

Patented Oct. 24, 1848.



UNITED STATES PATENT OFFICE.

JAMES DANE, OF WEST DERBY, VERMONT.

BRICK-PRESS.

Specification of Letters Patent No. 5,878, dated October 24, 1848.

To all whom it may concern:

Be it known that I, JAMES DANE, of West Derby, in the county of Orleans and State of Vermont, have invented a new and useful

Improvement in Machines for Making Brick, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine showing the lower carriage P' extended from the left side thereof, the filled molds being removed and discharged and a set of empty molds put in their places—the upper carriage P with a set of molds drawn in beneath the charging box G of the right side of the machine and the follower K, in the act of pressing the clay into the molds, the sweep E to which the horses are attached being represented as partly broken off. Fig. 2 is a view of the machine turned bottom upward showing the four parallel rods *r* attached to, and combined with, the carriages, there being two parallel rods to each carriage arranged in pairs at right angles. In this view the bridge-tree T is omitted in order to show the crank shaft Q'. Fig. 3 is a section showing the apparatus for lifting and discharging the molds, and the valve block O beneath the grating H for preventing the descent of the clay from the receiver, G; also a part of the mixing tub B, frame A, carriages P, P', mold I and followers or piston K. Likewise the crank Q, and arm R for moving the carriages and the axle Q' resting on the bridge-tree T.

Similar letters in the several figures refer to corresponding parts.

The main body of this machine is made and arranged much after the manner of the old combined mixing tub and sliding mold machine which has been long in use in the State of Maine and elsewhere. Namely the frame A, the hopper or tub B in which the clay is mixed before passing into the molds, the vertical shaft C of radial mixing or pulverizing knives D working in the tub, the sweep E to which the animal, or animals are attached for operating the knives and pressing the clay into the molds, the openings F in the sides of the tub through which the clay, when mixed, is forced into the mold by the action of the lever knives D, the receiver G into which the clay is forced from the tub B, and in which the followers work, resting upon the grating or stationary molds H, the sliding molds I, the followers or pistons K

working in the receivers G, the frames L and piston rods M attached to the frames L, the levers or treadles N bearing upon the heads of the piston rods, the sliding valves or blocks *o* attached to the carriages for passing under the grating when the filled molds I are moved out therefrom to prevent the descent of the clay; the cords L (attached to the carriages P and frames L) and pulleys (*j*) for raising the pistons. I say these parts are made and arranged and operated somewhat in the usual manner.

My invention and improvement consists mainly in a certain new and useful combination and arrangement of parts attached to the above described machine by which two horizontal carriages P P' extending through the frame and crossing each other at right angles one arranged above the other and carrying several sets of molds I, are made to run out on ways from the several sides of the machine in succession in order to discharge the pressed bricks, and again to run them in successively to fill the empty molds by the rotary motion of a crank Q geared to the vertical shaft C of the grinding machine; the manner of gearing being effected by means of an arm R (on which there is a cog or wrist S), attached permanently to the lower end of said shaft C below the mixing tubs and turning with said shaft C, the said crank Q operating to move the carriages alternately by coming in contact with four parallel rods *r* crossed at right angles and attached to the carriages; and the said arm R and crank Q being disconnected whenever it is desired to stop the motion of the carriages and to use the grinding machine alone by lowering a bridge-tree T, upon which the lower or pivot end Q' of the crank Q is stepped, the crank Q or upper end having a round socket Q'' into which the reduced end *c'* of the shaft *c* enters; the carriages P P' having iron grooved ribs *g* on the under side thereof made to move over, or running on wheels *f*, whose axles are let into the ways J; said ways J being adjusted by common set screws or wedges in order to make the mold work close up against the under side of the grating or stationary molds H, one carriage being arranged below the other and at right angles thereto, and carrying sets of molds I of the usual form.

Combined with the grating or under side of the false molds H is a movable striker V for striking the brick, said striker being held

in a permanent position by springs W during the regular operation of the machine and adjusted so as to give way and leave the false mold or grating H when struck by a stone

5 or other hard substance that may chance to be in the clay and which would break the machine and render it useless without the giving way of the said striker, on the running out of the molds.

10 The manner of uniting the pressing levers N to the heads of the piston rods M is by means of balls *n* and sockets and links *p* for the purpose of causing the piston rods to rise and fall vertically, while the ends N' of the levers N attached thereto move in the arc of a circle to prevent any binding of the piston rods M in the mortises *m* of the frame A in which they work.

20 My mode of discharging the filled molds is effected by means of a combined spring lever *a* cam shaft *b* curved arm *c* and treadle *d*; the whole being attached to the ways J, or bed pieces upon which the carriages P P' travel back and forth, except the spring lever *a* which is connected with the carriage P and moves back and forth with it.

25 The manner of unshipping or ungearing the apparatus used for moving the carriages, from the apparatus for grinding the clay when the latter is to be used alone, is accomplished by dropping one end of the lever *e* upon which the loose end of the bridge tree T rests that supports the pivot end Q' of the crank Q. This operation will cause the 35 crank Q to descend with the bridge tree T—the crank thus becoming disengaged from the end C' of the shaft C and from the wrists of the arm R.

40 The manner of stopping the action of one or more of the molds (when the machine is in operation) is by drawing one or more of the rods *r* from the carriages P P', said rods being inserted loosely into the carriages for that purpose.

45 The rods *r* against which the crank Q is to act, for moving the carriages may be plain, round wrought iron bars, inserted into corresponding round apertures in the carriages; or the rods may be square. The 50 crank may be provided with an anti friction roller *t* for reducing friction while operating against the rods.

