

No. 647,732.

Patented Apr. 17, 1900.

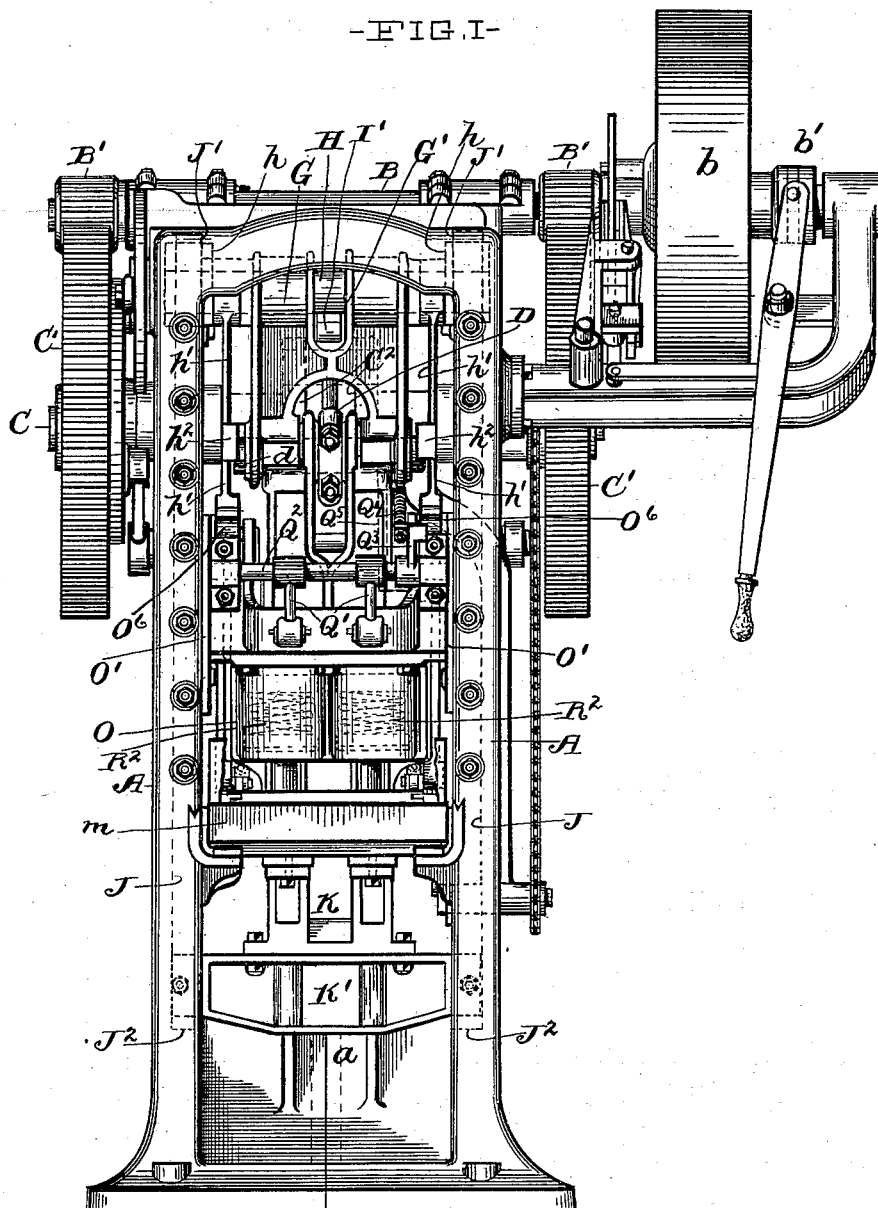
W. W. WALLACE.
BRICK RE-PRESSING MACHINE.

(Application filed July 25, 1898.)

(No Model.)

