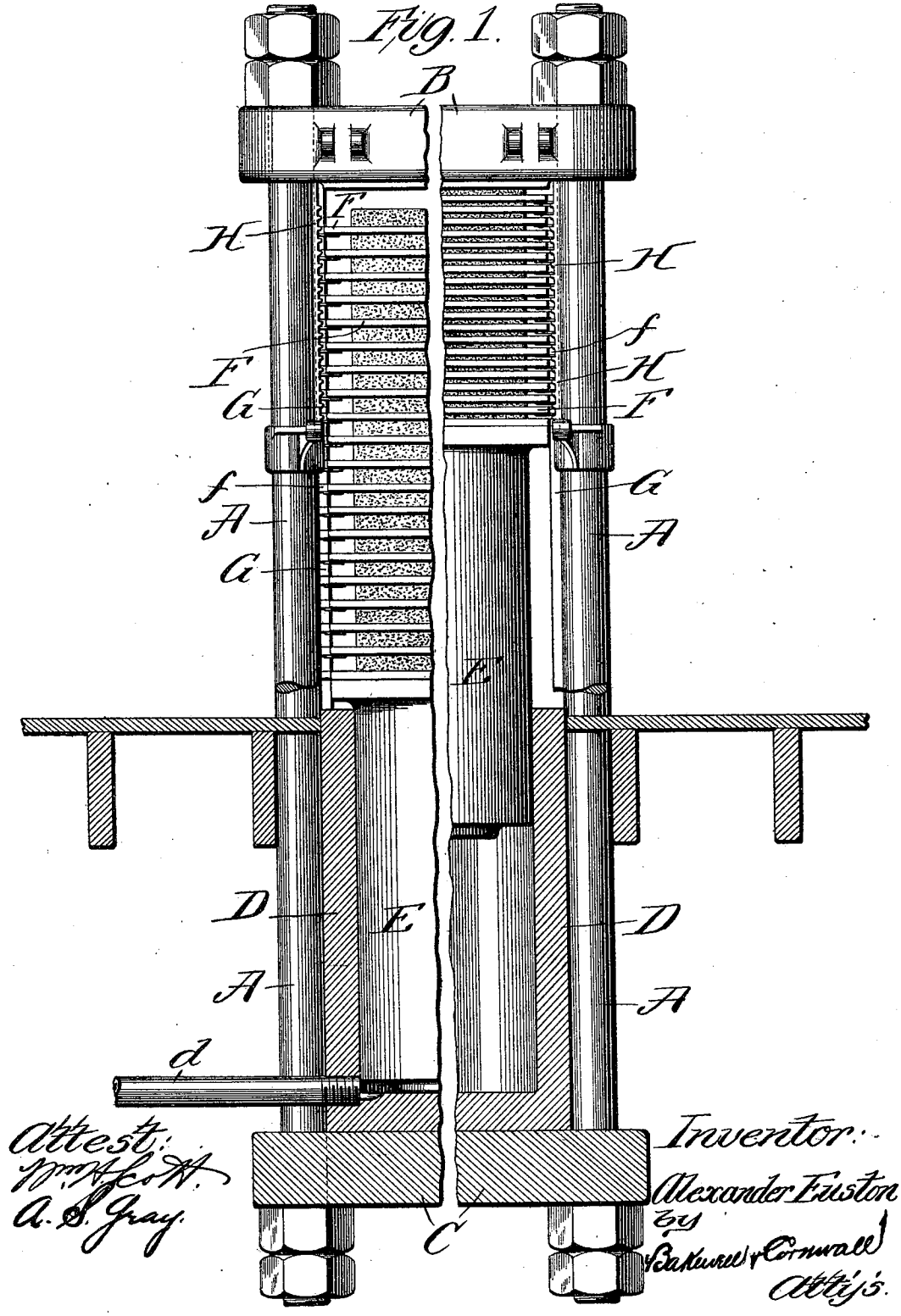
No. 631,286. Patented Aug. 22, 1899.

A. EUSTON.

HYDRAULIC PRESS.

(Application filed Apr. 3, 1899.)

(No Model.) 3 Sheets—Sheet 1.



