J. E. BLAKE.

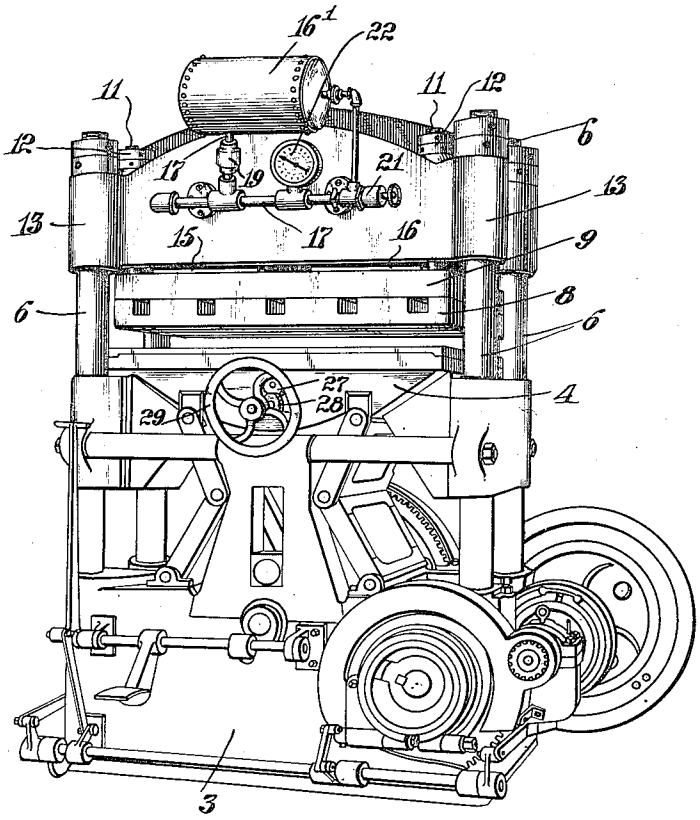
EMBOSSING PRESS.

APPLICATION FILED MAY 14, 1913. RENEWED JUNE 25, 1918.

1,285,600. Patented Nov. 26, 1918.

3 SHEETS—SHEET 1.

Fig. 1.




Attest:

E. M. Hewes

L. E. Morrison

Inventor:

by Jesse Emille Blake

Wm J Dolan, Atty

J. E. BLAKE.

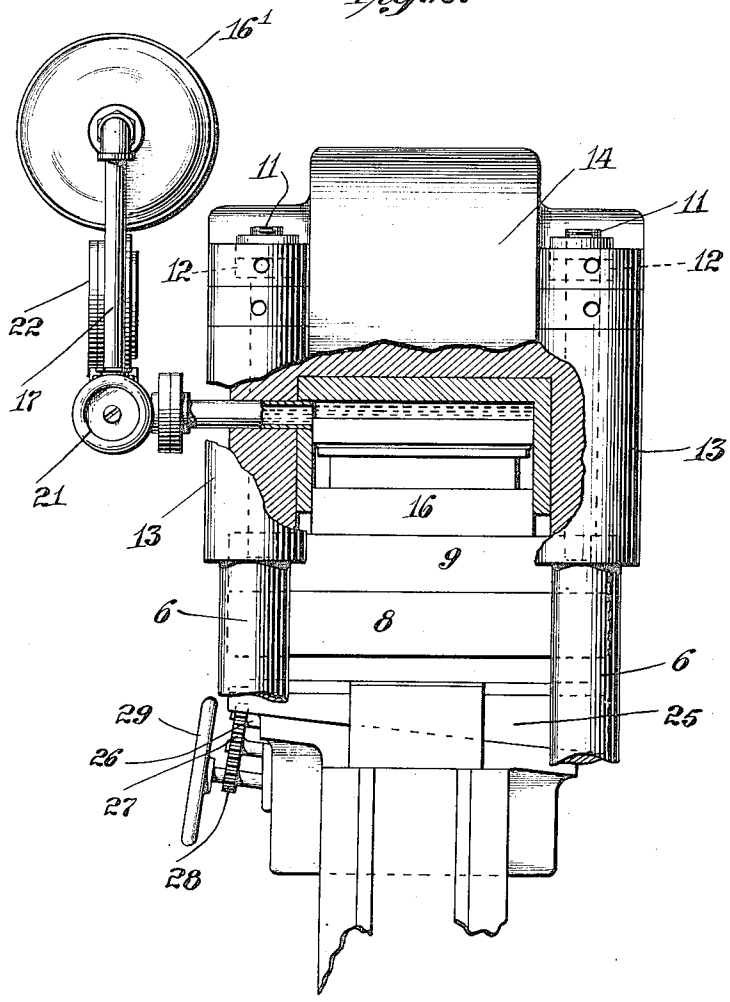
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3 SHEETS—SHEET 2.

