No. 894,089. PATENTED JULY 21, 1908.

F. E. WILKISON.

CONCRETE BLOCK PRESS MACHINE.

APPLICATION FILED JULY 18, 1907.

4 SHEETS—SHEET 1.

Fig. 1.

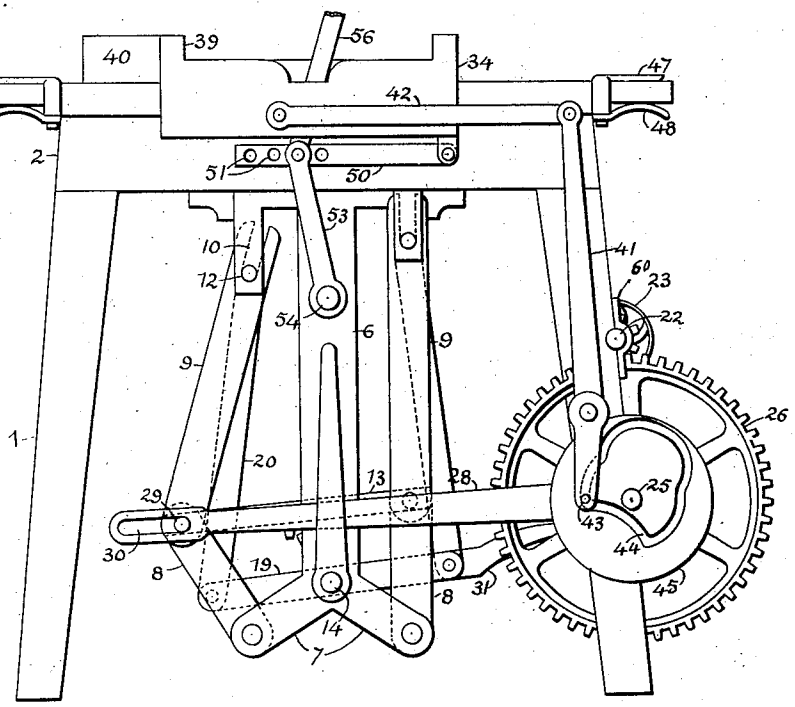
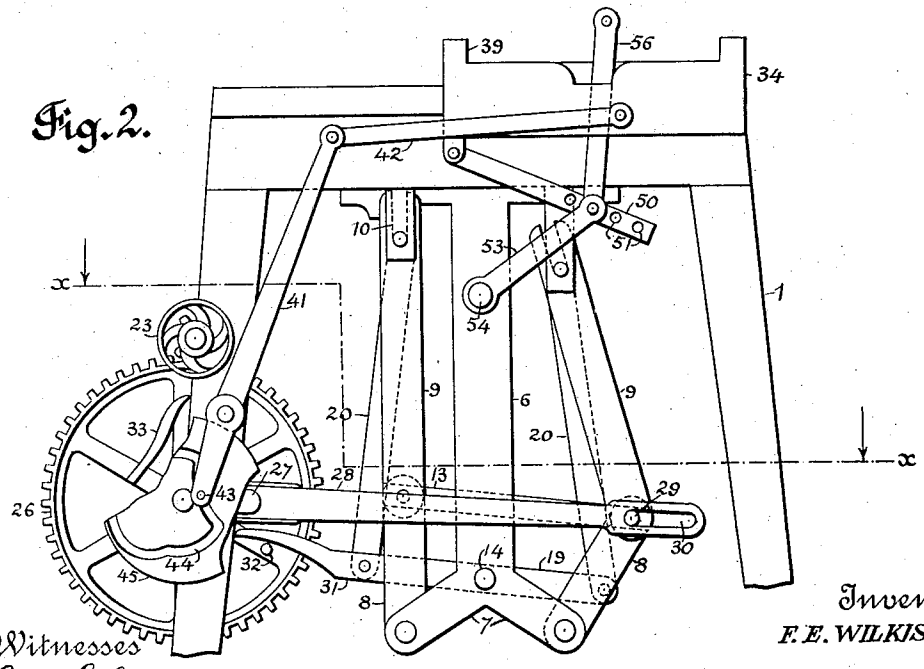


