No. 876,388. PATENTED JAN. 14, 1908.

J. J. NIETERS.

BRICK PRESS.

APPLICATION FILED MAR. 12, 1907.

3 SHEETS—SHEET 1.

Fig. 1.

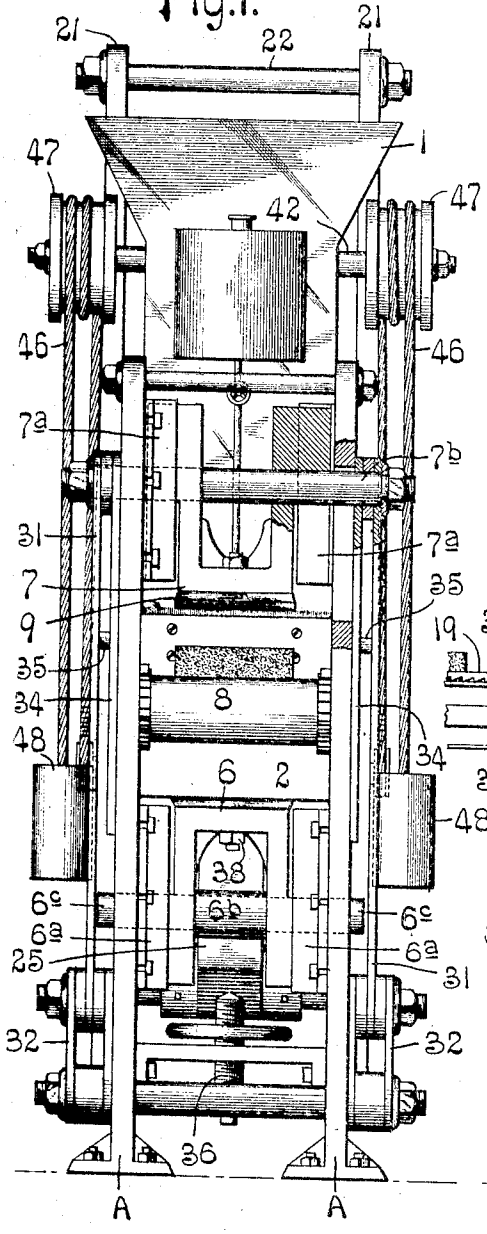
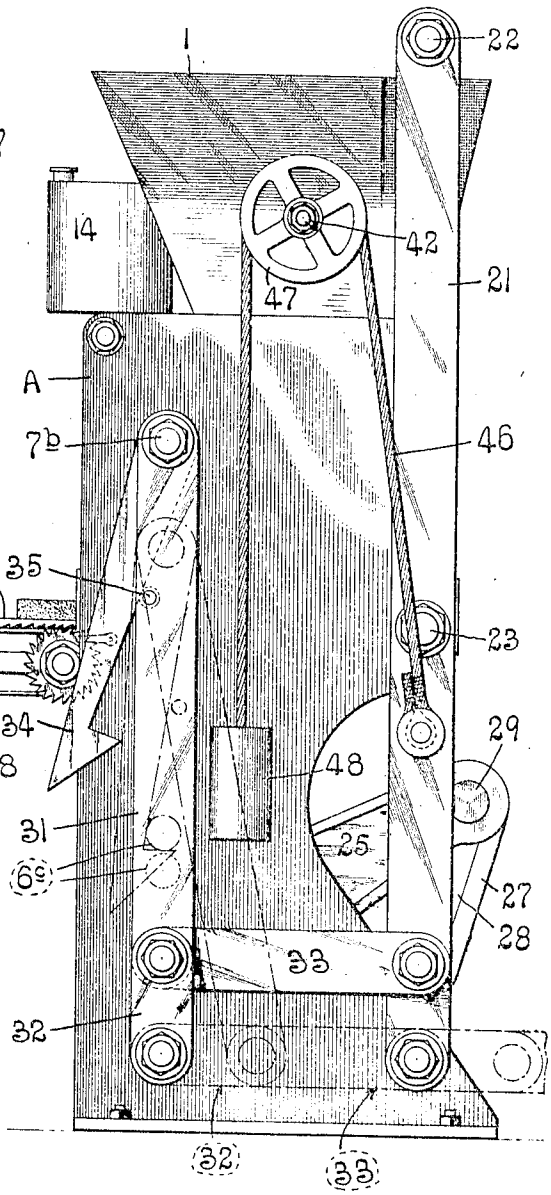


Fig. 2.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 4.

