(No Model.) 2 Sheets—Sheet 1.

G. B. BOOMER.

PRESS.

No. 301,795. Patented July 8, 1884.

Fig. 1.

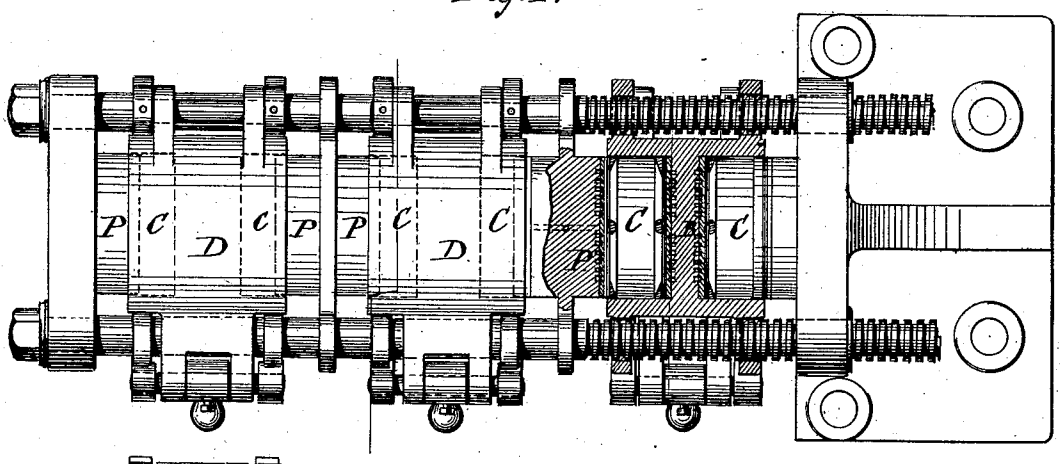
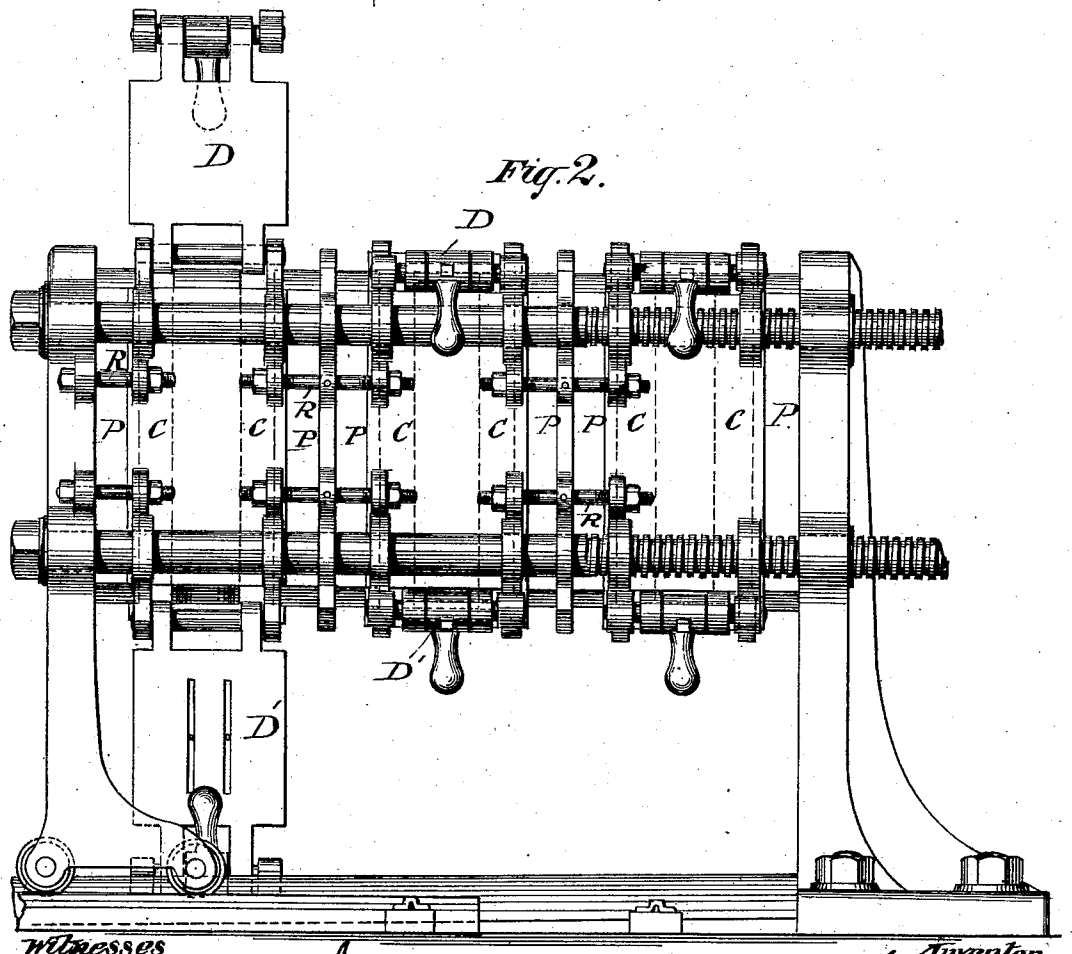