4 Sheets—Sheet 1.

-FIG. I-



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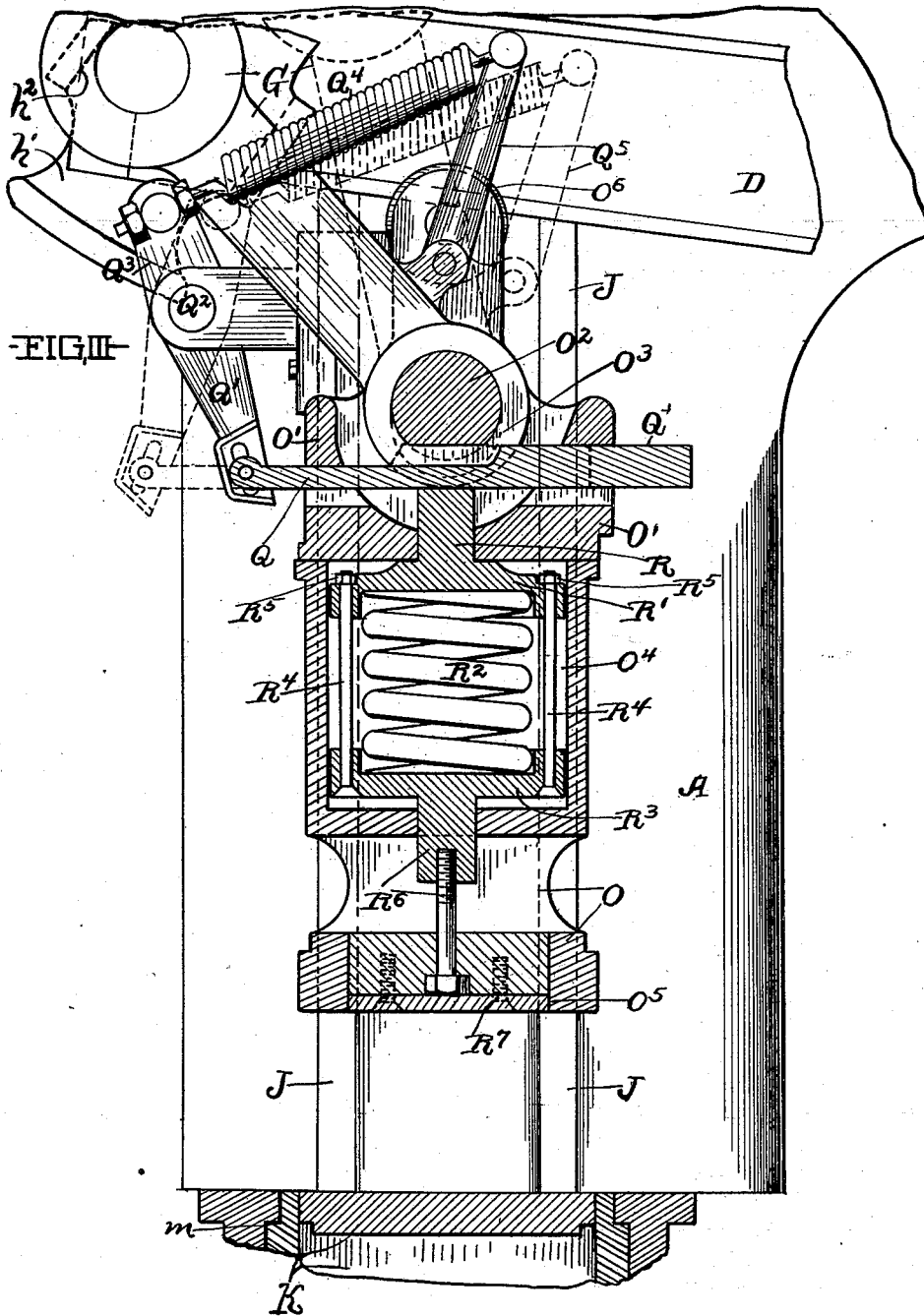
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4 Sheets—Sheet 3.



