

No. 697,251.

Patented Apr. 8, 1902.

J. H. HUBBELL.

CAGE PRESS.

(Application filed Sept. 7, 1901.)

2 Sheets—Sheet 1.

(No Model.)

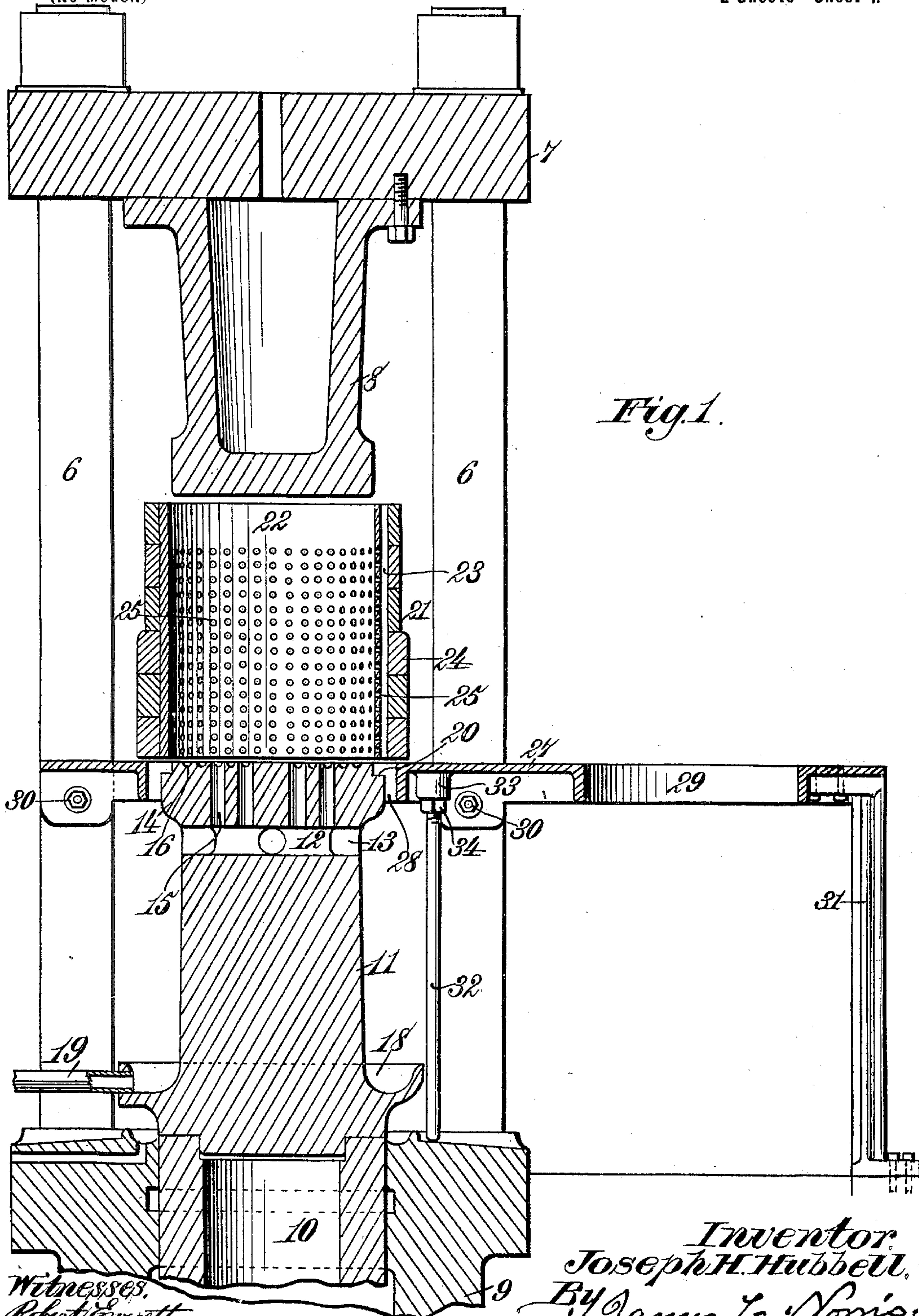


Fig. 1.