55 The cords *h*, for raising the pistons (after they have performed their office of pressing the clay into the molds) are attached to the ends of the carriages P P' and run thence over grooved pulleys *j* turning on axles inserted into the sides of the permanent ways J, directly over the lower cross bar of the rising and falling piston frames L—the 60 other ends of said cords being made fast to the said lower cross bars of the frames L, or run through openings therein and made fast to weights *w* hanging below them in 35 order to keep the cords extended and taut

during the return motion of the carriage with the empty molds. In running out the carriage this weight strikes against the lower rail of the frame L.

70 The sweep E for operating the machine is provided with an anti friction roller E' for pressing down the levers N to which the piston rods M are attached—said roller being connected to the under side of the sweep in such manner as to act upon all the 75 levers in succession.

80 The arm R is affixed permanently to and turns with shaft C. The crank Q is connected loosely with shaft C by its lower end being made round and inserted into the round hole or socket in the crank. The gearing together of the arm R and crank Q is effected by means of the wrist S.

85 Operations: The horses being attached to the sweep E and driven around the machine in a circle, until the clay and water previously put into the tub B, be sufficiently mixed, the lever *c* upon which the bridge-tree T rests is raised; this raises the crank Q and puts it into gear with the wrist S of 90 the arm R radiating from the lower end of the shaft *c'* that extends down through the bottom of the mixing tub B, and enters a socket Q'' in the head of the crank Q, and causes the molding part of the machine to 95 operate simultaneously with the mixing part, said crank Q operating the carriages P P' and roller E' operating the levers N and pistons K successively, the pulverizers or mixers D keeping the receivers G filled with 100 clay by their rotary motion, the clay being forced through the openings F into the receivers. As the crank Q revolves it strikes one of the rods *r* nearest the center and 105 forces the carriage P to which it is attached horizontally over the antifriction rollers *f* carrying a set of filled molds from beneath the grating H and bringing a valve block O in its place to prevent the descent of the clay from the receiver, G, on one side of 110 the machine, and simultaneously with this operation there takes place on the opposite side, the operation of conveying a set of empty molds under the grating on that side, the carriage being continuous and connected 115 through the machine, and at the same time raising the piston K in the receiver G, of the first named side of the machine by means of the cords *h* attached to the lower horizontal cross bar of the frame L which carries the piston K running up and over the pulleys *j* and leading thence horizontally to the end of the carriages P P', to which they are made fast. Whilst this operation is 120 going on the other carriage P', running at right angles thereto, is stationary, and the molds thereon on one side receive their charge of clay pressed into the same by the roller E' of sweep E passing over the inclined lever N, both sets of molds of each 125 130

carriage being stationary during a quarter revolution of the crank; the lever or treadle *d* Fig. 3 on the first named side of the machine is then pressed down, which turns the
 5 cam shaped roller *b*, raises the curved springs *a*, and with it the filled molds *I*, and at the same time brings the upper end of the curved discharging levers *c* in contact with the bottom of the molds *I* causing the
 10 molds to be lifted and delivered into the hands of the off-bearers.

The crank having revolved another quarter of a circle comes in contact with one of the parallel rods *r* of the carriage *P'* crossing
 15 the first named carriage *P* at right angles and operates it in the same manner, while the roller *E'* of the sweep *E* acts upon the next lever *N* of the piston *K* in succession, forcing the clay from its receiver *G* through the grating *H* into the second set of molds of the first named carriage *P* which remain stationary during this operation—the crank moving through the space between the rods *r*, *r* (Fig. 2) without touching them. In
 20 this manner the operation is continued—there being always a set of filled molds leaving the grating on one side of the machine while a set of empty molds are approaching it on the opposite side and at the same time
 30 a follower on another side is performing its office of pressing the clay into the molds on that side. The machine will require an off-bearer to each set of molds. This operation will be better understood by describing the successive motions of the carriages during one revolution of the crank. Now, suppose the crank to start from N. 1, on the dotted circle; the first quarter revolution from 1 to 2, will cause the carriage *P'* with its two
 40 sets of molds to move one set in and the other out.—The next quarter revolution from 2 to

3, will move carriage *P* with its two sets of molds, in the same manner—carriage *P'* remaining stationary. The third quarter revolution from 3 to 4 will move carriage *P'*
 45 back to the position it had at the commencement of the revolution. The fourth quarter revolution of the crank will return the carriage *P* to its position on starting at No. 1.

From the foregoing it will be clearly seen
 50 that each carriage will be stationary at every quarter revolution of the crank and while the crank is moving through the space between the parallel rods of the said stationary carriage. By these alternate stoppages in
 55 the motion of the carriages time is allowed to take up the filled molds and put on a set of empty molds at each end of each carriage after it is brought out from under the grating—and this operation is effected without
 60 connecting the cranks to the carriages and without the use of a cam being done by the simple arrangement of the parallel rods *r* and causing the crank *Q* to strike against them.
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I do not claim the invention of the crank or carriages nor giving the carriages a reciprocating action, but

What I do claim as my invention and desire to secure by Letters Patent, is—
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The mode of discharging the filled molds by means of a combined spring lever *a*—cam shaft *b*—curved discharging arm *C* and treadles *d*, arranged and operating in the manner and for the purpose above set forth.
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In testimony whereof I have hereunto subscribed my name before two subscribing witnesses this 24th day of May, 1847.

JAMES DANE.

Witnesses:

WM. P. ELLIOT,

A. E. H. JOHNSON.