Fig. 2.




Attest:

L. E. Morrison

Inventor:

by Jesse Erville Blake

Wm. J. Dolan, Atty

J. E. BLAKE.

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3 SHEETS—SHEET 3.

*Fig. 4.*

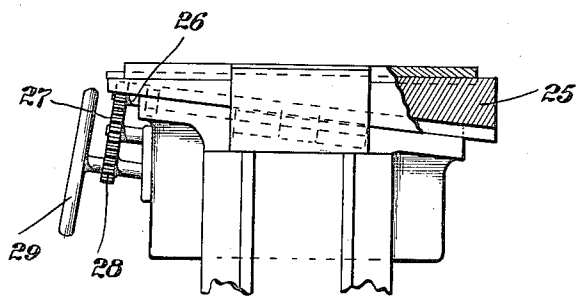
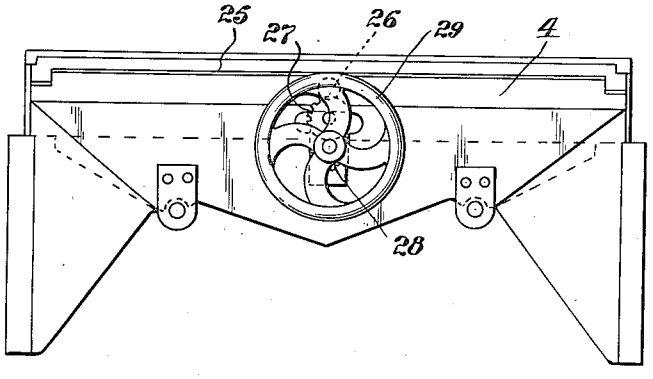



*Fig. 3.*




Attest:
C. Mitchell
L. E. Morrison

Inventor:
by Jesse Erville Blake
Wm. J. Dolan, Atty

# UNITED STATES PATENT OFFICE.

JESSE ERVILLE BLAKE, OF CHAMPLAIN, NEW YORK, ASSIGNOR OF ONE-HALF TO THE SHERIDAN IRON WORKS, A CORPORATION OF NEW YORK, AND ONE-HALF TO T. W. & C. B. SHERIDAN COMPANY, A CORPORATION OF NEW YORK.

## EMBOSSING-PRESS.

1,285,600. Specification of Letters Patent. Patented Nov. 26, 1918.

Application filed May 14, 1913, Serial No. 767,559. Renewed June 25, 1918. Serial No. 241,871.

*To all whom it may concern:*

Be it known that I, JESSE ERVILLE BLAKE, a citizen of the United States, and a resident of Champlain, Clinton county, State of New York, have invented certain new and useful Improvements in Embossing-Presses, of which the following is a specification.

The invention relates to presses; and, while it may be embodied in constructions adapted for various purposes, it is more particularly applicable to presses for embossing materials, such as leather and the like.

Objects of the invention are to provide a press in which the pressure on the material to be treated may be regulated; which shall be simple in construction, economical, speedy, and reliable and highly efficient in operation. These and other objects of the invention will in part be obvious and in part be more fully set forth in the following description.

The invention consists in the novel parts, improvements, combinations, and features of construction herein shown and described.

In the accompanying drawings, which are referred to herein and form part hereof, is illustrated an embodiment of the invention, the same serving in connection with the description herein to explain the principles of the invention.

Of the drawings:

Figure 1 is a perspective view of an embossing press constructed in accordance with the invention;

Fig. 2 is an end view of the same, parts being broken away;

Fig. 3 is a front view of a detail; and

Fig. 4 is an end view of the same, parts being broken away.

A press constructed in accordance with one feature of the invention comprises in combination, a pair of coöperating platens, means for operating said platens, and hydraulic cushioning means for one of said platens. In one embodiment of this feature of the invention said cushioning means comprises a fluid-circulating system arranged in coöperative relation with the impression platen.

According to other features of the invention, means are provided for regulating the degree of resistance offered by said cushioning means, and a dial is provided for indicating the pressure on the material being treated.

According to yet another feature of the invention, means are provided in combination with the cushioning means for adjusting the platens to varying thicknesses of material to be treated.

