No. 734,917. PATENTED JULY 28, 1903.

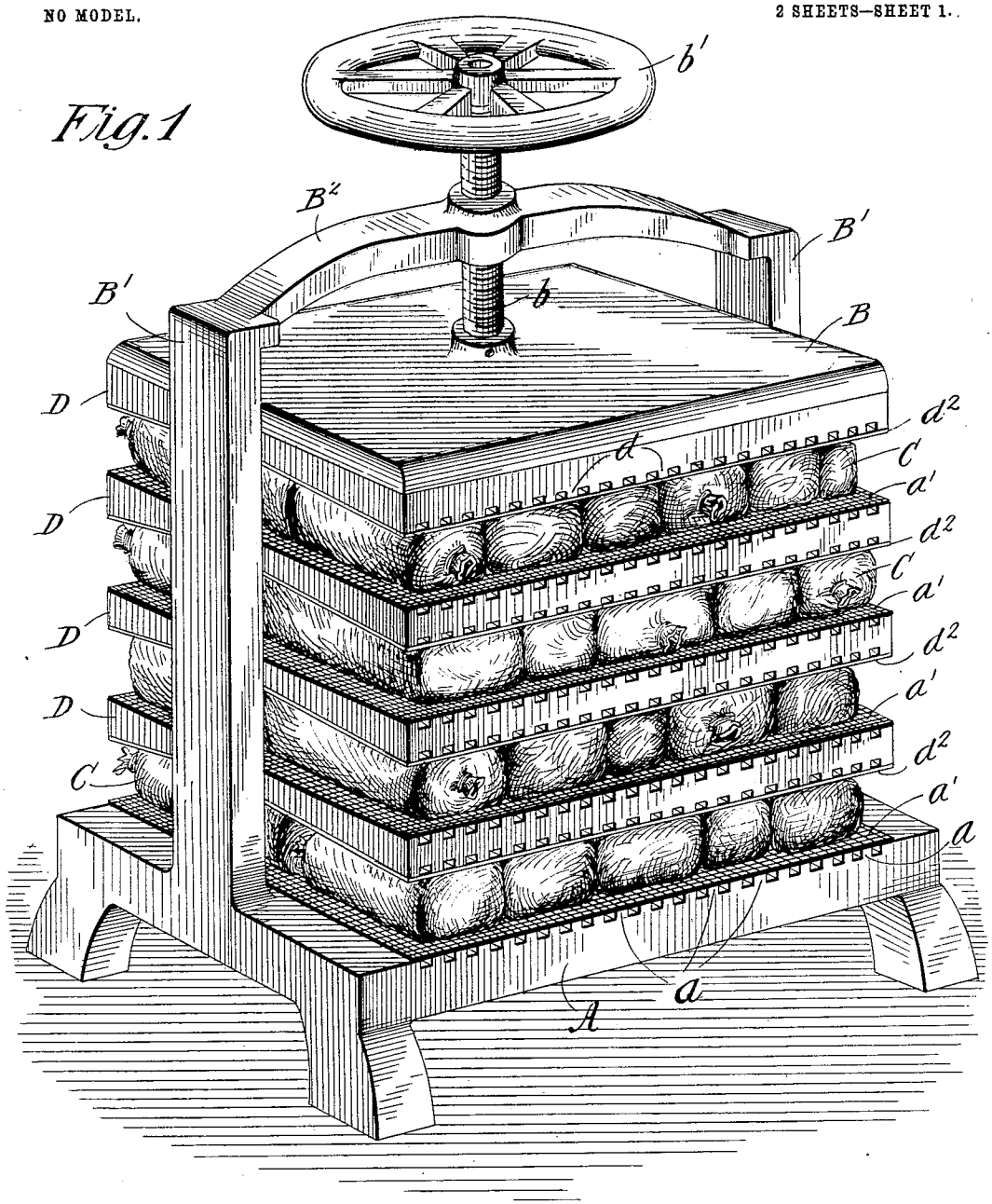
W. C. MARSHALL.

FLUID EXTRACTING PRESS.

