

No. 711,446.

Patented Oct. 14, 1902.

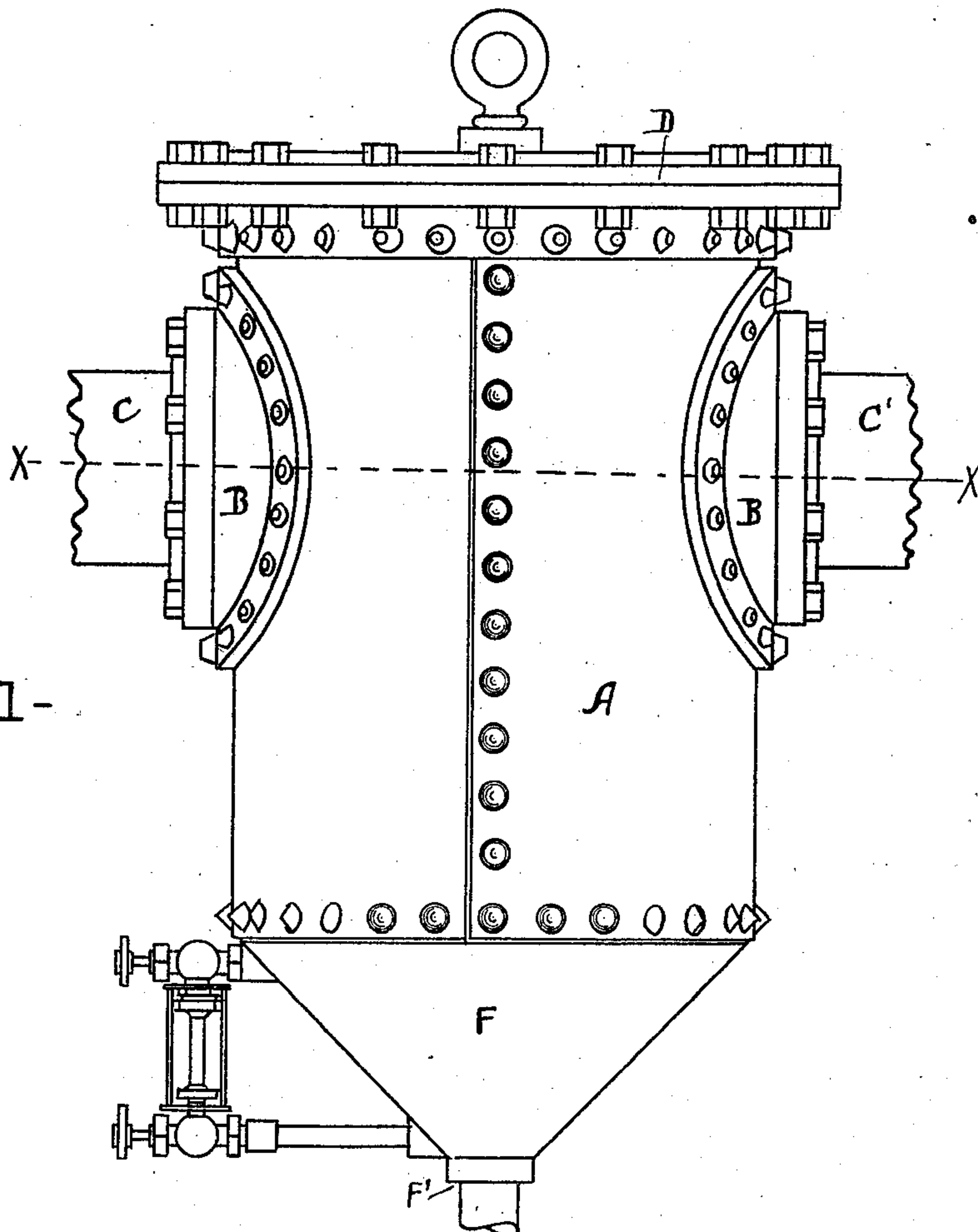
E. M. THACKER.
APPARATUS FOR SEPARATING OIL.

(Application filed May 7, 1902.)

(No Model.)

2 Sheets—Sheet 1.

-Fig-1-



WITNESSES.