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(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

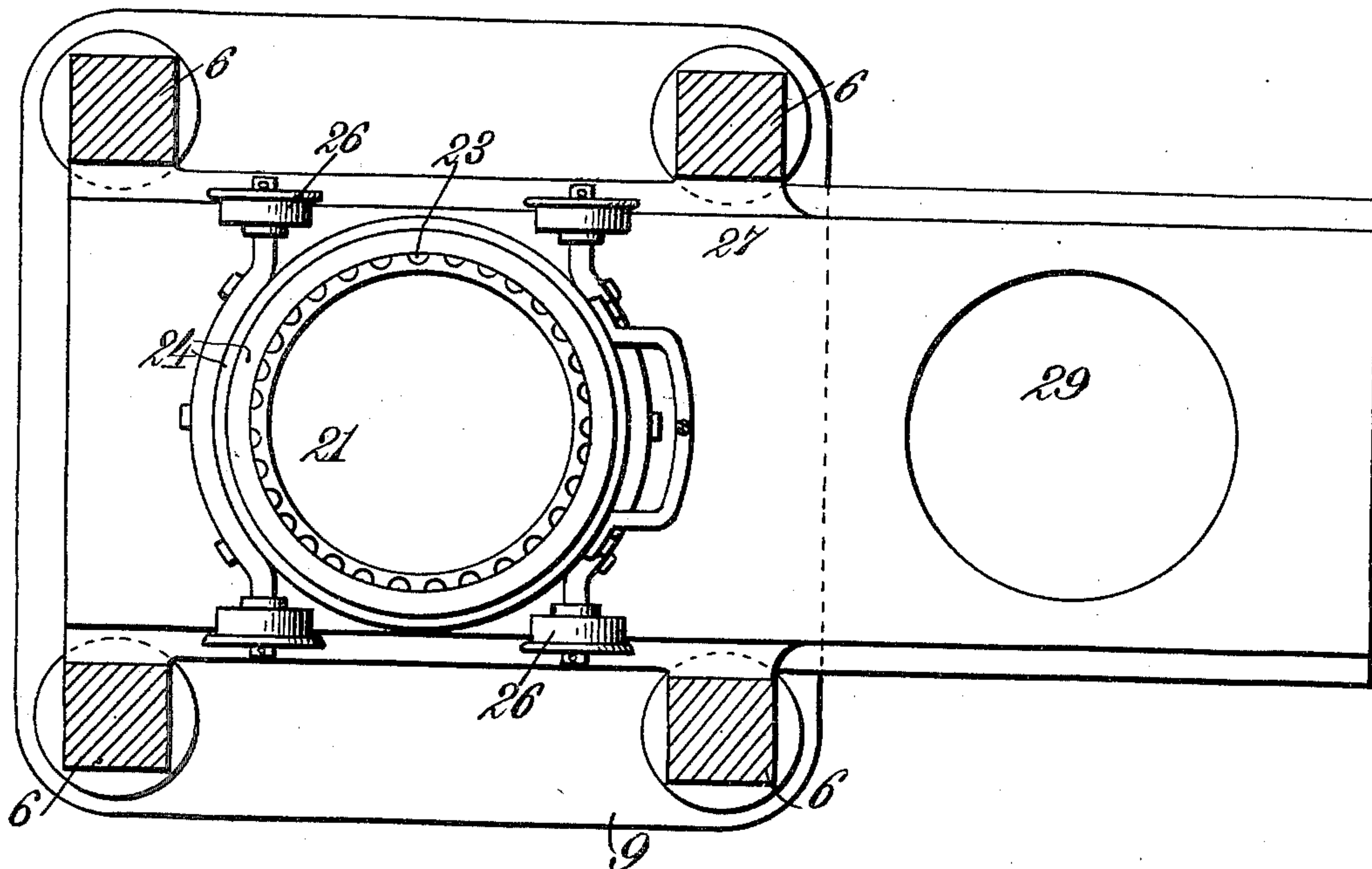


Fig. 3.

