

April 14, 1925.

E. F. HULBERT

1,533,115

LEATHER PRESS

Filed Sept. 24, 1921

3 Sheets-Sheet 1

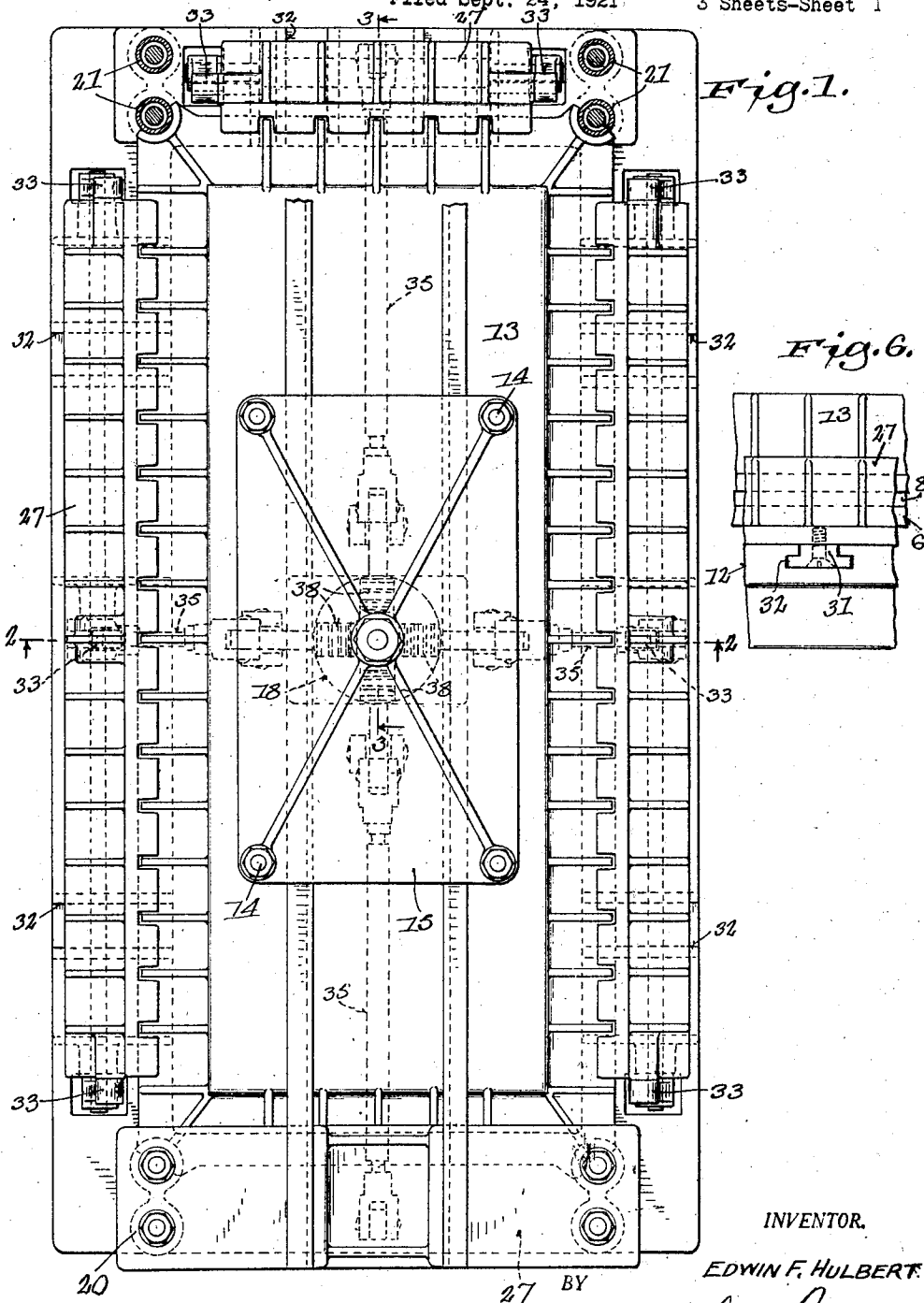


Fig. 1.

Fig. 6.

INVENTOR.

