

(No Model.)

N. CLUTE.
OIL EXTRACTOR.

No. 512,681.

Patented Jan. 16, 1894.

Fig. 1.

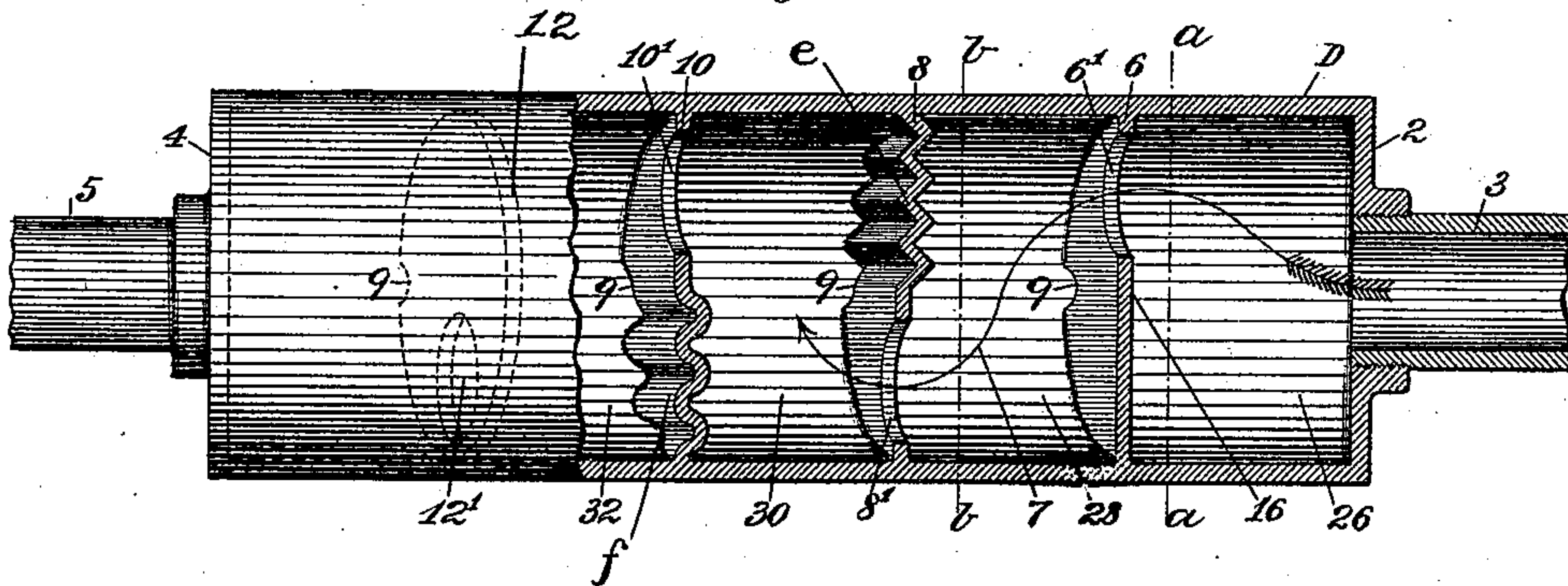


Fig. 2.

