E. JOHNSON.

PRESS.

APPLICATION FILED JULY 11, 1916.

1,207,172.

Patented Dec. 5, 1916.

3 SHEETS—SHEET 1.

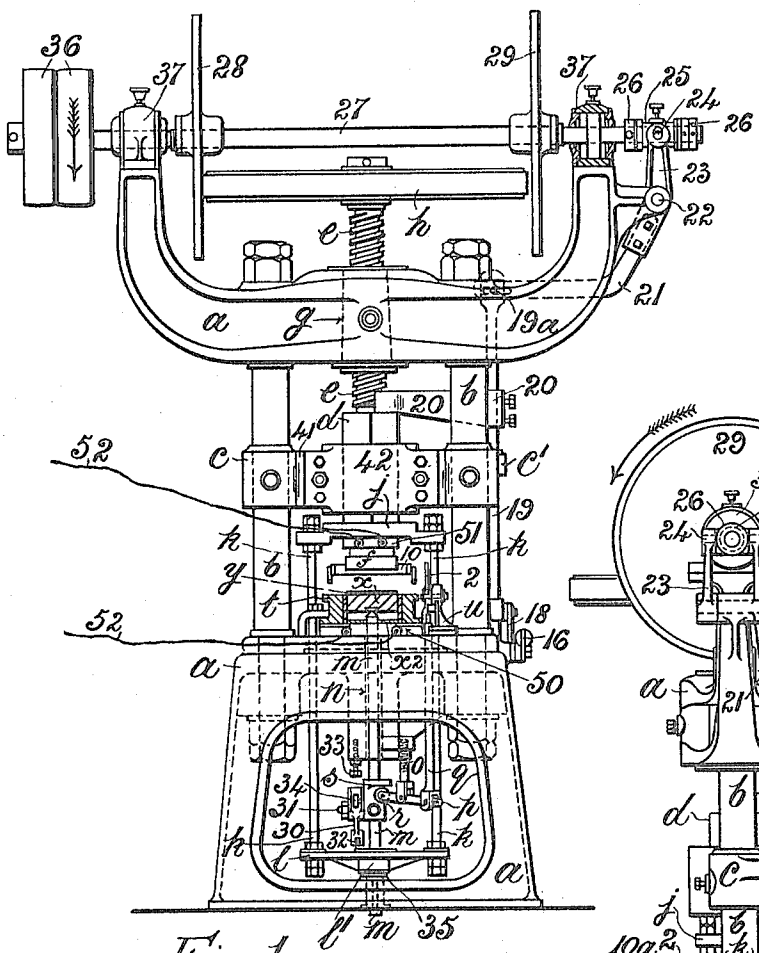


Fig. 1.

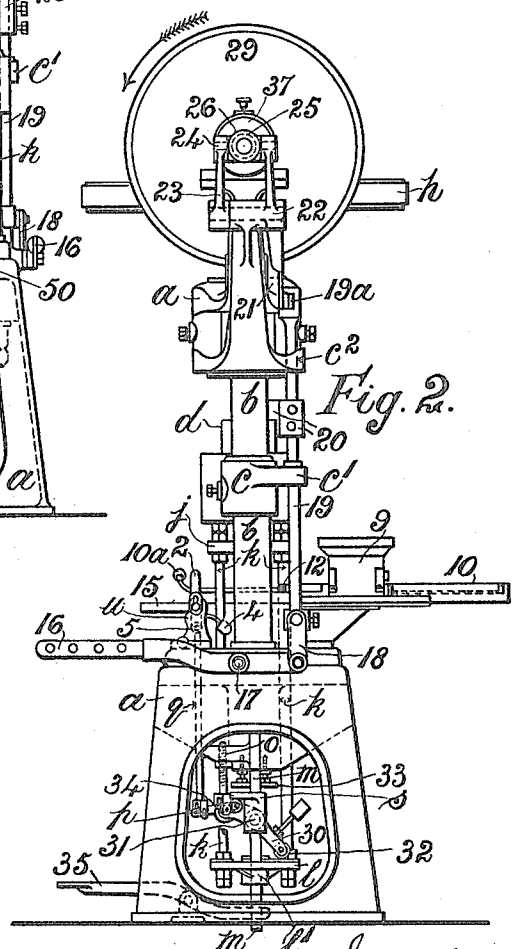


Fig. 2.

