

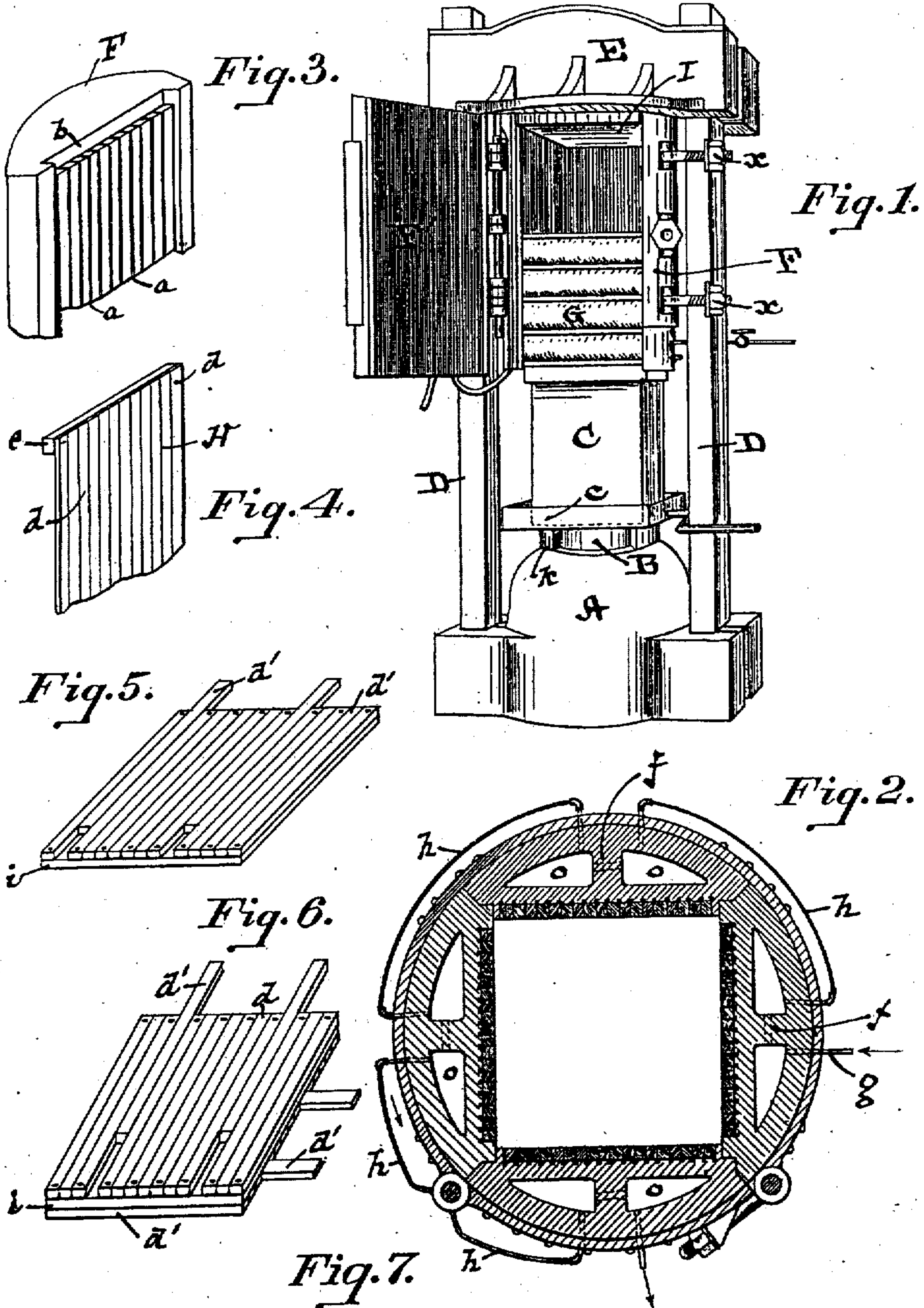
(No Model.)

