

No. 735,881.

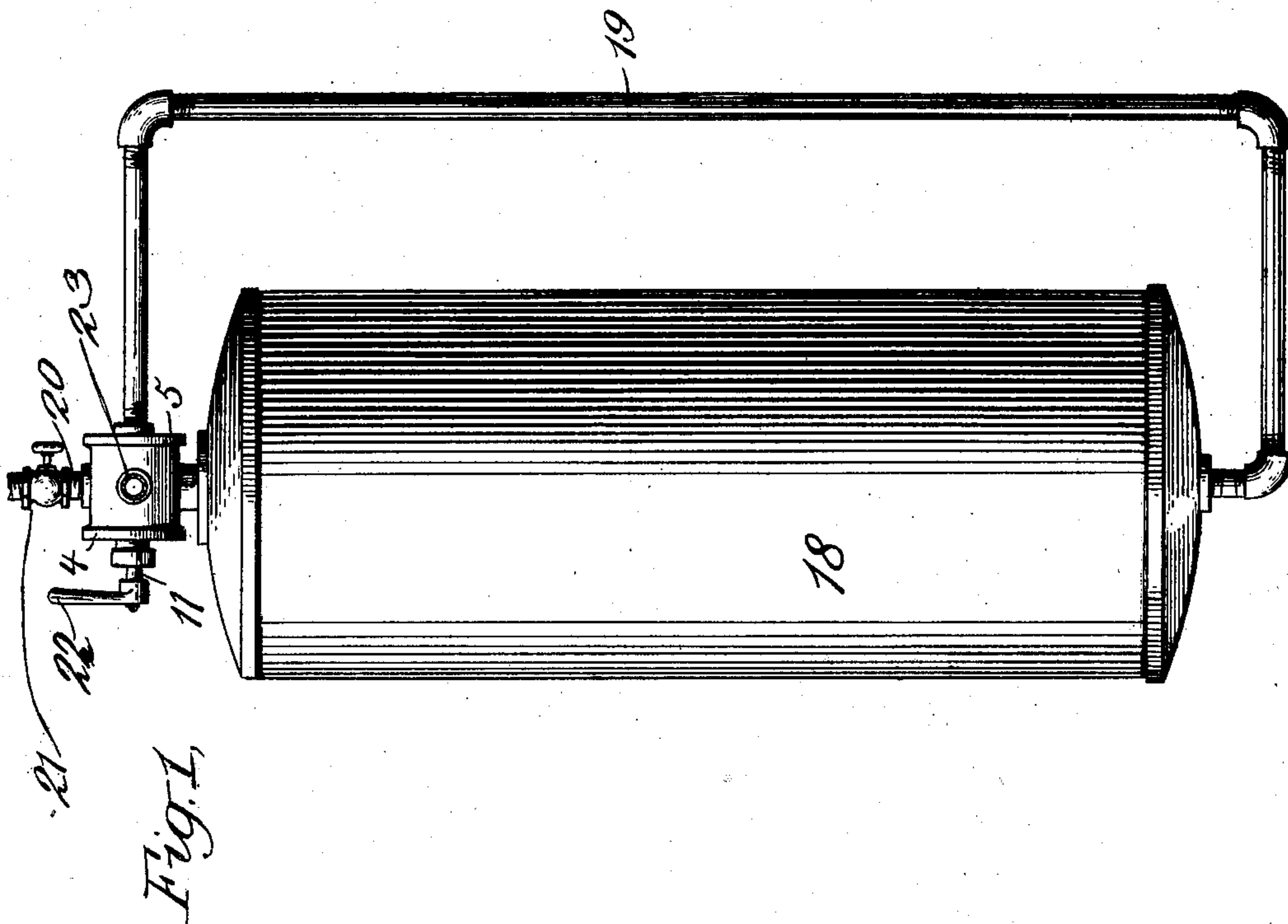