Attest:
W. A. Fox
A. S. Gray.

Inventor:
Alexander Euston
by
Baldwin & Cornwall
Atty's.

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

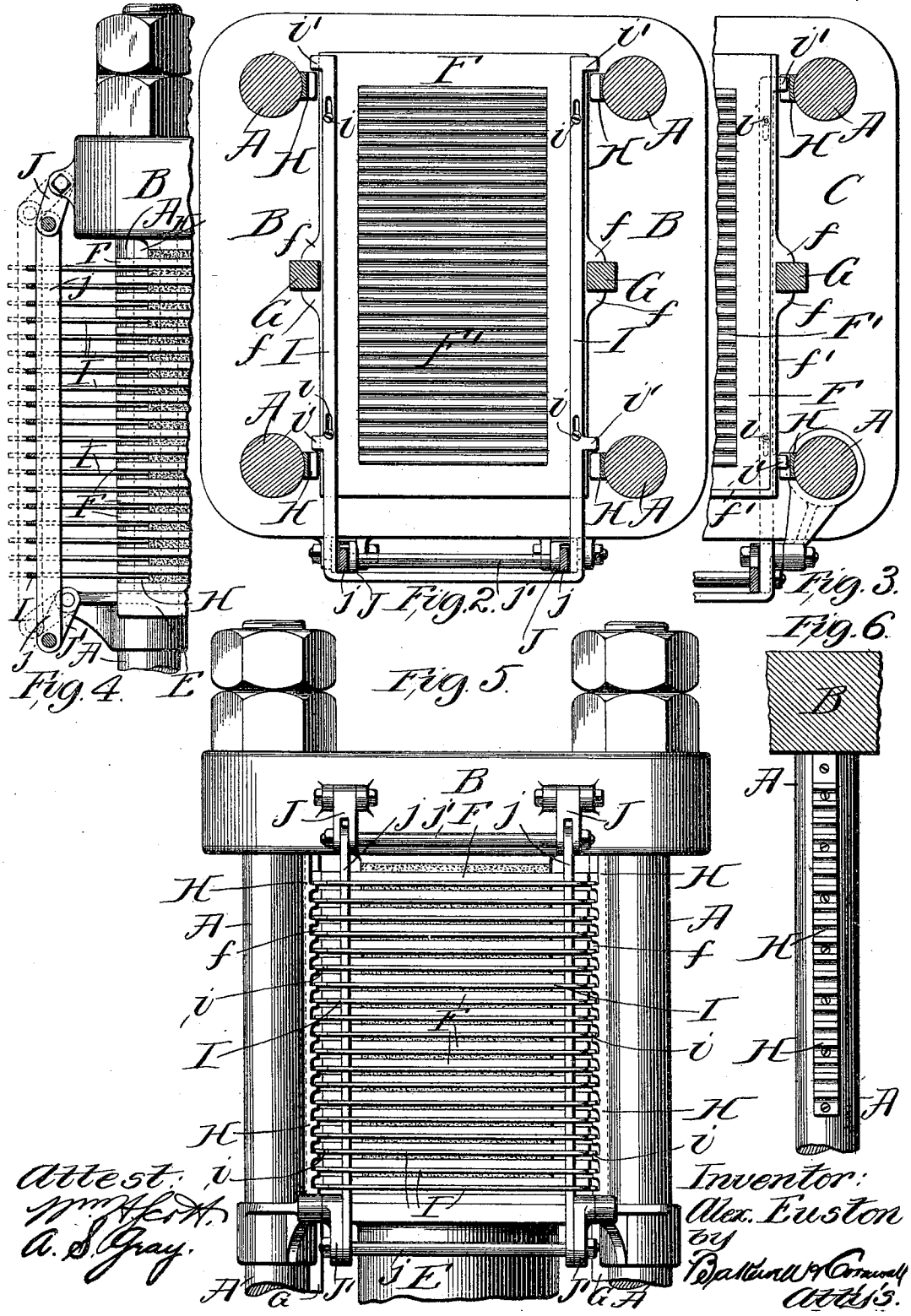
No. 631,286. Patented Aug. 22, 1899.