Referring now in detail to the drawings, the invention is illustrated as embodied in an embossing press which, preferably, comprises a base 3 and a pressing platen 4 which, as shown, is vertically movable between tension rods 6, being operated by suitable mechanism, as illustrated. An impression platen, preferably adapted to be heated for use with leather and similar materials and for this purpose and as shown consisting of the steam head 8, suitably bolted to a heavy backing plate 9, is arranged above the pressing platen 4, being adjustably secured by means of four rods 11, one preferably at each corner of the plate 9, and adjustable nuts 12 to a stationary head 13 rigidly secured to the tension rods 6.

A feature of the invention consists in providing cushioning means for said platens. Preferably, a fluid-circulating system is used as a hydraulic cushion, and in the preferred embodiment of the invention illustrated in the drawings two rams 15 and 16, suitably spaced apart, are securely fastened to the plate 9 and are arranged to operate in housings, as shown of steel, formed in the stationary head 13. A receptacle 16′ for a suitable fluid, as oil, is arranged near the top of the stationary head 13, and a pipe 17 communicates between this receptacle and the housings for the rams, establishing a circulation for the fluid. The rams are packed in a usual manner.

Suitable means are provided for regulating the resistance offered by the cushioning means. As shown, the receptacle having been supplied with oil, the same passes through a check valve 19 into the piping and thence into the housings for the rams 15 and 16. When the impression platen 8 is lifted by the upwardly moving pressing platen 4, it compresses the oil in the fluid-circulating system and automatically closes the check valve 19. A safety valve 21 is provided at a suitable place in the piping, which valve may be set for any desired pressure,

and when this pressure has been reached the safety valve 21 opens and the oil is permitted to return therethrough to the receptacle 16' from which it is returned to the ram housings, as required. As shown, the pressure is indicated on a dial 22.

The operation of the fluid-circulating system may be further particularized as follows: The rams 15 and 16 with the impression platen or combined heating and die-holding plate are allowed to drop a slight distance. In thus dropping the oil is turned into the spaces in the housings thus vacated. The return of the rising bed forces the rams back into the housings until the rams are held by the liquid. Then takes place the embossing of the material. When the pressure reaches the degree for which the safety valve has been set, the safety valve permits the liquid to pass therethrough to the supply receptacle 16', thus preventing excessive pressure. Or the pipe 17 could merely be connected to any steady liquid pressure source or head, such as a city water main, so that without the use of the valves a resistance would be opposed to the pressure on the dies, but only up to a predetermined amount of pressure.

In order that the press may be further accommodated to varying thicknesses of leather, means are provided for adjusting the platens with relation to each other. Preferably and as shown, the pressing platen 4 is provided with an adjustable wedge 25 operated under the top of the platen by means of screw 26 and gears 27, 28 which are actuated by the wheel 29. The operation of the wedge will be obvious.

It will be noted that with a press constructed in accordance with the invention perfect regulation of the pressure on the material may be secured, the exact pressure being at all times known to the operator, and all the advantages of the hydraulic form of press are secured without its defects and dangers. Besides speed and efficiency, other advantages of the invention will also be seen.

The invention in its broader aspects is not limited to the precise construction shown and described nor to any particular construction by which the same has been or may be carried into effect, as many changes may be made in the details thereof without departing from the main principles of the invention or sacrificing its chief advantages.

I claim:

1. A press including, in combination, a gravitating die, a work carrier movable thereagainst, and means checking ascent of the die up to a certain pressure exerted by the carrier.

2. A press including, in combination, a die adapted to descend by gravity, a work support arranged to be driven against said die in an upward direction, a fluid resistance opposed to the ascending die and support, and means for gaging said resistance according to a predetermined pressure.

3. A press including, in combination, a vertically movable work carrier, a gravity die suspended above said carrier in position to be raised thereby, and a fluid pressure device operating to offer a resistance to the raising of the die relatively to its means of suspension.

4. A press including, in combination, a die adapted to be positioned by gravitation, a ram operable thereby, a fluid offering resistance to the movement of said ram, and a work carrier arranged to be driven against said die.

5. A press including, in combination, a vertically movable work support, a die suspended thereabove, a ram displaceable by gravity in conjunction with said die, and a body of fluid adapted to occupy the space vacated by said ram in position to be repelled thereby.

6. A press including, in combination, a loosely suspended die, a body of fluid adapted for superimposition thereupon in quantities commensurate with varying pressures, a reciprocable work carrier arranged to be driven against the die in opposition to said fluid, and means capable of limiting the range of movement of either said die or said carrier, or both of them, relatively to each other.

