(No Model.)

L. L. BAXLEY.

Filtering Press.

No. 230,103. Patented July 20, 1880.

Fig 1.

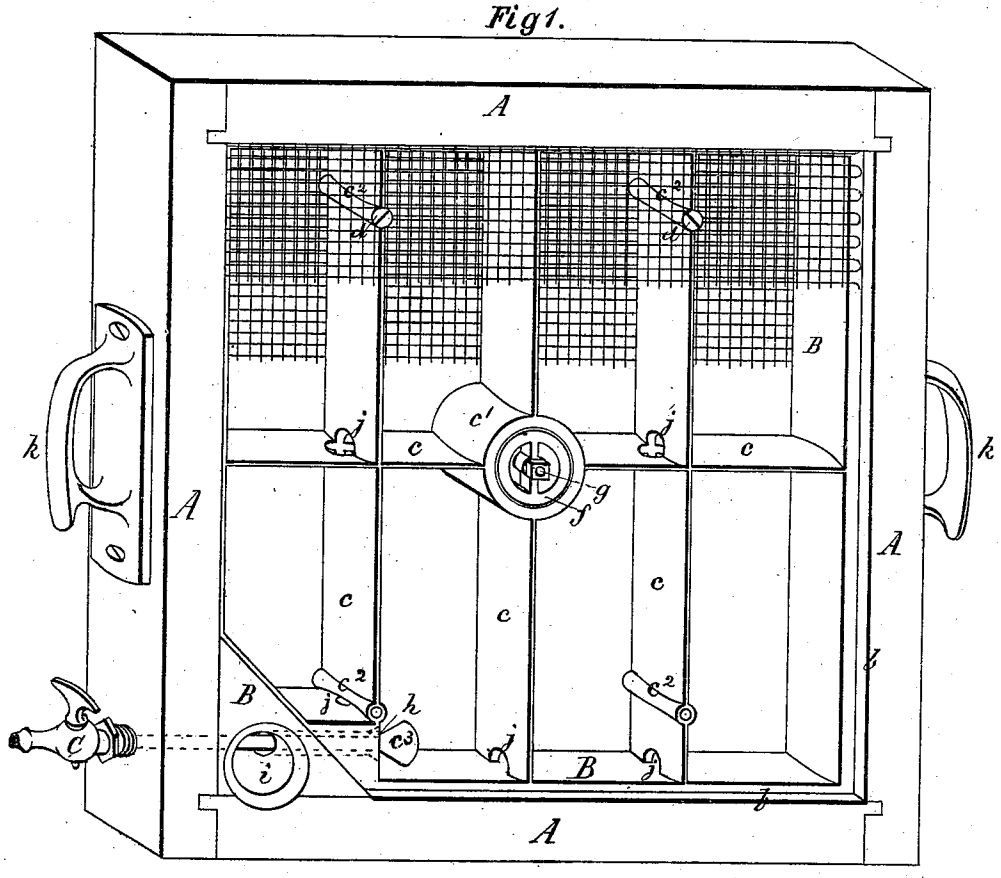


Fig 2.

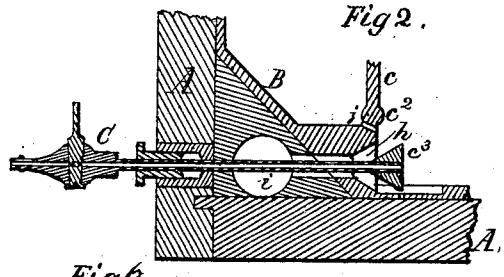


Fig 3.

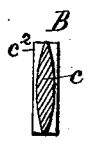


Fig 4.

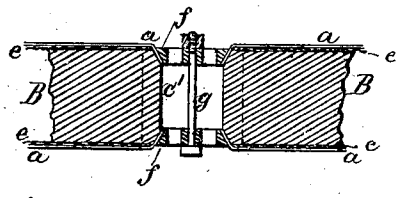


Fig 6

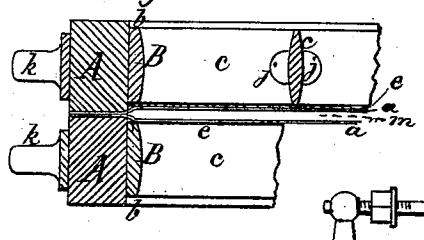
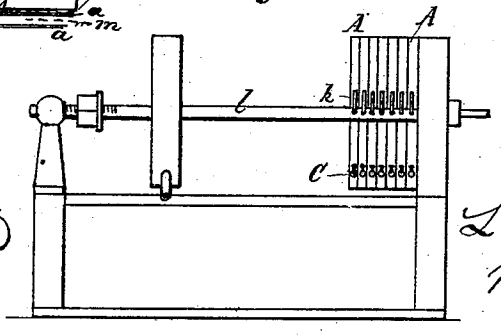


Fig 5.