A. EUSTON.

HYDRAULIC PRESS.

(Application filed Apr. 3, 1899.)

(No Model.) 3 Sheets—Sheet 2.



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

No. 631,286. Patented Aug. 22, 1899.

A. EUSTON.

HYDRAULIC PRESS.

(Application filed Apr. 3, 1899.

(No Model.) 3 Sheets—Sheet 3.

Fig. 7

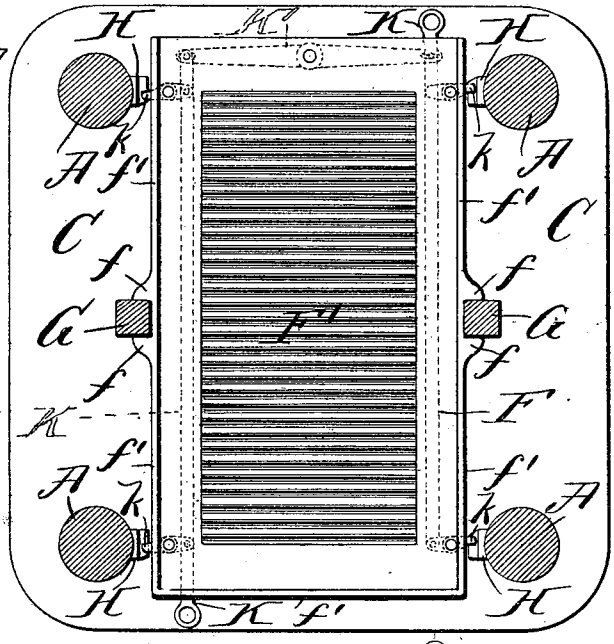


Fig. 8.

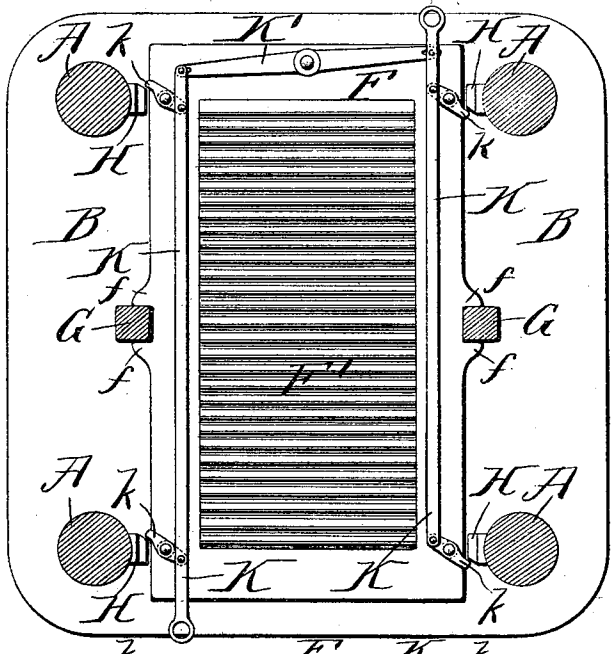
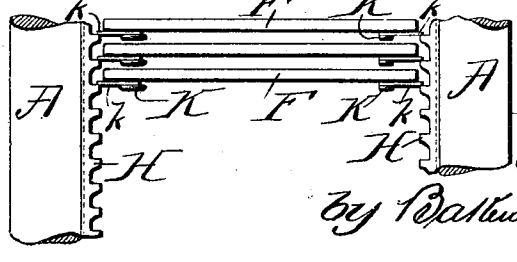


Fig. 9



Attest:
Wm. H. Gee
A. S. Gray.

Inventor:
Alexander Euston
by Baldwin & Cornwall
Attys

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

UNITED STATES PATENT OFFICE.

ALEXANDER EUSTON, OF ST. LOUIS, MISSOURI.

HYDRAULIC PRESS.

SPECIFICATION forming part of Letters Patent No. 631,286, dated August 22, 1899.

