

No. 643,900.

Patented Feb. 20, 1900.

G. HOTTINGER.  
FILTER PRESS.

(Application filed June 10, 1899.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 2.

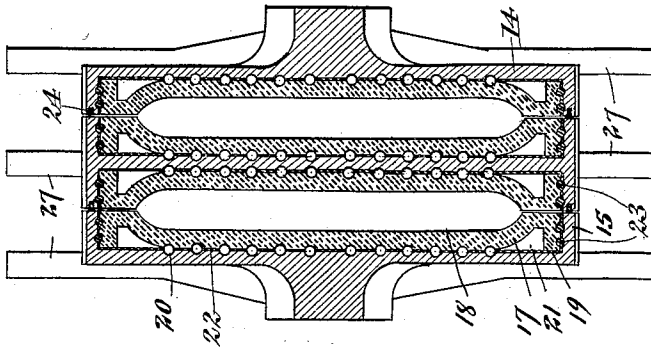
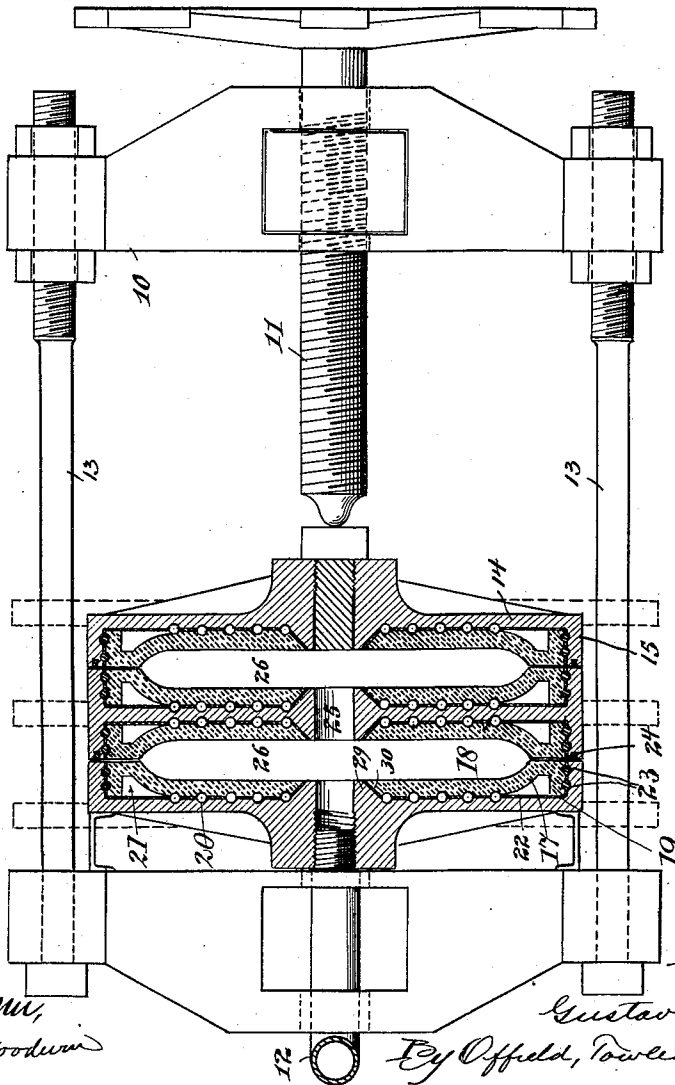


Fig. 1.