Inventor
Edward Johnson
by Herbert W. Jenner.
Attorney.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

E. JOHNSON.

PRESS.

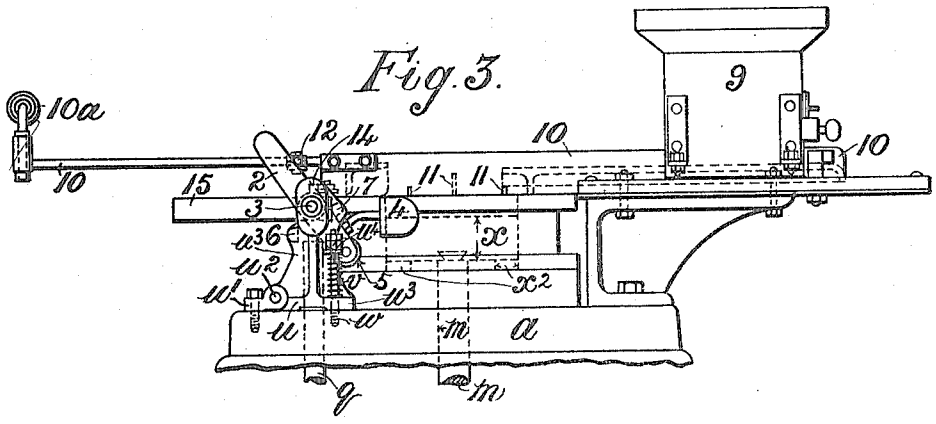
APPLICATION FILED JULY 11, 1916.

1,207,172.

Patented Dec. 5, 1916.

3 SHEETS—SHEET 2.

Fig. 3.



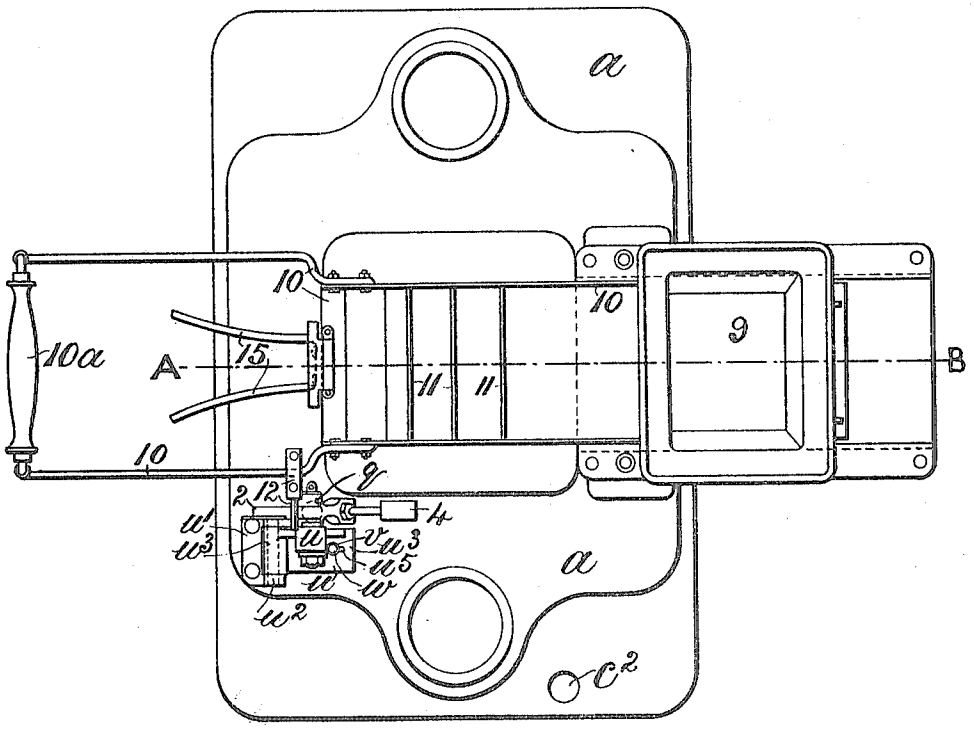


Fig. 4.