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

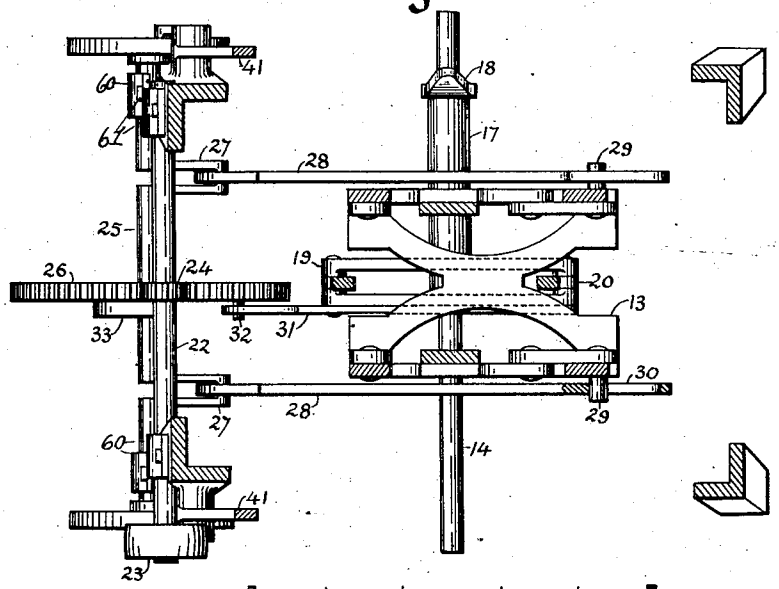
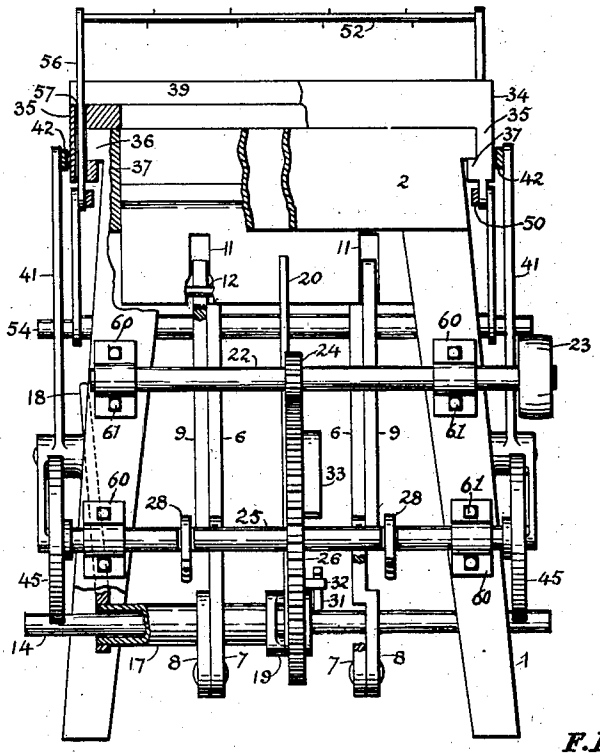


Fig. 4.



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4 SHEETS—SHEET 3.

Fig. 5.

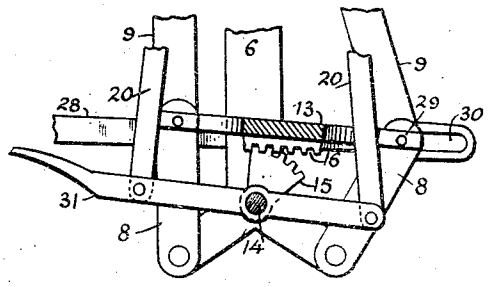


Fig. 6.

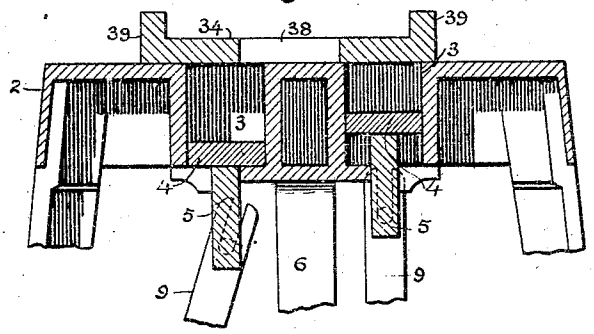
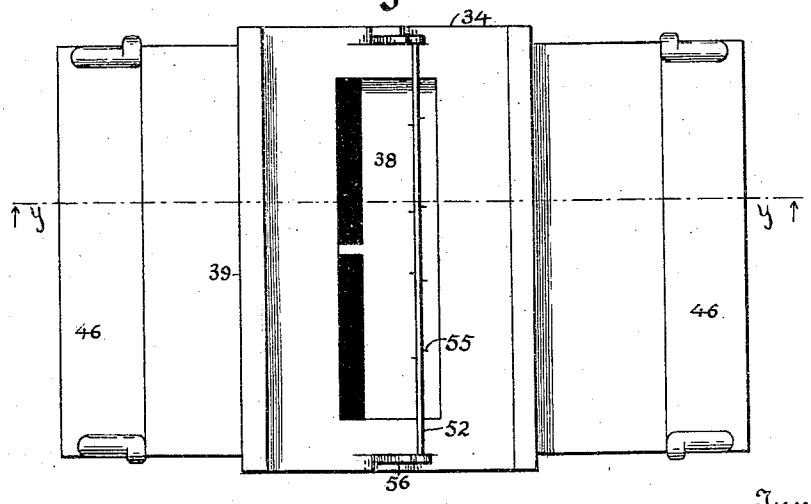


