

C. F. STREET.  
HYDRAULIC PRESS.  
APPLICATION FILED JAN. 22, 1913.

1,196,491.

Patented Aug. 29, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

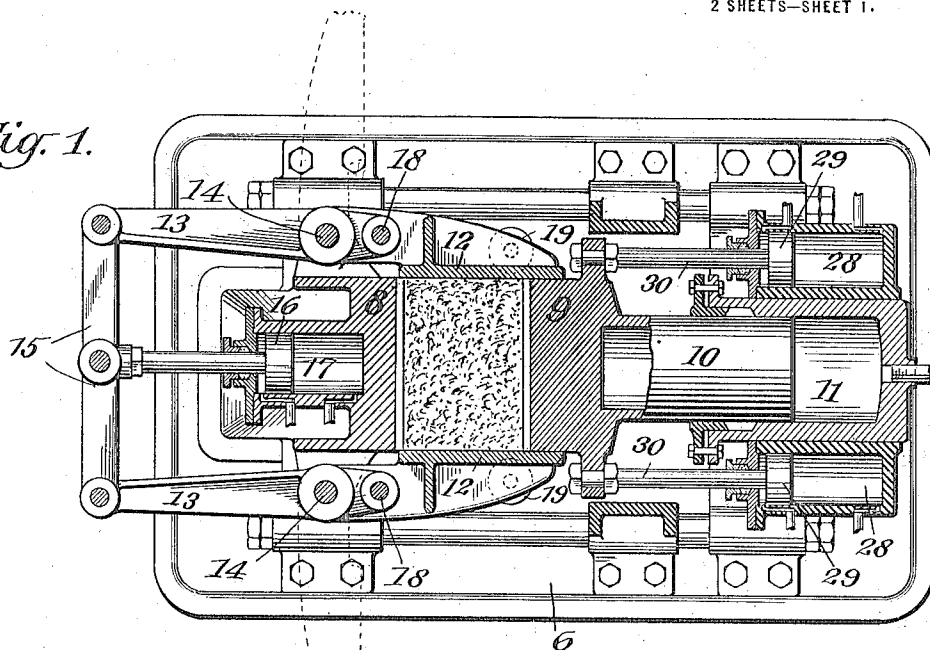


Fig. 2.

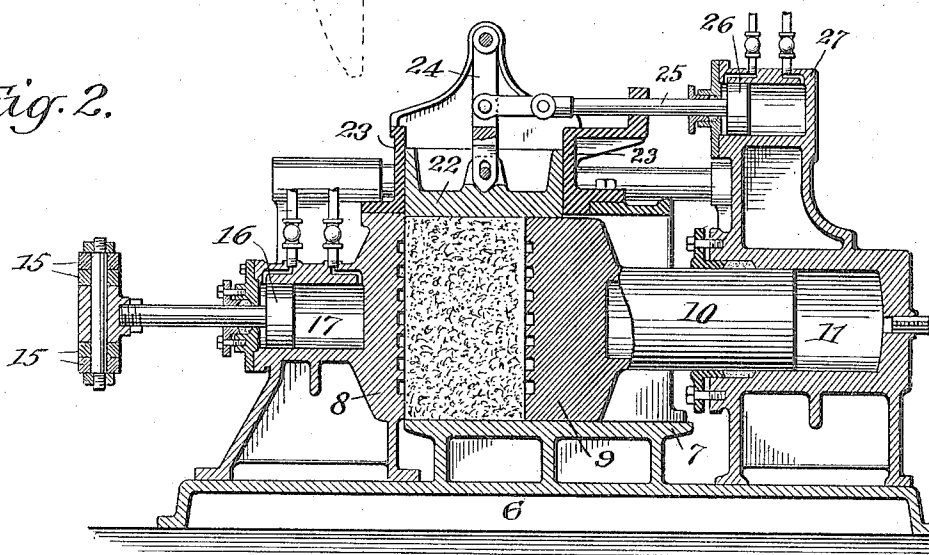
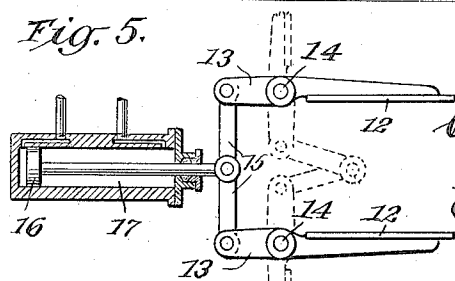


Fig. 5.