Inventor.
Edward Johnson
by Herbert W. Jenner
Attorney.

THE NORRIS PETERS CO., PHOTO LITHO., WASHINGTON, D. C.

E. JOHNSON.

PRESS.

APPLICATION FILED JULY 11, 1916.

1,207,172.

Patented Dec. 5, 1916.

3 SHEETS—SHEET 3.

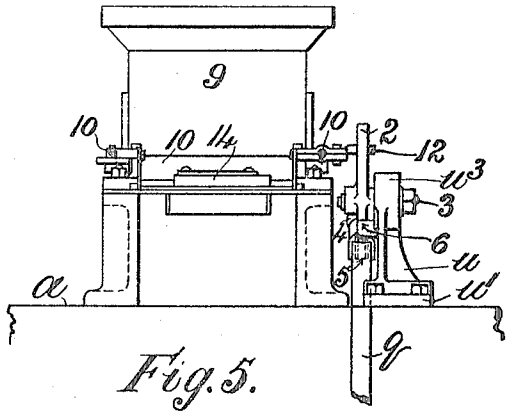


Fig. 5.

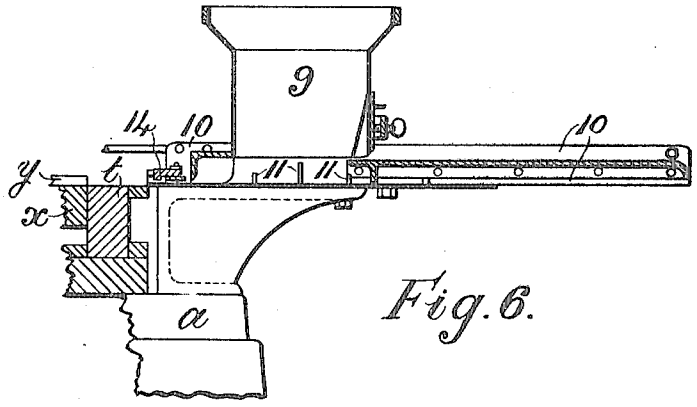


Fig. 6.

Inventor
Edward Johnson,
by Herbert W. Jennes,
Attorney

UNITED STATES PATENT OFFICE.

EDWARD JOHNSON, OF BURSLEM, ENGLAND.

PRESS.

1,207,172. Specification of Letters Patent. Patented Dec. 5, 1916.

Application filed July 11, 1916. Serial No. 108,712.

To all whom it may concern:

Be it known that I, EDWARD JOHNSON, subject of the King of Great Britain and Ireland, and resident of Burslem, Stoke-on-Trent, in the county of Stafford, England, engineer, have invented certain new and useful Improvements in Presses, of which the following is a specification.

My invention relates to improvements in or applicable to tile and like presses and has reference to that type of power press having a feed hopper, a slidable dust frame, means for raising the bottom die after the tile has been pressed and a screw operated by disks coming into frictional contact with the periphery of a fly or friction wheel.

The object of my invention is to provide certain improvements in such power presses as hereinafter fully described and claimed in order to produce tiles in a more efficient manner.

My invention will be fully described with reference to the accompanying drawings in which,

Figure 1 is an elevation, partly in section, of a tile press having my improvements applied thereto, Fig. 2 is a side elevation as seen from the right hand side of Fig. 1, Fig. 3 is a side elevation, to an enlarged scale of the die box and the dust conveying frame the latter being in its forward position, Fig. 4 is a plan of Fig. 3, Fig. 5 is a front elevation of Fig. 3 with some of the parts removed, Fig. 6 is a sectional elevation through the dotted line A—B, of Fig. 4, but with the dust conveying frame in its rear position.