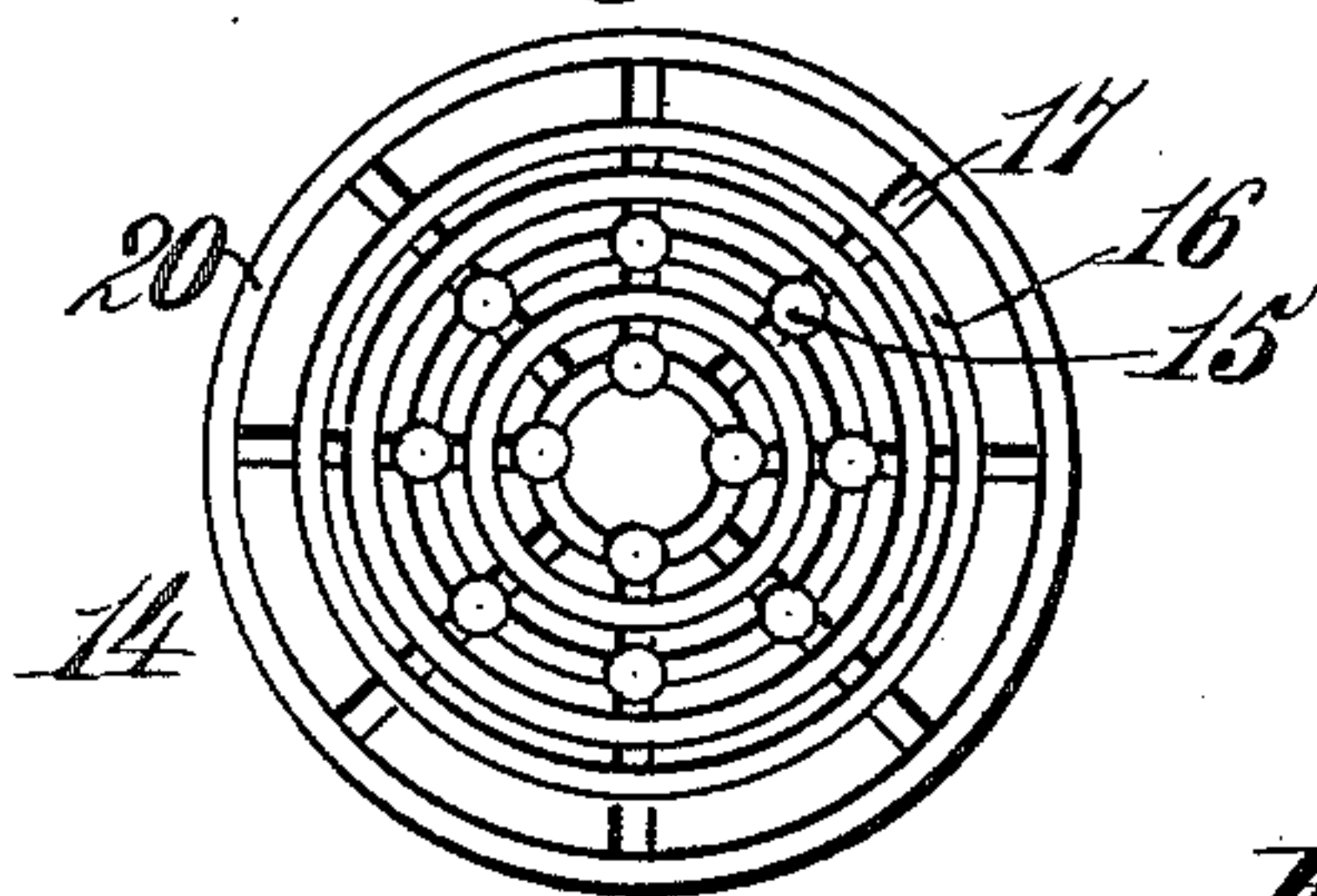


Fig. 4.