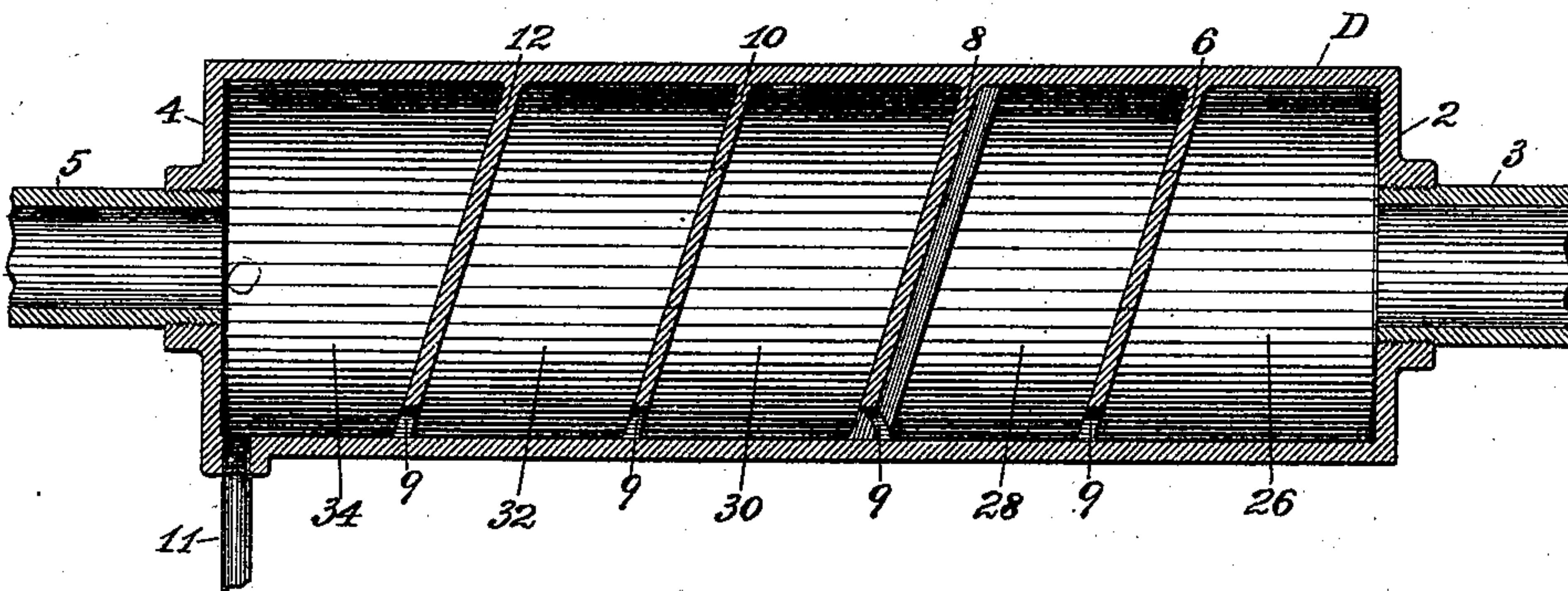


Fig. 4.