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2 SHEETS—SHEET 2.

Fig. 3.

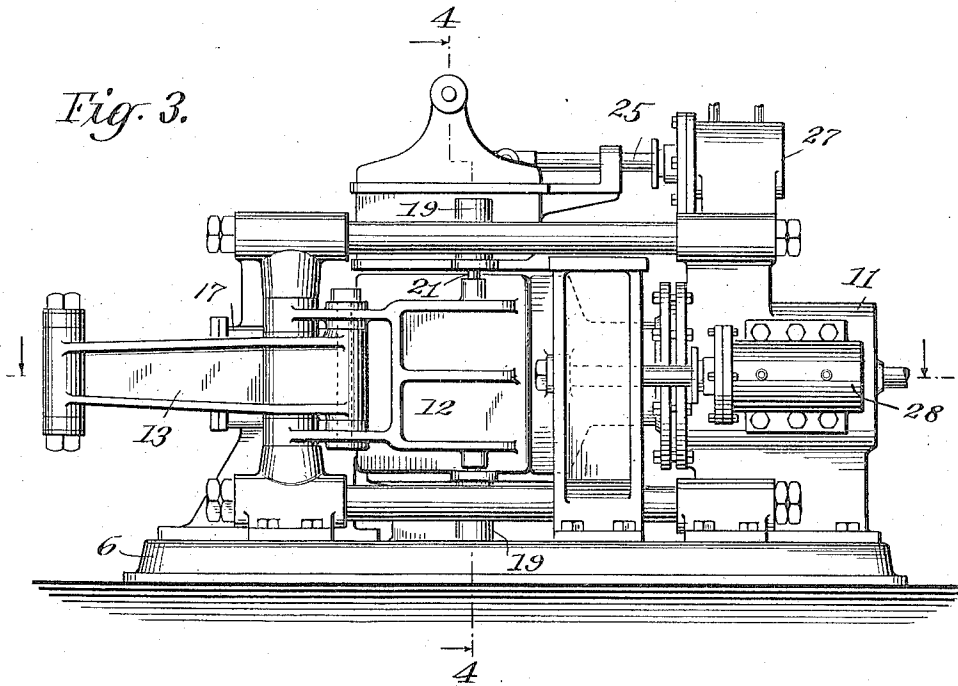
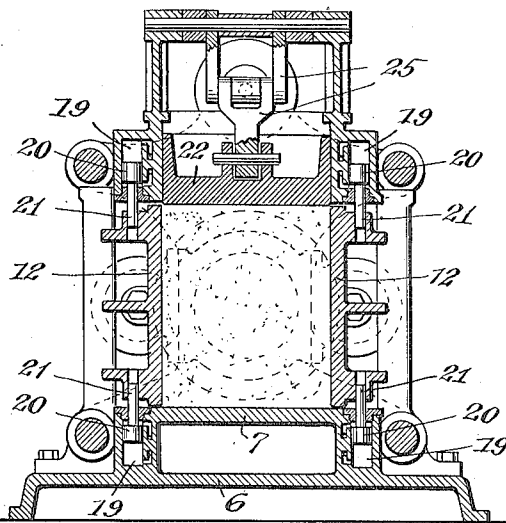


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## HYDRAULIC PRESS.

1,196,491.

Specification of Letters Patent.

Patented Aug. 29, 1916.

Application filed January 22, 1913. Serial No. 743,445.

*To all whom it may concern:*

Be it known that I, CLEMENT F. STREET, a citizen of the United States, and a resident of the borough of Manhattan, in the city, county, and State of New York, have invented a certain new and useful Improvement in Hydraulic Presses, of which improvement the following is a specification.

