

No. 672,592.

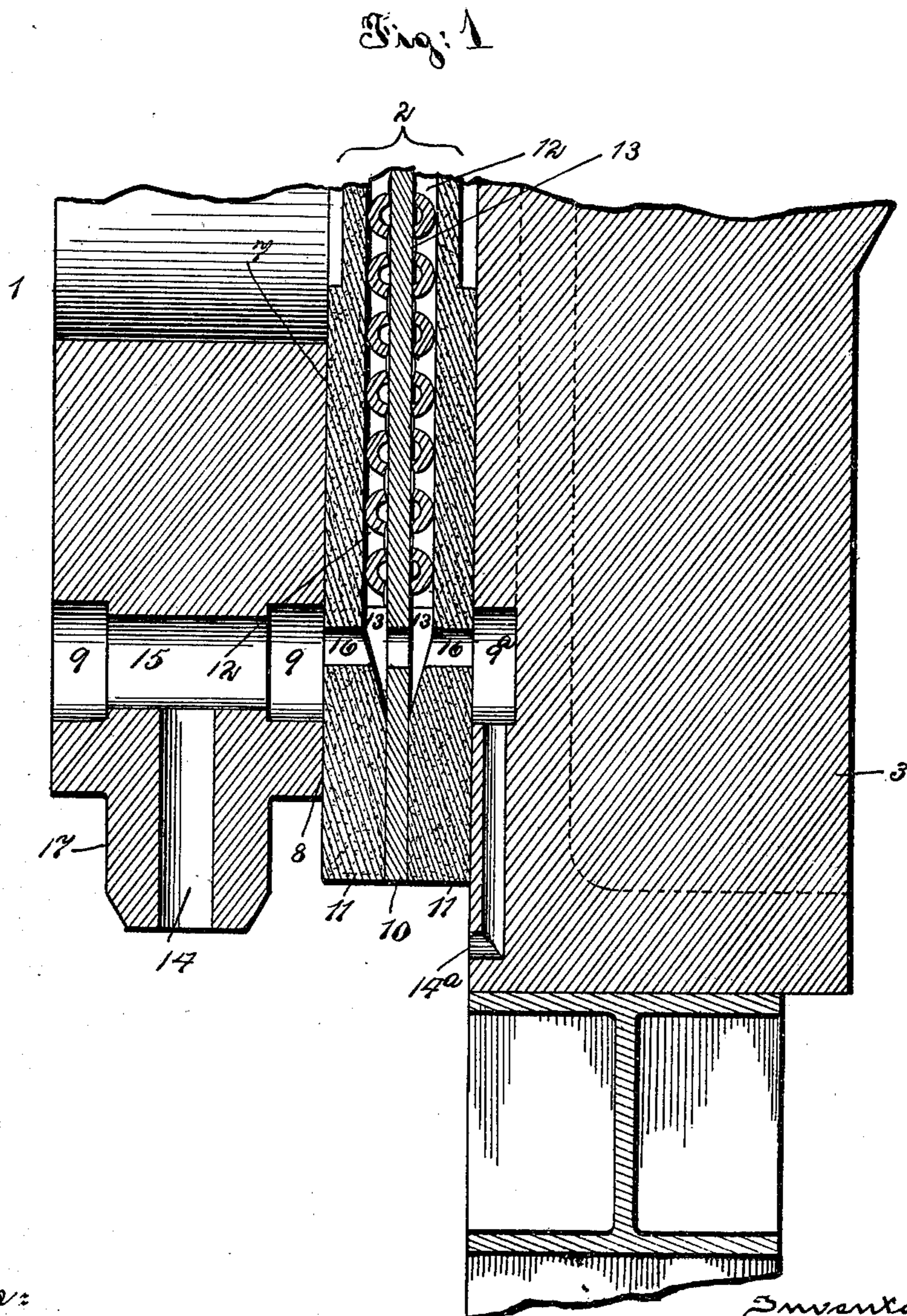
Patented Apr. 23, 1901.

R. C. CONGDON.
FILTER PRESS.

(Application filed Jan. 2, 1901.)

(No Model.)