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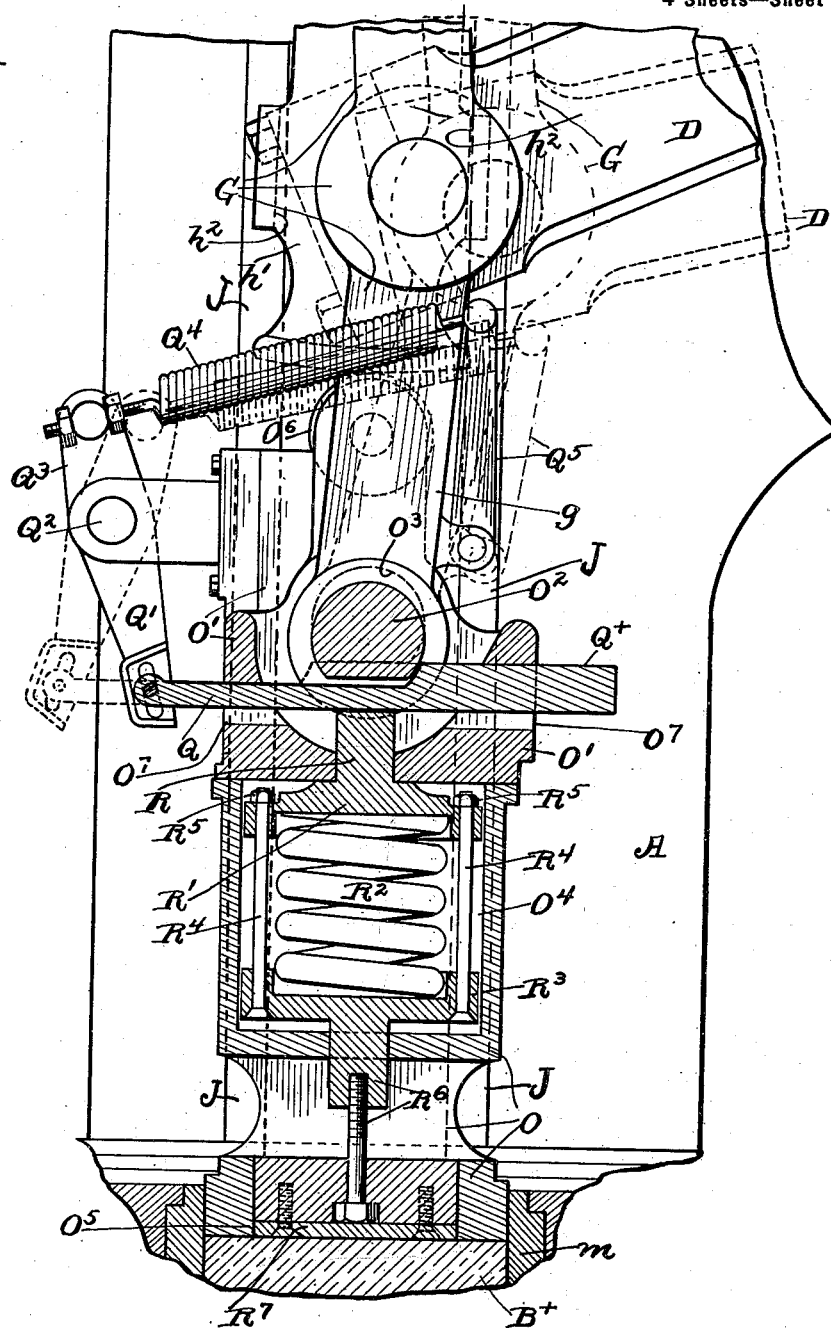
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4 Sheets—Sheet 4.

FIG. IV.



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UNITED STATES PATENT OFFICE.

WILLIAM W. WALLACE, OF WILLOUGHBY, OHIO.

BRICK-RE-PRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 647,732, dated April 17, 1900.

Application filed July 25, 1898. Serial No. 686,848. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. WALLACE, of Willoughby, in the county of Lake and State of Ohio, have invented certain new and useful Improvements in Brick-Re-Pressing Machines; and I do hereby 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 pertains to make and use the same.

My invention relates to improvements in machines for re-pressing brick.

The primary object is to provide a machine wherein the brick that is to be re-pressed is operated upon in such a manner that the resulting product is highly satisfactory so far as uniformity of density and quality of the brick is concerned.