APPLICATION FILED SEPT. 16, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1



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

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APPLICATION FILED SEPT. 16, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2

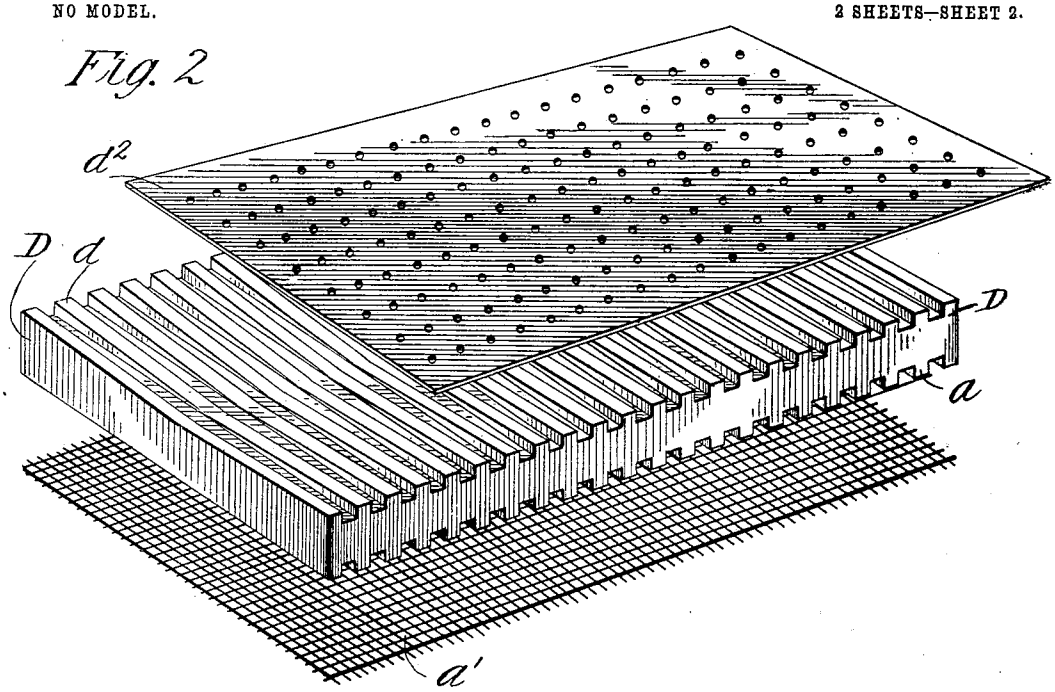
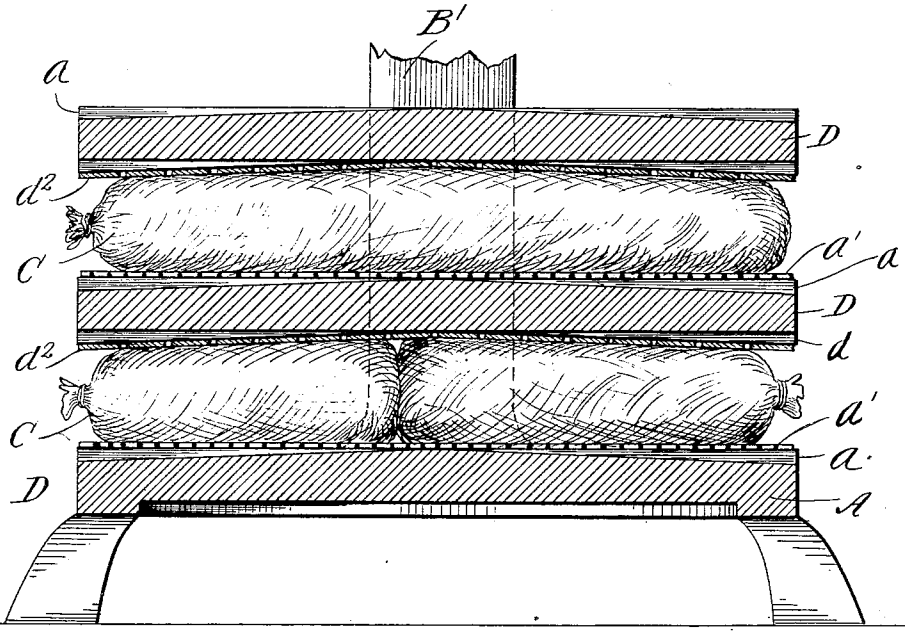


Fig. 3



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No. 734,917. Patented July 28, 1903.