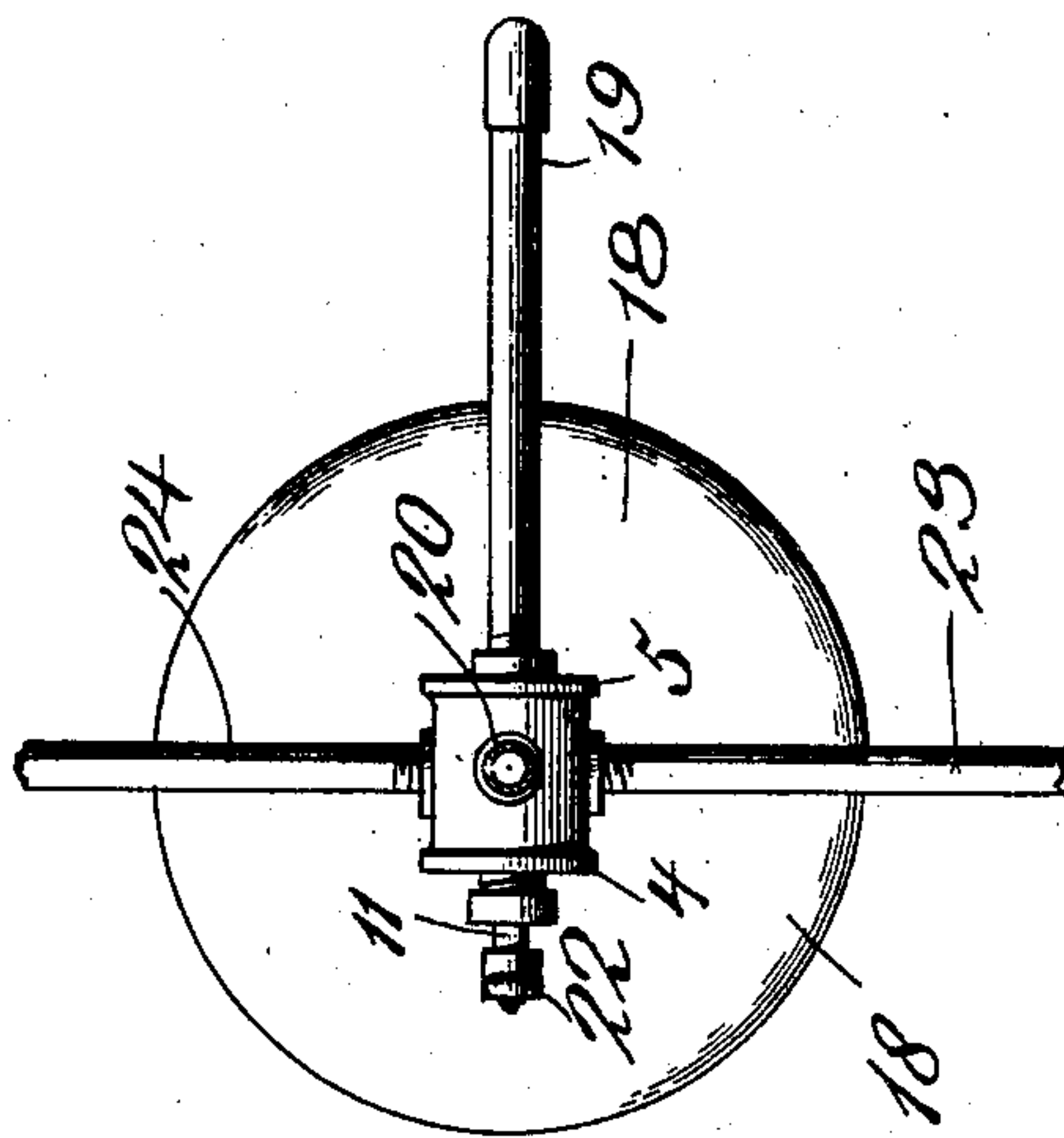
PATENTED AUG. 11, 1903.