This invention relates to hydraulic presses in general, and more particularly to presses for baling cotton and similar material, the principal object being to provide an improved construction which may be operated with increased rapidity, whereby a greater amount of work may be accomplished in a given time and with increased efficiency.

One of the features of my improvement comprises a construction in which one or more compressed air operated pistons are employed for advancing and retracting the main ram or plunger of the press throughout its greater range of movement, as when being moved up through the slack motion against the bale, and when being withdrawn therefrom, and a hydraulic piston by which the high pressure is exerted during the final short movement of greatest compression. By this means, the quick acting lighter fluid, such as compressed air, serves to move the plunger rapidly through its longer preliminary slack movements when no pressure or only a comparatively light degree of pressure is to be exerted, thereby saving much time in the preliminary operation, and then admitting the slower acting hydraulic pressure against said plunger during its final short movement to effect the desired degree of compression.

Another feature comprises an improved construction of fluid pressure operated pistons and connections for quickly and positively actuating the sides and the top wall of the press to exert a preliminary compression at these points and put the bale in condition to receive the final high compression from the main plunger.

These and other features of my improvement will now more fully appear from the following description of one form of apparatus embodying the same.

In the accompanying drawings: Figure 1 is a central horizontal section of a hydraulic press embodying my improvement; Fig. 2, a central longitudinal vertical section; Fig. 3, a side elevation; Fig. 4, a transverse sec-

tion taken on the line 4—4 of Fig. 3; and Fig. 5, a diagrammatic view illustrating a modification of the side levers.

According to the construction shown in the drawings, the press comprises the bed plate, 6, having the usual table, 7, on which the material to be compressed is placed, the fixed end pressure head or wall, 8, being located at the end of the table and opposite to the movable head, 9, attached to the plunger, 10, of the hydraulic cylinder, 11, which is also mounted on the bed plate.

In order that the bale of material to be compressed may be readily inserted and removed from the press, the vertical side pressure walls, 12, are preferably operated by levers, 13, pivoted at 14, upon the side frames, the other ends of the levers being connected through toggle links, 15, with piston, 16, in cylinder, 17, which is adapted to be operated by compressed air or other quick acting fluid. As shown in Figs. 1 and 3, the levers are connected to the side pressure walls, 12, by means of pins, 18, the walls being also hinged upon the pivots, 14, whereby the walls operate as an integral part of the levers when the pins, 18, are in place, but may be swung independently of the levers when the parts are disconnected by removing the pins, as is done when it is desired to swing the side doors or walls fully open at right angles to the closed position, as indicated in dotted lines in Fig. 1.

As shown in Fig. 5, the side doors are mounted directly upon the levers, 13, which are formed with a short power arm and operated by cylinder, 17, and piston, 16, located outside the toggle links so as to give a sufficient movement for throwing the doors to the wide open position by the traverse of said piston in its cylinder. Fluid pressure locking devices comprising cylinders, 19, pistons, 20, and bolts, 21, are mounted on the frame and adapted to engage the side walls or doors when the same are swung to their closed positions, to rigidly hold the same and relieve the strain upon the levers during the movement of the plunger.

For the purpose of compressing the top of the bale of material, a vertically movable top head, 22, is adapted to slide in guides, 23, by means of toggle links, 24, actuated by rod, 25, of piston, 26, in cylinder, 27. The top head, 22, and the side doors, 12, are adapted to overlap the traverse of the longi-

tudinally movable head, 9, of the main plunger when it makes its final movement of compression.

According to another feature of my improvement, I provide one or more cylinders, 28, and pistons, 29, which may be connected by rods, 30, to the main pressure head, 9, and adapted to be operated by compressed air, or similar quick acting fluid under pressure, for the purpose of exerting a rapid movement of the head, 9, and plunger, 10, through the preliminary advance or forward movement up to such a point as will put a light pressure upon the bale, and also to rapidly withdraw the head, 9, and plunger during the backward movement when it is desired to release the bale. By this means the press may be operated much more rapidly as the time which would otherwise be consumed by the slow moving plunger under hydraulic pressure throughout these movements is saved. Any suitable means may be provided for permitting the free admission of liquid into the hydraulic cylinder, 11, as the plunger, 10, moves forward under the action of the air operated pistons, 29, and for freely discharging liquid from the cylinder, 11, when the pistons, 29, operate to rapidly return the plunger on its reverse stroke.