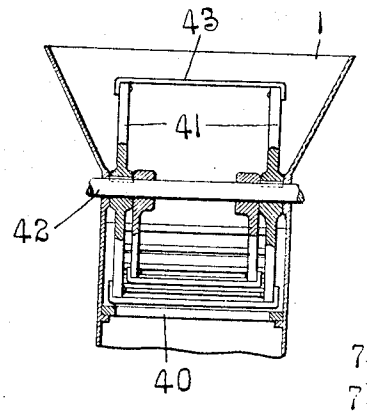


Fig. 3.

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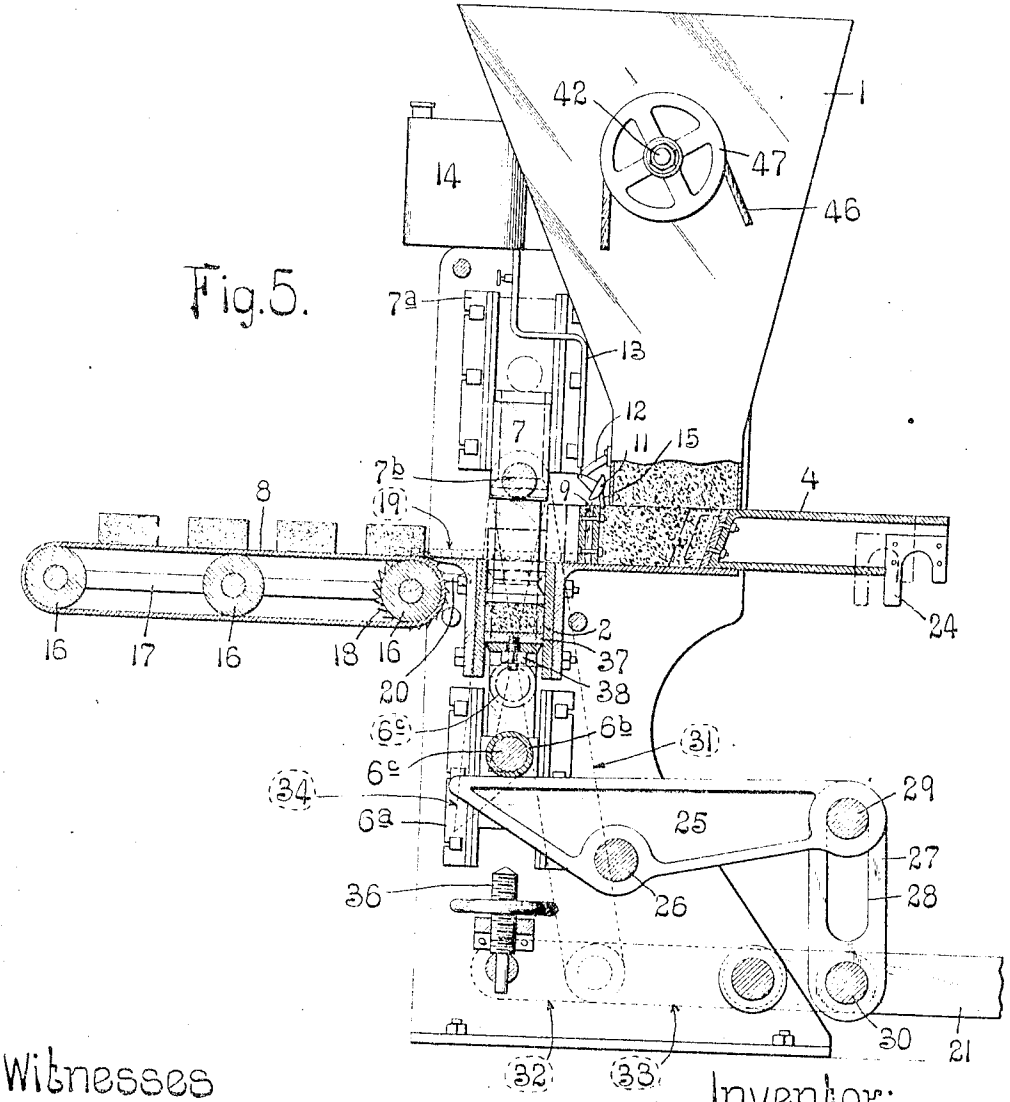
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3 SHEETS—SHEET 3.

Fig.5.



Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH J. NIETERS, OF ST. LOUIS, MISSOURI.

BRICK-PRESS.

No. 876,388. Specification of Letters Patent. Patented Jan. 14, 1908.

Application filed March 12, 1907. Serial No. 361,973.