E. A. JULY.
TRANSFER SWITCH FOR FLUIDS.

APPLICATION FILED MAY 15, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses
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SHEETS—SHEET 2.

Fig. 4.

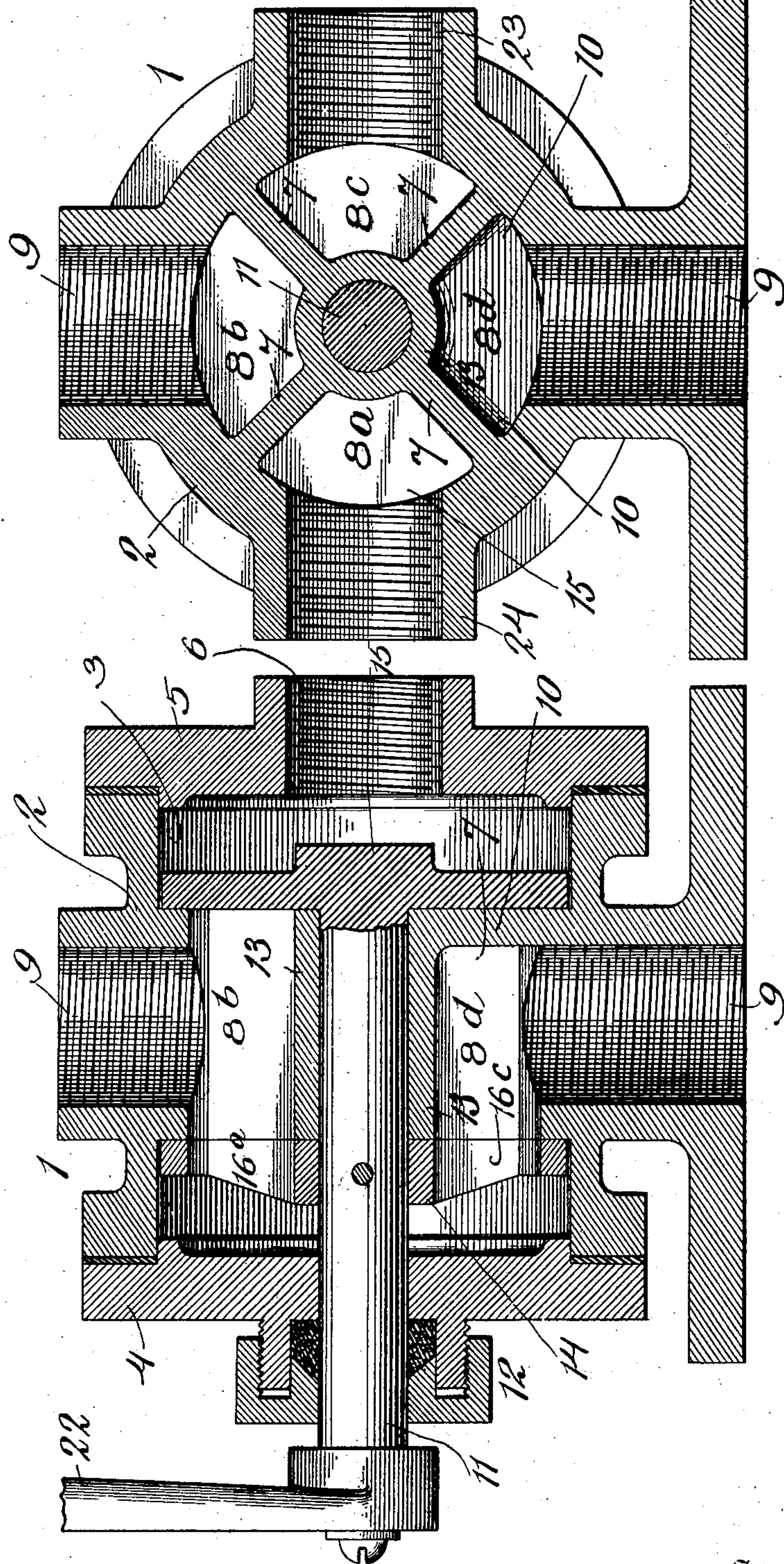


Fig. 3

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3 SHEETS—SHEET 3.