EDWIN F. HULBERT.

Louis L. L...
ATTORNEY.

April 14, 1925.

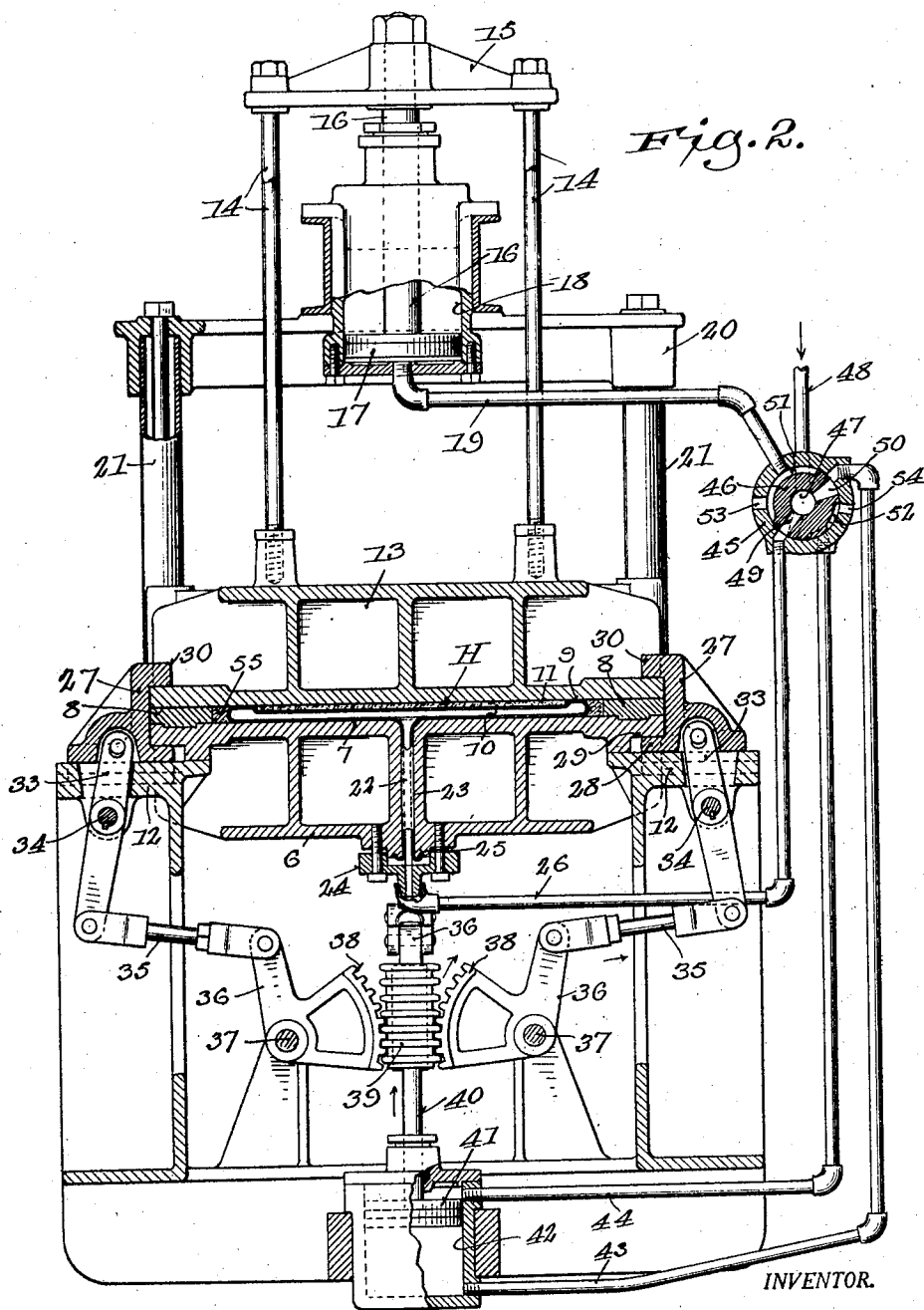
1,533,115

E. F. HULBERT

LEATHER PRESS

Filed Sept. 24, 1921

3 Sheets-Sheet 2



INVENTOR.