Application filed April 3, 1899. Serial No. 711,469. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER EUSTON, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Hydraulic Presses, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevational view, partly in section, illustrating my improved hydraulic press in two positions. Fig. 2 is a cross sectional view showing the plate in bottom plan. Fig. 3 is a top plan view, broken away, showing the supporting mechanism in a different position. Fig. 4 is a side elevational view of part of the upper portion of the press, showing the manner of operating the supports in unison. Fig. 5 is a front elevational view of the upper portion of the press. Fig. 6 is a detail view of one of the supporting-racks attached to its column. Fig. 7 is a cross-sectional view of the press, showing a modified form of mechanism for supporting the plates. Fig. 8 is a similar view showing the plate in inverted plan, and Fig. 9 is a front elevational view of a portion of the press.

This invention relates to a new and useful improvement in hydraulic presses designed particularly for use in extracting oil from oleaginous seeds, such as linseed.

The object of my present invention is to simplify the construction of the supporting mechanism for the plates in presses of the character described to increase the capacity of said presses.

In the presses now in use for extracting oil from eleaginous seeds there are two well-known methods employed for supporting the plates on which the green cakes are placed preparatory to being subjected to pressure. One method involves the use of links attached to pins or bolts inserted in the edges of the plates and each plate is thus connected to the next adjacent by such links. By this construction the green cakes are inserted between each plate, a sufficient clearance being provided for each cake. Usually there are fifteen plates in presses answering this description. When the ram ascends, it necessarily comes in contact with the bottom plate, raises it until its carried green cake comes in contact with the plate next above, and so on, the initial movement of the ram being depended upon to overcome the clearance between the plates and each cake, or, say, about fifteen to twenty inches in a press having from fifteen to twenty plates. The links of course move over their pins or bolts when the ram thus rises, and after all clearance has been overcome by the movement of the ram the cakes are subjected to pressure. When the ram descends, the total number, fifteen to twenty plates, are suspended at equal distances, governed by the length of the links between. The pressed cakes are then removed and green cakes inserted in their places and the same cycle of operations is repeated. Another method is to place a metal rack or frame on either side of the press, which rack or frame is formed with a series of steps at unequal distances apart. The plates in the press are provided with suitable projections located at varying distances apart to coöperate, respectively, with proper steps, so that as the ram descends the plate having the projections closest together will be supported on the top steps, the second plate on the second steps, and so on until the ram has reached its lowest position, when all of the plates will be supported by their proper steps. In this construction from fifteen to twenty plates are employed, and it is necessary to have a clearance between each plate for the introduction and proper manipulation of the green cake, which clearance has to be overcome by the ram in its initial upward movement and provided for by the ram in its final descending movement. My invention contemplates a construction which dispenses with this clearance, thereby adding from twenty-five to fifty per cent. to the capacity of each press without increasing the size of the press, and, furthermore, the descent of each plate according to my invention is under immediate control of the operator instead of following the ram as it descends.

My invention consists in the provision of a number of movable projections suitably mounted on the plates for coöperating with supports for sustaining the plates in an ele-

vated position or for permitting the descent of each individual plate, at the will of the operator; and the invention consists in the construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

In the drawings, A indicates a column, of which there are usually four, passing at each end through a head-piece B and a base-plate C. On the base-plate C is arranged a cylinder D, carrying a piston or plunger E, which latter is raised or lowered, according to the will of the operator, by the introduction of hydraulic pressure thereunder through a pipe *d*. The above parts are common to most hydraulic presses now in use for the purpose of extracting oil from oleaginous seeds.

F indicates the plates preferably used, which plates are arranged in the press between the columns and guided in their vertical movement by rods G, said plates having lugs *f* on each side thereof embracing said guide-rods. The two sides and front edges of my improved plate are provided with ribs *f'* on their upper faces, the rear side being left open to conduct off the oil as it exudes from the pressed cake, the press as an entirety being slightly tilted to conduct off the oil at this point. A panel F' is provided in each plate, which panel is formed by transversely-arranged corrugations, said corrugations being so positioned that they match each other in their respective plates, so that the thickness of the cake is substantially equal throughout its length. By providing these panels in the plates, such panels being an integral part of the plates, I dispense with the use of hair mats and all the labor of securing separate panels or mats in position on the upper and lower faces of each plate. Furthermore, by having fixed corrugations above and below the cakes to be pressed I prevent said cakes from spreading, and by having an equal thickness throughout the cake all parts of the cake are pressed evenly, so that said cake will test out more uniformly with respect to the percentage of oil remaining therein after pressure than with other systems.