Fig. 6,

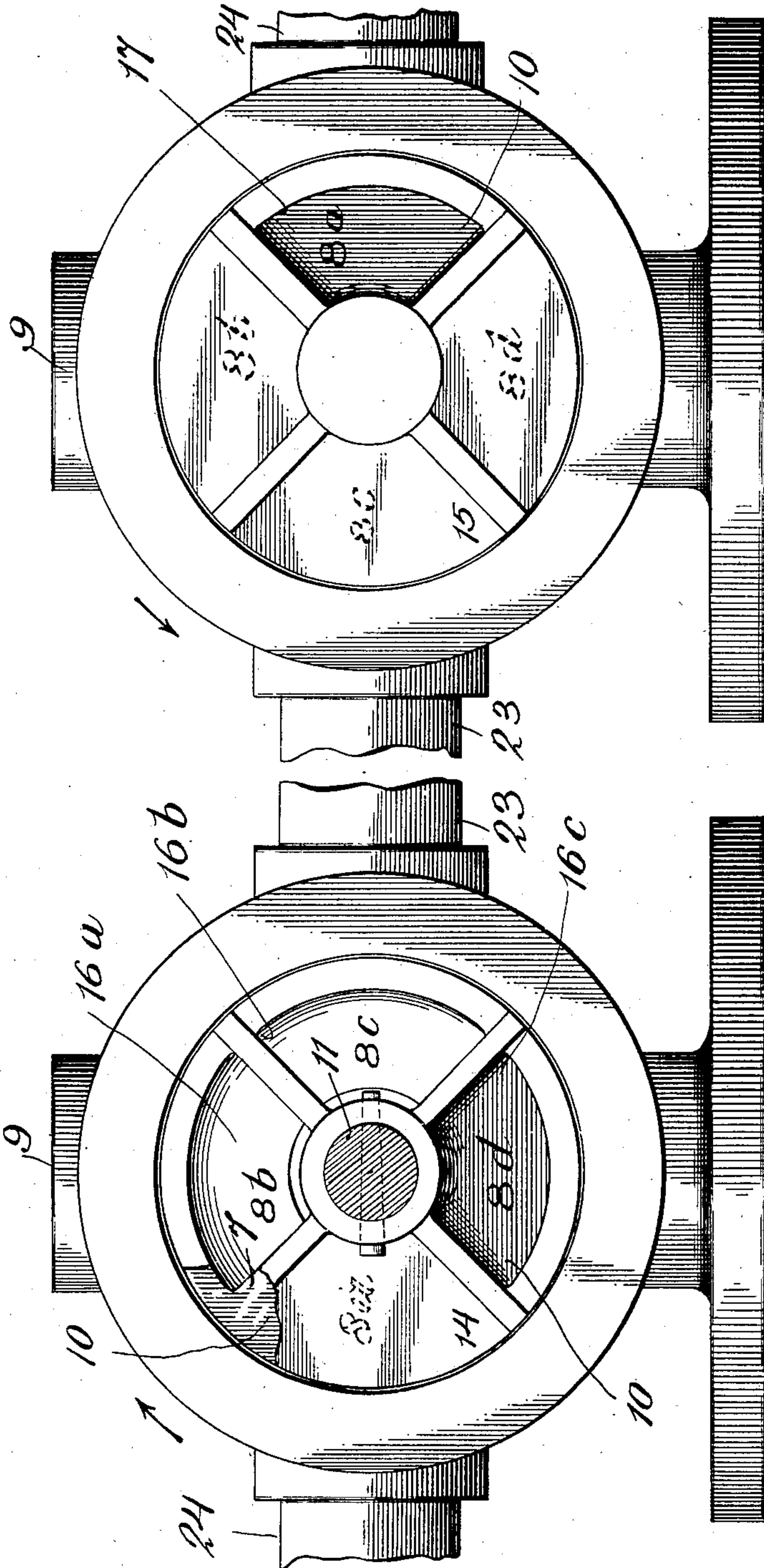


Fig. 5,

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UNITED STATES PATENT OFFICE.

EMIL A. JULY, OF BROOKLYN, NEW YORK.

TRANSFER-SWITCH FOR FLUIDS.

SPECIFICATION forming part of Letters Patent No. 735,881, dated August 11, 1903.

Application filed May 15, 1903. Serial No. 157,220. (No model.)

To all whom it may concern:

Be it known that I, EMIL A. JULY, a citizen of the United States of America, residing at Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Transfer-Switches for Fluids, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention consists in improvements in transfer-switches for fluids, and particularly to that class of transfer-switches employed in connection with filtering apparatus.

In the following I will describe my invention as applied for use in connection with a filtering apparatus; but it will be understood that I may employ my invention in combination with other apparatus, as may be desired.

The object of my invention is to simplify apparatus employed for transferring or switching the direction of fluid therethrough, to reduce the number of working parts in such apparatus, to reduce the friction upon the working parts, so as to render the device easy to operate, to reduce the weight and size thereof, and to provide free and undisturbed passages for the fluid.

To these ends my invention consists in certain novel construction and combination of parts, as illustrated in the drawings and as will hereinafter be more fully set forth.

I will now proceed to describe a device embodying my invention and will then point out the novel features in claims.

In the drawings, Figure 1 is a view in front elevation of a filtering apparatus having a transfer-switch embodying my invention employed in connection therewith. Fig. 2 is a top view of same. Fig. 3 is a view in central longitudinal vertical section through the switch. Fig. 4 is a view in central vertical transverse section through the same. Figs. 5 and 6 are opposite end views of the same with the covers removed.