Witnesses:
J. Russell Bass
Y. P. Th. Lang.

Inventor:
Levi L. Baxley
by
Munn & Fennick Attorneys

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LEVI L. BAXLEY, OF CHICAGO, ILLINOIS, ASSIGNOR OF A PART OF HIS RIGHT TO EUGENE A. SPINK, JOHN F. T. HOLBECK, AND ERNEST LEHMPUHL, OF SAME PLACE.

FILTERING-PRESS.

SPECIFICATION forming part of Letters Patent No. 230,103, dated July 20, 1880.

Application filed April 30, 1880. (No model.)

To all whom it may concern:

Be it known that I, LEVI L. BAXLEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Filtering-Presses, of which the following is a specification.

My invention relates to an improvement in that description of filtering-press which is formed of a series of separate screening and pressing chambers placed vertically side by side each other and clamped firmly against one another between two heads by means of side rods which form supports or rests for the chambers, the said chambers communicating with one another by central hubs or eyes, through which the substances to be filtered and pressed are passed under pressure, and being provided with discharging-passages in line with one another; and the objects of my improvements are, first, to provide an open metal frame having strong tapering cross-bars for keeping the wire netting or cloth a proper distance apart, supporting said cloth, and at the same time offering but slight obstruction to the passage of the filtered liquid through the frame and cloth; second, to provide a wood water-tight frame or the equivalent thereof, in combination with the open metal frame, whereby, while the wire-cloth is supported by the metal frame below the surface of the wood frame, the cotton or other fibrous filtering-cloths can be fastened to the wood frame, and in this position will not be subjected to the straining and cutting action due to the placing of the filtering-cloths between iron surfaces, and, further, the fibrous cloths can be permanently fastened to the wood frame, and, thus secured, can be washed off by hose-water without any liability of falling down and becoming disarranged; third, to provide a new and better method of fastening the fibrous cloths at the inlets or hubs of the chambers, the same consisting of two taper packing-rings drawn together by a bolt or screw after the cloths are placed in position, thus saving time when it is necessary to change the cloths, and also avoiding the inconvenience of wrinkles in the cloths at the points where they are confined; and, fourth, to provide a tube having a cock and a rubber or other proper valve, in combination with the discharge-passage of each of the chambers, whereby any one of the chambers may be shut off, and also whereby the cock, while answering as a means for testing the character of the filtered liquid, the valve, and its tube can be moved and made to close the entrance of any chamber when desirable—as, for instance, when the cloth has become broken and the liquid does not run clear, the closing off of any one or more chambers not interfering with the operation of the others. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of one of my improved filtering-frames, the fibrous filtering-cloths being removed and a portion of the wire nettings or wire cloths being broken away to show more plainly the metal and wood frames. Fig. 2 is a vertical broken section of the frame in the line of the discharge-hole, test-cock, and shut-off valve. Fig. 3 is a cross-section of one of the cross-bars of the open metal frame. Fig. 4 is a horizontal broken section in the line of the entrance-passage of the frame. Fig. 5 is a side view, illustrating the ordinary mode of setting up the frames in a filtering-press; and Fig. 6, a broken horizontal section of two frames.

A is the wood frame, made water-tight at its corners or joints. The material of which this frame is made may be other than wood, provided it will permit the entrance of tacks or fastenings for confining the fibrous cloths *a* to its front and rear surfaces.

B is the metal frame, fitted tightly within the wood frame. This frame is of less thickness than the frame A, and owing to this a shoulder, *b*, is formed by the two frames at front and rear, as shown.

Across the frame B, both vertically and horizontally, a number of strong thin bars, *c*, of lenticular shape, are extended, being cast with the side pieces of the frame. The central bars of the series unite in a central hollow

portion, c', which constitutes an entrance hub or eye. The front and rear edges of the bars are brought to nearly a knife-edge, while the intermediate portions of the bars are thick and bulging. The inner surfaces of the side pieces of this frame are also of convex form, being thinned off toward the front and rear.

