

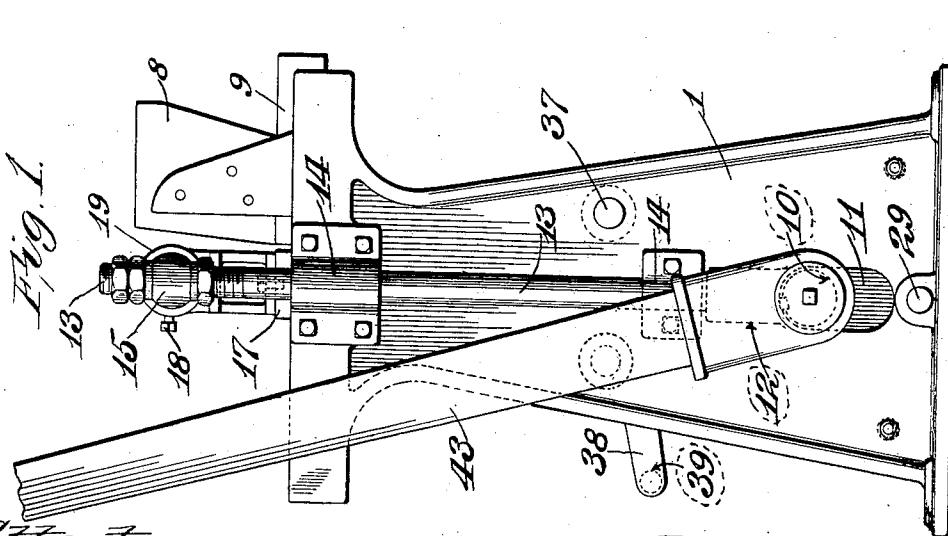
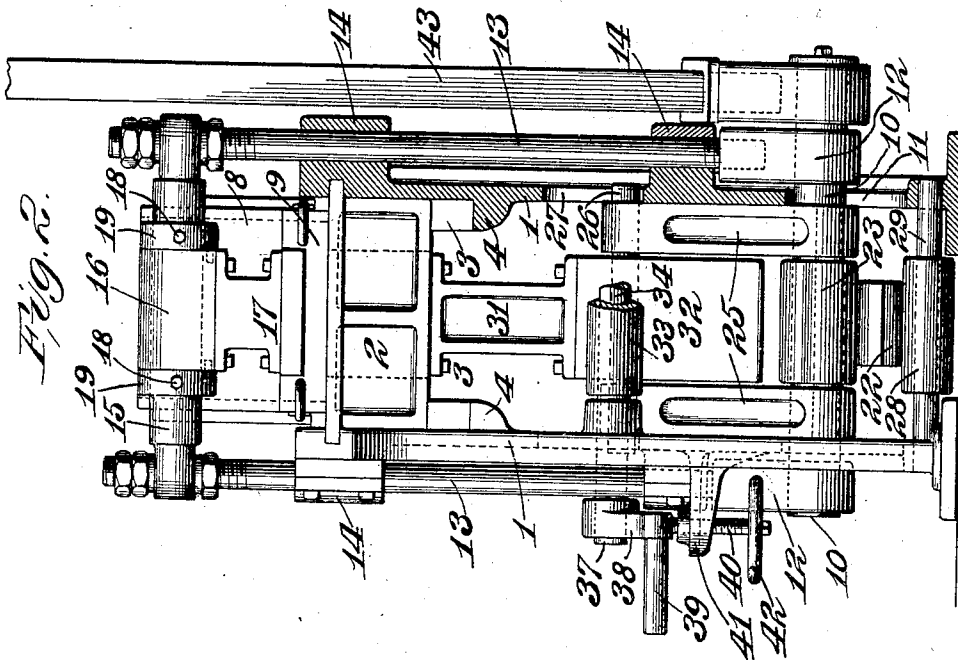
No. 832,125.

PATENTED OCT. 2, 1906.

W. P. GRATH.
BRICK PRESS.

APPLICATION FILED JAN. 18, 1906.