With this object in view and to the end of realizing other advantages hereinafter specified the invention consists in certain novel and meritorious features of construction and combinations of parts, hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a front side elevation of a machine embodying my invention. Fig. II is a side elevation, and portions are broken away and in section in this figure to more clearly show the construction and to reduce the size of the drawing. Fig. III is a side elevation, largely in vertical section, showing in solid lines the two plungers in the position they occupy preparatory to and after the re-pressing operation. Fig. IV is a side elevation, largely in vertical section, and shows in solid lines the two plungers in the position they occupy when the toggle, that is instrumental in the operation of the upper plunger, has commenced to move inwardly and rearwardly beyond its straightened position.

My improved machine comprises two standards or upright side frames A A, arranged a suitable distance apart and connected together at the top and bottom in any approved manner, so as to constitute a rigid supporting-frame that at the top supports the driving-shaft B, (see Figs. I and II,) that is arranged transversely of the machine and is provided with a driving-pulley *b* and a clutch *b'* for controlling operative connection between the pulley and the shaft. The driving-shaft

at each side of the machine is intergeared with a shaft C, that is arranged transversely of the machine and parallel with the driving-shaft and rearward of and below the driving-shaft—that is, the shaft C is operatively provided with two spur-gears C' C', arranged at opposite sides, respectively, of the machine and meshing with different pinions B' B', respectively, operatively mounted upon the driving-shaft. Shaft C at its central portion is provided with a crank C², that is operatively connected by a link or pitman D with the joint of the upright toggle G, that is arranged to operate between the two standards or side frames of the supporting structure. The upper toggle-arm at its upper end is mounted loosely upon the vertically-movable rod or shaft H, that is arranged horizontally and transversely of the machine. Rod or shaft H at its central portion rests upon an arm or lever I', that is operatively mounted upon and extends forwardly from a shaft I, that is supported by the supporting-frame rearward of the upper end of the upper arm of the toggle and is arranged between and parallel with the driving-shaft and the crank-shaft. The shaft I is provided with a depending arm I², (see Fig. II,) that at its lower or free end bears a roller I³, that engages the working surface of a cam C³, that is operatively mounted or formed upon the crank-shaft. The upper toggle-arm is slotted, as at G', to accommodate the location and operation of the toggle-lifting lever I'. Vertically-slidable upright bars J (see Figs. I and II) are arranged centrally of the standards A A and are provided at their upper ends with flanges J', that overlap the vertically-sliding boxes *h*, that afford bearing for shaft or rod H and engage slideways formed upon the bars J. The bars J at their lower ends have flanges J², that overlap the under side of the slide K', that carries the lower plunger K.

Slide K' in its lowermost portion rests upon a seat *a*, formed upon the supporting structure. Plunger K is provided with as many heads as there are brick-receiving compartments or chambers in the molds *m*, and the said plunger-heads have the arrangement required to enter the different mold-compartments, respectively.

The upper plunger O is arranged to enter

the mold from above, and comprises a slide or cross-head O', that extends between the bars J and is arranged to slide up and down the said bars that form slideways for the said slide O'. Slide O' is supported from the lower end of the lower toggle-arm, and the plunger O is provided with as many heads as there are compartments in the mold, and the said heads have the dimensions and arrangement required to snugly enter the different mold-compartments, respectively. The mold *m* is constructed in any approved manner and is arranged between the two side frames A A with its compartments in line with the heads of the paths of the plungers.

By the construction hereinbefore described it is obvious that both plungers are supported from the lifting-lever I' and that the upper plunger is actuatable independently of the lower plunger by the toggle.

The arrangement of parts is such that when the toggle is tripped forwardly, as shown in Fig. III, the upper plunger O is elevated independently of the lower plunger, but both plungers K and O are elevated simultaneously by the lifting-lever I', and when the lower plunger is in its extreme elevated position the upper plunger is in its uppermost position, and in this position of the plungers the latter are separated far enough to accommodate the removal or introduction of a brick between the two plungers. B⁺ designates a brick in the mold.