To all whom it may concern:

Be it known that I, JOSEPH J. NIETERS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Brick-Presses, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of a brick press constructed in accordance with my invention; Fig. 2 is a side elevation of said machine; Fig. 3 is a vertical sectional view showing the charging device in its forward position after it has filled the mold box with clay; Fig. 4 is a transverse sectional view through the hopper; and Fig. 5 is a view similar to Fig. 3 but with the parts in a different position.

This invention relates to brick presses.

One object of my invention is to provide a brick press having an automatically operated brick ejecting mechanism which is so constructed that the bricks will not be moved into contact with each other as they are ejected from the mold box, thereby preventing the bricks from being marred or defaced.

Another object is to provide a brick press having an automatically operated oiling device for keeping the faces of some of the mold members and also other parts of the machine lubricated.

Another object is to provide a novel form of device for grinding up clay from which the bricks are formed while the clay is in the hopper of the machine; and still another object of my invention is to provide a hand-power brick press which is of simple construction and can be operated easily.

Other desirable features of my invention will be hereinafter pointed out.

Referring to the drawings which represent the preferred form of my invention, 1 designates the hopper of the machine into which the clay is thrown, the clay being in its natural condition just as it is taken from the bank. The mold box 2 is arranged below the hopper and slightly in front of same, and extending rearwardly from the mold box is a table 3 on which the charging device 4 is reciprocatingly mounted. This charging device is provided at its front end with an opening 5 into which some of the clay in the hopper drops when the charging device is in its rearward position, as shown in Fig. 5, said charging device being moved from its rearward into its forward position, as shown in Fig. 3, to permit the clay to drop into the mold box. A lower plunger 6 reciprocates in the mold box, and arranged above the mold box and in alinement therewith, is an upper plunger 7, these plungers being moved toward each other to compress the mass of clay in the mold box and thus form a brick, as shown in Fig. 5. After the brick has been formed the upper plunger and the lower plunger both move upwardly so as to carry the brick out of the mold box, the charging device 4 having previously been moved into its rearward position so that the front end thereof is located at the rear of the brick. When said charging device moves forwardly to carry a fresh charge of clay to the mold box the front end of the charging device will engage the brick which at this time is supported on the lower plunger flush with the top of the mold box, and will eject said brick onto an endless conveyer or belt 8 extending forwardly from the machine and having its upper surface arranged in the same horizontal plane as the table 3. This endless conveyer is moved intermittently so that after a brick has been deposited thereon the next brick that is moved onto said conveyer will not contact with the brick that was previously placed on same, thereby preventing the bricks from rubbing against each other and thus spoiling or marring the surfaces thereof as would be apt to result due to the fact that when the bricks are ejected from the mold box they are very moist and comparatively soft.

In order that the bottom face of the upper plunger 7 may be kept thoroughly lubricated and also the sides of the mold box and the upper surface of the table 3 on which the charging device reciprocates, I have provided the press with an oiling device which consists of a piece of fibrous material 9 clamped between the front end of the charging device and a bar 10 that is secured thereto by means of bolts or in any suitable manner, the upper end of this piece of fibrous material projecting above the upper edge of the charging device so that it will contact with the underneath face of the upper plun-

ger as the charging device is reciprocated back and forth.

A pivotally mounted oil cup 11 is carried by an arm 12 at the lower end of the hopper, this cup being supplied with oil by means of a pipe 13 which leads from a tank or reservoir 14 containing oil. An arm 15 projects downwardly from the oil cup 11 and extends into the path of movement of the front end piece of the charging device so that as said device moves rearwardly this front end piece will engage the arm 15 and tip the oil cup into the position shown in Fig. 5, thereby discharging the oil therein onto the fibrous material 9 and thus saturating it with oil, the upper edge of the fibrous piece 9 applying the oil to the bottom face of the upper plunger, and the lower edge of said piece applying the oil to the table 3 and also to the sides of the mold box or rather to the upper edge of the mold box so that the oil can flow or drip down the inside faces thereof.

The endless belt 8 onto which the bricks are moved as they are ejected from the mold box travels over rollers 16 mounted in a stationary frame 17, and one of said rollers, preferably the one nearest the mold box, is provided with ratchet wheels 18 that are actuated by means of ratchet toothed bars 19 pivotally connected to the front end of the charging device 4. When said charging device moves forwardly these ratchet toothed bars will engage the ratchet wheels 18 and thus positively feed the endless belt 8 forwardly for a slight distance, the ratchet toothed bars slipping idly over the ratchet wheels 18 when the charging device moves rearwardly, retrograde movement of these ratchet wheels being prevented by pivotally mounted pawls 20, as shown in Fig. 3.