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

G. B. BOOMER.

PRESS.

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Fig. 3.

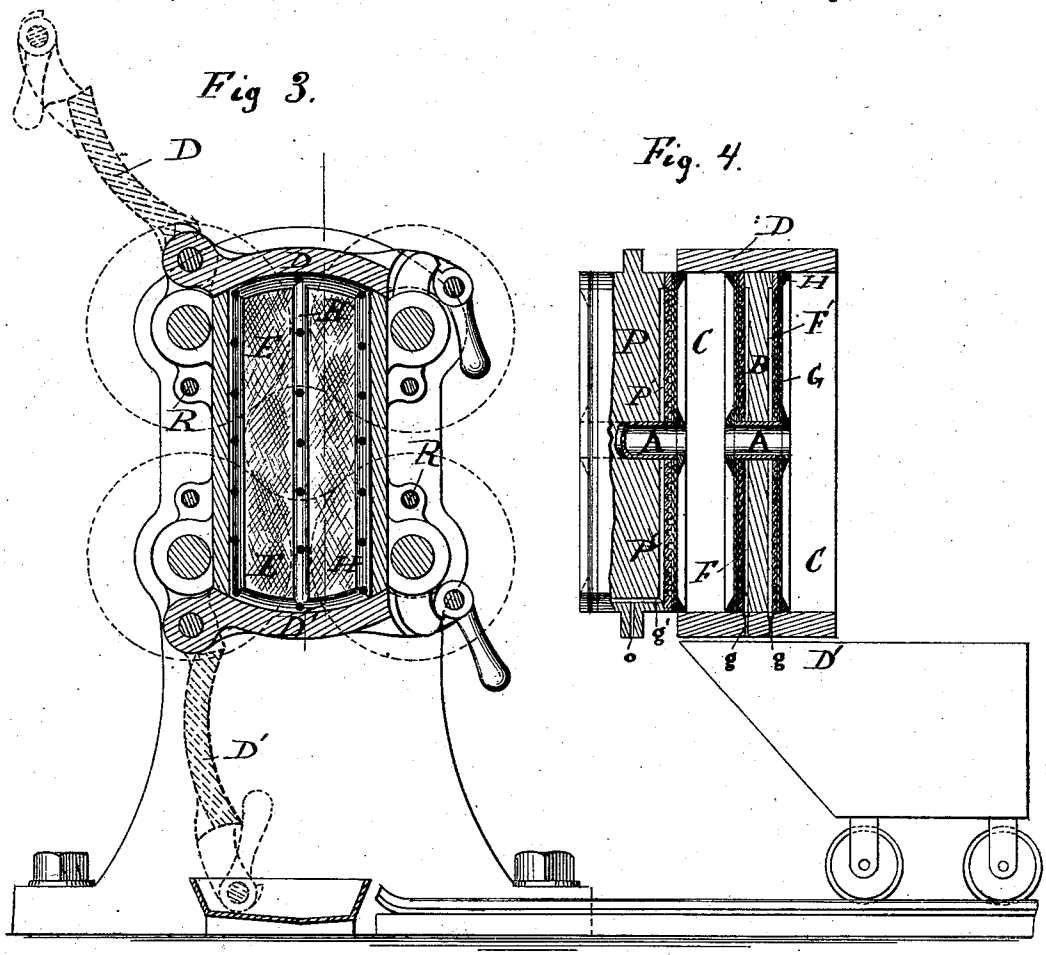


Fig. 4.

Fig. 5.