Referring to Figs. 1 to 6 *a* is a frame having vertical pillars *b*. Connected to the pillars is a crosshead *c* through which passes a plunger *d* connected to the screw *e* and the top die *f*. The screw engages an internally threaded nut at *g* and is provided with a friction wheel *h* at its upper end to engage friction disks 28 and 29 in the usual way. Secured to the plunger *d* just above the top die *f* is a plate *j* to which are fixed bars or connecting rods *k* the said rods being also fixed at their lower ends to a plate *l*. The two plates *j* and *l* and the connecting bars *k* form a frame which moves with the plunger *d* carrying the top die. The bottom die *x* is connected to and is lifted by a slidable rod *m* passing through a guide hole *n* in the machine frame and through a hole in the boss l^1 on the bottom plate *l*. Hinged to the bracket *o* on the machine frame is a lever *p* the outer end being slotted and connected to a rod *q* while its inner end is provided with a bowl *r* to take against a projection or collar *s* fixed on the lifting rod *m*. The rod *q* is guided vertically by the machine frame. By hinging the lever *p* as shown at Fig. 1 the descent, by gravity, of the bottom die *x* and the rod m lifts the rod *q*. Fig. 1 shows the bottom die *x* held up by the lever *p* and with a tile *y* ready to be removed therefrom as the dust, for the next tile is being supplied to the die box or mould *t*.

Figs. 1 and 2 show the bottom die held up by means of the hinged lever *p* the rod *q* connected thereto being pressed down by the weighted lever 2 which is in its vertical position. When the parts are in this position a tile *y* is ready to be removed by the forward action of the slide or frame when supplying the dust over the die box.

One of the features of my present invention lies in the provision of a resilient bracket or support for the lever 2 which holds up the bottom die, the object being to cushion or absorb the shock usually caused by the meeting of the rod *q* and the bowl 5. The improved bracket *u* shown at Figs. 3 to 5 is mounted on the machine frame *a*. The said bracket *u* is formed in two parts, one part u^1 being fixed to the frame while the other part u^3 is hinged thereto at u^2. A stud *w* fixed on the machine frame passes through a slot u^5 in the hinged bracket u^3, The slot allows the bracket to yield or move on its hinge and compress the spring *v* against the washer u^4 this taking place when the rod *q* strikes the vertical two-arm lever 2, the shock being absorbed by the spring *v*. The two-arm lever 2 is fulcrumed at 3 to the hinged and spring controlled bracket u^3 and is provided with a weight 4 and the bowl 5 at its lower end, the weight causing the lever 2, when the rod *q* drops by gravity, to fall into a vertical position against a stop 6 on the hinged bracket u^3. A stop 7 on the bracket limits the forward stroke of the lever 2. By employing a resilient bracket as described the breakage of the tile, is prevented.

The usual construction of slide or frame to supply the dust is shown more clearly at Figs. 3 to 6 and will now be described. A hopper 9 having an open bottom is secured to the machine frame or to a bracket there-