4 Sheets—Sheet 1.



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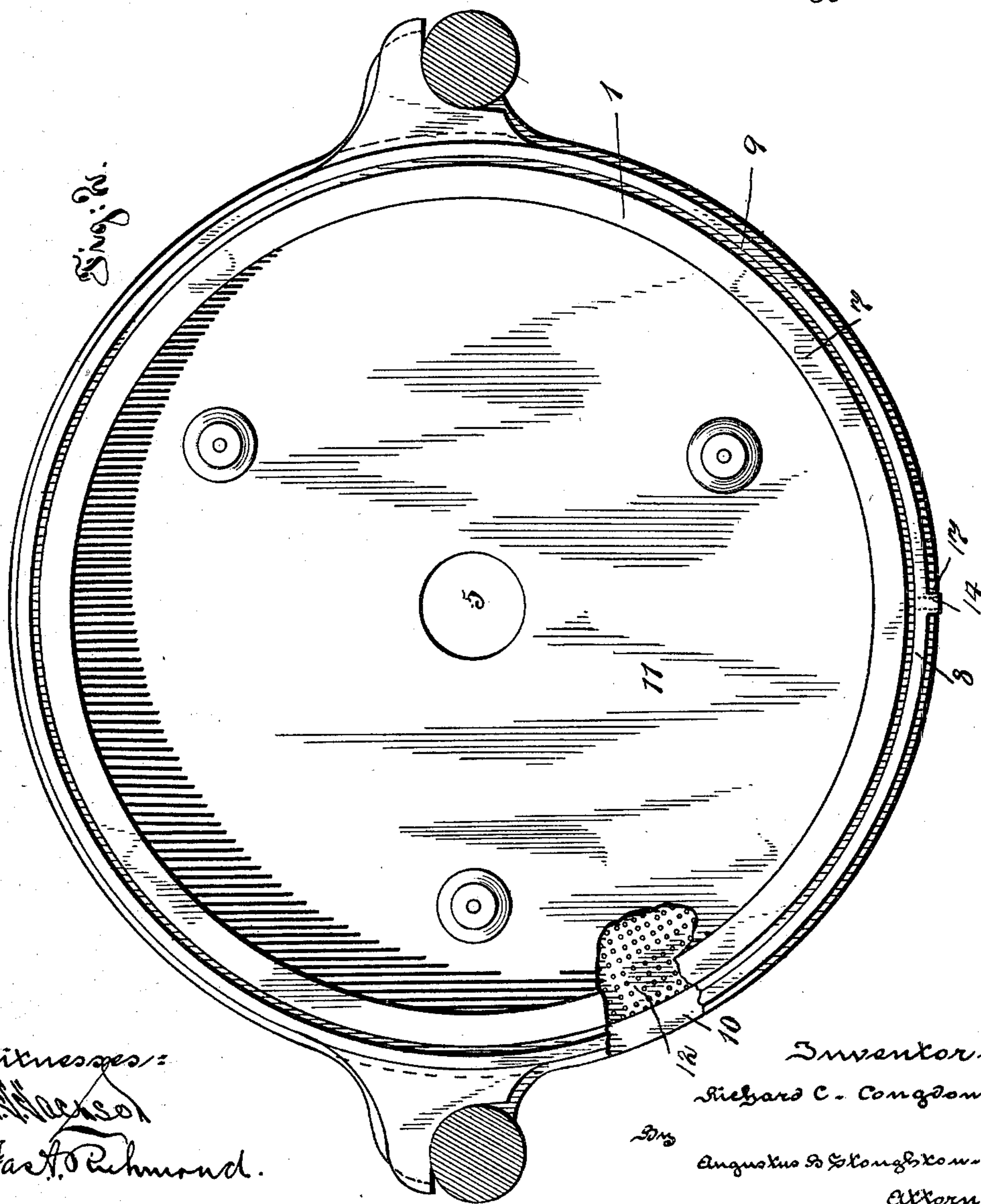
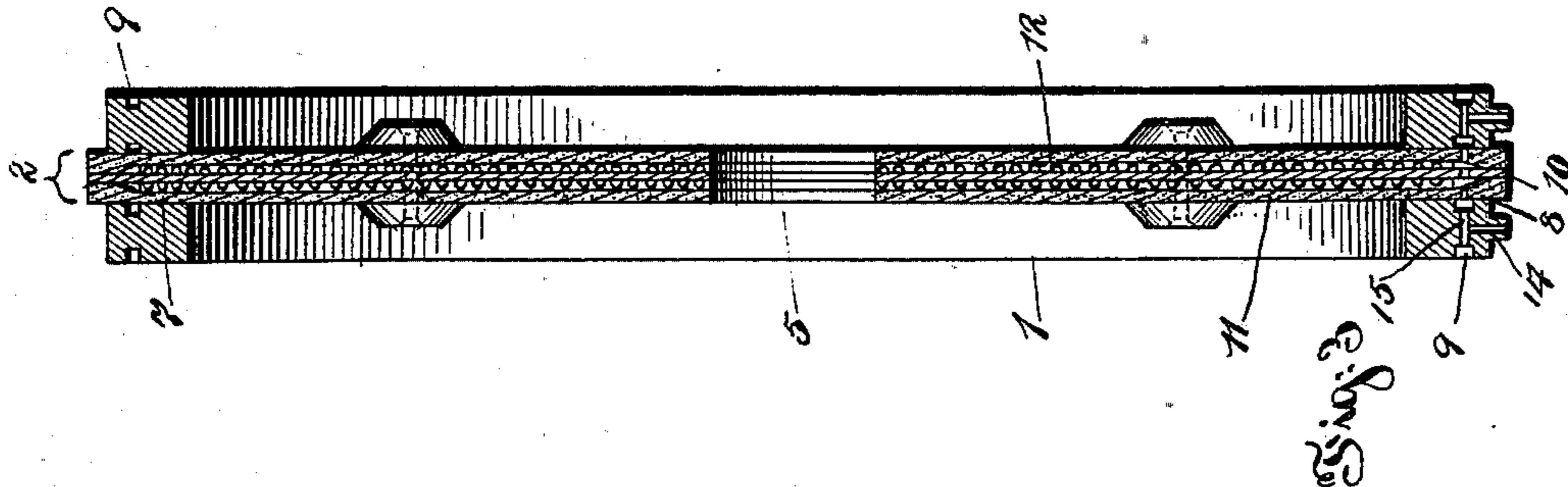
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4 Sheets—Sheet 2.



