rake, is thrown on the grate, through which it falls into the buckets of the elevator, and is carried up and thrown into the U, and thus through the hoppers and feed box, into the mold, where it is pressed by the
20 combined action of cams Nos. 1 and 2 both from the upper and under side. The upper plunger is intended to press the clay into the mold but not to a definite thickness, and it will be observed that while the process of

pressing the brick is being performed that 25 all the other parts of the machine are at rest or nearly so, the brick being pressed and the upper plunger raised up two inches or thereabout, and the feed box raised up the plane is made to pass over the top of mold and cut 30 away all surplus clay. Then the mold is spread and the brick raised above the top thereof and is carried off on the endless apron, and while the above was being done the hoppers were being refilled and thus 35 automatically the process is carried on.

I claim—

1. The beveled joints of the mold as arranged and for the purpose specified.
2. I also claim the mechanism as described 40 when relatively arranged and combined in its several parts as set forth and for the purposes specified.

HENRY WHITE.

Witnesses:

AARON CLARK,
S. A. JEWETT.