2 SHEETS—SHEET 1.



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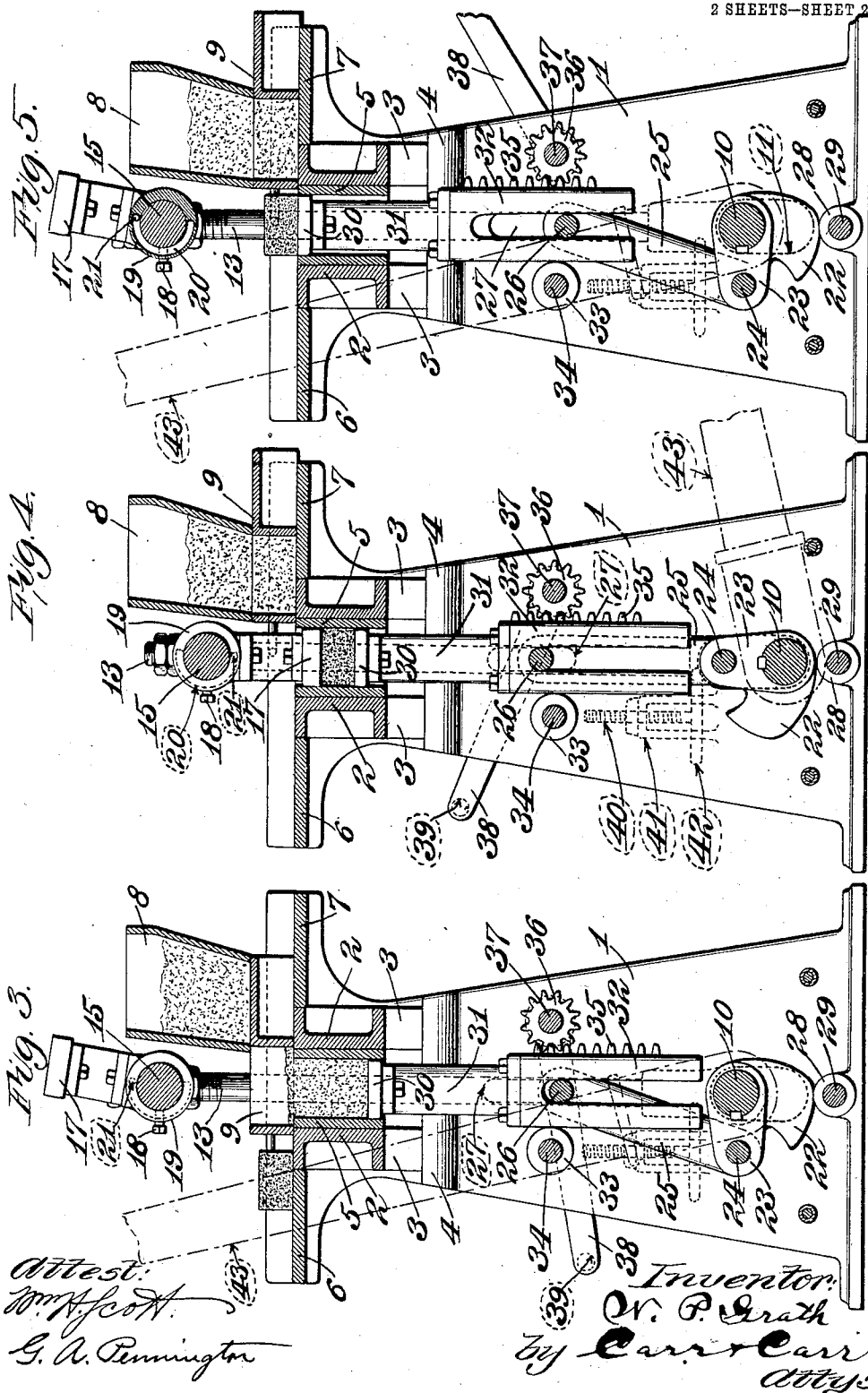
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2 SHEETS—SHEET 2



UNITED STATES PATENT OFFICE.

WALTER P. GRATH, OF ST. LOUIS, MISSOURI.

BRICK-PRESS.

No. 832,125.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed January 18, 1906. Serial No. 296,598.