Fig. 7.



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4 SHEETS—SHEET 4.

Fig. 8.

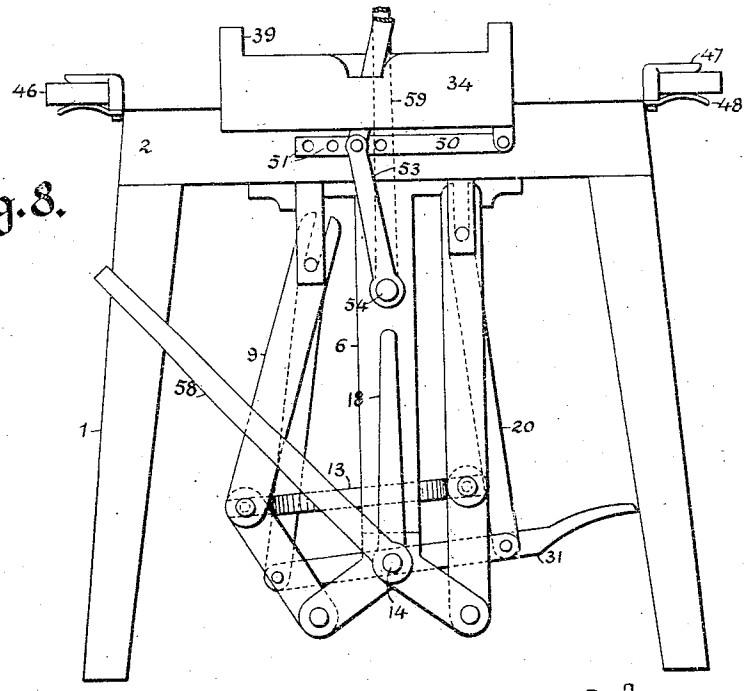
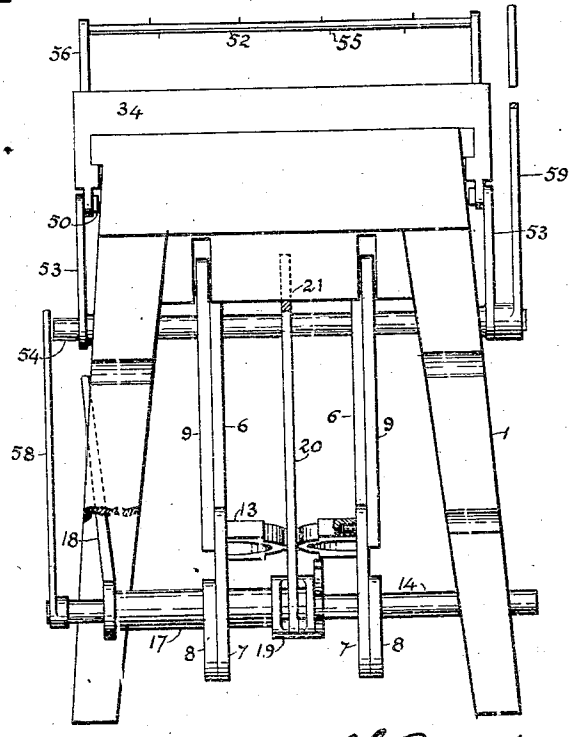


Fig. 9.



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UNITED STATES PATENT OFFICE.

FRED E. WILKISON, OF FAIRBURY, NEBRASKA.

CONCRETE-BLOCK-PRESS MACHINE.

No. 894,089. Specification of Letters Patent. Patented July 21, 1908.