Mounted on columns A (although I do not wish to confine myself to these main columns as supports for the supporting mechanism, as other supports may be provided, if desired) are notched or stepped bars H, the projections or steps of which coöperate with suitable dogs or movable supports arranged on the plates. These movable supports, as shown more clearly in Fig. 2, are arranged on the under side of the plates and consist of a U-shaped frame I, slotted for the reception of retaining-screws *i*, the parallel members of said frame being provided with projections *i'* and extending laterally beyond the side edges of the plate to which the frame is connected. These projections *i'* are adapted to engage with the steps of bar H and support the plate in position. It will be noted that when the U-shaped frame is moved in one direction—say to the rear—all of the projections *i'* are thrown out of the path of the bar H, and when said frame is moved in the other direction—say forwardly—all of the projections are thrown in the path of the projections on bar H and so support the plate in position. The plate itself is prevented from moving forwardly and backwardly by reason of the engagement of the guide-rods G. Each plate in the press is provided with a frame I, and the notches of bars H are arranged at such distances apart that when the press is approximately at its pressing position, or rather immediately after the greatest pressure is removed from the plates and the ram starts to descend, all of the projections *i'* on the different movable frames of the several plates are in register with the notches of bars H, and by moving the frames I forwardly said projections *i'* enter said notches and are supported by the projections or steps of bars H.

As shown in Figs. 2 to 5, means are provided for operating all of the supporting-frames of a press at one time, so as to save the labor of drawing out each frame independently. This means consists of links J and J', pivotally mounted to the head-piece and to the forward columns, respectively, said links carrying bars *j*, arranged within the cross-bars of the U-shaped frames I. The pivotal connection between the links and the bars *j* consists, preferably, of through-bolts *j'*, so that bars *j* will be moved forwardly and upwardly in parallel to prevent the U-shaped frames from binding.

In Figs. 7 and 8 I have shown a modified form of supporting means, in which the same notched bars H are employed, but in which pivoted dogs *k*, arranged on the bottom of the plate, are substituted in lieu of projections *i'*. These dogs *k* are connected on each side by rods or bars K, one end of said rods or bars being connected by lever K', so that when either of said rods or bars K is operated to throw its connected pivoted dogs into or out of the path of the projections on the bars H through the instrumentality of the lever K' the other bar K will operate its connected dogs *k* correspondingly.

Assuming for the purpose of description that the ram is at its highest point, as shown at the right in Fig. 1 and in Fig. 5, in which position all the oil has been extracted from the cakes, the ram is preferably permitted to descend slightly, so as to allow the pressed cakes to expand slightly. The lower through-bolt *j'* is pulled outwardly and upwardly, as shown by the dotted lines in Fig. 4, so as to operate all of the frames I and throw their projections *i'* into the notches of the bars H for the purpose of supporting each plate, which position is shown in Fig. 3. The ram is now permitted to drop, say three or four inches, and the pressed cake is removed from the head thereof and a green cake inserted in its place. By proper manipulation of the frame

I on the lowest plate the projections *i'* are thrown out of the paths of the bar H, so as to permit said plate to fall onto the green cake arranged on the ram-head. The pressed cake is now removed from the dropped plate and a green cake arranged in position thereon. The frame on the next plate above is operated in the same way and said plate dropped, its pressed cake being removed and a green cake inserted, this operation of loading the ram step by step and dropping the plates individually for the purpose of removing the pressed cakes and introducing green cakes being continued until the ram occupies its lowest position, as shown at the left in Fig. 1, wherein it will be seen that the press is charged with green cakes for the next ascent of the ram. It will be further noted in this connection that the only clearance left when the press is charged to its full capacity is the clearance for the last cake introduced on the top plate. The operator may, instead of starting and stopping the ram at each removal of the dry cake and introducing the green cake on the release of cakes, start the ram slowly in its descending movement, drop a plate, remove the dry cake, and insert a green one, and so on, accommodating the removal and insertion of cakes according to the speed of the descent of the ram without further control thereof. The bars K, with their connected dogs *k*, are operated in substantially the same manner as that above described. After the press is charged with green cakes all of the plate-supports are out of the paths of the bars H and the plates have an unobstructed upward movement. When the plates are approximately at their highest point, these supports are thrown into engagement with the notched bars, and the plates are held in such elevated position until the operator starting at the bottom of the tier of plates successively releases each plate independently of the others and removes the pressed cake and charges such released plate with a green cake.