The trend of the working surface of the lifting-cam C³ and the arrangement of parts are such, furthermore, that the lower plunger when it receives the brick that requires repressing descends, and thereby lowers the brick into the mold, and the upper plunger follows the lower plunger and the toggle is actuated from its forwardly-tripped position into a straightened position, and thereby causes the upper plunger to descend into the mold the distance required to press the brick, as shown in Fig. IV, and the trend of lifting-cam's working-surface is such, furthermore, as to slightly elevate the lower plunger after the upper plunger has engaged the brick, and thereby compress the brick from below.

Further compression of the brick is desired before it is removed from the mold, and very desirable and efficient means for attaining the result desired is as follows: The horizontally-arranged pin O², that connects the slide O' of the upper plunger with the lower toggle-arm *g*, while not movable independently of the toggle is shiftable vertically independently of the plunger, in that the plunger-slide O' has the hole or holes O³, through which the said pin extends, elongated vertically for the purpose, and the pin rests upon two forwardly and rearwardly extending bars Q, that are arranged horizontally and rest upon the upper ends of the upright stems or arms R of the caps R', that are mounted upon the springs or cushions R², confined within the chambers O⁴, formed in the plunger O between the said

caps and plates R³, that are suspended from the said caps and normally arranged a short distance from the bottoms of the said chambers. The means employed in suspending the plates R³ consists, preferably, of guide-forming bolts R⁴, arranged at suitable intervals circumferentially of the springs and having their heads arranged at the under side of the plates, so as to bear the cushions. The bolts extend upwardly and loosely through holes formed in the caps R', and the nuts R⁵ are mounted upon the threaded shanks of the bolts at the top of the caps. The plates R³ are provided, respectively, with depending arms or stems R⁶, from which the pressure-plates R⁷ are suitably supported, and I would here remark that each head of the upper plunger is provided centrally with a pressure-plate R⁷, arranged normally flush with the under side of the plunger and within and movable vertically of a chamber O⁵, formed within the said head and capable upon being depressed during the operation upon a brick of impressing the brick, and thereby effecting a further compression of the material that composes the brick. It is obvious, therefore, that a pressure exerted upon the aforesaid cushions R² will more or less compress the cushions and transmit pressure to the pressure-plates R⁷ of the plunger, and the said plates will result in the formation of panels in the bricks, and the panel formed in a brick will have greater or less depth, according as the quantity of material composing the brick is greater or less. Bricks re-pressed by my improved machine are quite uniform in density. The cushion R² will yield to any undue strain occasioned by an excess of material in the mold or otherwise and prevent injury or breakage of any of the parts or mechanism.

The means for depressing the plates R⁷ comprises the aforesaid bars Q, that are enlarged upwardly at their rear ends, as at Q⁺, and the said enlarged ends are actuated forwardly, so as to bring them in under the aforesaid pin O² immediately upon the commencement of the movement of the rearwardly-moving toggle beyond the latter's straightened position, and the said forward actuation of the said pressure-exerting bars Q is effected by the following mechanism: The bars Q are operatively connected at their forward ends with the lower or free ends of the arms Q', that are operatively mounted and depend from the shaft Q², that is arranged horizontally and transversely of the machine a suitable distance forward of the toggle, and the said shaft that is supported from the plunger-slide in any approved manner has an upright arm Q³, that is operatively connected by means of a spring Q⁴ with an upright lever Q⁵, arranged at the rear side of the toggle and fulcrumed at its lower end to the lower toggle-arm *g* and arranged to be engaged by the rear side of the said arm when the toggle is tripped rearwardly beyond its straightened position, and the arrangement of parts is such that the