To all whom it may concern:

Be it known that I, WALTER P. GRATH, a citizen of the United States, and a resident of the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Brick-Presses, of which the following is a specification.

My invention relates to brick-presses of the hand-operated type, and has for its principal objects to provide a simple and effective operating mechanism possessing great strength and pressing power and requiring but a minimum amount of exertion on the part of the operator, and, further, to improve upon the general construction of machines of this character.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings, which form part of this specification, and wherein like symbols refer to like parts wherever they occur, Figure 1 is a side elevation of my improved brick-press. Fig. 2 is a front elevation, parts being shown in section; and Figs. 3, 4, and 5 are vertical sections through the machine, illustrating the operation thereof.

The supporting-frame comprises cast side frames 1. Between the upper portions of the side frames is secured a casting 2, having integral lugs 3, which rest upon shelf-like ribs 4 on the inner faces of said side frames. The casting is provided with suitable strengthening-ribs and is formed with a central opening in which is mounted a mold 5. Work-tables 6 and 7 are provided at the front and rear of the machine, at the top thereof, and above the rear table is arranged a hopper 8 for supplying material to a charger 9. The charger is arranged to be moved forwardly to carry a charge of material of which the brick is to be made to the mold.

Mounted in the lower portion of the machine is a shaft 10. This shaft extends beyond the side frames, passing through vertical guide-slots 11 therein, and has loosely mounted on its ends blocks 12, to which are secured vertical connecting-rods 13. The connecting-rods pass through bearings 14, which serve to guide the rods in their movement. Adjustably mounted on the upper ends of rods 13 is a cross-head 15. The portion of the cross-head intermediate its ends is cylindrical in cross-section and has loosely mounted thereon a sleeve 16, to which is secured the upper plunger or ram 17.

Adjustably mounted on the cross-head and held in position by set-screws are collars 19, arranged at each end of the sleeve 16 to prevent lateral movement of the upper ram relative to the mold 5. The collars are provided with circular grooves 20, adapted to receive studs 21 on the ends of the sleeve 16. The end walls of the slots serve as stops to arrest the movement of the ram when swung either into or out of operative relation to the mold.

Secured fast upon the operating-shaft 10 is a cam 22, and integral therewith is a crank-arm 23, through which passes a rod or shaft 24, upon the ends of which are loosely mounted links 25. Passing through the upper ends of links 25 is a cylindrical cross-bar 26, whose ends extend beyond the outer faces of said links and enter vertical guide-slots 27 in the side frames 1. Cam 22 rests upon and bears against an antifriction-roller 28, mounted on a spindle 29, journaled in bearings at the bottom of the side frames. It is noted that the weight of the power-shaft and the parts connected thereto is transmitted through said cam to the stationary bearing thereof. As the cam bears continuously against said stationary bearing the vertical position of the shaft is controlled thereby.

The head of the lower ram 30 lies always within the mold and forms a bottom therefor. The shank 31 of the ram is secured to an elongated bifurcated block 32, which straddles the cross-bar 26 and is permitted to move vertically between the links 25. The curved end wall of the bifurcation forms a seat or bearing for the cross-bar 26 when the parts are in pressing action. The front face of the block 32 is formed plain and engages an antifriction guide-roller 33, mounted on a spindle 34, while its rear face is provided with a toothed rack 35, which engages a pinion 36, fixedly mounted on a shaft 37. One end of shaft 37 extends beyond the side frame and has fixed thereon a crank-arm 38, having a suitable handle 39.

The crank-arm 38 normally rests upon an adjustable stop 40, comprising a screw mounted in a bracket 41 on the side frame and provided with a hand-wheel 42. By manipulating the adjustable stop the normal position of the crank-arm is regulated. So, too, the normal or lowermost position of the lower ram is controlled by the position of the crank-arm, owing to its connection therewith. Thus the mold is provided with an adjustable bottom, whereby the capacity of the mold can be

changed at will to suit the condition of material to be used or the desired density of the finished brick.

