

E. HATSCHEK.
FILTER PRESS.

APPLICATION FILED MAR. 18, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

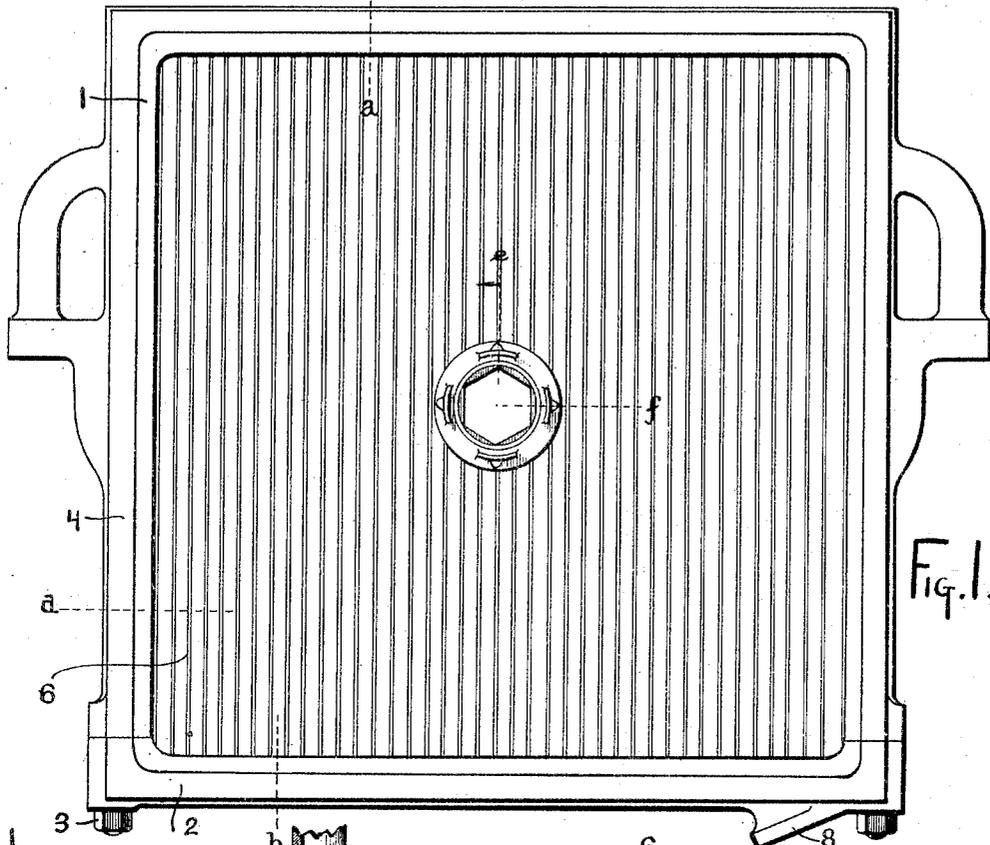


Fig. 1.

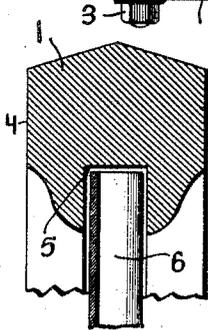


Fig. 2.

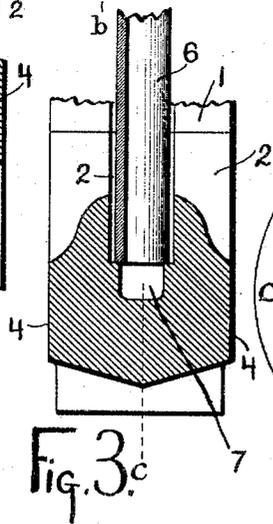


Fig. 3.
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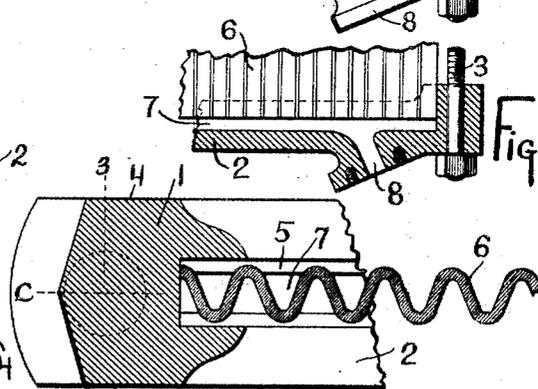


Fig. 4.

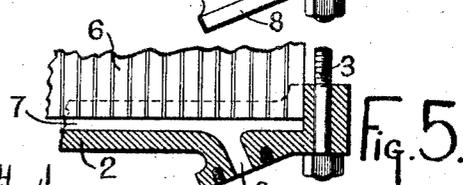


Fig. 5.

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2 SHEETS—SHEET 2.