lower toggle-arm during the rearward actuation of the toggle beyond its straightened position shall tilt the said lever rearwardly, and thereby place the spring under tension and transmit motion to the shaft Q^2 , that is at once oscillated in the direction required to effect the forward actuation of the pressure-exerting bars Q and bring the rear enlarged ends of the said bars in under the pin O^2 while the said pin moves into the upper portions of the vertically-elongated pin-engaging holes O^3 in the plunger-slide O' . Two depending arms h' , that are mounted upon the toggle-bearing shaft H and arranged at opposite sides, respectively, of the toggle's path, have their lower ends formed, preferably, concentrically of their axes and are arranged to be swung rearwardly and forwardly by the toggle. Each of the said depending arms h' is provided with two lugs h^2 , arranged at opposite sides, respectively, of the toggle-joint's pin d and a distance apart greater than the diameter of the said pin, and the plunger-slide O' is provided with members, preferably rollers O^6 , arranged to be engaged at their upper extremities by the lower ends of the said arms h' , and the arrangement of parts is such that the toggle-joint's pin shall come into an engagement with the forward side of the rear lugs h^2 of the said arms h' when the toggle during the operation of the machine commences to move rearwardly beyond its straightened position, and thereby actuate the said arms into a perpendicular position, wherein they engage the upper extremities of the aforesaid roller O^6 and lock the latter, plunger-slide O' , and consequently the plunger O as against vertical displacement by the aforesaid pressure-exerting bars Q when the toggle returns to its straightened position, and the extent of the space between the lugs of the arms h' beyond the diameter of the toggle-joint's pin accommodates the movement of the toggle-arms from their rearwardly-swung position forwardly into line before the toggle-joint's pin comes into an engagement with the rear sides of the forward lugs h^2 upon the said arms h' during the forward actuation of the toggle-arms. Consequently the pressure upon the brick being re-pressed is held while the arms h' lock the pressure-exerting bars Q in the latter's operative position.

The upper portion of the plunger-slide O' is suitably chambered, as at O^7 , to accommodate the location and operation of the bars Q .

The operation of the brick-re-pressing mechanism instrumental in pressing a panel in the upper side of the brick operated upon is as follows: Fig. III illustrates the toggle in its extreme forwardly-tripped position, wherein the upper plunger is elevated into its extreme upper position, and in this position the bars Q , the mechanism for actuating the said bars, and the connection between the said bars and the pressure-plates R^3 are in their inoperative position and arms h' are in their extreme for-

wardly-swung position, and the pin O^2 , that connects the lower end of the lower toggle-arm g with the plunger-slide O' and that has a limited vertical play within the said slide, engages the upper end of the slide's vertically-arranged slot O^3 , that accommodates the said play. As the toggle swings rearwardly from its extreme forwardly-tripped position the lower end of the lower toggle-arm and the engaging pin O^2 descend until the said pin rests upon the bars Q forwardly of the upwardly-enlarged portions Q^+ of the said bars. When the toggle during its rearward swing comes into a straightened position, as shown in Fig. II, the arms h' will have been swung inwardly into position over the rollers O^6 , as shown in Fig. II. As soon as the toggle during the continuation of its rearward stroke moves beyond its straightened position it has commenced to tilt the lever Q^5 rearwardly, so as to place the spring Q^4 under tension; but the spring immediately recoils, and thereby oscillates the shaft Q^2 and its arms Q^3 and Q' in the direction required to pull the bars Q against the pin O^2 , that is now ascending, as illustrated in Fig. IV, and as the lever O^5 is tilted farther rearwardly during the continuation of the said stroke the spring Q^4 is again placed under tension and remains under tension until the lower end of the lower toggle-arm and the engaging pin O^2 have been elevated far enough to remove the said pin upwardly above the rearwardly-enlarged portions Q^+ of the bars Q , whereupon the spring Q^4 immediately recoils and actuates the members Q^3 , Q^2 , and Q' in the direction required to pull the bars Q forwardly to the extent necessary to bring the upwardly-enlarged portions Q^+ of the said bars in under the pin O^2 , as shown in dotted lines, Fig. IV. Arm Q^3 of the shaft Q^2 has its upper end projecting forwardly of the lower toggle-arm g . The toggle during its next succeeding forward stroke will because of the interposition of the upwardly-enlarged portion Q^+ of the bars Q between the pin O^2 and the upwardly-projecting members R of the cushion-caps R' compress the cushions, and thereby result in the depression of the pressure-plates R' , and the panel formed in the brick being operated upon will vary in depth according to the amount of brick-forming material contained in the mold. The arrangement of parts is such, however, that when the toggle during its said forward stroke is swung part way forwardly of its straightened position it will come into engagement with the upper end of the arm Q^3 , and thereby tilt the said arm and the connected lever O^5 into their extreme forwardly and normal position, and thereby result in pushing the bars Q rearwardly into their extreme rearwardly and normal position.