2 Sheets—Sheet 1.

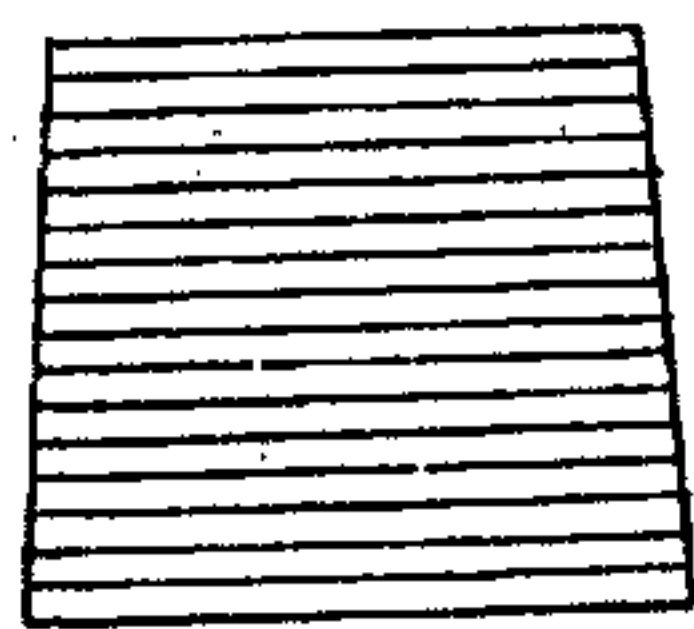
J. H. MCGOWAN.
OIL PRESS.

No. 315,529.

Patented Apr. 14, 1885.



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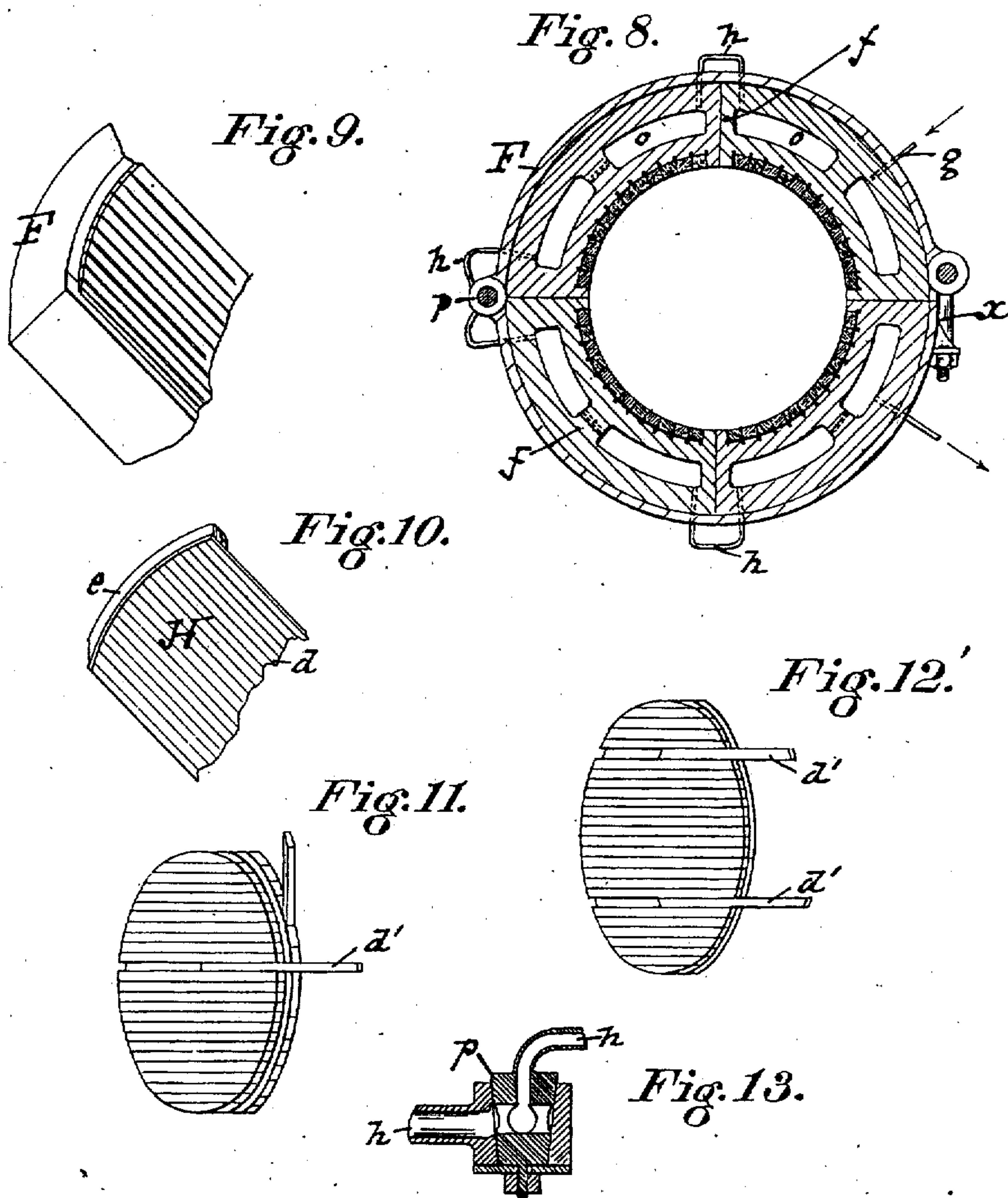