EDWIN F. HULBERT

BY

Louis Leach
ATTORNEY.

April 14, 1925.

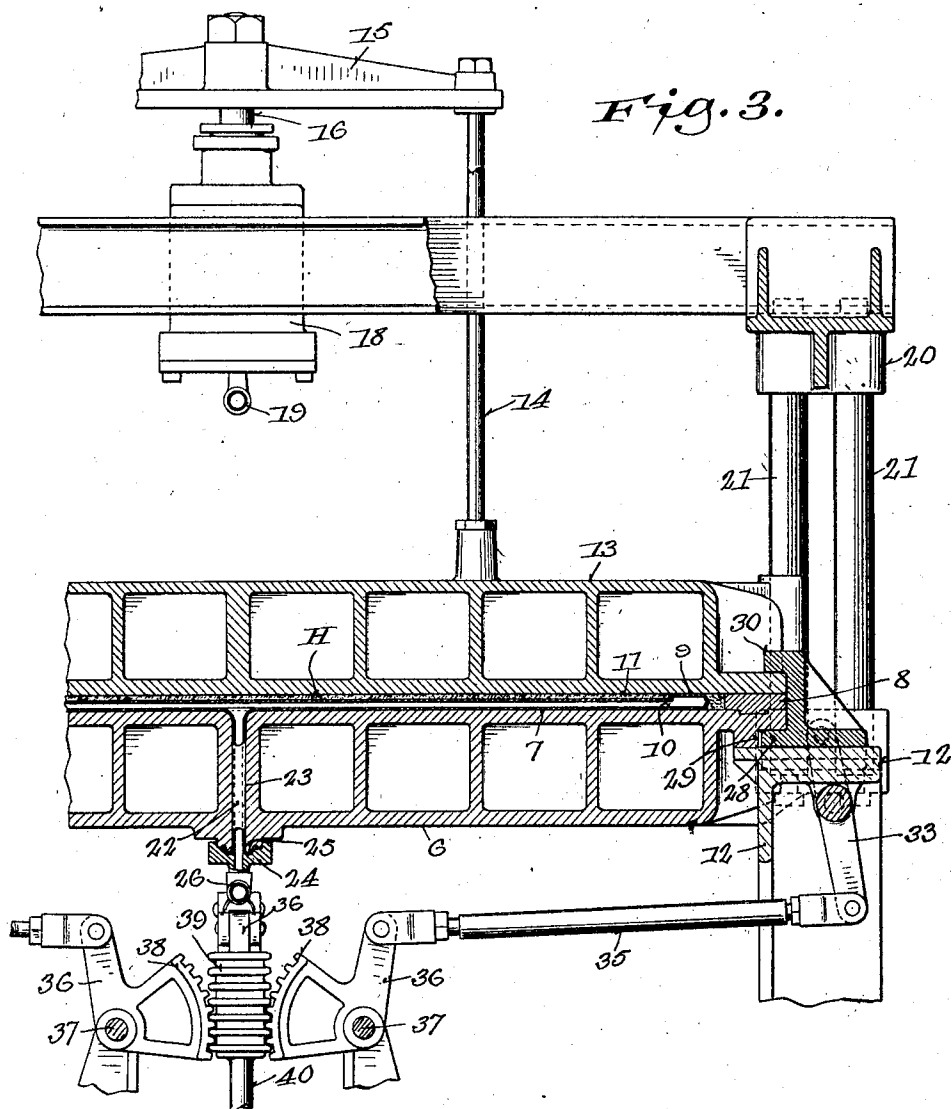
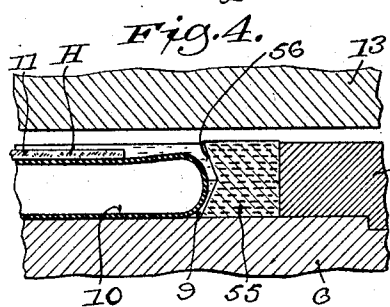
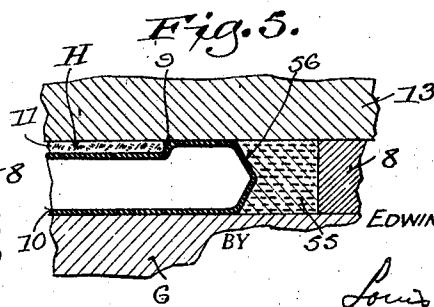
E. F. HULBERT

1,533,115

LEATHER PRESS

Filed Sept. 24, 1921

3 Sheets-Sheet 3



INVENTOR.