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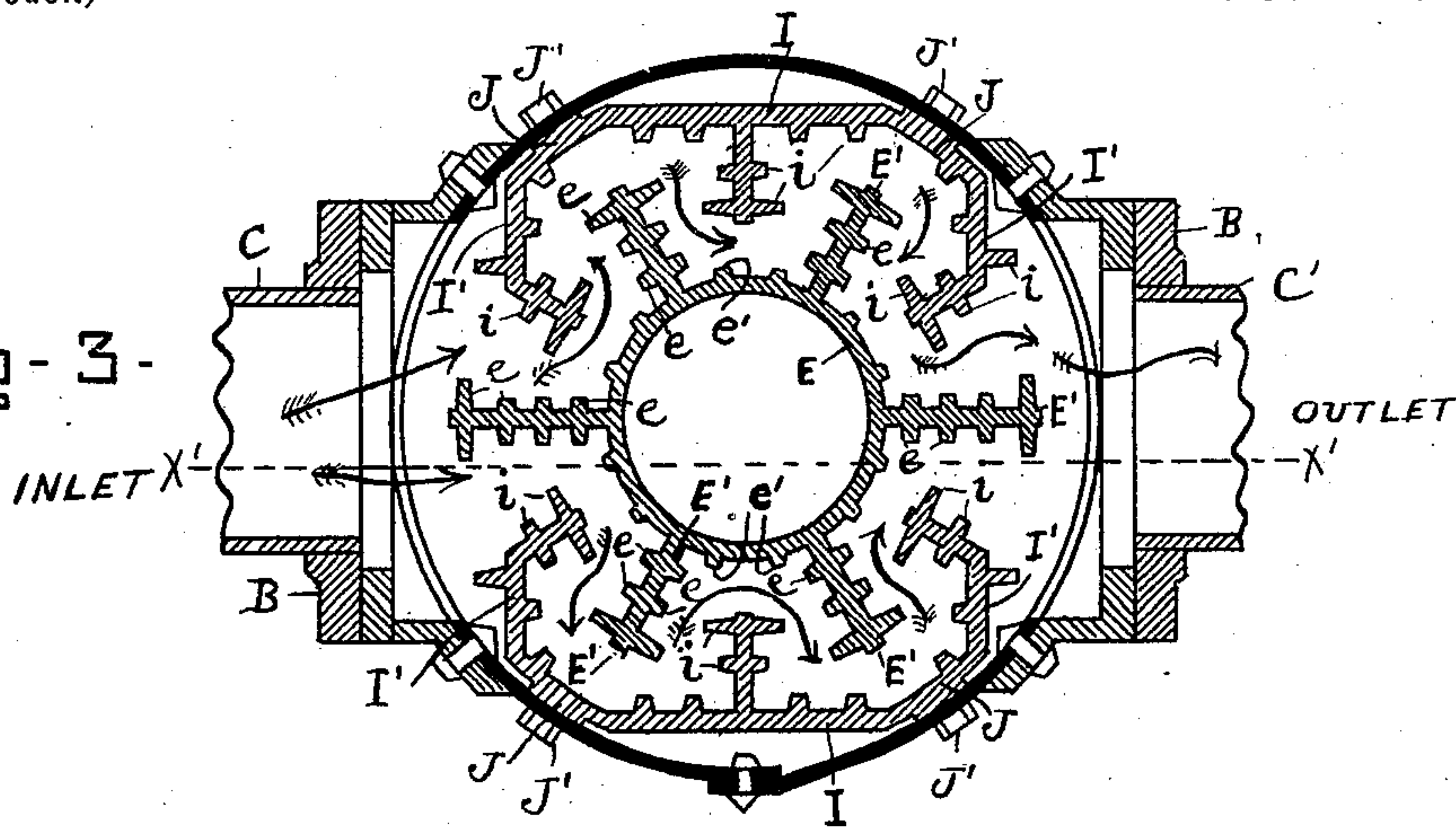
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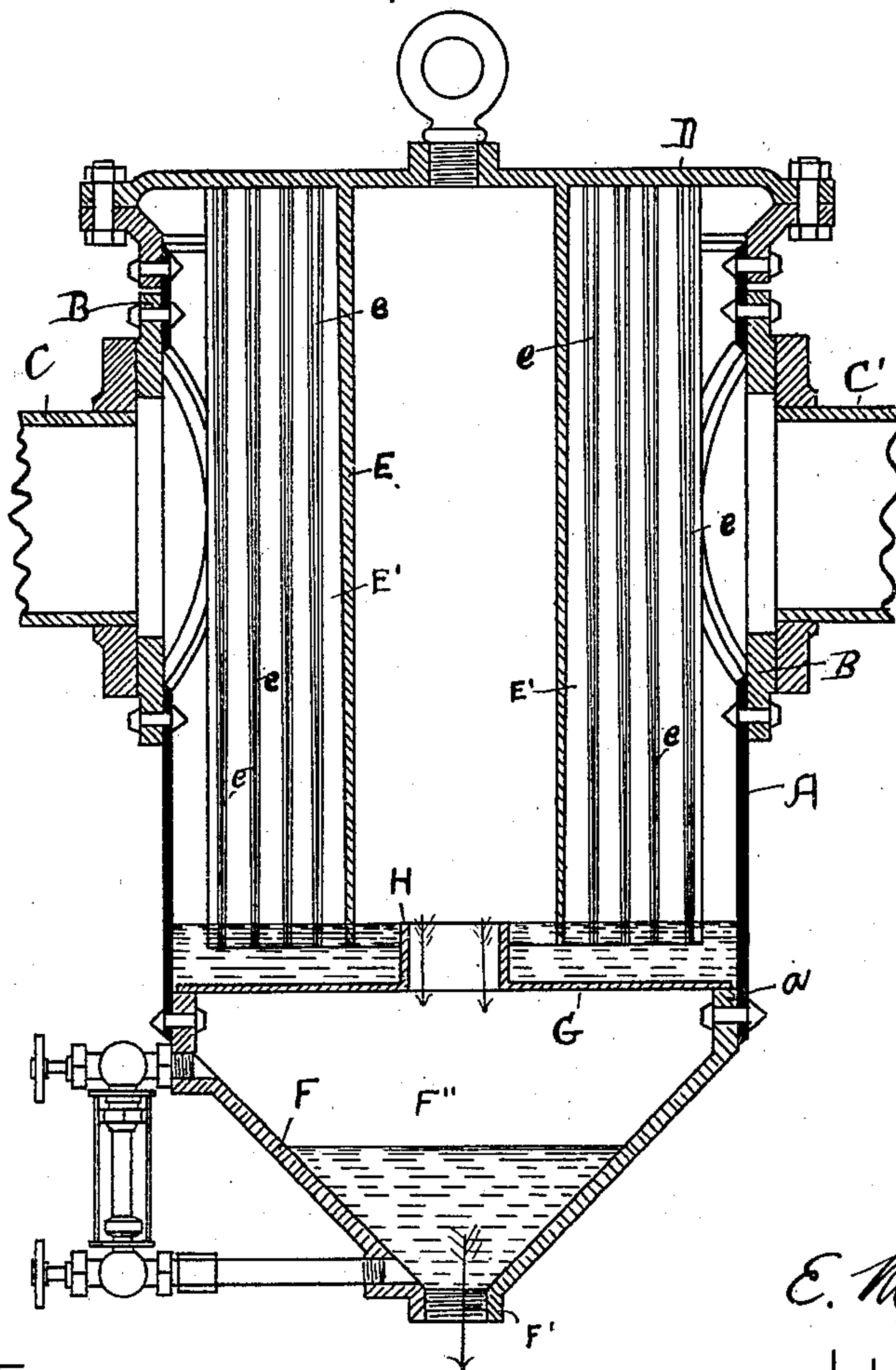
(No Model.)