UNITED STATES PATENT OFFICE.

WILLIAM C. MARSHALL, OF CHICAGO, ILLINOIS.

FLUID-EXTRACTING PRESS.

SPECIFICATION forming part of Letters Patent No. 734,917, dated July 28, 1903.

Application filed September 16, 1902. Serial No. 123,600. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. MARSHALL, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Fluid-Extracting Presses; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in presses of that class used for extracting the fluid constituents from material containing the same.

It is usual to place the fluid-containing material in the press in sacks or the like, and the presses have usually been so constructed that during the pressing operation the fluid can exude only from a relatively small part of the area of the sack, usually only that represented by the ends and sides of the sack, inasmuch as the pressure from the base and top of the press and the intermediate following-boards on the upper and lower surfaces of the sacks is such as to prevent fluid exuding from the top and bottom of the sack. When presses are so constructed, the only exit for the fluid constituents is at the ends and sides of the bags, and it is obvious the fluid has to travel a much greater distance through the material, and vastly greater power is required to force the fluids therefrom than would be the case if the fluids escaped from the entire surface of the sacks, or much longer time must be consumed in accomplishing the work.

The object of this invention is to provide a construction whereby the fluid constituents of the material are permitted to escape from approximately the entire surface of the sack or sacks, thus permitting the pressing operation to be completed in the least possible time with the expenditure of minimum power.

The invention consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a perspective view of a press and follower boards or plates embodying my invention. Fig. 2 is an enlarged perspective view of the follower-plate, showing the same inverted and the parts thereof separated. Fig. 3 is an enlarged fragmentary vertical section taken longitudinally of the press with bags therein.

As shown in said drawings, A indicates the base-plate of the press, and B indicates the upper or compression plate of the same, which, as shown, is movable vertically between upright ways B′, connected at their tops by the transverse beam B^2, in which the screw-shaft *b*, which actuates the compression-plate, has screw-threaded engagement. In the illustration a hand-wheel *b*′ is shown secured on the upper end of said screw-shaft, by means of which the same may be rotated in a familiar manner, though obviously the character of said press and the means for actuating the same may vary as preferred. The bed-plate or base A, as shown, is provided in its upper surface with a plurality of transverse closely-arranged grooves, which incline downwardly and outwardly from near the center of the base toward the sides or ends thereof. The upper surface of the webs *a*, of metal, between said grooves are in the same plane and form the support for an apertured sheet *a*′, which rests thereon and which in the drawings is shown as a coarse reticulation or net of wire upon which the material to be compressed, usually wrapped in cloths or packed in bags, (indicated by C,) is laid. Upon said material in bags or otherwise is placed a follower board or plate D, the upper surface of which corresponds with the upper surface of the base-plate A of the press, having outwardly and downwardly inclined laterally-directed grooves therein, between which are supporting-webs *a*, as before described. The under surface of each follower-plate is provided with a plurality of closely-arranged parallel outwardly and downwardly inclined webs *a*, providing between the same corrugations or transverse grooves, as indicated in Fig. 2. The construction described gives the follower-plate less thickness at its middle than at the sides, so that the under surface inclines upwardly toward the center, as shown. A sheet of perforated metal d^2 or other desired material forms the bottom of the follower-plate and may, if preferred, be attached thereto and rests upon the bags of material beneath the same. The material is usually

arranged in the press as shown in Figs. 1 and 3, the first layer resting on the screen-floor of the base-plate, a follower-plate, with its perforated-sheet bottom plate and wire-net top plate, supported thereon, and in a like manner any desired number of layers of material within the capacity of the press may be placed in position, each resting on the reticulated sheet above corrugations and each supporting a perforated sheet of a superposed follower-plate, the under surface of which is corrugated and inclined downwardly and laterally. Upon the upper layer of material is also laid a sheet of the perforated metal d^2, as shown in Fig. 1, which is engaged by the compression-plate B, the under surface of which corresponds with that of the follower-plates.