EDWIN F. HULBERT

BY *Louis Leach*
ATTORNEY.

UNITED STATES PATENT OFFICE.

EDWIN F. HULBERT, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO PFISTER & VOGEL LEATHER COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

LEATHER PRESS.

Application filed September 24, 1921. Serial No. 503,055.

To all whom it may concern:

Be it known that I, EDWIN F. HULBERT, a citizen of the United States, residing in the city of Milwaukee, county of Milwaukee, and State of Wisconsin, have invented a certain new and useful Improvement in Leather Presses, of which the following is a specification.

The invention relates to leather presses. Heretofore the pressing of leather into sheet form has been accomplished by pressing the hide between a plain surface and the pressing roller, a method which is not satisfactory because the inherent inequality in thickness or unevenness of the hide prevents the application of uniform pressure to all parts of the hide. While I am aware that the use of a "water" or inflated bag has been proposed for pressing materials into different shapes, the usual apparatus for accomplishing this result can not be successfully used for pressing hides, because of the liability of puncturing the bag between the joints of the press under the high pressure necessary for this purpose. The present invention is designed to provide an apparatus for compressing the hide uniformly with an elastic bag and provide suitable means for preventing rupturing of the bag under the high pressure employed.

It is also important, in order that a press embodying the invention may be effectually used, that positive and rapidly operated locking means and press-opening means be employed, otherwise the loss of time incident to closing and opening the press makes its use costly. The present invention is therefore designed to provide a simple and effective form of locking means for the press members, as well as suitable means for separating the press members from each other on the introduction or removal of the hide from the press.

The invention further consists in the several features hereinafter set forth and more particularly defined by claims at the conclusion hereof.

In the drawings: Fig. 1 is a plan view of a press embodying the invention; Fig. 2 is a section taken on the line 2—2 of Fig. 1; Fig. 3 is a detail sectional view taken on the line 3—3 of Fig. 1; Fig. 4 is an enlarged sectional view of parts shown in Fig. 1 with the press members open; Fig. 5 is a view

similar to Fig. 4, with the press members closed, and Fig. 6 is a detail view of the lock plate guide.

In the drawings the numeral 6 designates a press member here shown as having a flat surface 7 and provided with a marginal metal frame 8 to form a cavity 9 in which an elastic bag 10 and the hide 11 are disposed. This press member is mounted on a suitable supporting frame 12. A movable press member 13 is provided with a flat surface and cooperates with the first named press member to form an enclosed cavity within which the hide and bag are received, the hide engaging the flat surface of the press member 13. In order to separate the press members the press member 13 is secured by rods 14 to a head 15 carried by the rod 16 of a piston 17 working in a cylinder 18, fluid under pressure being introduced into the cylinder below the piston, for elevating the movable press member, through a pipe 19 adapted to be connected to a suitable source of supply. The cylinder 16 is mounted on a frame 20 carried by rods 21 connected to the main frame of the machine.

The water bag 10 has its filling tube 22 passed through a centrally disposed opening 23 in the lower press member 6 and securely clamped to a pipe coupling 24 by compressing the inner end of the tube between a curved annular rib 25 at the end of the opening 23 and the coupling 24. The coupling 24 is suitably connected to a pipe 26 supplying the bag with fluid under pressure.