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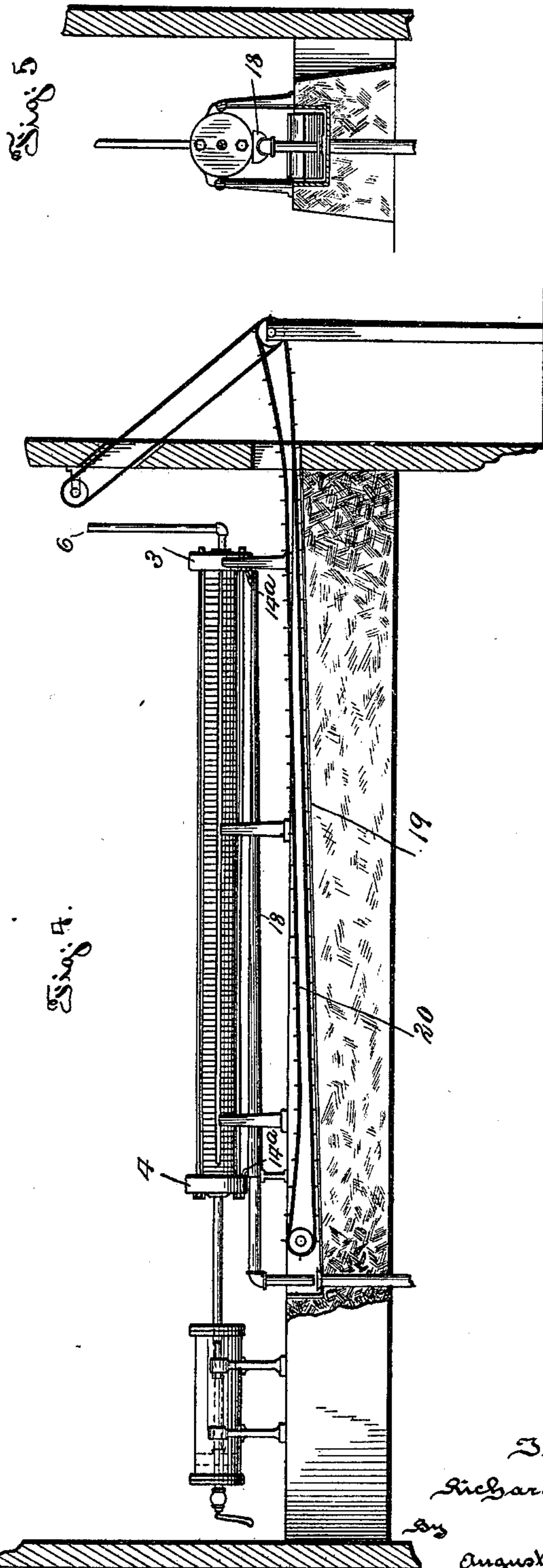
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4 Sheets—Sheet 3.