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UNITED STATES PATENT OFFICE.

JOHN H. MCGOWAN, OF CINCINNATI, OHIO.

OIL-PRESS.

SPECIFICATION forming part of Letters Patent No. 315,529, dated April 14, 1885.

Application filed December 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. MCGOWAN, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful
5 Improvements in Oil-Presses, of which the following is a specification.

My invention relates to improvements in presses for the extraction of oils from oil-bearing substances—such as flaxseed, cotton-seed,
10 &c.—its principal object being to provide in a press of this character a free drainage under pressure by channels wholly contained within the casing at all available points in relation to the mass under compression, said channels being
15 contracted to the smallest limit of size to avoid clogging by fibrous or other solid matters, yet affording a free passage for the oil under pressure, thus subjecting the oil to a semi-filtration in and during the process of
20 extraction, thereby requiring less settling and producing a purer final product.

Other objects of my invention relate to structural improvements with a view to economy of cost and production, all as hereinafter
25 more fully pointed out.

Mechanism embodying my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a general perspective elevation
30 of my improved press complete; Fig. 2, a horizontal section of the press-casing taken about midway of its axial length; Fig. 3, a partial perspective view of one of the sides of the casing removed; Fig. 4, a partial perspective view
35 of a removable lining separated from the casing; Fig. 5, a perspective view of a "single" press-mat, showing some of the slats partially withdrawn; Fig. 6, a similar perspective view of a "double" press-mat; Fig. 7, a plan view
40 of a mat, indicating a preferred form of the press-casing, being wider, as indicated, in front than in rear; Fig. 8, a horizontal cross-section of a press-casing with cylindrical interior; Fig. 9, a partial perspective view of one side
45 of said casing, showing the construction of the interior walls; Fig. 10, a partial perspective view of a removable lining adapted to said cylindrical casing; Figs. 11 and 12, perspective views of single and double mats adapted to
50 said cylindrical casing, and Fig. 13 a detail vertical section of the hinged pipe-joint for

carrying steam or other heating medium into the hinged door of the press-casing.

Letters of reference on the drawings indicate the parts designated in the following description. 55

The general mechanism of the press consists of a hydraulic cylinder, A, plunger B, a platen or press-block, C, provided with a surrounding drip-gallery, c, these parts being
60 arranged in the usual manner between vertical side standards, D D, connected above by a cross-bar, E, from which depends a compress-casing, F, open at the bottom, and having one of its sides, F', swung upon hinges and provided with fastening-bolts x, permitting the
65 same to be opened as a door to afford ready access to the interior. These general features are clearly indicated in Fig. 1, which represents the door F' standing open, exposing the
70 interior to view, containing a partially-completed series of bags, G, of oil-bearing material loaded upon the platen for the pressing operation. The compress-casing may be four-sided interiorly, as shown, with cylindrical exterior, or may be cylindrical both exteriorly
75 and interiorly with one-half hinged, as indicated in Fig. 8, or may be wholly rectangular; but the form first shown is preferred.