on. The sliding frame 10 provided with a detachable handle 10^a passes underneath the hopper 9 (see Fig. 6), to receive dust therefrom for the tile to be made, the dust falling between the plates 11 on the frame. These plates 11 are arranged as shown, the middle one being the highest and are for the purpose of conveying the dust, at a regular depth, from the hopper 9 to above the die box, for leveling the dust in the die box when the die has dropped and for conveying the surplus dust therefrom. The plates 11 cross the opening in the frame and prevent the irregular piling up of the dust during its transmission from the hopper. Figs. 2 and 6 show the slide or frame in its rear position, that is, with the plates 11 underneath the hopper 9 in the position to receive the dust. Figs. 3 and 5 show the slide or frame in its forward position the die x having dropped on the stops x^2 and a supply of dust having fallen through the opening in the frame. In sliding the frame to convey the dust from the hopper to the die box as described a projection 12 on the sliding frame 10 meets the hinged lever 2 and moves it on its fulcrum 3 causing the bowl thereon to clear the end of the rod q when the latter is raised releasing the lever p and allowing the die x and the dust thereon to fall. During the forward sliding of the dust frame a rubber pad 14 (Fig. 6) comes against the tile y, previously formed, and removes it from the die on to the bracket 15. When the die x has dropped with its supply of dust as stated the frame is moved back again by hand to its rear position as shown at Fig. 6 when the top die is brought down by my improved means, to be now described. A hand lever 16 is fulcrumed at 17 to the side of the machine frame and has a link 18 pivotally connected thereto and to a rod 19 which carries an adjustable stop 20, the upper end of the rod being connected at 19^a to a bent lever 21 having its end connected to a rod working in a bracket 22 on the machine frame a. The said rod has connected to it two arms 23 each arm engaging a pin 24 at the side of a sleeve 25 which is held in place by side collars 26 on the disk shaft 27. When the lever 16 is pressed down by hand the rod 19 is lifted and with it the stop 20, the arms 23 slide the shaft 27 to the right of Fig. 1 bringing the revolving disk 28 in frictional contact with the friction or fly wheel h rotating the screw e and bringing the top die down to compress or form the tile. After compression takes place the handle 16 is released by the operator when the weight of the rod 19 and its connections cause the arms 23 to move the shaft 27 to the left of Fig. 1 taking the disk 29 against the friction wheel h causing the reverse travel of the screw and the upward movement of the top die f until the slide d comes into contact with the stop 20. When the slide on its upward movement reaches the stop 20 it lifts the vertical rod 19 and takes the disk 29 out of contact with the friction wheel h. The momentum of the friction wheel h continues to lift the stop 20 bringing the disk 28 into contact with the friction wheel h and as the rotation or travel of the disk 28 is opposed to the friction wheel h the upward movement of the latter is arrested and converted into a downward movement bringing the disk 29 into contact with the friction wheel h and so on alternately thus maintaining the predetermined height of the friction wheel h until the hand lever 16 is again pressed down. The sliding rod 19 passes through and is guided by a hole in a lug c^1 on the crosshead c and by a hole c^2 in the frame a.

The usual means are employed to lift the bottom die and to raise the tile after compression into the position y (Fig. 1). These means consist of a two-arm lever 30 hinged at 31 to the fixed collar s on the rod m. When the top die is compressing the dust the plate l of the lifting frame is at its lowest position and allows the two-arm weighted lever 30 to fall by its own weight into a vertical position with the bowl 32 on or near the plate l. The upward movement of the plate l with the top die causes the two-arm vertical lever 30 to lift the rod m and with it the die x and tile y but as soon as the bowl 34 on the lever meets the fixed stop plate 33 the lever is moved on its fulcrum 31 into the position shown at Fig. 2 and no longer supports the die x, the die being now held up by the weighted lever 2 engaging the top of the rod q as previously stated. The lever 30 is arranged to lift the bottom die x and tile y a little higher than the top of the die box t. The moment the lever 30 becomes disengaged the rod m falls until the projection or collar s thereon strikes the bowl r on the lever p which forces the rod q upward against the bowl 5 on the lever 2 as shown at Figs. 1 and 2. The shock caused by the meeting of the rod q and the bowl 5 is cushioned or absorbed by my improved resilient bracket u hereinbefore referred to. The sliding dust conveying frame 10 is now pulled forward again to remove the tile, to supply the dust for the next tile and to lower the die and dust as hereinbefore described.

A further feature of my invention consists in means for raising the bottom die, when necessary, independently of the usual automatic die-raising means hereinbefore described. To accomplish this the lifting rod m is connected to a hinged foot lever 35. Pressure on the foot lever 35 lifts the bottom die only and enables it to be cleaned or adjusted as desired.

The shaft 27 carrying the disks may be driven by a belt or in any other convenient

way, a fast and loose pulley being shown at 36 for a driving belt.

What I claim is:

In a press, a main frame, a plunger slidable in the main frame and provided with an upper die, a mold carried by the main frame and provided with a slidable lower die, an auxiliary frame secured to the plunger and extending below the lower die, a lifting rod for the lower die slidable in the two said frames, a disengageable lifting connection between the said rod and the auxiliary frame, a lever pivoted to the main frame and actuated by the lifting rod, a retaining rod connected with the said lever, a spring-controlled bracket pivoted to the main frame, and a disengageable retaining lever pivoted to the said bracket and provided with means for placing it automatically in line with the said retaining rod, the said retaining rod being operated without jar when raised into contact with the retaining lever to hold the lower die in its raised position.

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

EDWARD JOHNSON.

Witnesses:

PATTIE PLANT,

I. BENTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."