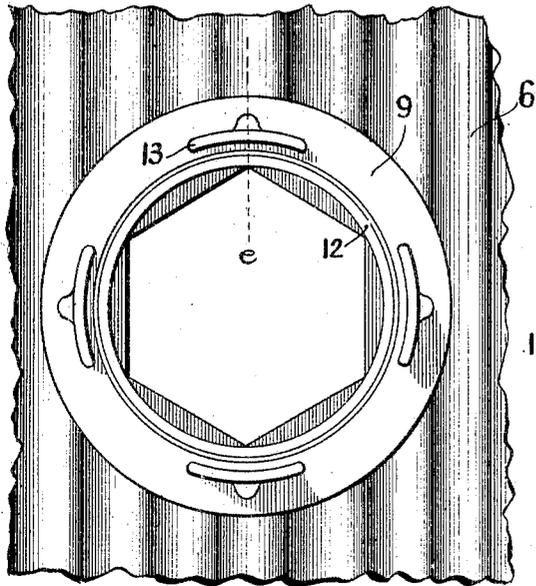


Fig. 6.

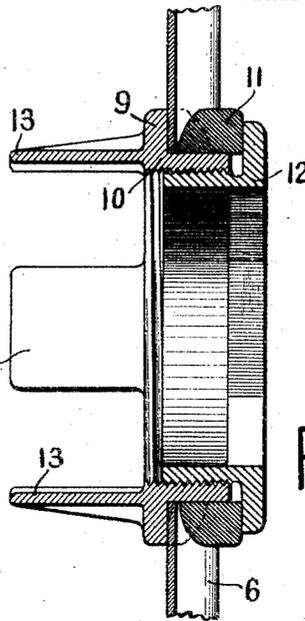


Fig. 7.

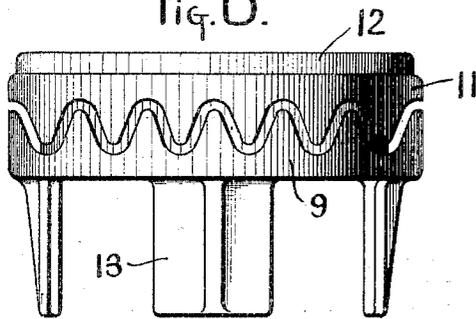


Fig. 8.

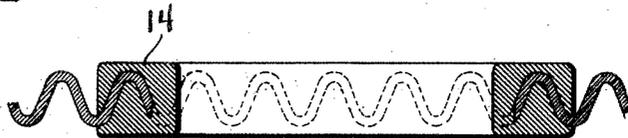


Fig. 9.

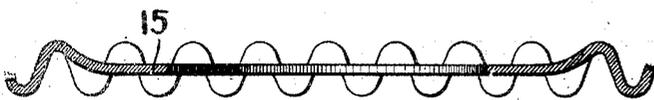


Fig. 10.

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UNITED STATES PATENT OFFICE.

EMIL HATSCHKEK, OF NEW YORK, N. Y., ASSIGNOR TO NILES-BEMENT-POND COMPANY, OF JERSEY CITY, NEW JERSEY.

FILTER-PRESS.

SPECIFICATION forming part of Letters Patent No. 776,024, dated November 29, 1904.

Application filed March 18, 1904. Serial No. 198,761. (No model.)

To all whom it may concern:

Be it known that I, EMIL HATSCHKEK, a citizen of Great Britain, residing at New York, county and State of New York, (post-office address 136 and 138 Liberty street, New York,) have invented certain new and useful Improvements in Filter-Presses, of which the following is a specification.

This invention, pertaining to filter-presses and relating particularly to the construction and provision of the plates, will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a face view of a filter-press plate exemplifying the present invention; Fig. 2, a vertical transverse section of a portion of the plate in the plane of line *a*; Fig. 3, a similar section in the plane of line *b*; Fig. 4, a horizontal section in the plane of line *d*; Fig. 5, a vertical section in the plane of line *c*; Fig. 6, a face view of one of the bushings, together with a portion of the plate; Fig. 7, a vertical section of the same in the plane of line *e*; Fig. 8, a plan of the bushing; and Figs. 9 and 10, horizontal sections at the passage through the plate, illustrating modifications adapting the press to various uses.

In the drawings, 1 indicates the margin-frame of the plate, this frame comprehending three of the marginal members of the plate and being preferably formed as an integral piece of casting; 2, the bottom member of the margin-frame; 3, bolts uniting the bottom member to the remainder of the margin-frame to form a complete rigid rectangular frame; 4, the side faces of the margin-frame to clamp the cloths as usual either between contiguous plates or between the plates and the usual alternating frames; 5, an inwardly-open groove extending around the inner surface of the margin-frame, including the attached lower member thereof; 6, a panel of corrugated sheet metal having its edges seated in the groove 5, the depth of the groove in the side members of the margin-frame being preferably such as to receive at least one complete corrugation of the panel; 7, a downward extension of that portion of groove 5

which is in the attached bottom member 2 of the margin-frame, this extension preferably forming a groove narrower than the groove 5, so as to form upwardly-presenting shoulders on which the lower edge of the panel may rest; 8, the drainage-outlet from the margin-frame, the same communicating with the groove 7 and arranged to carry off the expressed liquid as usual.