In the embodiment of my invention herein illustrated the transfer-switch comprises a casing 1, having a substantially hollow body 2, inclosing within it a chamber 3. Heads 4 and 5 close the ends of the said chamber, and a passage 6 leads from the said casing 1 through the head 5 to the exterior thereof. The heads 4 and 5 form, in effect, part of the casing 1.

The central portion of the chamber 3, inclosed by the said casing, is divided by radial partitions 7 into a plurality of longitudinal segments 8^a 8^b 8^c 8^d, and passages 9 lead from each of the said segmental portions to the exterior of the casing. Certain of said segments are closed to passage of fluid therethrough at any time by lateral walls 10, the segment 8^d having a lateral wall 10 at one end thereof and the segment 8^a having a lateral wall at the other end thereof. A valve or switch member is provided in the casing to cooperate with the ports and passages therein, comprising a central operating-spindle 11, passing through a suitable stuffing-box 12 in the head 4 and supported by a hollow hub 13, arranged in the central portion of the chamber 3 and connecting the inner ends of the radial partitions 7 and two valve-disks 14 and 15. The valve-disk 14 has three transfer ports or passages therethrough, 16^a 16^b 16^c. The disk 15 has a transfer-passage 17 therethrough. The various ports and passages are arranged in different positions of the valve or switch member to connect different segmental portions of the chamber 3 in different relation, so as to switch fluid therethrough in different directions in a manner and for a purpose to be presently described.

In Figs. 1 and 2 are shown a conventional form of filtering apparatus in which 18 is intended to represent a filter, and 19 a return-pipe therefor. The transfer-switch embodying my invention is shown in connection with the upper part of the filter and the return-pipe 19 in connection with the rear end of the chamber 3 through the passage 6 in the head 5. A discharge-pipe 20 is connected to the passage 9, leading to the segment 8^b of the chamber 3, and is provided with an ordinary stop cock or valve 21. This pipe may connect with waste. An operating-lever 22 is connected to the operating-spindle 11 of the switch member or valve and may be used for the purpose of operating same. An inlet-pipe 23 connects with the passage leading to the segment 8^c of the chamber 3.

With the apparatus set in the position in which it is shown in the several figures of the drawings—that is to say, with the blank portion of the disk 14 opposite the wall 10 of the segment 8^a and with the port or passage

17 of the disk 15 opening the said segment 8^a to the rear end of the chamber 3—passage for fluid from the inlet 23 is controlled as follows: Fluid is admitted through the passage 9 into the segment 8^c, through the passage 16^b of the disk 14 into the front end of the chamber 3, through the passage 16^c in the disk 14 into the segment 8^d, down through the filter 18 and up through the return-pipe 19 and passage 6 into the rear end of the chamber 3, through the passage 17 in the disk 15 into the segment 8^a, and then through the pipe 24 to a receiver for filtered water. During this operation the valve 21 in the waste-pipe 20 will be closed in order to prevent escape of fluid from the segment 8^c and passage 16^b through passage 16^a to segment 8^b, and thence to waste. In this position of the parts the filtering apparatus is connected for the purpose of delivering filtered water to a suitable receiver or reservoir. If the switch member be turned a quarter of a revolution in the direction of the arrows of Figs. 5 and 6, passage through the segment 8^a, and consequently to pipe 24, will be entirely closed, as it will be in any other position of the switching member except that in which it is shown in the drawings, and this for the reason that one end of said segment is closed by its lateral wall 10; also, the other end will be closed by the disk 15 in any other position than that in which the passage 17 therethrough is opposite the said segment. When the switching member has been given the quarter-turn, as before mentioned, admission through the segment 8^c will pass through the passage 16^a (at such time opposite the segment 8^c) into the front end of the chamber 3, through the passage 16^b into the segment 8^d, down through the filter 18, up through the return-pipe 19 into the rear end of the chamber 3, and thence through the passage 17 in the disk 15 to the segment 8^b, through the waste-valve 21, which at this time will be open, and pipe 20 to waste. In this position the filtering apparatus will be connected from inlet to waste for purpose of filtering to waste. If the switch member be turned another quarter of a revolution in the same direction, the filter will be connected for washing, the fluid passing therethrough in a reverse direction—that is to say, fluid received will be passed backward through the filter to waste. This will be effected as follows: Admission through the pipe 23 and segment 8^c will be closed to the front end of the chamber 3 by the blank portion of the disk 14 (which at this moment will be opposite the said segment) and will be open to the rear end of the chamber 3 through the passage 17 in the disk 15, (at that moment opposite the said segment 8^c.) Fluid will then pass through the rear end of said chamber 3 down through the return-pipe 19 and up in a reverse direction through the filtering apparatus 18 to the segment 8^d, from thence through the passage 16^a in the disk 14 to the front end of the chamber 3,