The inner sides of the compress-casing are
80 recessed, as shown in Fig. 3, for the reception of a lining, preferably removable, and the generally-depressed surface of the recess may be vertically channeled, as at a a, and, where removable linings are employed, is further
85 horizontally recessed at top and bottom, as at b, to receive and retain the lining H, which, when in position, fills the general recess and constitutes the flush plane inner surface of the casing. 90

The removable lining H consists of a number of metal slats, d, preferably of steel of nearly rectangular cross-section, but slightly narrowed at the rear, arranged vertically side by side and secured to a cross-bar, e, adapted
95 to fit in the recesses b. The thickness of the slats equals the depth of the general depression in the side of the compress-casing, and that of the cross-bars the additional depth of the recesses b, so that when the lining is in place
100 it fills the general depression in the side of the casing, and forms a flush plane surface, the

slats being of such width that the interstices between them register with the channels *a*. It is to be understood that the slats *d* are planed smooth and are in close contact at their meeting edges, the interstices being, therefore, exceedingly minute and permeable by the oil only under pressure.

For cleansing purposes alternate slats only are secured permanently to the cross-bars, the intermediate slats being provided with dowel-pins entering sockets in the cross-bar, and held in place when in the compress by the upper plate, *I*, removably secured to the cross-bar *E* and by the platen *C*, both of which in use project within the casing. The object of this construction is to permit the removal of the lining to facilitate the cleansing of the casing and to permit the separation of the lining for a similar purpose. Where a removable lining is not used, the slats *d* may be secured directly to the compress-casing and the cross-bar *e* and its containing recess *b* wholly omitted in the construction. The channels *a a* are not absolutely essential, and may, if preferred, be omitted, in which case the drainage passes downward between the slats in the larger interstices formed by narrowing the slats at the rear. In either case the vertical drainage-channels open below through the bottom of the casing, and the expressed oil drips thence into the gallery *c* surrounding the platen, and is thence conducted by pipes to the final receptacle. The walls of the casing are further made hollow, preferably as shown at *O*, Figs. 2 and 8, with strengthening-partitions *f*, arranged to constitute a substantially continuous return-channel by means of openings through the partitions above and below for the passage of steam, hot water, or other heating medium, admitted by pipe *g*, and carried by pipes *h h* from one portion of the casing to another, and by a flexible pipe or pivotal pipe-joint, *p*, to the swinging segment or door permitting the latter to be opened at will without breaking connection. If a pivotal connection is used, it should be located in the vertical hinge-line of the door, and the construction shown in Fig. 13 will be found convenient, consisting of the ordinary conical plug stop-cock with a continuous peripheral groove around the plug permitting an unimpeded flow of the heating medium, whether the door is open or shut.

In connection with the drainage-channels of the casing I employ drainage-mats interposed between the bags of oil-yielding material, constructed as follows: Upon the upper and lower surfaces of a sheet of metal, *i*, fitting the interior horizontal area of the casing, are secured a series of parallel slats, *d'*, similar to those before described, but preferably arranged at right angles on opposite sides of the sheet and covering each surface entire. The slats being slightly narrowed at the sides in contact with the plates and corresponding in width with the slats *d* of the casing, the horizontal drainage-channels thus formed

practically register at opposite sides with those of opposite sides of the casing, the two series thus formed at opposite sides of the mat communicating with the four sides of the casing—that is, one series to each two opposite sides thereof, thus equalizing the distribution of oil to the drainage-channels of the casing.

In practice it is desirable to construct the central sheet a little smaller than the area covered by the slats, thus practically forming a horizontal channel communicating with all the casing-channels crossed thereby and rendering it immaterial whether the channels of the mat-slats and those of the casing-slats exactly register. The upper and lower mats of the press-load may have the slats at one side of the sheet wholly omitted, thus forming what may be called "single" mats, such as shown in Figs. 5 and 12, and in constructing the mats it is desirable that each alternate slat should be attached by screws or other fastening, permitting their removal for cleansing purposes.

In the general construction of the compress casing it is desirable that the side of the casing opposite the door, where the four-sided interior is employed, should be narrowed for convenience in removing the press-load, in which case the horizontal area would conform to the plan indicated in Fig. 7, and the form of the mat be modified accordingly.