2 Sheets—Sheet 2.

-Fig-3-



-Fig-2-



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UNITED STATES PATENT OFFICE.

EDGAR M. THACKER, OF DAYTON, OHIO, ASSIGNOR TO THE STILWELL-BIERCE & SMITH VAILE CO., OF DAYTON, OHIO, A CORPORATION OF NEW JERSEY.

APPARATUS FOR SEPARATING OIL.

SPECIFICATION forming part of Letters Patent No. 711,446, dated October 14, 1902.

Application filed May 7, 1902. Serial No. 106,252. (No model.)

To all whom it may concern:

Be it known that I, EDGAR M. THACKER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Apparatus for Separating Oil; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

15 This invention relates to an apparatus for separating oil from steam, and possesses the new and useful features hereinafter described and claimed.

20 Preceding a detail description of the invention reference is made to the accompanying drawings, of which—

Figure 1 is a vertical elevation of my improved oil-separator. Fig. 2 is a vertical sectional elevation of the same on the line $x' x'$ of Fig. 3. Fig. 3 is a horizontal sectional view on the line xx of Fig. 1.

Throughout the specification similar reference-letters indicate corresponding parts in the several views of the drawings.

30 A designates the shell or body of the oil-separator, the bottom of which is inclosed by a conical-shaped portion F, which is riveted thereto and from which there is an outlet F'. This conical bottom provides a chamber F'' for the precipitated oil after its separation from the steam. G designates a water-seal partition, which incloses the top of the said oil-chamber and is supported upon the surrounding edge a of the conical bottom. This partition has a central tubular projection H, which extends from its upper side on a plane with the water-line on the interior of the shell, and thus forms a water seal at the bottom of the shell.

45 B B designate pipe-flanges, which are riveted to opposite sides of the shell A and provide for the connection for inlet and outlet pipes C C'.