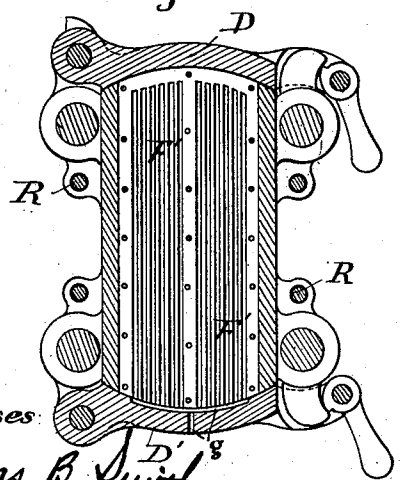


Fig. 6.

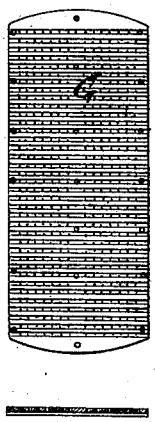
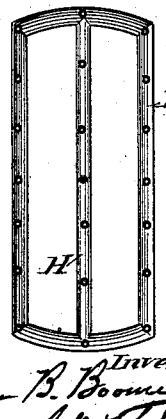


Fig. 7.



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UNITED STATES PATENT OFFICE.

GEORGE B. BOOMER, OF MOUNT PLEASANT, NEW YORK.

PRESS.

SPECIFICATION forming part of Letters Patent No. 301,795, dated July 8, 1884.

Application filed May 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, GEORGE B. BOOMER, residing at Tarrytown Heights, in the town of Mount Pleasant, county of Westchester, State of New York, have invented a new and useful Improvement in Presses, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making a part of this specification.

My invention relates to improvements in the boxes used on telescopic presses for extracting liquids from solids, and is designed to prevent all canting or tilting of the boxes when the press is in operation, and to effect a greater economy of space in the arrangement of the boxes and their plungers on the press, and to reduce the cost of construction and increase the strength of the boxes themselves.

In the drawings illustrating my invention, in which like letters indicate like parts, Figure 1 is a plan view of a horizontal press containing my improved boxes. Fig. 2 is a side elevation of the press shown in Fig. 1. Fig. 3 is a vertical sectional view of the press through the box, showing the frame for holding the cloth. Fig. 4 is a horizontal sectional view of the box and the plunger on one side of the same, and showing the arrangement of the box when used as a filter-press. Fig. 5 is a sectional view of the inner face of the box. Fig. 6 is a view of the metallic plate placed over the inner face. Fig. 7 is a view of the frame for holding the filter-cloth in position.

My invention consists in a novel method of constructing the boxes by which two boxes are formed together or in one, whereby the cost of construction is lessened, and at the same time greater strength in the box is secured, and a longer or double bearing on the rods which support the box is obtained, by which all canting or tilting of the box is effectually prevented; and in the press having doors at the top and bottom of the boxes one door is made to close two boxes.

The boxes constructed according to my improved method are formed of two single boxes arranged back to back, with the front or open ends opening in opposite directions, and having continuous sides. My improved box is thus a double box, including or having two separate cavities or spaces, C C, divided by a single partition or web, B, forming the back of each cavity and open at each end, as is shown in the drawings, and in particular in section in Fig. 4. The sides may be constructed in any suitable manner, and the box may be any shape desired to adapt it to different styles of presses. As two boxes are thus brought together to form the double box, a saving in space is effected, as but one back is necessary for the two single boxes or cavities; and the cost of construction is much less in the case or the double box than where the single boxes are made separately. The plungers P, designed to pass into these double boxes, are also made double, or with opposite faces, P', to enter the open boxes or cavities on either side. The boxes and plungers thus constructed are arranged on the rods of the press, along which they slide in alternate succession, a double box and a double plunger, as shown in Figs. 1 and 2, except at the ends of the press, where a single plunger is secured.

With the usual form of boxes now used on telescopic presses, much difficulty is experienced in keeping the boxes and plungers true and even on the rods on which they slide, so that the face of the plunger will always be in a plane parallel with the face of the box which it enters. As the press is run together, and the plungers slide into their respective boxes, and thereby cause the boxes to move on the rods, the movement of one side of a box, owing to greater resistance on one of the rods, or for some other cause, may be retarded, and the box, on account of the short bearing on the rods, rendered necessary by its construction, is at once canted or tilted to one side, so that its face is no longer parallel with the face of the plunger. As the plunger is forced into the box when in this position, it can no longer slide into it freely, but enters it at an angle, and is apt to force out the sides of the box or otherwise injure the same; or it may happen that the plunger is tilted or canted on the rods for some reason, and entering the box in this position causes the latter to tilt, which results in the injury of the box, as before. By my improved box I overcome this difficulty, and hold the box so steadily on the rods that it cannot tilt from any cause whatever. By my form of double box, in which there are long continuous sides extending over two cavities, I secure a longer bearing of the box on the rods. This