I am aware that minor changes in the construction, arrangement, and combination of several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with a plate, of movable projections arranged thereon, and a stationary support with which said movable projections coöperate; substantially as described.

2. In a hydraulic press, the combination with a plate, of a stationary support, a movable projection mounted on said plate and adapted to coöperate with said support, and means for moving said projections into and out of engagement with said support; substantially as described.

3. In a hydraulic press, the combination with a plate, of a plurality of stationary supports, a plurality of projections coöperating with said supports, and means for operating said projections in unison to engage, or disengage same from said stationary supports; substantially as described.

4. In a press, the combination with the plates, of stationary supports, and supporting mechanism on each individual plate for supporting the same independently of its companions; substantially as described.

5. In a press, the combination with the plates, of stationary supports, and mechanism on each individual plate for engaging with, and being disengaged from, said stationary supports to support and release the plate on which said mechanism is mounted, independently of its companions; substantially as described.

6. In a press, the combination with a plurality of plates, of stationary supports, supporting mechanism mounted on the different plates for coöperating with said supports and holding the plates in approximately their pressing position, and mechanism for operating said supporting mechanism so as to release each plate independently; substantially as described.

7. In a press, the combination with a plurality of plates, of supports mounted on each plate, stationary supports coöperating with the plate-supports, and connection between all of said plate-supports for operating the same in unison, so as to throw said supports into or out of the paths of said stationary supports; substantially as described.

8. In a press, the combination with a plurality of plates, of guide-rods for the same, a plurality of stationary supports, a plurality of movable plate-supports mounted on each plate, and connections between all of the supports of an individual plate, whereby said supports may be operated in unison to engage with, or be disengaged from said stationary supports; substantially as described.

9. The combination with a plurality of plates, of supporting mechanism mounted on each plate, stationary supports with which said supporting mechanism coöperates, and means coöperating with the supporting mechanism of all the plates for operating the same as an entirety; substantially as described.

10. In a press, the combination with a plurality of plates, of independently-operable supporting mechanism mounted on each plate, stationary supports for coöperating with the supporting mechanism of all the plates, and mechanism common to all the plate-supports, and adapted to operate same in unison; substantially as described.

11. In a press, the combination with a plurality of plates, of a plurality of supports mounted on each plate, a plurality of stationary supports coöperating with the plate-supports, means for operating the plate-supports independently of each other, and means com-

mon to all of said plate-supports for operating the same in unison to engage the stationary supports; substantially as described.

12. In a press, the combination with a plurality of plates, of a plurality of supports mounted on each plate, a plurality of stationary supports coöperating with the plate-supports, means for operating the plate-supports independently of each other, and means common to all of said plate-supports for operating the same in unison to engage the stationary supports, said means comprising a bar *j*, mounted in the ends of pivoted links; substantially as described.

13. The combination with a plate, of stationary supports and a U-shaped frame provided with projections for engaging said stationary supports; substantially as described.

14. The combination with a plate, of stationary supports, a U-shaped frame I, which is slotted for the reception of plate-bolts, by which said frames are slidingly mounted, and projections *i'* extending laterally from said frame and beyond the side edges of said plate; substantially as described.

15. The combination with a plurality of plates, of stationary supports, U-shaped frames slidingly mounted on each plate and provided with lateral projections for coöperating with said stationary supports, and connected bars *j*, mounted in the ends of pivoted links for operating said U-shaped frames; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 31st day of March, 1899.

ALEXANDER EUSTON.

Witnesses:
F. R. CORNWALL,
A. S. GRAY.