As already indicated, the bars Q are shown in their operative position by dotted lines in Fig. IV, and the said bars remain in the said position during the aforesaid forward stroke

of the toggle, as shown in dotted lines, Fig. III, until the lower arm *g* of the toggle comes into engagement with the arm *Q*³ of the mechanism attached to and instrumental in turning the bars *Q* in the latter's extreme rearward and normal position.

What I claim is—

1. In a brick-re-press, the combination of a plunger having a brick-impressing plate arranged within the plunger and depressible below the remainder of the plunger; a forwardly and rearwardly extending bar *Q* having its rear end enlarged upwardly; the cushion interposed between the plate and bar; the toggle operatively connected with the plunger by a pin having a limited movement vertically independently of the plunger; a lever *Q*⁵ supported from and arranged at the rear of the toggle, and operatively connected with the forward end of the said bar, all arranged and operating, substantially as shown, for the purpose specified.

2. In a brick-re-press, the combination with a brick-re-pressing plunger having a brick-impressing plate arranged within the plunger and depressible below the remainder of the plunger, the suitably-operated toggle operatively connected with the plunger, means for depressing the aforesaid plate, and means for locking the said plate in the latter's operative position and arranged to be operated by the toggle, all arranged and timed to operate substantially as shown, for the purpose specified.

3. In a brick-re-press, the combination of a vertically-reciprocating brick-re-pressing plunger having a brick-impressing plate arranged within the plunger and depressible below the remainder of the plunger; a forwardly and rearwardly swinging bar or arm having two lugs arranged a suitable distance apart along the sweep of the said arm or bar; the suitably-operated upright toggle operatively connected with the plunger by a pin that has a limited movement vertically independently of the plunger, which toggle has a member projecting and having a sweep between the aforesaid lugs; a member on the plunger arranged to be engaged by the lower end of the said

arm or bar; a lever *Q*⁵ carried by and extending rearwardly of the toggle's lower arm; a forwardly and rearwardly extending bar at the under side of the aforesaid pin and operatively connected with the said lever and having its rear end enlarged upwardly, and a cushion interposed between the said last-mentioned bar and the aforesaid brick-impressing plate, all arranged and operating substantially as shown, for the purpose specified.

4. In a brick-re-press, the combination with the vertically-reciprocating plunger *O* having the slide *O*¹, vertically-elongated hole or holes *O*³ and chamber *O*⁴; the suitably-operated upright toggle *G*; the pin *O*²; a bar *Q* enlarged upwardly at its rear end, a brick-impressing plate *R*¹, the cushion interposed between the said plate and bar, and the lever *Q*⁵ operatively connected with the said bar and supported from and arranged or extending rearwardly of the toggle's lower arm; of a suitably-supported depending and forwardly and rearwardly swinging arm or bar *h*¹ having the two lugs *h*² *h*³, and a member of the toggle having a path or sweep between the said lugs, all arranged and operating substantially as shown, for the purpose specified.

5. In a brick-re-press, the combination of the vertically-reciprocating plunger *O* having the rollers *O*⁵, the suitably-supported and suitably-operated upright toggle *G* having the pin at the joint of the toggle projecting beyond the side of the toggle; the pin *O*² operatively connecting the toggle's lower arm with the plunger and having a limited movement vertically independently of the plunger; the suitably-operated bars *Q*, the brick-impressing plates; the cushions interposed between the plates and bars, and the suitably-supported depending and forwardly and rearwardly swinging arms or bars *h*¹ having the lugs *h*² *h*³, all arranged and operating, substantially as shown, for the purpose specified.

Signed by me at Cleveland, Ohio, this 4th day of June, 1898.

WILLIAM W. WALLACE.

Witnesses:

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