D designates a cover, which is bolted to the

top of the shell and has a downwardly-projected tube E, which occupies a central position within the shell. The lower end of said tube projects below the surface of the water and below the upper end of the tubular projection H, which extends, as before stated, from the upper side of the partition-plate G. From the outer side of this tubular extension E there is a series of longitudinal arms E', which extend radially from said tube, the said tube and arms forming a spider, which is connected with and supported from the cover D. These arms E' provide a series of deflecting-walls on the interior of the shell and each of which is provided with a series of longitudinal projections or ribs e . These projections or ribs have their opposite surfaces tapered, and the outermost projection of each arm is somewhat wider than the remaining ones in order to increase the obstruction to the passage of the commingled steam and oil. The surface of the tube E between the radiating arms E' is also provided with longitudinal obstructing-ribs e' . The purpose of this construction of said tube is to provide a deflector for the incoming steam and oil which has a suitably-rough surface, upon which the oil is collected and precipitated to the bottom of the shell. These rough walls of the spider or inner deflector are combined with two outer deflecting and collecting walls I, which extend the length of the shell and are secured by means of bolts J' to the opposite sides of the shell on the interior thereof. The bolts J' penetrate openings in the outer flat surfaces J of said walls. The walls I have their ends I' projected inwardly in the direction of the tube E, and each of said walls I incloses two of the longitudinal walls E' of said tube. The walls I are provided throughout with collecting and deflecting surfaces consisting of corrugations or ribs i , the functions of which are similar to the functions of the ribbed walls of the spider—namely, to provide a series of ribbed walls extending in various directions and providing a rough surface to impede the passage of steam and oil as they enter the separator in a commingled form.

It will be noted from Fig. 3 that there is a

series of vertical serpentine or tortuous passages provided by the construction and arrangement of the spider and the outer walls I, through which the commingled oil and steam passes and during which a contact thereof is made with said walls. The walls deflect the oil and steam in various directions and collect said oil thereon, to be precipitated to the bottom of the separator.

The lower end of the spider, consisting of the tube E and the radiating walls E', rests in the water above the partition-plate G, which, as before stated, provides for a water seal. It is obvious that it would be impossible, owing to the several angularly-disposed deflecting-walls on the interior of the shell, to force the oil through from one port to another. The oil, naturally rising to the surface of the water at the bottom of the separator, will overflow into the opening in the tubular projection H in the center of the partition-plate G and will deposit in the oil-chamber below. The exhaust-steam may enter the port at either side of the separator, and the action of the deflectors and oil-collectors, consisting of the spider and the adjacent plates I, will be the same in either event.

In the operation of the apparatus it will be observed that the steam enters the interior thereof through the inlet-pipe and is divided by the arm or rib of the spider, which points directly toward said inlet (see Fig. 3) and then passes through the several tortuous passages on either side. In such passage it is churned and thrown in every direction against the various corrugated walls or deflectors, during which a maximum quantity of the oil is precipitated against and is collected on said walls, as before indicated, and upon which it descends by gravity to the surface of the water below.

Having described my invention, I claim—

1. An oil-separator comprising a shell having an inlet and outlet for steam at opposite sides, and a bottom oil-outlet, a central baf-

fle member pendent from the top of the shell and projecting to a point below the steam inlet and outlet, said baffle member being provided with a series of spaced radially-projecting walls running longitudinally thereof, and a pair of plate members respectively secured to opposite inner sides of the shell and provided with a series of inwardly-projecting walls alternating with and extending into the intervals between the radial walls of the central baffle member, substantially as set forth.

2. An oil-separator comprising a shell having a steam inlet and outlet at opposite sides, a bottom oil-outlet, and an interior water seal associated with the oil-outlet, a central tube member supported within the shell and having its lower end extending into the water seal, said central tube member being provided with a plurality of exterior radial baffle-walls, and opposite plate members arranged at opposite inner sides of the shell and having a plurality of walls projecting into the spaces between and alternating with the corresponding walls of the tube.

3. An oil-separator comprising a shell having a steam inlet and outlet at opposite sides, a bottom oil-chamber, an interior water-seal partition at the top of the oil-chamber and provided with an opening in communication therewith, a central tube member pendent from the top of the shell and having its lower end submerged in the water seal, said tube being provided with a plurality of longitudinal radially-projecting walls, and oppositely-located plate members within the shell and provided with a series of inwardly-projecting walls projecting into the spaces between and alternating with the corresponding walls of the tube.

In testimony whereof I affix my signature in presence of two witnesses.

EDGAR M. THACKER.

Witnesses:

R. J. MCCARTY,

JOHN W. KALBFUS.