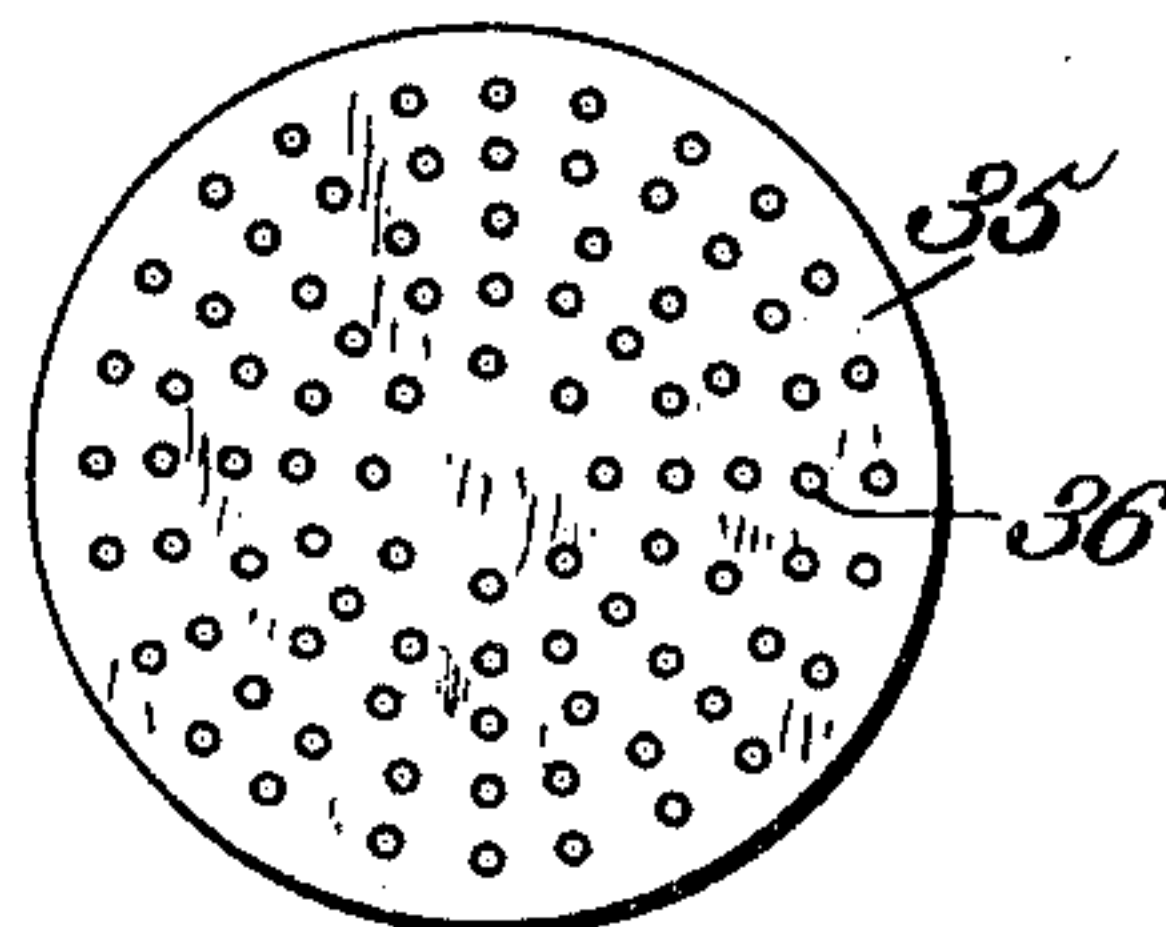
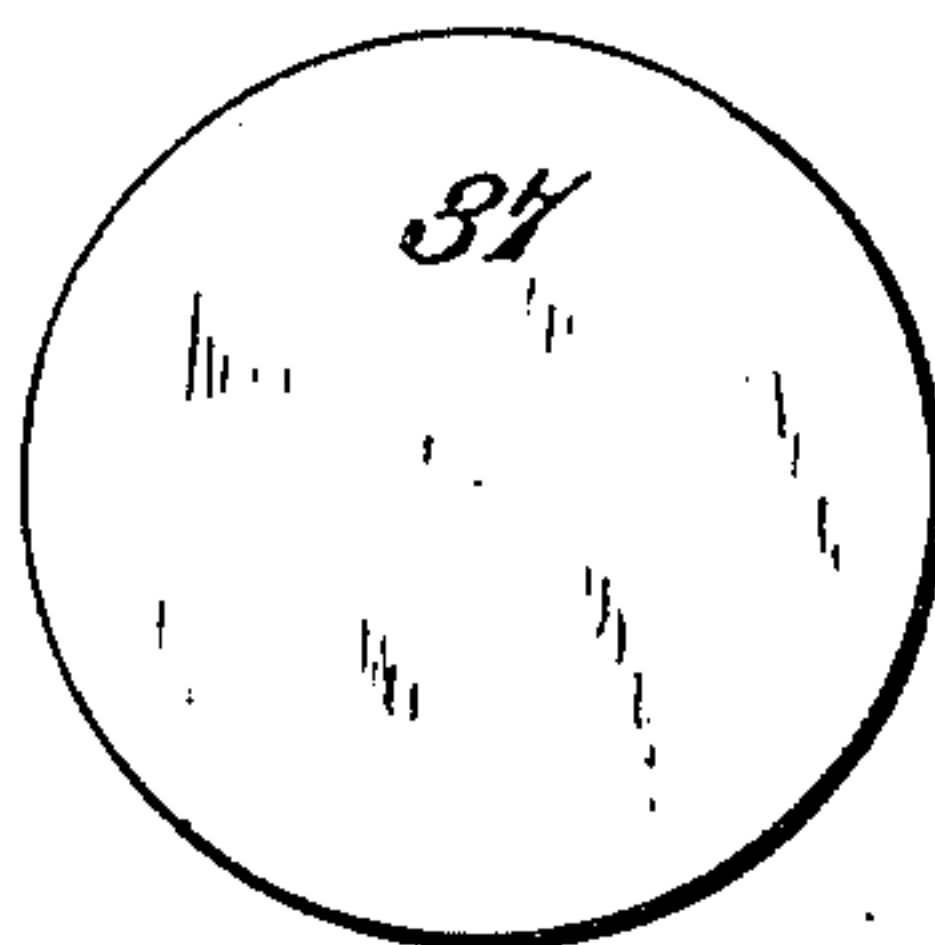