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4 Sheets—Sheet 4.

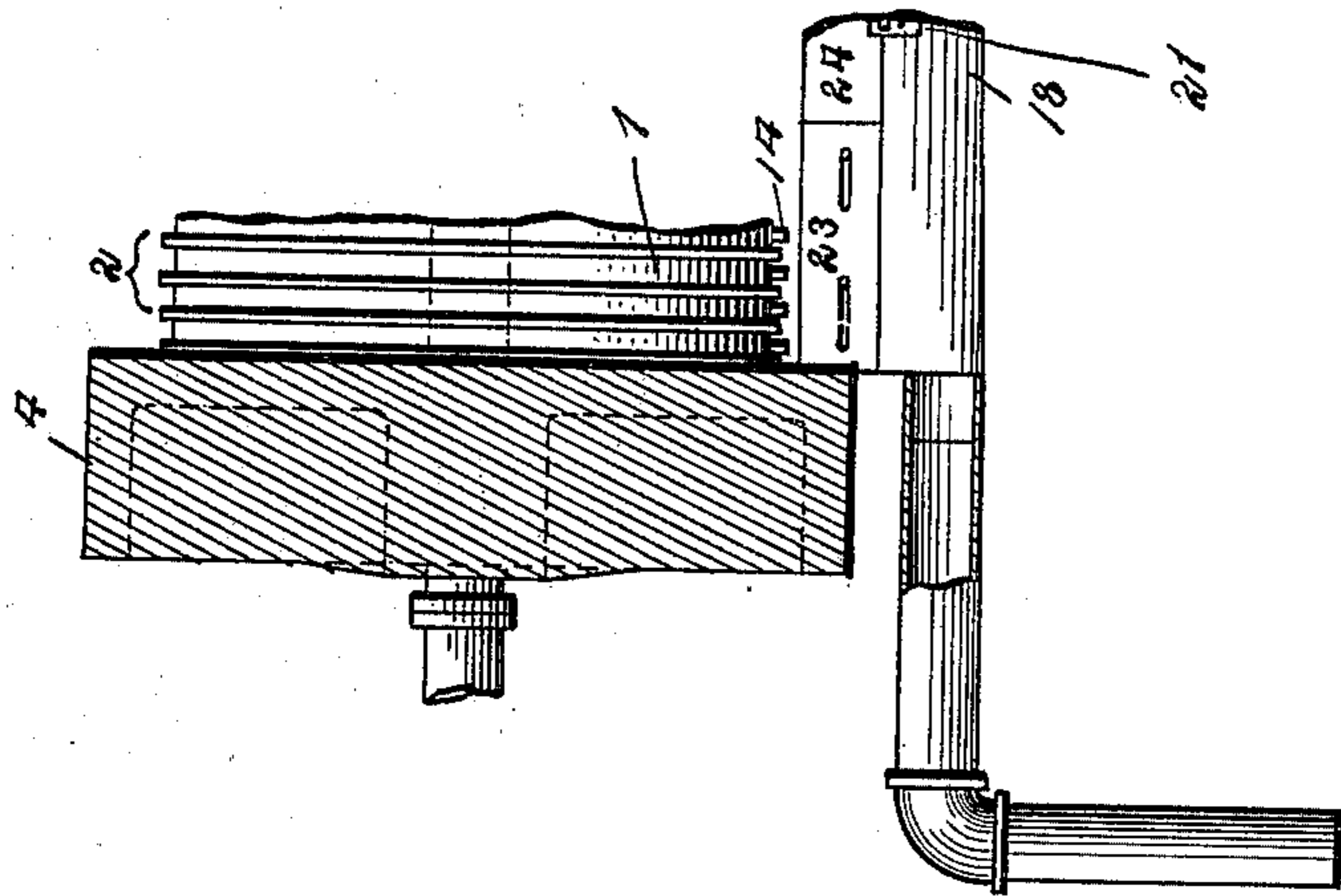


Fig. 1.