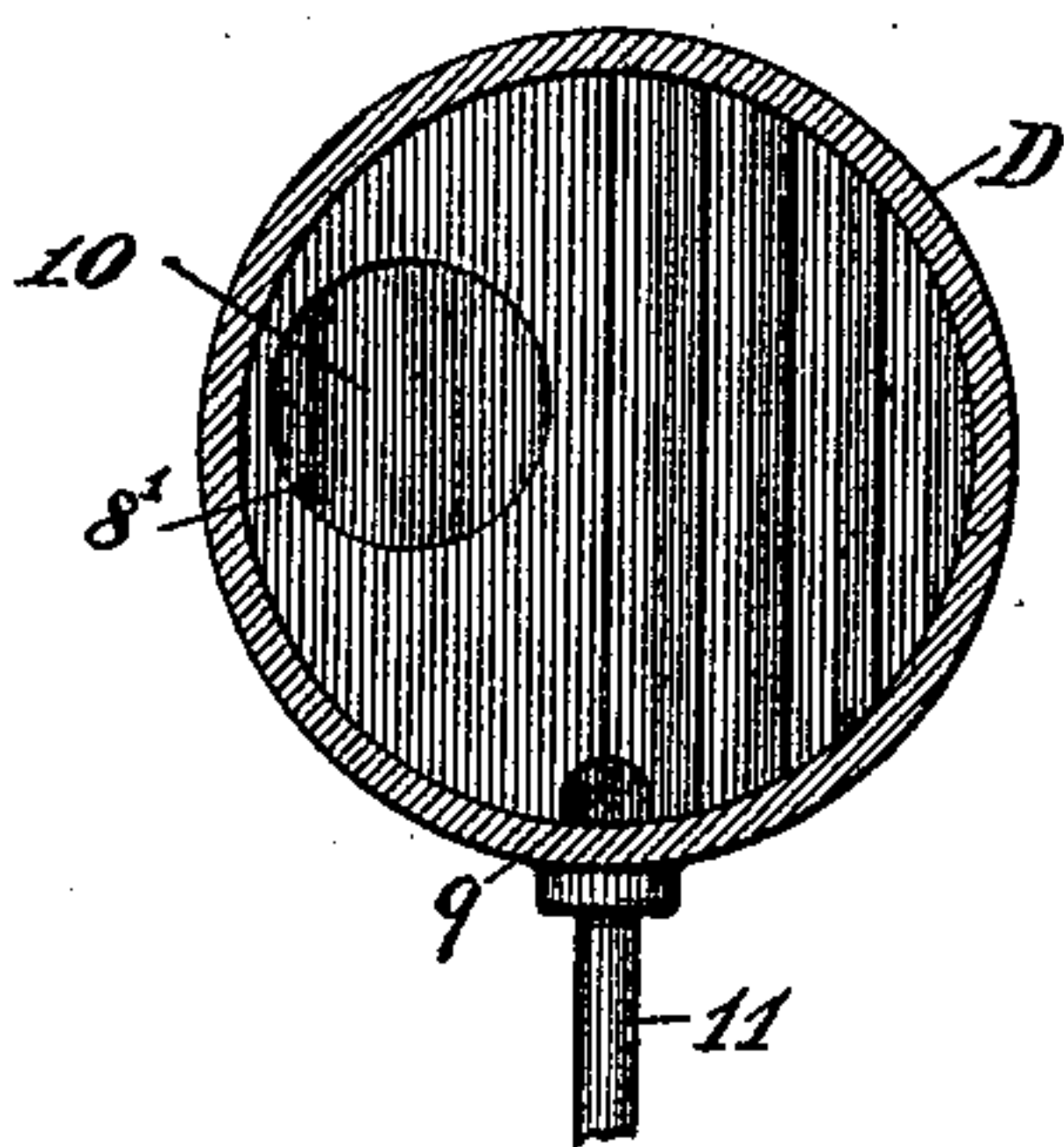
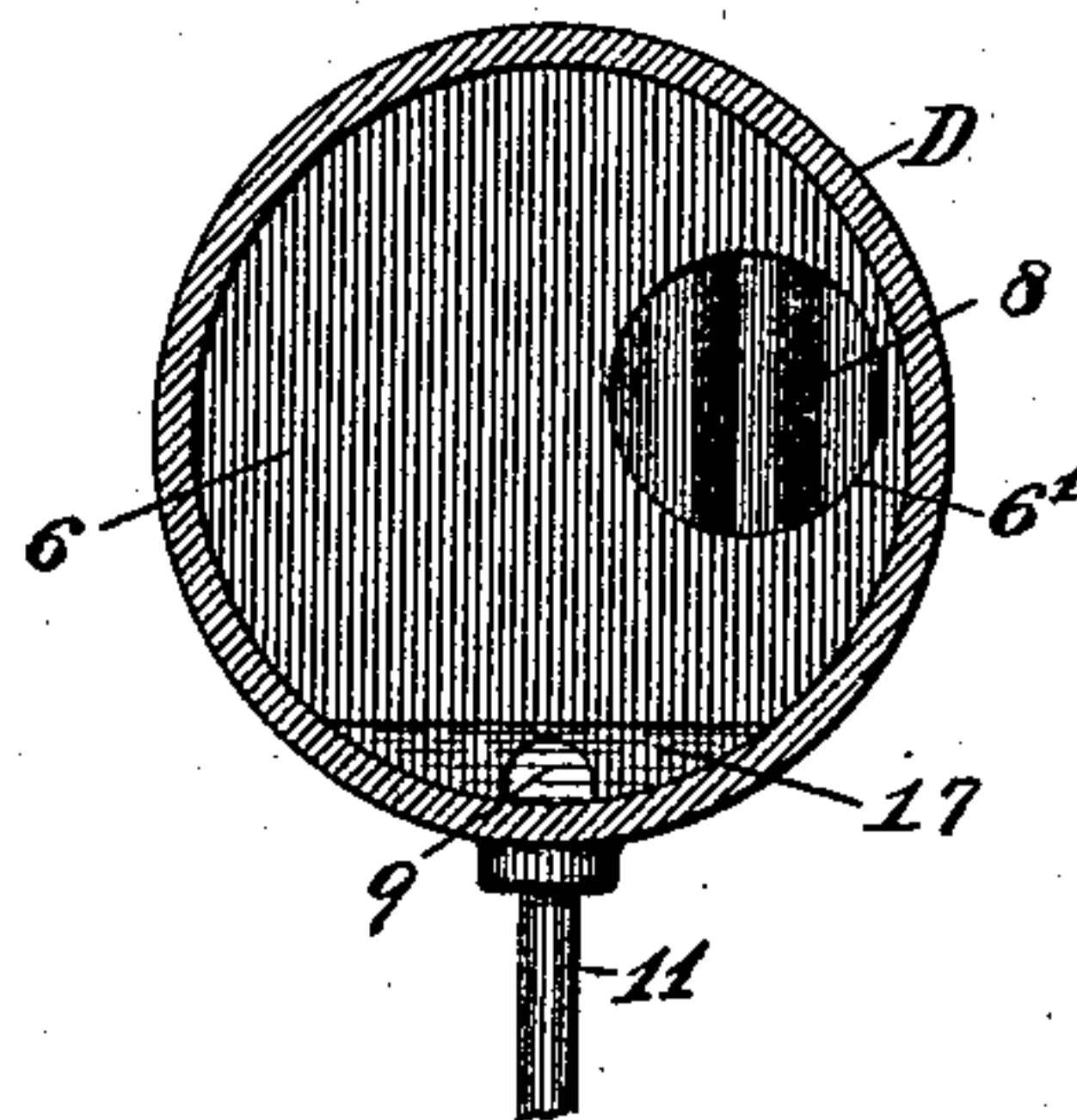