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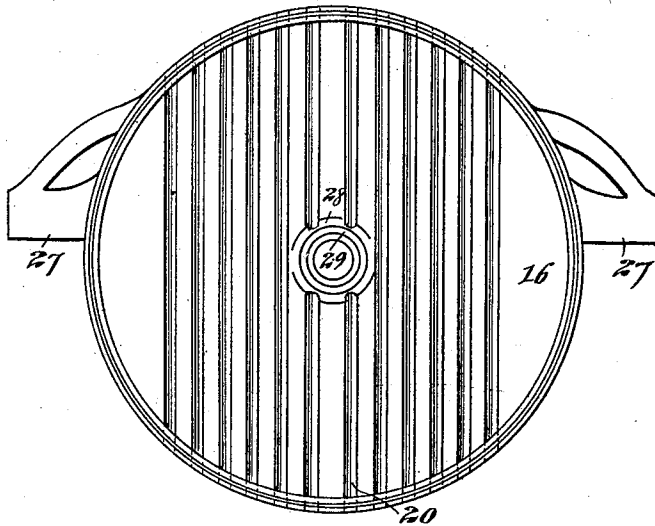
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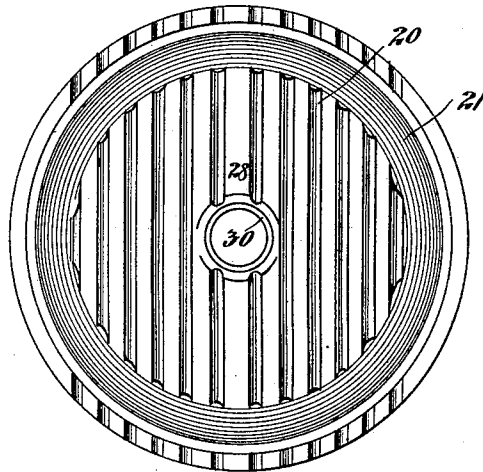
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*Fig. 3.*



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

GUSTAV HOTTINGER, OF CHICAGO, ILLINOIS.

## FILTER-PRESS.

SPECIFICATION forming part of Letters Patent No. 643,900, dated February 20, 1900.

Application filed June 10, 1899. Serial No. 720,098. (No model.)

*To all whom it may concern:*

Be it known that I, GUSTAV HOTTINGER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Filter-Presses, of which the following is a specification.

This invention relates to filter-presses, and has for its object to provide a press of superior durability and efficiency.

To this end my invention consists of certain novel features, which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a plan view, partly in section, of a filter-press embodying my invention. Fig. 2 is a sectional view in inverted plan, taken through the filter-disks and their supporting-frames in a plane below the center and looking upward. Fig. 3 is a face view of one of the supporting-frames, and Fig. 4 a similar view of the abutting face of the filter-disk.

Referring to the drawings, 10 represents the framework of the press, having the usual pressure-screw 11, inlet-pipe 12, and connecting-bars 13, upon which the frames which carry the filter-disks are supported.

The filter proper is composed of a plurality of frames carrying filtering-disks made of porous earthenware. In the present instance I have shown only three of these filtering-sections—to wit, two terminal sections and one intermediate section—although it will be obvious that any desired number of intermediate sections may be employed in order to give the press any desired capacity. Each of the terminal frames, which are indicated at 14, consists of a body of cast-iron or the like circular in general form and provided with an annular marginal flange 15, thereby forming in the face of the frame a recess 16, in which the filter-disk 17 is seated and secured. These filter-disks are constructed of porous earthenware, circular in form to fit within the recesses 16 and having their central portion depressed or hollowed out, as indicated at 18, while their margins are carried out flush with the edge of the flange 15, said marginal portion being provided with an annular flange 19, which bears against the flange 15 and against the inner face of the disk-shaped body 14 of the frame. Between each disk

and its supporting-frame there is provided a plurality of grooves or conduits 20, which are preferably formed in the manner shown, one half in the frame and the other half in the filter-disk, so that when the abutting faces of the two are brought together the conduits are formed complete. These conduits extend vertically the entire distance across both frames and disks, extending through the flange 15 in the form of apertures, and there is provided in each disk an annular recess 21, located immediately inward from the flange 19 and serving to establish communication between all of the conduits. The disks are held in place in their frames in any suitable manner; but I prefer for this purpose to interpose between each disk and frame a setting or layer 22 of cement, and between the flanges 15 and 19 there are provided semicircular grooves 23 in the abutting faces of the flanges, into which the cement is forced, so as to fill the same, and whereby said cement acts as a key to bind the disk and frame together against any strain which might tend to separate them, and will thus more firmly hold the disk in place. The intermediate disks are identical with the terminal disks in construction, with the exception that they are provided with a recess 16 in each face and with duplicate flanges 15 on each side, so that each intermediate frame carries two filtering-disks, one on each face. In order to prevent leakage, I provide one of the frames at each joint between two pairs of frames with a rubber packing 24, located in a groove in the edge of the flange 19 and projecting therefrom slightly, so as to bear against the edge of the adjacent frame. It will be understood, of course, that the disks are centrally apertured, as shown at 25, in order to establish communication between the several spaces 26 which receive the material to be filtered and the inlet-pipe 12. It will also be understood that the frames are provided with laterally-projecting arms 27, which rest upon the connecting-bars 13, as indicated in dotted lines in Fig. 1.