The member 2 of the margin-frame is made separable from the balance of the margin-frame in order that the panel may be inserted. The construction permits of extreme lightness along with superior depth of vertical draining-channels formed by the valleys of the corrugations of the panel. There need be no liquid-tight joint between the panel and the margin-frame, and even looseness unto shakiness is not seriously objectionable. This construction of plate may be employed with cloths alone or with perforated plates disposed between the cloths and the faces of the panel.

The panels are to be provided with the usual passage through them for placing the filtering-cells in communication, and a special bushing has been devised for economical use with the plate, this bushing being shown in Figs. 6, 7, and 8, in which 9 indicates a flange having a corrugated rear face fitting the corrugations of the panel around the passage-way through the panel; 10, an interiorly-threaded nose projecting from this flange through the passage in the plate; 11, a washer encircling this nose on the side of the panel opposite the flange 9 and having its inner face corrugated to fit the corrugations of the panel; 12, an exteriorly-threaded bushing screwing into the nose 10 and having a flange engaging the outer face of washer 11 and having the usual non-circular opening adapted for a plug-wrench, and 13 prongs projecting outwardly from one of the flanges and adapted to extend across the filtering-cell and engage the face of the bushing of the next plate, the illustration showing these prongs as projecting from the flange 9, which is the non-rotary one. With this construction of bushing, considered as a whole, the cloths may be clamped directly

against the corrugated faces of the panel around the passage therethrough. In the use of filter-presses the panels between the cells are generally in equilibrium of pressure; but cases arise of excess pressure upon one side of the panels, tending to dish them. Prongs 13 form struts between the panels and prevent deflection of one plate relative to another. By reason of the non-rotary flange 9 engaging the corrugations of the panel it is self-held against rotation while the rotary member of the bushing is being screwed up. When perforated sheets of metal are employed between the panels and the cloths, they will be applied in the usual manner without modification by reason of the present construction.

The bushing which has been described is of course designed for use with separate cloths. Where the cloths are united by a neck at the passage through the panel and used without bushings, the corrugated character of the margin of the passage through the panel may prove injurious to the necks of the cloths, and in such case the panels may be reinforced, as illustrated in Fig. 9, in which 14 is a ring of metal permanently cast on the panel around the passage therethrough, which ring may be formed of low-fusion metal—Babbitt metal, for instance. This construction provides a smooth margin for the passage through the panel not injurious to cloths when neckcloths are employed and at the same time permitting of the employment of the bushings usually employed in filter-presses, with or without the prongs 13, heretofore described, which prongs, by the way, are applicable to any ordinary forms of bushings. When the ordinary forms of bushings are employed adapted to clamp the cloths against flat surfaces, such flat surfaces upon the corrugated panel instead of being secured by means of reinforcement 14, which has been described, may be secured by flattening the panel and suppressing the corrugations around the margin of the passage through the panel, as indicated in Fig. 10, where 15 is the flattened annular portion of the panel around the passage against which the cloth is to be clamped. This latter construction may also be employed with necked cloths, but is obviously more apt to injure them than the reinforced construction shown in Fig. 9.

I claim as my invention—

1. In a filter-press plate, the combination, substantially as set forth, of an incomplete frame comprising three sides of a rectangle, said frame presenting cloth-clamping surfaces on its opposite faces and having an inner

groove, a frame member separably bolted to and completing the otherwise incomplete frame and having upon its inner edge a groove in continuation of the groove in the incomplete frame, said completed frame being provided with an outlet through its edge leading from the lower horizontal member of said groove, and a panel of corrugated sheet metal with its edges engaging the groove of the frame and having its corrugations disposed vertically with their lower extremities resting in the lower horizontal member of said groove above the floor thereof.

2. In a bushing for use with filter-plates corrugated around the passage through the plate, the combination, substantially as set forth, of a flange having an inner corrugated surface adapted to intermember with the corrugations of one face of the plate, a member having a corrugated inner face adapted to intermember with the corrugations on the opposite face of the plate, and means for drawing said corrugated faces toward each other.

3. In a bushing for use with filter-plates corrugated around the passage through the plate, the combination, substantially as set forth, of a flange having a corrugated inner face adapted to intermember with the corrugations on one side of the plate, a ring having its inner face corrugated to intermember with the corrugations on the opposite side of the face, a flange engaging the outer surface of the ring, and a threaded connection between the two flanges to serve in drawing the two corrugated faces toward each other.

4. In a filter-press, the combination, substantially as set forth, of a corrugated plate having a passage through it for placing contiguous filtering-cells in communication with each other, a corrugated flange, fitting and surrounding said passage, and struts disposed around said passage and projecting across the filtering-cell formed between two plates to serve in transmitting deflecting strains from plate to plate.

5. In a bushing for filter-press plates, the combination, substantially as set forth, of a pair of corrugated cloth-clamping members, threaded means for drawing said members toward each other, and prongs projecting from the outer face of one of said members and adapted to extend across the filtering-cell and abut at the succeeding plate.

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Witnesses:

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