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

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OIL-EXTRACTOR.

SPECIFICATION forming part of Letters Patent No. 512,681, dated January 16, 1894.

Application filed March 6, 1891. Serial No. 383,952. (No model.)

To all whom it may concern:

Be it known that I, NICHOLAS CLUTE, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Oil-Extractors, of which the following is a specification.

This invention relates to apparatus for extracting oil from exhaust steam, the object being to furnish an effective oil-extractor adapted to be constructed at a low cost and to permit a free passage through it of the exhaust-steam.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan view, partially in section, of my improved oil-extractor. Fig. 2 is a sectional side elevation of the extractor. Fig. 3 is a cross-sectional view in line *a a*, Fig. 1. Fig. 4 is a cross-sectional view in line *b b*, Fig. 1.

Similar characters designate like parts in all the figures.

My improved oil-extracting apparatus consists of a suitable chamber placed horizontally in the line of the exhaust-pipe and furnished with means in the interior thereof for collecting and draining therefrom the condensed water and oil. The particular means employed for said purpose is a suitable number of intercepting plates or diaphragms, constructed and arranged substantially as hereinafter more fully set forth.

The drum or extractor-case, D, is furnished with the heads 2 and 4, which are perforated for the inlet and outlet steam-pipes, 3 and 5, respectively. The interior of the case D is divided into a series of chambers by the aforesaid intercepting-plates or walls, 6, 8, 10 and 12, set cross-wise thereto. Said walls are perforated at 6', 8', 10' and 12', respectively, for the passage of the steam, these perforations or openings being arranged in a serpentine course, alternately near the opposite sides of the case D, and in the same horizontal plane to give a serpentine movement to the current of steam, as illustrated by the arrow 7, Fig. 1.

In setting the extractor for use, the drum D should be placed nearly horizontally, the end having the drainage-pipe 11 being preferably a little lower than the opposite end thereof, to secure the ready discharge of the collected water and oil.