In the operation of the machine, the parts being in their normal positions the upper ram is swung upwardly to the position shown in Fig. 3, out of the path of the charger. The charger is next moved forward, carrying a charge of material from the hopper to the mold, and then returned to its normal position. Then the upper ram is swung back to its operative position relative to the mold, and the operating-handle 43, fixedly mounted on the end of shaft 10, is moved to the position shown in broken lines in Fig. 4. Shaft 10 is rotated and cam 22 is moved from its bearing-roller 28, permitting shaft 10 to drop downwardly in its guide-slots 11. Shaft 10 thus constitutes a movable fulcrum for the arm or lever 23, which together with the links 25, hinged thereto, forms a toggle whose power member is relatively short. Through the medium of the connecting-rods 13 and cross-head 15 the upper ram is moved into engagement with the charge in the mold simultaneously with the downward movement of shaft 10. Meanwhile the toggle has been straightening and exerting an upward pressure against the lower ram. As the rams meet with the resistance of the material within the mold an equalized and increasing pressure is exerted upon the top and bottom of the material, thus forming a brick of uniform density throughout and whose outer surface is smoothly finished. The brick having been formed, the operating-handle 43 is returned to the position shown in Figs. 1 and 3, restoring the operated parts to normal position. The crank 38 is then turned to the position shown in Fig. 5, thus rotating the pinion 36 and elevating the lower ram until the upper face of the head lies flush with the top of the mold, the ram being free to move independently of the toggle. The finished brick may now be removed, the parts again restored to normal position, the charger operated, and the pressing operation proceeded with, as described above.

Obviously my device is capable of considerable modification within the scope of my invention, and therefore I do not wish to be limited to the particular construction shown and described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A brick-press comprising a frame, a mold supported in said frame, a lower ram forming a bottom for said mold, a toggle in operative engagement with said lower ram, a vertically-movable rock-shaft constituting a fulcrum for said toggle and having fixed thereon an actuating-lever and a cam arranged to control the elevation of said shaft, and an upper ram forming a top for said mold and connected to said rock-shaft.

2. A brick-press comprising a frame, a mold supported in said frame, a lower ram forming a bottom for said mold, a toggle in operative engagement with said ram, a vertically-movable rock-shaft constituting a fulcrum for said toggle and having fixed thereon an actuating-lever and a cam arranged to control the elevation of said shaft, an upper ram swingingly-mounted on a cross-head and adapted to form a top for said mold, and connecting-rods between said cross-head and said rock-shaft.

3. A brick-press comprising a frame, a mold supported in said frame, a lower ram forming a bottom for said mold, a toggle in operative engagement with said lower ram, a vertically-movable rock-shaft constituting a fulcrum for said toggle and having fixed thereon an actuating-lever and a cam arranged to control the elevation of said shaft, an upper ram forming a top for said mold and connected to said rock-shaft, and a stationary antifriction-bearing mounted in the frame-work below said cam to cooperate therewith.

4. A brick-press comprising a frame, a mold supported in said frame, a lower ram forming a bottom for said mold, an upper ram forming a top for said mold and swingingly mounted upon a cross-head above said mold, guide-collars adjustably mounted on said cross-head in engagement with said upper ram and provided with circular grooves, and stop-pins on said upper ram adapted to move in said grooves and to engage the ends thereof, whereby said upper ram can be adjusted and guided into operative relation to the mold.

5. A brick-press comprising a frame, a mold supported in said frame, a lower ram forming a bottom for said mold, the lower end of said ram being bifurcated and provided with a toothed rack, a shaft having a pinion fixed thereon in operative engagement with said rack and provided with an operating handle, an adjustable stop for said handle, a toggle comprising a relatively short power member and links hinged to said power member, a cross-bar connecting the free end of said links, the ends of said cross-bar bearing in guide-slots in said frame, and the intermediate portion thereof engaging the bifurcated portion of said lower ram, a vertically-movable rock-shaft constituting a power-shaft and movable fulcrum for said toggle, said rock-shaft having a bearing in guide-slots in said frame, a cam on said rock-shaft, a bearing for said cam, an upper ram forming a top for said mold and connected to said operating-shaft, and an operating-handle on said rock-shaft.

St. Louis, Missouri, January 15, 1906.

WALTER P. GRATH.

Witnesses:

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