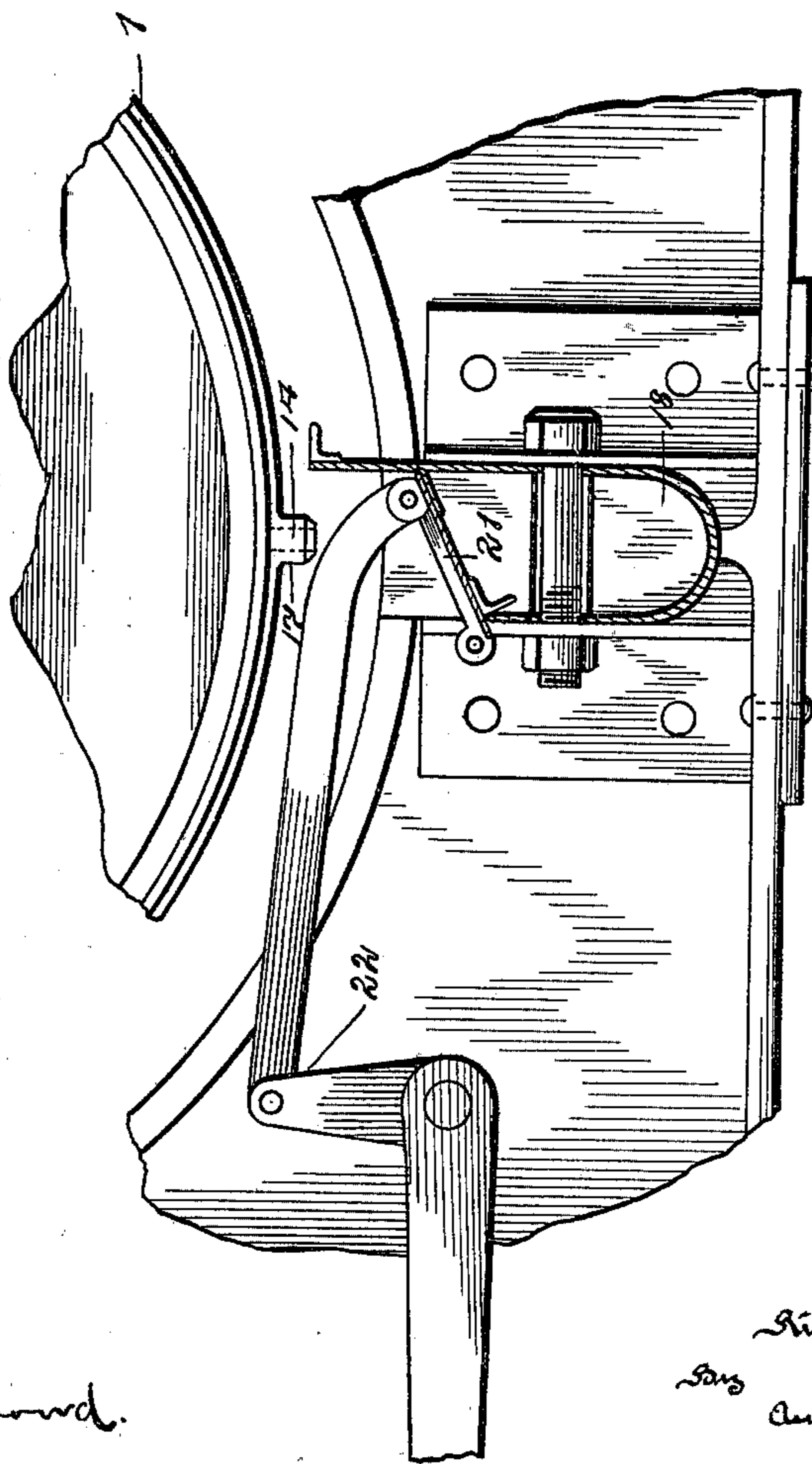


Fig. 6.

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UNITED STATES PATENT OFFICE.

RICHARD C. CONGDON, OF PHILADELPHIA, PENNSYLVANIA.

FILTER-PRESS.

SPECIFICATION forming part of Letters Patent No. 672,592, dated April 23, 1901.

Application filed January 2, 1901. Serial No. 41,769. (No model.)

To all whom it may concern:

Be it known that I, RICHARD C. CONGDON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Filter-Presses, of which the following is a specification.

One object of the present invention is to insure in practice the theoretical or ideal working of a filter-press and to prevent streams or jets from escaping and squirting from it in such a way as to be objectionable.

Another object is to facilitate the cleanly removal of the filtrate or residuum.

Other objects are hereinafter set forth.

To these and other ends hereinafter set forth the invention, stated in general terms, consists of the improvements in the rings and also in the improvements in the combination of the improved rings with the filter-blankets and offtakes, which are hereinafter more fully described and claimed.

The nature, characteristic features, and scope of the invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a view showing one embodiment of my invention and illustrating a section through a part of one of the rings, one of the platens of the press, and one of the ring-separators, consisting of a central supporting-plate, two perforated plates, and a pair of blankets, all securely fastened together with rivets. Fig. 2 is a face view of one of the rings embodying features of my invention, showing one of the separators with portions thereof broken away. Fig. 3 is a transverse sectional view showing two rings embodying features of the invention, with the separators mounted between them, in accordance with my invention. Figs. 4 and 5 are respectively side and end views of a filter-press embodying features of the invention. Fig. 6 is a transverse sectional view showing means for covering the gutter and illustrating features of the invention; and Fig. 7 is a view illustrating features of the invention, showing means for adjusting the length of the gutter.