As will be noticed, by reference to the drawings, the perforations 6', 8', 10', 12', in the partitions for the passage of steam are located on a horizontal plane each side the center of the casing, and remote from the side-wall of said casing. The object of this construction is to provide a deflecting plate contiguous to the wall of the casing between the perforation and wall to break the continuity of the circuituous course of the steam along the side-wall in its passage toward the perforation in the partition. This construction greatly facilitates the disintegration or breaking up of the column of steam through its impingement between the walls of the casing and the contiguous portion of the partition intermediate to the perforation and said casing prior to its passage through the perforation into the adjacent compartment. The complete disintegration or breaking-up and re-forming of the column of steam, in each compartment, prior to its passage into the next compartment, insures the thorough separation of the lighter from the heavier constituents of the steam, *i. e.*, the dry-steam from the oil and water globules, permitting the oil and particles of condensation to descend by their own gravitation to the bottom of the casing whence they pass off through the drainage-pipe. The steam entering through the pipe 3 impinges against the first diaphragm at 16, spreads to fill the first chamber 26 of the extractor-case, and flowing laterally passes through the perforation 6' in said first diaphragm into the second chamber 28. In said second chamber the steam, after impinging against the face of the diaphragm 8, flows laterally and passes through the second opening 8' into the third chamber 30. Thus the steam is successively slightly impeded in its progress through the length of the extractor until it emerges therefrom through the outlet pipe 5.

The operation of extracting the oil from the steam will be understood by means of the preceding description and the drawings, when it is remembered that the particles of oil, being heavier than the steam and carried along at a high speed, naturally, owing to their greater momentum, pursue a straighter line than the steam itself, thereby being ultimately thrown entirely out of the current of steam and delivered against one of the series

of diaphragms. Furthermore, when thrown against the diaphragms, owing to its adhesive nature the oil collects thereon, and by its superior specific gravity flows downward against the surfaces of the diaphragms to the bottom of the extractor-chamber, where it passes along through the passages 9, to the drainage-pipe 11, and is discharged into some suitable receptacle.

As a means for increasing the efficiency of the several diaphragms, these may be constructed of a corrugated form whereby the surface for adhesion of the oil is largely increased, and whereby the diaphragm is also made more effective for the catching of the oil by reason of the ribs whose surfaces are, on one side of them, cross-wise of the resultant currents of steam.

The walls 6 and 12 are shown formed plain, while the wall 8 is of one, and the wall 10 of another form of corrugation; said corrugations, *e* and *f*, should run substantially vertically of the walls, and need not extend over that part of the walls above and below the steam-passages therein. The corrugations *e* in wall 8 are V-shaped or zigzag in arrangement, while the corrugations *f* in the wall 10 are oval or serpentine in form. The steam as it flows laterally of the casing passes contiguous to the ribs of the corrugated plate, and thus carries the oil against the sides of the ribs. The corrugating of the walls very materially also has the important advantage of increasing the effective surface for collecting the oil.

According to another feature of my improvement, the diaphragms are set forwardly-

inclined from the upper edge toward the lower edge thereof, so as to favor by the action of the currents of steam, the down-flow of the films of oil which gather on the surfaces of the diaphragms. At their lower edges the diaphragms may have passage-ways, as set forth, for the passage of the collected fluids, (17, Fig. 3,) to the drainage-pipe, or separate drainage-pipes (not shown) may be provided for each of the chambers 26, 28, 30, 32 and 34.

My improved oil-extractor is adapted, as shown in the drawings, to be formed of a single casting, the several diaphragms being integral therewith, and the several steam and fluid passages being formed in the diaphragms by means of suitable cores, in a well-known manner.

Having thus described my invention, I claim—

In an oil-extractor, the combination with a horizontal casing, having inlet and outlet steam-pipes, of transverse partitions each of which has a central steam deflecting portion and a continuous circumferential steam deflecting portion contiguous to the wall of the casing and said portions having alternate perforations intermediate to their central and circumferential deflection portions and remote from the outer edges thereof, and a discharge-pipe located at the bottom and at one end of said casing, substantially as and for the purpose described.

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Witnesses:

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