The means for actuating the charging device and also the upper and lower plungers consists primarily of two levers 21 pivotally connected at their lower ends to the side members of the frame of the machine and connected at their upper ends by means of a bar 22 which is grasped by the operator for moving said levers downwardly in the direction of the arrow shown in Fig. 3. These primary actuating levers carry a cross bar 23 which extends into notched blocks 24 detachably connected to the sides of the charging device so as to move said charging device rearwardly when the levers are depressed, the bar 23 passing out of engagement with the blocks 24, however, before the levers 21 have reached the limit of their downward movement so that the charging device will remain at rest while the upper and lower plungers are being operated. The lower plunger 6 is arranged in adjustable guideways 6^a secured to the frame of the machine, and is provided at its lower end with a friction roll 6^b that rests upon the upper face of an oscillating device 25 mounted on a horizontally extending shaft 26. The rear end of this oscillating device 25 is connected by means of a link 27 with the levers 21, said link being provided with an elongated slot 28 that receives a pin 29 in the outer end of the device 25, and the levers 21 being provided with a cross bar 30 on which the link 27 is mounted. The upper plunger 7 is also reciprocatingly mounted in adjustable guideways 7^a and said plunger is provided with a cross shaft 7^b having links 31 secured to the outer ends thereof. The links 31 cooperate with links 32 to form a toggle, and secured to said links at the points where they are connected together, are links 33 that are fastened to the levers 21, as shown in Fig. 2, these links 33 being mounted on the outer ends of the cross bar 30 carried by said levers 21. When the levers 21 are depressed the charging device 4 will be moved as previously described, and the oscillating member 25 will be moved into the position shown in Fig. 5, thereby forcing the lower plunger upwardly, this movement of the levers 21 also breaking the toggles formed by the links 32 and 33 and thereby drawing the upper plunger downwardly so that it coöperates with the lower plunger to compress the clay in the mold box. The oscillating member 25 is counter-weighted at its outer end so that it practically balances the lower plunger. Consequently, when said lower plunger is disengaged from the upper plunger as hereinafter described, said lower plunger will move down slowly to normal position.

The machine herein shown is so constructed that the lower plunger is used to force the brick out of the mold box, this being accomplished by mounting hooks 34 on the outer ends of the cross shaft 7^b in the upper plunger outside of the standards A which form the sides of the frame of the machine. When the upper plunger moves downwardly these hooks 34 will catch over the ends of a cross shaft 6^c in the lower plunger and will thus cause the lower plunger to move upwardly with the upper plunger when it is returned to normal position, the lower plunger moving upwardly until its upper face is flush with the top of the mold box. The hooks 34 are moved into an inoperative position to release the lower plunger and permit it to drop back to its normal position after the brick has been removed therefrom by the charging device 4, this being accomplished by pins 35 on the inner sides of the links 31, as shown in Fig. 2. When the toggles, of which these links 31 form part, are broken, as shown in dotted lines in Fig. 2, the pins 35 will permit the hooks 34 to swing rearwardly and thus be in position to engage the cross shaft or rod 6^c in the lower plunger; but when said toggle is straightened out to restore the upper plunger to its elevated position and occupy the position shown in full lines in Fig. 2,

these pins 35 will engage the hooks 34 and move them forwardly, thus carrying them out of engagement with the cross shaft 6ᶜ of the lower plunger. The normal position of the lower plunger can be varied by means of an adjustable contact screw 36 mounted in the stationary part of the frame of the machine and adapted to contact with the inclined lower face at the inner end of the oscillating member 25.

The die plate 37 which forms the pressing face of the lower plunger, is also of novel construction in that its engaging face is perfectly smooth, said plate being provided on its underneath side with a screw which extends through an opening in the top of the plunger and has a nut 38 mounted thereon to secure said plate in position. In the machines which have heretofore been in use the fastening devices that secured the die plates to the plunger extended clear through to the pressing faces of said plates so that these fastening devices would leave their imprint on the brick.

In order that clay in its natural state may be used in the machine I have provided the hopper with means for grinding up or pulverizing the clay, this means consisting of transversely extending grate-bars 40 over which a rotary knife-carrying member travels. This rotary knife-carrying member consists of a plurality of spiders 41 rigidly connected to a shaft 42 that extends transversely of the hopper, the arms of said spiders having knife blades 43 secured thereto. A knife blade 44 is connected to arms 45 that are loosely mounted on the shaft 42, these arms being of less length than those of the spider so that the knife blade 44 will be located within the circular path in which the knife blades 43 travel. This knife blade 44 coöperates with those connected to the spiders 41 and thus forms a shearing device that acts to cut the clay up very fine, the knife blades 43 also coöperating with the grate-bars to sever and grind up the clay in the hopper.