bearing may extend the full width of the side of the box; or there may be two bearings, as is the case in the press shown in Fig. 2. On account of this long or double bearing, the box is made to slide steadily and evenly on the rods, and cannot be tilted or canted in any way. Even if the plunger is tilted on entering the box thus held firmly, it cannot tilt the latter, but is caused to right itself, so it can slide freely into the box or cavity. In my improved double box, therefore, all danger of bursting the box on account of the plunger not sliding evenly into the cavity is avoided; and as the box cannot tilt in any manner, it slides more freely and with less resistance on the rods.

The double box thus constructed may be used on all forms of telescopic presses, whether horizontal or vertical, and whatever the power to run the press may be, and can be altered and changed to adapt it to any material which it is desired to press.

The drawings show the adaptation of the box to a horizontal press when the plunger is held continually within the cavity of the box, and prevented from wholly withdrawing therefrom by the bolts R on the sides of the plunger and box, and communication is had with the interior for filling and discharging by means of doors D D′ at the top and bottom. These doors are made wide enough to extend the entire width of the double box, and thus the one door covers two cavities. In the lower door, D′, is provided a channel and holes or outlets *g*, through which the liquid escapes from the boxes, while the liquid from the face of the double plunger is caused to escape by means of grooves or conduits *g′* through the end of the plunger *o*, as shown in Fig. 4.

In this press the inner face of each cavity is formed with a number of narrow vertical grooves, as shown in Fig. 5, extending from near the upper edge through the lower edge of the same. Similar vertical grooves are provided on the face of the plunger; but in the latter case, instead of extending across the lower edge, they terminate in a ridge or channel on the bottom of the face itself, which communicates with the grooves *g′*, mentioned above.

A metallic plate, G, Fig. 6, having horizontal grooves on one side, and pierced with a number of small holes opening into the grooves, is placed next to the face of the cavity, and a similar plate next to the face of the plunger, so that the holes correspond with the vertical grooves on the inner face and on the plunger, and on the grooved side of these plates is secured the filter-cloth E by means of the frame H, as shown more particularly in Fig. 3. This frame H not only holds the cloth in place and prevents its being pulled off the plate when the cake is detached and dropped out of the box, but, by its beveled edges, forces the material, when pressed, away from the sides of the cavity. As will be seen from Fig. 4, the face of the plunger is introduced just within the open edge of the cavity, so as to inclose the space within, and to confine the material or charge in the cavity. The open ends of the cavities are thus perpetually closed by the plungers, and communication is had with the interior only at the top and bottom by means of the doors. Through the top door, D, both cavities in the box are filled with the material to be pressed. The door is then closed and securely fastened, and the press run together. As the material is reduced in bulk, the plungers slide into the boxes, and the boxes slide on the rods or ways of the press; but by reason of the long or double bearings of each box on the rods neither the boxes nor plungers can be tilted or canted out of their true line, but both will be at all times maintained in their proper relative positions—their faces parallel to each other, and their sides in the same straight line. After all the liquid is extracted, the press having been run back or extended, the upper and lower doors, D D′, are opened, and the dry cakes dropped out of the box, when the cavities are ready to be refilled, and the operation of pressing repeated.

By the use of my double box I am enabled to make one door cover two cavities or boxes, thereby simplifying the construction and reducing the cost of the box, and giving the doors greater strength, and at the same time making the press more convenient to handle.

My improved form of box may be used on filter-presses when the material from which the liquid is to be extracted is of so soft a nature as to be pumped into the press. In this form of construction the hole or passage through which the material is introduced into the cavities is made through the double plunger and through the central web or division between the cavities, as shown at A, Fig. 4.

What is claimed as new is—

1. In a press for extracting liquids from solid or partially-solid matter, the double box C C, constructed substantially as described, and provided with plungers P P′, entering it from opposite directions, substantially as and for the purposes set forth.

2. In combination with the double boxes C C, the doors D D′, so constructed and arranged that each door covers both cavities of the box, substantially as and for the purposes set forth.

3. In combination with the double boxes C C and double plungers P P′, the long or double guides, substantially as described, for keeping the boxes or plungers in line, for the purposes set forth.

4. In a press for extracting liquids from semi-fluid matter, the double boxes C C and double plungers P P′, constructed substantially as described, provided with the central passage, A, as and for the purposes set forth.

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