Application filed July 18, 1907. Serial No. 384,392.

To all whom it may concern:

Be it known that I, FRED E. WILKISON, a citizen of the United States, residing at Fairbury, in the county of Jefferson and State of Nebraska, have invented certain new and useful Improvements in Concrete-Block-Press Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to brick presses, and more particularly to machines for forming what are known as "concrete blocks," and it has for its object to provide a device of this kind which shall be simple, cheap and efficient, and can be adapted for hand or power use.

The main portions of the machine are the same, and the means for applying power thereto can be quickly changed by any ordinary person, whereby the machine can be operated by power or by hand, and the hand power can be applied by one person or more. The parts are so arranged that when pressure is being applied to one set of bricks or blocks, another set can be ejected whereby the capacity of the machine is very greatly increased.

In the accompanying drawings which illustrate the invention, Figure 1 is a side elevation of a press provided with means for operating it by power; Fig. 2 is a side elevation of the same, from the opposite side; Fig. 3 is a horizontal cross sectional view, taken on the line *x*—*x* of Fig. 2, looking downward; Fig. 4 is a broken end elevation of the machine; Fig. 5 is a broken elevation of a platform or connector between the pressure bars; Fig. 6 is a longitudinal vertical sectional view of the upper portion of the machine; Fig. 7 is a plan view of the top and the hopper; Fig. 8 is a side elevation of a machine when equipped with hand operating mechanism; and Fig. 9 is an end view of the same.

Referring more particularly to the drawings, 1 indicates the frame of the press, which may be of any desired shape or form with sufficient strength to adapt it for use. The top 2 of the machine is provided with a plurality of mold cavities, 3, two being shown, although it is evident that any desired number of such cavities may be employed according to the size and capacity of the press. Reciprocally mounted within the cavities are plates 4, which are adapted to be moved up and down by means of plungers, 5.

Depending from the sides of the machine are two hangers or supports 6, which are bifurcated at their lower end to form diverging arms, 7. Two sets of toggle levers 8 and 9 are pivotally secured to the lower end of the arms 7 and are loosely connected with the plungers 5 as by having their upper ends slotted as shown at 10. The lower edges of the plungers 5 are recessed vertically as shown at 11 and provided with a pin 12, whereby the loose connection between the upper ends of the toggles with the plungers is secured.

Pivotally secured at its ends to the jointed portions of the toggles is a plate or platform, 13, which is adapted to be moved longitudinally and thereby cause the toggles of one set to move simultaneously with the toggles of the other set, that is, when one set is standing in a straight line to exert its greatest pressure, the toggles of the other set will be flexed or bent, and the plates 4 will be at their lowest point in the mold cavities 3 for the reception of fresh material, and as soon as the bent toggles are straightened to apply pressure, the other toggles will be flexed in turn and thus permit of the formation of two bricks or blocks for each reciprocation or movement of the plate and the respective toggles.

Journaled in the lower ends of the hangers, 6, is a shaft 14, on which is rigidly secured a quadrant 15, which is adapted to engage with a toothed rack 16, upon the underside of the plate 13. Loosely mounted upon the shaft 14 is a sleeve 17, having an arm or lever 18 at its outer end and a frame 19 at its inner end. Pivotally secured to the outer ends of the frame 19 are two vertically arranged push rods, or ejectors, 20, the upper ends of which are adapted to engage with the lower edges of the plungers 5, for forcing the plungers 5 and plates 4 upward until the upper surface of the plates 4 are even with the upper surface of the top 2. The upper ends of the ejectors are preferably slotted as shown at 21, for engaging with the lower edges of the plungers 5.

When the machine is to be operated by power, a shaft 22 is journaled at one end of the machine upon the legs thereof and pro-

vided with the ordinary driving pulley, 23, and a pinion 24. A shaft 25 is journaled at a suitable distance below the shaft 22 and is provided with a gear wheel, 26, which is adapted to be engaged by the pinion 24 and rotated thereby. The shaft 25 is provided with two cranks 27, with which are adapted to be connected two rods or pitmen, 28, which are adapted to be connected at their other ends with one end of the platform 13 by means of pins 29. The ends of the rods 28 are slotted longitudinally as shown at 30 for permitting a continuous motion being given to the power mechanism, but permitting periods of rest or no motion for some of the parts of the machine.