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOSEPH H. HUBBELL, OF DAYTON, OHIO, ASSIGNOR TO BUCKEYE IRON AND BRASS WORKS, OF DAYTON, OHIO, A CORPORATION OF OHIO.

CAGE-PRESS.

SPECIFICATION forming part of Letters Patent No. 697,251, dated April 8, 1902.

Application filed September 7, 1901. Serial No. 74,699. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. HUBBELL, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented new and useful Improvements in Cage-Presses, of which the following is a specification.

My invention relates to certain new and useful improvements in presses of the type known as "cage-presses," and has for its broad objects to provide an improved cage which shall be simple, strong, and durable in construction and adapted to yield the highest desirable results in operation, to provide an improved construction of ram-block or lower plunger whereby the ready escape of fluid from the substance being pressed is provided for by a system of bottom drainage, and to provide an improved platform for the cage.

Other objects of the invention relate to the provision of minor parts coöperating with the elements above noted and to details of construction, all of which will be more clearly set forth in the following specification.

With the above objects in view the invention resides in the parts and combinations of parts hereinafter described, and particularly set forth in the claims appended hereto.

In order that my invention may be clearly understood, I have illustrated the same in the accompanying drawings, wherein—

Figure 1 is a sectional elevation of the upper portion of a press constructed according to my invention, the lower portion or cylinder of the press being broken away. Fig. 2 is a sectional plan view taken on the line 2 2 of Fig. 1. Fig. 3 is a top plan view of the ram-block. Fig. 4 is a plan view of one of two similar perforated plates, and Fig. 5 is a similar view of an imperforate plate.

Referring now to the drawings, 6 6 indicate uprights, secured to the upper ends of which is a cross-beam 7, having secured to its under side a stationary plunger 8. The cylinder is indicated by 9 and the plunger or piston working in said cylinder for raising and lowering the ram-block by 10. These parts are as ordinarily constructed and need not be described in detail.

Secured on the upper end of the plunger 10 is my improved ram-block 11, which is preferably circular in cross-section. Toward the

upper end of this ram-block I provide an annular chamber 12, communicating with which are ports 13, extending through the sides of the block. The ports 13 are preferably four in number, located at equidistant points around the block. The portion of the ram-block above the chamber 12 is enlarged to form a head 14, and extending through this head are a series of vertical ducts 15, which communicate with the chamber 12. The top side of the head 14 is provided with a series of circular concentric grooves 16, which are connected by means of radial cross-grooves 17, as clearly shown in Fig. 3. The ducts 15 are circularly arranged, as shown, and each duct is located at the intersection of a circular groove 16 and cross-groove 17. The purpose of these grooves and the ducts 15 is to permit the ready flow of the liquid from the substance being pressed to the chamber 12, whence it passes through the ports 13 and runs down the side of the ram-block. Near the lower end of the ram-block is provided a gutter 18, extending entirely around the ram-block and from which leads a pipe 19. The oil or other liquid flowing down the side of the ram-block in the pressing operation, as above stated, collects in the gutter 18 and is carried off by the pipe 19 to a suitable receptacle. The top of the head 14 is provided with an annular shoulder 20, the purpose of which will presently appear.

The numeral 21 indicates the cage of the press, and the construction of this cage constitutes one of the important features of the invention. Heretofore as commonly constructed these cages have been made by riveting slats at intervals to a thin shell and shrinking the outer rings to these slats, the oil channels or ducts being formed by spaces between the slats. This construction is objectionable for many reasons, among which may be mentioned its expensiveness and relative weakness. The construction of cage devised by me is far less expensive than the type of cage above mentioned and is much stronger. According to my invention I provide an integral metal cylinder 22 and cut on its outer surface a series of longitudinal grooves 23, extending from end to end of the cylinder and located at frequent intervals around the entire periphery of the cylinder,

as clearly shown in Fig. 2. A number of rings 24, placed one upon the other to the height of the cylinder, are then shrunk upon said cylinder, whereby the grooves 23 are converted into a series of closed ducts or channels. The cylinder 22 is provided throughout the greater portion of its length from bottom to top with a number of perforations 25. These perforations extend entirely around the cylinder and are arranged in rows corresponding to the grooves or channels 23, with which they communicate.