In the drawings, 1 represents the rings, and 2 represents the separators. The rings and the separators are, as is well known, mounted between the fixed platen 3 and the movable platen 4 and are arranged alternately. As usual, the separators have central openings 5, and the material to be filtered is introduced under pressure by way of the pipe 6. The filtered material is expressed from the rings and the residuum is retained in them. Each ring 1 is provided with a seat 7, which packs the blanket, and it is also provided with a second seat 8, which also packs the blanket. Between these faces there is provided a groove or channel 9, which extends all the way around the ring. The outside diameter of the ring should be substantially equal to or less than the diameter of the supporting-plate 10 in order to allow the portion 8 of the ring to form a joint with the canvas 11 of the separator. The periphery of the perforated plate 12 should come substantially flush with the inner edge of the groove 9. The thickness of the plates 12 affords a joint between the separator and the parts 7 of the ring, which joint, however, is tighter than the joint formed between the parts 8 of the ring and the reinforced edge of the canvases and the support-plate 10, because the plates 12 do not extend between the parts 8. Around the periphery of the perforated plates there is a channel 13 for filtered material. This channel is formed between the reinforced edge of the canvas, the perforated plates, and the supporting-plate 10. The filtered material reaches this channel 13, and in order to do so it penetrates the canvas and finds its way through and past the perforated plate 12. A serious defect which is remedied by the present invention is that unfiltered material, under the great pressure to which it is subjected, is forced between the seat or face 7 and the canvas. Hitherto such material squirted from the machine and flew all around the place. However, in the present invention such material reaches the groove 9 and is there confined and collected. At the base of the rings and of the blankets provision is made for carrying off the filtered material from the channel 13, as well as the unfiltered material which may have reached the