Secured to the frame 19 so as to project therefrom towards the wheel 26 is an arm or lever 31, which is adapted to be engaged by a pin, 32, or a cam, 33, as the case may be, upon one side of the wheel, 26. The pin and cam are so arranged that when the pin engages with the lever 31, the lever and also the end of the frame 19 adjacent thereto, is lifted up, but when said lever is engaged by the cam surface, 33, the end of the lever and the arm of the frame 19 adjacent thereto will be forced downward. In this manner the pressure is applied to the material in the mold box above one set of plungers by reason of the pitmen 28 moving the plate 13 so as to straighten the toggles connected therewith and flex the toggles connected with the other plungers. After pressure has been applied to complete a brick or block within the mold cavities, the plate 13 and the toggles retain the positions they have been forced into, while the pin or cam upon the gear wheel engages with the lever 31 and causes it to rock the frame 19 in one direction or the other and cause the desired push rod or ejector 20 to engage with the plunger under the completed brick and force the plunger and the plate up to the top of the mold cavity and place the brick in position for being removed. During this process of ejecting the completed brick, the other cavity has been filled and by the time the parts assume their normal positions, the shaft 25 and the gear wheel 26 will have caused the rods 28 to engage with the pins 29 and shift the plate 13 so as to straighten the flexed toggles to apply pressure and to flex the toggles which have just occupied a straight position for the purpose of applying pressure.

Reciprocally mounted upon the top of the frame is a combined hopper frame and pressure plate 34, which is provided with depending flanges 35, which overhang the projecting edges, 36, of the top or table, 2, and engage with the under face thereof by means of inwardly extending flanges 37. The central portion of the plate 34 is provided with a longitudinal slot 38, through which the material is passed down into the mold cavities, and its ends are extended upward as by means of flanges 39 to substantially equal the height of the block 40, as shown in Fig. 1.

The plate is reciprocated on the top 2 by means of two levers, 41, which are pivotally mounted upon the legs of the frame and have their upper ends connected with the ends of the plate 34 by means of links or pitmen, 42. The lower end of each of the levers 41 is provided with a pin, 43, which is adapted to fit in a cam groove 44, formed in a disk-like wheel, 45, mounted upon one end of the shaft 25. The groove 44 is of such shape that the plate 34 remains stationary during the operation of pressing the brick, but is moved to discharge the brick on the pallet 46 at one end or the other of the table as soon as the brick has been ejected from the pressure mold. The plate 34 is then moved back into position to have pressure applied to a new brick and have the emptied cavity refilled, after which the plate is further reciprocated to discharge the completed and ejected brick onto the pallet at the other end of the table. In this manner two bricks are formed for each revolution of the main shaft of the press where there are but two openings or mold cavities, but it is evident that with a greater number of such cavities, a greater number of bricks will be thus discharged. The pallet 46 may be held in any desired manner as, for instance, by means of rigid brackets, 47, and yielding supports 48, which co-act therewith.

Pivotally connected with one end of the pressure plate 34 as by means of ears 49, are two links or levers 50, which preferably have their free ends provided with perforations 51, by means of which an agitator, 52, and arms, 53, on a rock shaft, 54, may be adjustably connected. The agitator is preferably in the form of a rod or bar, which is adapted to extend across the machine directly above the slot 38, and has its ends bent down or provided with supports for pivotally connecting it with the links 50. If desired, projections 55, extend from the cross piece of the agitator for assisting in causing the material to be passed down through the opening in the hopper into the mold cavities of the press frame. In the drawings, the ends, 56, of the agitator are shown as passing down through openings 57 in the ends of the plate 34 which hold it in its proper position without the necessity of additional mechanism.

As above described, the machine is adapted to be actuated by the application of power from any suitable source, not shown, through the drive pulley 23 and from there transmitted to the other elements so as to cause them to quickly and successively form and apply the necessary pressure to the blocks or bricks in the mold cavities and thus eject them onto the pallet, from whence they may be removed in the ordinary manner.