To firmly clamp and lock the press members 6 and 13 together when the pressure is put upon the hide by the admission of pressure fluid to the bag, I provide a plurality of locking means, as clamping members 27. Each member 27 is slidably mounted upon the frame 12 and has a flanged portion 28 working between the top part of the frame 12 and a recess 29 in the press member 6, and a flanged portion 30 adapted to engage over a side edge of the press member 13. The members 27 are also provided with T-shaped lugs sliding in transversely extending guides in the frame 22, as shown in detail in Fig. 6. The clamping members on all sides of the machine are adapted to be moved simultaneously and for this purpose each member is pivotally connected to the upper end of a lever 33 pivotally mounted

intermediate its end upon a pin 34 carried by the frame, and having its lower end pivotally connected to one end of a link 35, the other end of said link being connected to a bell crank lever 36 pivotally supported upon a pin 37 mounted in the frame of the machine. One arm of the bell crank lever is provided with a segmental gear face 38 meshing with a rack 39, which rack is in the form of a cylindrical rack so that all bell cranks may engage therewith, as shown in Figs. 1 and 2. The rack 39 is connected to the rod 40 of a piston 41 working in a cylinder 42 which has fluid pressure supply pipes 43 and 44 communicating with its ends.

In order to control the supply of fluid pressure to the pipes 19, 26, 43 and 44, all of these pipes lead to a valve casing 45 having a rotary plug valve 46 disposed therein with a central bore 47 communicating with the source of compressed fluid supply through a pipe 48. Passages 49 and 50 in the valve are adapted to establish communication between the bore 47 and certain of the pipes while bypasses 51 and 52 are designed to establish communication between certain of the pipes and exhaust ports 53 and 54 in the casing 45.

With this construction, when the parts are in the position as shown in Fig. 2, a movement of the valve 46 in a counter-clockwise direction first releases the pressure in the bag by establishing communication between the pipe 26 and the exhaust ports 53 through the bypass 51, then establishes communication between the pipe 43 and port 54 through the bypass 52, thereby releasing the upward pressure upon the piston 41, then establishes communication between the port 49 and pipe 44 to conduct pressure fluid from the pipe 48 through the valve 46 to the space above the piston 41, which through the rack and link mechanism previously described causes a release of the clamps 27 from the press members and finally the port 50 comes into registration with the pipe 19 and fluid under pressure from the pipe 41 passes through the valve 46 and pipe 19 to the cylinder 18 and acts against the piston 17 raising the press member 13 to permit removal of the hide and the positioning of another hide within the press. It will thus be seen that the valve provides first a release of pressure in the bag, then a movement of the clamps to "off" position and then a raising of the press member 13. Under these conditions when the valve is moved in a clockwise direction the press member 13 moves down into pressing position by the establishment of communication between the pipe 19 and the port 53 through the bypass 51, then the pressure upon the upper face of the piston 41 is relieved through establishing communication between the space above this piston and the

port 54 by the bypass 52 registering with said port 54 and the pipe 44, then the port 50 comes into register with the pipe 43 introducing fluid under pressure to the space in the cylinder 42 below piston 41, thereby causing an upward movement of the piston 41 which through the rack and link mechanism moves the clamps 27 into clamping engagement with the press members and finally the port 49 registers with the pipe 26 and fluid pressure from the pipe 48 passes through the valve 46 to pipe 26 and into the bag 10. It will thus be noted that when the valve moves in a clockwise direction the press member 13 is first lowered to operative position, the clamps then move to locking position, and then the fluid under pressure is introduced into the bag.

With the construction above described there is always a danger, when pressure is introduced into the bag by its fluid contents, of rupturing the bag, due to the extrusion of the bag into the joint formed between the press members 6 and 13, particularly where a high pressure, such as 500 lbs. per square inch or over is used, as in the pressing of leather. To obviate this difficulty, I provide a lining or packing 55 of a vulcanized fabric of canvas or rubber, such as is used in automobile tires, which is put under pressure when the press members are clamped together, as indicated in Figs. 4 and 5 of the drawings; where Fig. 4 shows this lining prior to bringing the press members to their final position and Fig. 5 shows the parts in their final position. This lining is preferably provided with a V-grooved or concaved inner side 56 which comes into contact with the elastic bag 10 when pressure is put upon the bag.

It will be understood that one or more very small bleed holes may be provided in the member 13 to allow entrapped air or moisture to escape from the press.