Filter-presses as heretofore constructed have ordinarily employed as a filtering means cloth or the like, which has but little durability and is easily torn, and thus rendered worthless, such fabrics not being of such a character as to long resist severe strains.

Porous earthenware, such as I propose to employ as a filtering means, is strong and durable and well adapted to resist the strains brought upon it when the necessary pressure is brought to bear upon the material to be filtered. The filtered liquid passes through the porous earthenware into the conduits 20 and is discharged from these latter at the lower portion of the press, the annular passage 21 serving to connect all of the conduits and insure the free discharge of their contents. The disks are firmly held in place in the frames by the cement bedding, and leakage at the joints between the disks is prevented by the packings 24. The press is filled in the usual manner through the pipe 12, and the residuum is discharged from the press after filtering in the ordinary way by separating the frames or units of which the press is composed to permit said residuum to be discharged by gravity or otherwise.

In order to provide a connection between those portions of the central grooves or conduits 20 which are in line with the apertures 25, I provide an annular passage-way 28, surrounding said aperture and formed by two circular grooves located, respectively, in the supporting-frame and filtering-disk, as shown in Figs. 3 and 4. The supporting-frame is provided at its center with a tapering hub 29, while the central aperture of the disk is provided with a correspondingly-tapering wall 30 to fit thereon, and thus more firmly center and hold the disk within the frame.

The particular form of press which I have shown is chosen for purposes of illustration only, as my invention is obviously applicable to filter-presses of various kinds.

The details hereinbefore pointed out may obviously be varied, and I therefore do not wish to be understood as limiting myself to the precise construction set forth.

I claim—

1. A filter-press comprising separable filtering-disks of porous earthenware, arranged in pairs having recessed or hollowed-out opposed faces to form chambers for the material to be filtered, means for firmly pressing said disks toward each other, and means for introducing the material to be filtered into the spaces between the disks, substantially as described.

2. A filter-press comprising separable filtering-disks of porous earthenware, means for pressing said disks toward each other, and metallic supporting-frames carrying said disks and adapted to distribute the pressure over the same, substantially as described.

3. A filter-press, comprising metallic sup-

porting-frames and filtering-disks of porous earthenware, supported by and bearing against said frame throughout the major portion of their bearing-surfaces, substantially as described.

4. In a filter-press, the combination, with metallic supporting-frames having recesses in their opposing faces, of filtering-disks of porous earthenware mounted in said recesses and bearing against the frames, the units thus composed of frames and disks being each provided with conduits or passages to receive the filtered liquid after it passes through the disks and to discharge the same from the press, substantially as described.

5. In a filter-press, the combination, with metallic supporting-frames and porous earthenware filtering-disks carried thereby, of conduits or passages located at the junction of the disks and frames to receive and discharge the filtered liquid, substantially as described.

6. In a filter-press, the combination, with metallic supporting-frames and porous earthenware filtering-disks carried by and bearing against said frames, of conduits or passages formed by coincident grooves in the meeting faces of the disks and frames, substantially as described.

7. In a filter-press, the combination, with disk-shaped supporting-frames having marginal flanges, of filtering-disks of porous earthenware having dished or hollowed-out central portions and secured by cement in the recesses thus formed in the frame, outlet-passages for the filtered liquid being provided at the meeting faces of the disks and frames, substantially as described.

8. In a filter-press, a supporting-frame having an annular marginal flange which is circumferentially grooved internally, in combination with a filtering-disk of porous earthenware having its margin similarly grooved, and a filling of cement located between the disk and frame and entering the grooves, substantially as described.

9. In a filter-press, the combination, with a supporting-frame having vertical grooves in its face, and a central apertured hub surrounded by a groove connecting the vertical grooves above and below it, of a filtering-disk of porous earthenware provided with corresponding vertical and circular grooves, and a central aperture, substantially as described.

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