The cage 21, constructed as described, is mounted upon sheaves 26, adapted to run on a platform 27, the lower edge of said cage lying closely adjacent to, but not touching, the upper surface of said platform. Said platform is provided near one end with a circular opening 28, through which the ram-block 11 is adapted to work, and near the opposite end with a similar opening 29, through which the contents of the cage 21 may be discharged. The platform 27 is bolted to the uprights 6, as indicated at 30, and is further supported at its outer end by means of an upright 31 and intermediate its ends and adjacent to the opening 28 by means of a bar 32, resting at its lower end upon the top of the cylinder 9 and having its upper end screwed into a boss 33 and held by means of a jam-nut 34.

In operation the cage 21 is moved to a position on the platform between the openings 28 and 29, and a circular plate 35, having perforations 36, is placed in the cylinder 22 and rests upon the platform 27, said plate fitting the interior of the cage snugly. Material to be pressed—such as cotton-seed, castor-beans, or the like—is then put into the cage to a certain depth, and a second plate, similar to the plate 35, is then placed on top of this material. More material is then placed in the cage, and finally a solid metal plate 37 is placed on top of the material. The cage is then moved to its place in the press-frame, the bottom perforated plate 35 coming directly on the face of the ram-block 11 through the opening 28 and the top solid plate 37 coming directly under the plunger 8. When pressure is applied to the plunger 10, the substance in the cage will be compressed between the ram-block 11 and the stationary plunger 8, the cage 21 being carried up by means of the shoulder 20 on the ram-block engaging the lower edge of the cage. This shoulder, however, does not cover the full space of the ends of the channels 23, enough space being left open for the free escape of the fluid passing from the substance being pressed through the perforations 25 into these channels. As the cage continues to rise over the plunger 8 the side drainage will to a large extent be cut off, and the fluid will then pass through the perforated plates into the grooves 16 and 17, which conduct it to the ducts 15, through which it passes into the hollow space or chamber 12 and thence through the ports 13 to the gutter 18, as already described. After the pressing

operation the cage is lowered till its sheaves rest upon the platform, and it is then rolled back until it comes directly over the opening 29, through which the plates and contents of the cage may be dropped, and the operation is then repeated.

Having thus described my invention, what I claim as new is—

1. In a press, a cage comprising an inner perforated cylinder provided with exterior longitudinal grooves, and an outer metal casing shrunk upon said cylinder.

2. In a press, a cage comprising an inner perforated cylinder provided with exterior longitudinal grooves and a series of superposed rings surrounding said cylinder.

3. In a press, a cage comprising an inner integral perforated cylinder having a series of longitudinal grooves cut in its outer surface, and a series of superposed rings shrunk upon said cylinder.

4. In a press, a cage comprising an inner perforated cylinder provided with exterior longitudinal grooves, and an outer metal casing surrounding said cylinder.

5. In a press, in combination with a cage having an inner perforated cylinder and longitudinal grooves, a ram-block having its upper face grooved and provided with a chamber having lateral outlets leading to the exterior of the ram-block and with ducts leading from said chamber to the upper face of said block and communicating with the grooves therein.

6. In a press, in combination with a cage having an inner perforated cylinder and longitudinal grooves, a ram-block having its upper face provided with intersecting cross-grooves, and having a chamber provided with lateral outlets leading to the exterior of the ram-block and ducts leading from said chamber to the upper face of said block at the intersection of the grooves therein.

7. In a press of the character described, a ram-block having its upper face provided with circular and intersecting cross-grooves, and having a chamber provided with lateral outlets leading to the exterior of the ram-block and ducts leading from said chamber to the upper face of said block at the intersection of said grooves.

8. In a press, in combination with the upper and lower plunger, one of said plungers being movable and carrying a ram-block, a platform extending between said plungers and having two openings, one of said openings being in line with said plungers, whereby the ram-block may work therethrough, and a cage mounted to travel on said platform and register with said openings.

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

JOSEPH H. HUBBELL.

Witnesses:

JOHN L. H. FRANK,
R. BROWN HOOVER.