7. An embossing press including in combination, a stationary head, an opening therein, a ram arranged to operate in said opening, a loosely suspended impression platen carrying said ram, a fluid receptacle, means forming a communicating passage between said receptacle and the opening in said head, whereby fluid may be admitted to the opening to resist pressure imparted by the work brought against said platen, a carrier forcing the work toward the latter, and a safety valve for diverting the flow of said liquid to the receptacle at a predetermined degree of pressure.

8. An embossing press including in combination, a stationary head formed with an opening, a ram slidable therein, an impression platen connected to said ram so as to descend by gravity therewith, a fluid receptacle, means affording a passage between said receptacle and the opening in said head whereby fluid may be admitted to said opening to resist pressure of the work impelled against said platen, a carrier bringing the work to the latter, a check valve for preventing flow of the liquid through said passage, and a safety valve for diverting the flow of said liquid to the receptacle at a set degree of pressure.

9. An embossing press including in combination, a vertically movable ram, a housing therefor, an impression platen depending

from said ram and adapted to descend therewith by gravity in position to be pressed back by the work carried thereagainst, a work carrier, means for moving the latter to said platen, and a fluid-circulating system for resisting the movement of the platen and ram as the work bears thereon, said system comprising an externally mounted receptacle for the fluid, piping establishing a communication between said receptacle and said housing, a check valve in said piping for preventing the backflow of the fluid to the receptacle, and a safety valve permitting the passage of the fluid therethrough to the receptacle at a predetermined degree of pressure upon the ram.

10. An embossing press including in combination, a base, a stationary head connected to said base by tension rods, an impression platen vertically movable between said rods and connected to a pair of rams arranged to reciprocate in cylinders formed in said stationary head, a pressing platen vertically movable between said rods, means for operating said pressing platen, and a fluid-circulating system for resisting the pressure applied to said impression platen, said system comprising a receptacle for the liquid, piping communicating between said receptacle and said ram cylinders, a check valve in said piping to prevent back flow of the liquid to the receptacle, piping communicating between the cylinders and the receptacle, and a safety valve in said piping last mentioned and normally closed but adjustable to permit flow of the liquid therethrough to the receptacle at a predetermined degree of pressure, and means for indicating the pressure.

11. An embossing press including in combination, a housing with a cylinder, a ram slidable therein, an impression platen loosely suspended with said ram and capable of yielding therewith to pressure imparted to the work, a carrier operating to press the work against said platen, and a fluid-circulating system for resisting the movement of the ram, said system comprising a receptacle for the fluid, piping communicating between the receptacle and the ram cylinder, a check valve in said piping for preventing the backflow of the fluid to the receptacle, a safety valve permitting the passage of the fluid therethrough to the receptacle at a predetermined degree of pressure upon the ram, and means for indicating said pressure.

12. A press including, in combination, a frame, a stationary head at the upper end thereof, an impression platen loosely suspended from said head, a reciprocable work carrier confined within said frame in position to be driven against said platen, a body of fluid compressible by the latter, and means for circulating said fluid.

13. A press including, in combination, a framework having a stationary head, a ram housed in the latter, a loosely suspended die carrying said ram, a vertically movable work support arranged to be driven against said die, a body of fluid following the displacement of the ram within its housing, and means affording ingress and egress to said fluid in accordance with set pressures to be exerted upon the die by the work support.

14. A press including, in combination, a frame provided with a housing, a fluid receptacle mounted thereon, piping arranged to circulate the fluid to and from said housing and said receptacle in proportion to a predetermined pressure, a ram in the housing adapted to expel the circulating fluid, a loosely suspended impression platen carrying said ram, and a work carrier movable against said platen.

15. A press including, in combination, a frame having a fixed head, a housing formed therein, a ram slidably fitted in said housing, an impression platen loosely suspended from said head and carrying said ram, a receptacle arranged to discharge a fluid in the housing coincidently with the displacement of the ram upon retrogression of said platen, a work carrier adapted to be driven against the latter, and means for gaging the flow of said liquid so as to govern the resistance to be encountered by said carrier.

16. An embossing press including, in combination, upper and lower opposed press members, the lower press member having operating means for forcing it upwardly to squeeze the work and die between the two press members, the upper press member adapted normally to freely descend to initial position and having control means for first holding it down and after a predetermined pressure releasing it to recede upwardly as the lower press member ascends.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JESSE ERVILLE BLAKE.

Witnesses:
T. C. LAFONTAINE,
JAS. DE E. BURROUGHS.