The operation is as follows: When the bags are compressed by the downward movement of the compression-plate, the perforated sheets d^2 are sprung upwardly at the center to correspond with the under concave surface of said compression-plate and each of the follower-plates. Said sheets being apertured permit the fluid to pass upwardly into the corrugations above the same and to flow downwardly along the inclined surfaces to the sides or ends of the press to be collected in the usual or any desired manner. Obviously the reticulated material beneath the sacks afford a sufficient support for the material and permit the fluid constituents to pass freely from the bottom of the sacks therethrough into the corrugations in the upper side of the follower-plates or the bed-plate, from whence the downward inclination of the grooves or corrugations causes the same to flow to the sides or ends of the press or to the point of delivery. It is obvious that inasmuch as the lateral and end surfaces of the sacks are unobstructed the same will permit the fluid to exude therefrom as readily as in the ordinary press, while by permitting the escape of the fluid constituents through the upper and lower surfaces of the sacks the surface from which the fluid may be drained is enormously increased.

It is clear in the construction described that the fluid may be drained from material much more rapidly and freely than has heretofore been possible, and as a consequence the expenditure of much less power is required than in presses of the ordinary construction. It is also true that the drainage-surface being increased enables the work to be accomplished much more thoroughly, the fluid having a less distance to travel through the material before exit therefrom.

Obviously the press may be operated by any desired power, and the size and shape of the same is not material, and, if preferred, a drainage-trough may be provided at the sides or ends of the base-plate to lead the fluid to any desired point of delivery.

Obviously many details of construction may be varied without departing from the principles of my invention.

I claim as my invention—

1. A press provided in the upper surface of its bed with a plurality of drainage-grooves inclining outwardly and downwardly and oppositely from the center and an apertured rigid sheet adapted to rest on the webs between the grooves and to form the support for the material to be compressed.

2. In a press, a bottom or bed plate having in its upper surface channels inclining downwardly and outwardly and oppositely from the center, a sheet of reticulated material supported on the webs between the channels, and forming the bed for the material to be compressed, a vertically-movable compression-plate, webs on the under side thereof which extend on each side the center and incline oppositely and outwardly and downwardly, and a sheet of perforated metal or the like engaged against said webs and adapted for engagement upon the material to be compressed, the upper surface of said sheet forming a runway between the webs for the fluid or semifluid constituents of the material compressed.

3. A follower-plate for presses comprising an upper plane surface provided with grooves inclining oppositely and outwardly and downwardly from the center and an under surface provided with ribs inclining oppositely downwardly and outwardly from the center and providing a plurality of grooves between the same.

4. The combination with a follower-plate for presses comprising a rigid board or plate, a plurality of integral ribs disposed on the upper surface and having their tops in the same plane and providing between the same a plurality of grooves inclining outwardly and downwardly from the center and like ribs on the under side the plate inclining downwardly and outwardly from the center and a perforated plate adapted for engagement with each side the follower-plate.

5. A follower-plate for presses comprising a rigid plate having a plurality of oppositely-inclined grooves in its upper surface which incline downwardly from the center; a sheet of reticulated material supported thereon adapted to receive the material to be compressed, a plurality of oppositely-inclined ribs on the under side of the follower-plate inclined downwardly and outwardly from the center and providing between the same closely-arranged grooves, a sheet of perforated metal or the like conforming closely with the under surface of the plate and forming the bottoms for said grooves when in use.

6. A press comprising a bed provided in its upper surface with grooves inclining downwardly and outwardly and oppositely from the center, a movable compression-plate above the same, integral ribs on the under side thereof inclining downwardly and outwardly on each side of the center and providing a plurality of grooves between the same, a follower-plate between said base and compression-plate and having an upper sur-

face and a lower surface corresponding with the compressing-surfaces of the compression-plate and bed-plate respectively and a sheet of reticulated material supported on said bed-plate and follower-plate and a perforated sheet engaging below the follower-plate and compression-plate and coinciding closely with the surface thereof.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses.

WILLIAM C. MARSHALL.

Witnesses:
C. W. HILLS,
A. C. ODELL.