When the hide or piece of leather to be pressed is placed upon the top of the bag and the lining 55 in the position within the cavity, as shown in Fig. 4, and the press members are brought together and fluid under pressure is introduced into the bag, the expanding bag fills all the available space in the cavity and a uniform pressure is transmitted to all parts of the hide, at the same time the lining or bag 55 effectually sealing the joint between the press members, as shown in Fig. 5, and preventing the extrusion of any part of the bag into this joint, and by reason of the groove 56 the packing will be forced into this joint if the press members are not in perfect contact with each other, the packing or lining 56 being of a compressible material so that there is no liability of cutting the bag 10.

I desire it to be understood that this invention is not to be limited to any specific

form or arrangement of parts except in so far as such limitations are specified in the claims.

What I claim as my invention is:

- 5 1. In a leather press, the combination of a pair of separable press members cooperating to form a cavity, means for clamping said press members together, an elastic pressing bag disposed in said cavity to act upon
10 the leather therein, and a compressible packing lining the sides of the cavity to prevent extrusion of the bag through the joint between the press members when the bag is expanded by fluid pressure.
- 15 2. In a leather press, the combination of a flat surfaced member, a recessed member forming a cavity therewith, means for clamping said members together, an elastic pressing bag disposed in said cavity to act upon
20 the leather placed therein, and a compressible fabric lining surrounding the sides of the cavity and having recessed inner sides engageable with the bag and expanded thereby to prevent extrusion of the bag from the
25 confines of the cavity.
3. In a leather press, the combination of a pair of separable members cooperating to form a cavity, one of said members engaging the material to be pressed, an elastic
30 pressing bag in the cavity interposed between the material and the other member, and a compressible lining for the cavity presenting a V-shaped inner side to the bag.
- 35 4. In a leather press, the combination of a pair of separable press members cooperating to form a cavity, one of said members engaging the material to be pressed, an elastic bag in the cavity interposed between the material and the other member, and a
40 lining of vulcanized canvas and rubber fabric for the sides of the cavity and packing the joint between said members when the bag is subjected to fluid pressure.
- 45 5. In a leather press, the combination of a pair of separable press members cooperating to form a cavity, one of said members engaging the material to be pressed, an elastic pressing bag in the cavity between the material and the other member, and a
50 compressible lining for the joint between said members to prevent extrusion of the bag through the joint when the bag is expanded by fluid pressure, a plurality of locking means adapted to lock the separable
55 press members in the operative position, and means for simultaneously operating said locking means.
6. In a leather press, the combination of

a pair of separable press members cooperating to form a cavity, one of said members
60 engaging the material to be pressed, an elastic pressing bag in the cavity interposed between the material and the other member, a lining for the cavity presenting a V-shaped inner side to the bag, and a plurality of
65 simultaneously operable locking means adapted to lock the separable press members in the operative position.

7. In a leather press, the combination of a pair of separable press members cooperating to form a cavity, one of said members
70 engaging the material to be pressed, an elastic pressing bag in the cavity between the material and the other member, means for lining the joint between said members to prevent extrusion of the bag through the
75 joint when the bag is expanded by fluid pressure, fluid pressure-operated means for separating the press members, means for locking the press members together, and
80 fluid pressure-operated means for operating said locking means.

8. In a leather press, the combination of a pair of separable press members cooperating to form a cavity, one of said members
85 engaging the material to be pressed, an elastic pressing bag in the cavity between the material and the other member, means for lining the joint between said members to prevent extrusion of the bag through the
90 joint when the bag is expanded by fluid pressure, fluid pressure-operated means for separating the press members, means for locking the press members together, fluid pressure-operated means for operating said
95 locking means, and a single control for both fluid pressure-operated means.

9. In a leather press, the combination of a pair of separable press members cooperating to form a cavity, one of said members
100 engaging the material to be pressed, an elastic pressing bag in the cavity between the material and the other member, means for lining the joint between said members to prevent extrusion of the bag through the joint when
105 the bag is expanded by fluid pressure, a source of fluid pressure, fluid pressure-operating means for separating the press members, means for locking the press members together, fluid pressure-operated means
110 for operating said locking means, and a valve for controlling the supply of fluid pressure to both of said fluid pressure-operated means and said bag.

EDWIN F. HULBERT.