In the practical use and operation of the press, the parts being in the position shown in Fig. 1 the load of bags containing the oil-bearing material is placed upon the platen upon one of the mats, preferably a single mat, and drainage-mats are interposed between the successive bags, with their drainage-channels arranged, as hereinbefore indicated, to alternate the distribution of expressed oil to the sides of the casing uniformly, and the whole surmounted by a mat, preferably single, and the door closed and fastened. Steam, hot water, or other heating medium having been previously introduced or being now introduced to heat the casing by passing through the return channels, as indicated, power is applied to the ram and the platen elevated. By the pressure thus given the expressed oil is forced from the material and conducted through the mat-channels to the casing-channels, and flows thence downward into the drip-gallery.

In practice a block, *k*, is interposed between the platen-head or press-block and the cylinder *A*, thus retaining the press-block always just within the casing, and similarly a removable block, *l*, fitting the interior area of the casing is secured to the head or cross-bar *E* of the press. These, in case removable linings are employed in the press, serve to hold the slats *d* in place, and permit their convenient removal for cleansing purposes by dropping the platen-head and removing the block *l*.

In case it should be deemed desirable to construct the compress-casing with but two or even one side channeled, the drainage-mats

will be modified accordingly, the slats being arranged parallel on both sides. A similar modification may be made in the mats adapted to the circular casing and the mat-channels arranged to communicate with alternate channels of the casing.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In an oil-press, a compress-box adapted to contain the material for pressure built up directly in successive layers provided with a door at one side and with hollow walls, arranged as return-channels for the circulation and distribution of a heating agent around the oil-bearing material during the pressing operation, substantially as set forth.

2. In an oil-press, a compress box or casing having open vertical grooves channeled in its inner sides and provided with vertical lining-bars whose interstices register with said channels, substantially as and for the purpose set forth.

3. A compress-box or casing for oil-presses constructed of two or more sections or segments, in combination with linings composed of vertical slats for the inner sides, with suitable interstices for the out-drainage of the oil between said linings and the casing, as set forth.

4. In an oil-press, a compress box or casing having one or more sides provided with interior openings or channels for the circulation of steam or other heating medium, and a separable side or door similarly provided, substantially as set forth.

5. In an oil-press, a compress box or casing constructed with hollow sides for the circulation of steam or other heating agent, and a hinged door similarly constructed, and a flexible or jointed pipe-connection permitting the opening of the door without destroying said connection, substantially as set forth.

6. In a laterally-imperforated oil-press, a compress box or casing provided with interior vertical drainage-channels opening through the casing below, in combination with a platen-block provided with a drip-gallery arranged beneath the drainage-channels of the compress-box, substantially as set forth.

7. A compress box or casing, consisting of two or more segments or sides, said segments or sides being made hollow and provided with

division-partitions perforated alternately above and below to constitute a substantially continuous channel throughout for the passage of a heating medium, substantially as set forth.

8. In combination with an oil compress box or casing having removable linings, a block or plate removably secured within the casing to the head or cross-bar of the press, as and for the purpose set forth.

9. In an oil-press, in combination with a compress box or casing provided with vertically-channeled inner surfaces, a division-mat provided with horizontal channels registering with those of the casing, substantially as set forth.

10. In an oil-press, in combination with a compress box or casing provided with interior drainage-channels, a division-mat constructed with drainage-channels at opposite sides extending in different directions, substantially as set forth.

11. In an oil-press, in combination with a compress box or casing provided with interior drainage-channels, a division-mat consisting of a metal plate provided at either or both sides with a series of contiguous slats, the interstices between whose meeting surfaces constitute drainage-channels, substantially as set forth.

12. A division-mat for oil-presses consisting of a metal plate provided at one or both sides with slats, each alternate slat being removable, substantially as set forth.

13. A compress box or casing for oil-presses having its inner sides recessed and provided with removable linings filling said recesses and constituting a flush plane surface when in place, substantially as set forth.

14. In an oil-press, a laterally-imperforate compress-casing having its inner surface provided with continuous vertical drainage-channels opening interiorly, substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN H. MCGOWAN.

Witnesses:

L. M. HOSEA,
ABRAM MAY.