groove 9. Of course unfiltered material does not reach the groove 9 in anything like the quantity that filtered material reaches the channel 13, because it is only when the filter as a whole is pretty well filled with cake that any unfiltered material is forced out into the groove 9, and the comparatively slight quantity of unfiltered material which is mixed with the filtered material is, by reason of the small proportion, negligible. The advantage of preventing the escape of streams of material from the machine is obvious in all cases, and it is especially marked where the fluid acted upon is sticky and dirty or is injurious to the eyes and personal safety of the workmen. Provision is made to lead off the material from the channel 13 and from the groove 9 in a proper manner and predetermined direction. To this end outlets 14 are provided at the bases of the rings, and these outlets 14 have communication, as by way of the transverse passages 15, with the grooves 9. The latter in turn, by way of the passages 16, have communication with the channels 13. As shown in the drawings, the rings are provided at their lower portions with reinforcements 17. These permit of the proper escape of the filtered material even when it is of a sticky nature, and at the same time they serve to reinforce the rings where the latter are more or less weakened by the presence of the openings 14 and 15. Beneath the outlets 14 is located a gutter 18, into which they discharge and which leads the material to any suitable receptacle. The sediment or residuum remains in the rings as cake and is knocked out of the rings in the usual manner. However, when it is knocked out the gutter may be covered, so that it does not receive any of the residuum. To cover the gutter, the latter may be provided with a hinged side, as 21, Fig. 6, which can be closed like a lid by means of the link and lever 22 or can be turned into upright position, so as to complete the gutter. The sides of the gutter may be made in sections 23 and 24, overlapped and connected by slot-and-pin connections, so that the section 23 may be shifted in order to compensate for the shifting of the movable platen of the press. The residuum falls upon a suitable grate or pan 19, from which it is removed by the conveyer 20, for example, through a doorway and entirely out of the building. The front and rear platens 3 and 4 are provided with annular grooves 9^a and may have offtakes 14^a.

It will be obvious to those skilled in the art to which the invention relates that modifications may be made in details without departing from the spirit thereof. Hence I do not limit myself to the precise construction and arrangement of parts hereinabove set forth, and illustrated in the accompanying drawings; but,

Having thus described the nature and ob-

jects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A filter-ring provided upon each of its faces with annular seats having between them an annular groove, said groove extending all the way around the ring, substantially as described. 70

2. A filter-ring having upon each of its faces an annular groove that extends all the way around it, and having annular seats on opposite sides of the groove and having an outlet for the grooves, substantially as described. 75

3. In combination the filter-press platen provided with an annular groove having annular seats upon opposite sides of the groove, a blanket, and means for supporting the blanket in respect to the platen, substantially as described. 80

4. In combination filter-rings provided upon their opposite faces with an annular groove and with annular seats arranged on opposite sides of the groove, a separator interposed between the rings and having its support-plate and canvases arranged between the outer seats and having its support-plate and perforated plates and canvases arranged between the inner seats, substantially as described. 85

5. In combination filter-rings having on each of their faces annular grooves with annular seats arranged on opposite sides of them, and filter-blankets of varying thickness having parts thereof of different thickness interposed between the rings and clamped between the seats to make the joint between the inner seats tighter than the joint between the outer seats, substantially as described. 95

6. In a filter-press the combination of rings having upon each of their faces annular seats and an annular groove arranged between the seats and all around the ring, offtakes at the bottoms of the rings, blankets between the rings, a gutter arranged under the offtakes, and a table or pan arranged beneath the gutter for the reception of the cake from the rings, substantially as described. 100

7. The combination in a filter-press of rings provided with outlets, a gutter arranged beneath the outlets and having a hinged side arranged to operate as a lid, and means for shifting the hinged side, substantially as described. 105

8. The combination in a filter-press of a movable and a fixed platen, rings provided with outlets, and a gutter arranged under the outlets and between the platens and consisting of sections having sliding connection with each other, substantially as described. 110

In testimony whereof I have hereunto signed my name. 115

RICHARD C. CONGDON.

In presence of—

W. J. JACKSON,
FRANK T. KALAS.