In the operation of my improved press, a bale of cotton or other material to be compressed is placed upon the table against the fixed head, 8, the side doors being open and the top head raised for this purpose, and compressed air is then admitted, by means of a suitable valve, not shown, to the cylinder, 17, to move the side doors to the closed position, the pins, 18, being first inserted, if the construction of Fig. 1 is employed. Fluid pressure is then admitted to the outer ends of the locking cylinders, 19, to force the bolts, 21, into the recesses in the side doors, 12, thereby rigidly locking the same in the closed position, as shown in Fig. 4. Compressed air is then supplied to the cylinder, 27, for moving the piston, 26, and rod, 25, and operating the toggle links, 24, to force down the top pressure head, 22, upon the top of the bale. Compressed air is also admitted to the cylinders, 28, where it acts upon pistons, 29, and rapidly moves the main head, 9, and plunger, 10, through its preliminary or slack movement, and forces the head against the bale with a moderate pressure. During this forward movement of the plunger, 10, in its cylinder, liquid is freely admitted to said cylinder in any suitable manner for filling the space left by the displacement of the plunger, then with the parts in this position, the heavy slow acting hydraulic pressure is supplied to the liquid in cylinder, 11, and the head, 9, is forced against the bale with the final movement under high

pressure, thus compressing the bale into its finished condition, as indicated in Figs. 1 and 2 of the drawing.

After the bale has been properly tied and secured, it is readily released by admitting compressed air to the other end of cylinders, 28, thereby moving the pistons, 29, in the reverse direction and rapidly withdrawing the plunger and movable head, 9, from the bale. During the reverse movement of the plunger, 10, a suitable discharge valve, (not shown) provides for the free discharge of liquid from the cylinder, 11. The top head, 22, is then raised by admitting compressed air to the opposite end of cylinder, 27, and the fluid pressure pistons of the locking devices are reversed for withdrawing the bolts from the side doors. The side doors are then swung open by supplying air to reverse the piston, 16, in cylinder, 17, and the bale may then be removed. With the form of construction shown in Fig. 1, the pins, 18, may be removed if it is desired to swing the side wide open, but with the modification shown in Fig. 5, the pins are dispensed with and the doors are thrown to their wide open position by the action of the piston, 16.

It will now be seen that by means of my improved construction, the cycle of operations of the press may be performed with great rapidity and efficiency, thereby increasing the capacity and output of the press.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a hydraulic press, the combination with a substantially horizontal fixed table and a vertical pressure block, of two side levers carrying at one end the vertical side pressure walls, an air operated cylinder and piston operatively connected to the other end of said levers for quickly opening and closing same, a top head, and a movable head with a hydraulic plunger for pressing the material between said side walls and the top head.

2. In a hydraulic press, the combination with a substantially horizontal fixed table and a vertical pressure block, of two side levers carrying at one end the vertical side pressure walls, an air operated cylinder and piston with a toggle connection to the other ends of said levers for quickly opening and closing same, a top head, and a movable head with a hydraulic plunger for pressing the material between said side walls and the top head.

3. In a hydraulic press the combination with a fixed table and pressure block, of two side levers carrying at one end the vertical side pressure walls, an air operated cylinder and piston operatively connected to the other end of said levers for quickly opening and closing same, a fluid pressure

actuated locking device for locking the side walls in their closed position, and a movable head with a hydraulic plunger for pressing the material between said side walls.

- 5 4. In a hydraulic press, the combination with a fixed table and pressure block, of two side levers carrying at one end the vertical side pressure walls, an air operated cylinder and piston operatively connected to the  
10 other end of said levers for quickly opening and closing same, a vertically movable top

head for pressing the top of the bale, an air operated piston for actuating said head, and a longitudinally movable head with a hydraulic plunger for pressing the bale be- 15  
tween said side walls and beneath the top head.

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Witnesses:

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