When it is desired to operate the machine by hand power, the shafts and gearing may be removed or disconnected from the block-forming mechanism and the latter actuated by means of three levers, 58, 59 and the lever 18. The levers 58 and 59 are preferably removably secured to their respective shafts, 14 and 54, in any ordinary manner. The shafts 22 and 25 are removably secured to the frame by the boxing 60 which is held in place by the bolts 61. The pins 29 are of the same diameter throughout and the pitmen may be removed therefrom simply by straining the parts until the slots 30 slip over the ends of the pins, 29. The lever 58 is adapted to be secured to the shaft 14 whereby the toggles may be moved into or out of their pressure-applying positions through the quadrant 15 and plate 13 by rocking the shaft 14 by means of said lever 58. After pressure has been applied in this manner the lever 59, which is secured to the rock shaft 54, is actuated so as to reciprocate the pressure plate 34 and move it out of register with the mold cavities and permit of the ejector frame 19 and push rods 20 being actuated by means of the lever 18, which is secured to the sleeve 17. After the levers 59 and 18 have been actuated to eject a brick and move it onto the pallet, they are returned to their normal positions, during which time the emptied mold cavity has been filled, and pressure is then applied by rocking the shaft 14 in the opposite direction by means of the lever 58. By constructing the parts in this manner it can be quickly converted from hand to power use, or vice versa, and can be operated very rapidly and efficiently, thereby making it a very desirable structure.

The hand levers 58 and 59 are adapted to be secured to the ends of the shafts 14 and 54 upon either side of the machine, whereby the machine may be operated entirely by a person standing upon one side of the machine, or by two persons, one upon each side. The parts can be made very strong and are so constructed that but little machine work is required in building the machine, thereby cheapening its structure correspondingly. The removable parts are so connected that they can be readily taken off or changed whenever desired, thereby enabling the machine to be changed for the use of one kind of power or the other very quickly.

Having described my invention, I claim:

1. In a brick press, a frame provided with mold cavities and depending hangers, the lower end of each hanger being bifurcated, a slotted plate reciprocally mounted on the frame adapted to be moved into and out of register with said cavities, plates and plungers for said cavities, two sets of toggles pivotally connected with the lower ends of said hangers and with said plungers, two shafts journaled in the hangers, means connected with one of said shafts for reciprocating said plate, and an agitator connected with the other shaft.

2. In a brick press, a frame provided with mold cavities and hangers, a slotted plate reciprocally mounted on the frame, plates and plungers for said cavities, toggles pivotally connected with the lower ends of said hangers and with said plungers, two shafts mounted in said hangers, means for connecting said plate with one of said shafts, a platform pivotally connected with the flexible portions of said toggles at its ends and having a rack upon its underside, and a sleeve on the other shaft provided with a handle at one end and a quadrant at the other for engaging with said rack.

3. In a brick press, a frame provided with mold cavities, a hopper and pressure plate reciprocally mounted thereon, means for applying pressure to the material in said mold cavities, two shafts mounted in the frame, a gear wheel on one of the shafts provided with a pin and a cam, a sleeve mounted on the other shaft provided with an ejector frame at one end and a handle at the other, a lever connected with said ejector frame in position for being engaged by the pin and the cam, respectively, and ejectors connected with said ejector frame in position for pushing a completed article out of the mold cavities.

4. In a brick press, a frame provided with mold cavities, a hopper and pressure plate reciprocally mounted on the frame, toggles for applying pressure to material in the mold cavities, a platform connecting the flexible portions of the toggles, two shafts mounted in the frame, one of which is a crank shaft and the other is provided with means for actuating said platform, pitmen connected with said crank shaft at one end and having the other end slotted longitudinally and connected with the flexible portion of part of said toggles, and a handle for actuating the other shaft.

5. In a brick press, a frame provided with mold cavities, means for applying pressure to material in said cavities, a pressure plate on the top of the frame, two shafts journaled in the frame, rocker arms connected with one shaft and a cam with the other, a lever adapted to be engaged by said cam, links connected with the pressure plate, part of which are connected with the rocker arms, and the others with said lever, and a handle removably connected with the one of said shafts carrying the press arms.

6. In a brick press, a frame provided with mold cavities, a longitudinally slotted pressure plate adapted to be moved into and out of register with said cavities, two shafts mounted in the frame, one of which is provided with rocker arms and the other with cams, levers connected with the frame in position for being actuated by said cams, links

connected with the pressure plate and with said arms, and levers, respectively, part of said links having their free ends provided with a plurality of perforations, and an agitator connected with the perforated arms.

7. In a brick press, a frame provided with mold cavities, a reciprocatory pressure plate mounted thereon provided with a slot and a vertical perforation adjacent to each end of the slot, means for moving the pressure plate into and out of register with said mold cavities, and an angular agitator having its central portion above said slot and its end extending through said perforations and connected with the means for reciprocating said plate.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRED E. WILKISON.

Witnesses:
GUY FREEMAN,
FAE WILKISON.