At proper points the bars are formed with rounded thickened portions c^2, and these portions are bored out and screw-tapped to receive screws d, which confine wire nettings or wire cloths e upon the front and rear sides of the metal frame, as shown. The wire cloths fit against the cross-bars and side pieces of the frame B, and the confining-screws pass through it into the thickened portions of the bars, as shown. When thus applied the wire cloths abut with their edges against or close to the shoulder b, and they stand some distance from the front and rear surfaces of the wood frame A.

The hub of the frame B is bored tapering at each of its ends, the taper being inward, and in these taper portions conical disks f, with openings through them, are fitted and connected by a screw-rod, g, having a head at one end and a nut at the other, as shown. By means of the disks the fibrous cloths a are clamped within the hub and a water-tight joint is formed at this point without wrinkling the cloths a.

When it is desired to remove the cloths a it can be readily effected by loosening the clamping-disks, which is accomplished by turning back the nut of the rod g. The cloths a being tacked to the wood frame A and fastened to the metal frame, as described, and also supported by the wire cloths and the cross-bars of the frame, they cannot sag down when the press is in operation, and they will retain their position when the chambers are being washed out by hose-water.

At one corner of the chamber formed by the frames A and B and the fibrous and wire cloths a passage, h, is provided, and this passage intersects a horizontal passage, i, cut through the frame B. The passage h extends through the wood and metal frames, and into it a pipe of a try or test cock, C, is fitted.

The test-cock C has a conical rubber valve, c^3, on its tube, and by means of this valve the passage h is closed. The test-cock slides with its tube, and by moving the cock inward the valve can be opened, as shown in Fig. 2.

When the valve is open the liquid, while flowing through the respective chambers of the filtering-press, can be tested by turning the plug of the cock, and if, on testing, it is found that the liquid is not perfectly filtered, and it is discovered that the fibrous cloths of a chamber are broken, the valve can be closed and the flow of liquid from the imperfectly-operating chamber stopped. The cutting off of one chamber from the discharge-passage of the press does not affect the operation of the other chambers.

In order to have the circulation of the liquid between the wire cloths as perfect as possible, a series of holes, j, are formed in the cross-bars of the metal frame.

On opposite sides of the wood frame handles k are provided, and these are formed on their under side with a curvature corresponding to the rods l of the press, in order that the chambers may rest upon the rods when they are clamped between the head-plates of the press by means of nuts on said rods.

In Fig. 6 the space for containing the solid matters to be filtered is indicated by the letter m, and a similar space is formed between every pair of the filtering-chambers of the press.

The manner in which the respective chambers rest by their handles upon the clamping-rods l of the press will be seen in the diagram, Fig. 5, wherein a series of chambers placed side by side one another against a stationary head, and a movable clamping-head and nut, are shown.

The operation of a press provided with my improved chambers is very similar to ordinary filtering-presses, the fluids or moist substances being forced by a pump or by hydrostatic pressure through the central hubs of the chambers and into the spaces m between the fibrous cloths, the solid matters are trapped in the said spaces, while the liquids are forced through the cloths and screens and discharged through the passages h i j into proper receivers.

When the operation ceases the chambers are unclamped, separated, and cleared of trapped matters and washed with hose-water, and again clamped and adjusted for a continuation of the filtering operation.

The bars c are made of lenticular form, in order to have the requisite strength and still not occupy a large portion of the screening and filtering cloths at the points where these cloths bear upon them.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The filtering-chamber of a filter-press, comprising in its construction an open metal frame having cross-bars which taper from their middle portion toward each of their edges, substantially as and for the purpose described.

2. The filtering-chamber of a filter-press, comprising in its construction an open metal frame, B, and a wood frame, A, substantially as and for the purpose described.

3. The filtering-chamber of a filter-press, comprising in its construction a central hub whose bore is tapered from the middle portion to the ends of the hub, and two tapering disks, a screw-clamp rod, and a nut, substantially as and for the purpose described.

4. The filtering-chamber of a filter-press, comprising in its construction the passages h and i j and the test-cock with valve on its tube, substantially as and for the purpose described.

LEVI L. BAXLEY.

Witnesses:
JOHN KETTEL,
WM. GLADER.