The shaft 42 is rotated by means of belts or ropes 46 secured to the levers 21 and wound around grooved pulleys 47 on the opposite ends of the shaft 42, a weight 48 being secured to the end of each of said belts so as to return the levers 21 to their elevated position and also rotate the knife-carrying member in the opposite direction to that in which it is rotated when the levers 21 are depressed.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a brick-press, a support having rolls journaled thereon, an endless belt mounted on said rolls, means for feeding the bricks onto said belt as they are ejected from the mold box, a toothed wheel connected to one of said rolls, and a toothed bar secured to the member that moves the bricks onto the belt, said bar being adapted to move said toothed wheel; substantially as described.

2. In a brick-press, a hopper for receiving the material from which the bricks are formed, a mold box arranged below the lower end of said hopper and out of vertical alinement therewith, a charging device mounted between said mold box and the hopper for conveying the material from the hopper to the mold box, an endless conveyer arranged adjacent the upper end of the mold box, a roll around which said conveyer passes, a toothed wheel connected to said roll, and a toothed bar pivotally connected to said charging device for actuating said toothed wheel at each operation of the machine; substantially as described.

3. In a brick-press, a plunger, a movable member adapted to travel past said plunger, a pad carried by said movable member for applying a lubricant to the pressing face of the plunger, a receptacle for holding a quantity of lubricant, and means actuated by said movable member for tilting said receptacle to discharge the lubricant onto said pad; substantially as described.

4. In a brick-press, a plunger, a movable member provided with a pad for applying oil to the pressing face of said plunger, an oil-holding tank, a movable member for controlling the flow of oil from said tank, and means for actuating said member to supply the pad with oil and thereafter cut off the oil supply; substantially as described.

5. In a brick-press, a plunger, a movable member provided with an oil pad for applying oil to the pressing face of said plunger, a pivotally mounted cup provided with an arm that projects into the path of movement of said member, and means for supplying oil to said cup; substantially as described.

6. In a brick-press, a hopper, a mold box arranged below said hopper and out of alinement therewith, an upper plunger, a table, a movable charging device mounted on said table for carrying material from the hopper to the mold box, an oil pad carried by said charging device, an oil holding tank, a receptacle for receiving a certain quantity of oil and automatically operated means for actuating said receptacle to supply oil to said pad; substantially as described.

7. In a brick-press, plungers, a hopper, a mold box, a reciprocating charging device for carrying material from the hopper to the mold box, a primary actuating lever for operating the plungers, a block connected to the charging device and provided with an open-ended slot, and a device on said lever adapted to be seated in said slot for a portion of the movement of the lever and thereafter pass out of said slot while the lever completes its stroke; substantially as described.

8. In a brick-press, an upper plunger, a

lower plunger, links connected to said upper plunger and joined at their ends to pivotally mounted links to form toggles, a primary actuating lever for actuating said toggles, means operated by said lever for moving the lower plunger upwardly, hooks carried by said upper plunger, a member connected to the lower plunger and adapted to be engaged by said hooks to cause the lower plunger to move upwardly, and means on said toggle links for engaging said hooks and moving them into an inoperative position to permit the lower plunger to descend; substantially as described.

9. In a brick-press, a hopper a shaft mounted in said hopper and provided with arms to which transversely extending cutting members are secured, and a pivotally mounted cutting member extending parallel to the cutting members secured to said arms and adapted to coöperate therewith, and means for actuating said shaft; substantially as described.

10. In a brick-press, a hopper provided with a transversely extending shaft having a plurality of radially extending arms secured thereto, cutting blades fastened to said arms and extending transversely of the hopper, grate bars over which said blades travel, and arms pivotally mounted on said shaft and carrying a horizontally disposed cutting member that is arranged inside of the paths of movement of said transversely extending cutting members; substantially as described.

11. In a brick-press, plungers for compressing the material from which the bricks are formed, a hopper for holding said material, a rotary cutting member mounted in said hopper and comprising a shaft provided at its outer end with a pulley, a primary actuating lever for operating the plungers, a belt connected to said lever and passing around said pulley, and a weight on the free end of said belt; substantially as described.

12. In a brick-press, a lower plunger, a counter-weighted pivoted member on the inner end of which said plunger rests, said plunger and member having no positive connection with each other an actuating lever, and a link connecting the outer end of said member and lever together and provided with an elongated slot through which the device extends that connects it to said pivoted member; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this sixth day of March, 1907.

JOSEPH J. NIETERS.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.