through the passage 16^c in the said disk, and up through the pipe 20 and waste-valve 21, which will be open for such purpose. In the fourth position the blank portion of the disk 14 will close admission to filtering apparatus and admission from inlet will pass directly from segment 8^c through passages 16^c and 16^b in said disk 14 to segment 8^b, and thence to waste.

It will be seen that the foregoing apparatus is an exceedingly simple one and comprised of but few parts, that these parts are light in weight and form a small compact device, and that the frictional resistance to the operation of the device is reduced to a minimum, there being no tapered or coned surfaces to become jammed, and the pressure on the disks being usually practically balanced.

What I claim is—

1. The combination with a casing inclosing a chamber, the central portion of which is divided into a plurality of segments, of a switch member comprising a central operating-spindle and two disks carried thereby, said disks arranged in said chamber at opposite ends of the segmental portions thereof, and cooperating therewith, and having transfer-passages therethrough.

2. The combination with a casing inclosing a chamber, the central portion of which is divided into a plurality of segments, each segment having a passage leading therefrom to a point exterior the casing, of a switch member comprising a central operating-spindle, and two disks carried thereby, said disks arranged in said chamber at opposite ends of the segmental portions thereof and cooperating therewith, and having transfer-passages therethrough.

3. The combination with a casing inclosing a chamber, the central portion of which is divided into a plurality of segments, each segment having a passage leading therefrom to a point exterior the casing, said casing also containing a passage leading from said chamber at the end thereof to the exterior, of a switch member comprising a central operating-spindle and two disks carried thereby, said disks arranged in said chamber at opposite ends of the segmental portions thereof, and cooperating therewith, and having transfer-passages therethrough.

4. The combination with a casing inclosing a chamber, the central portion of which is divided into a plurality of longitudinal segments, certain of said longitudinal segments having lateral walls closing the same to passage of fluid therethrough, of a switch member comprising a central operating-spindle and two disks carried thereby, said disks arranged in said chamber at opposite ends of the segmental portions thereof, and cooperating therewith, and having transfer-passages therethrough.

5. The combination with a casing inclosing a chamber, the central portion of which is divided into a plurality of segments, each

segment having a passage leading therefrom to a point exterior the casing, and certain of said segments having lateral walls closing the same to passage of fluid longitudinally there-
 5 through, of a switch member comprising a central operating-spindle, and two disks carried thereby, said disks arranged in said chamber at opposite ends of the segmental portions thereof and coöperating therewith,
 10 and having transfer-passages therethrough.

6. The combination with a casing inclosing a substantially cylindrical chamber, the central portion of which is divided into four segmental portions by radial partitions, and further laterally divided by lateral walls closing
 15 passage longitudinally through certain of said segmental portions, of a switch member comprising an operating-spindle extending longitudinally within the said casing and two
 20 disks carried thereby, having substantially parallel faces arranged against the opposite ends of the segmental portions of the said chamber, said disks having transfer-passages therethrough.

25 7. The combination with a casing 1, inclosing a chamber 3, the central portion of which is divided into four segments 8^a , 8^b , 8^c , 8^d , certain of said segmental portions having lateral walls 10, as shown, of a switch member comprising a central operating-spindle 11, and
 30 two disks 14, 15 carried thereby, said disks having their faces parallel and operating

against the ends of the said segmental portions of the chamber, and having transfer-passages therethrough, said casing being provided with inlet and discharge passages leading to or from the interior of the segmental portions of the chamber and of one of the end portions of the chamber substantially as specified.
 40

8. The combination with a casing 1, inclosing a chamber 3, the central portion of which is divided into four segments 8^a , 8^b , 8^c , 8^d , the said segment 8^a closed at one end by a lateral wall 10, and the segment 8^d closed at its opposite end by a lateral wall 10, said casing
 45 having passages connecting the exterior of the casing with the said segments and with the said chamber at one end thereof, of a switch member comprising a central operating-spindle 11 and two disks 14 and 15 carried thereby, the said disk 14 having three transfer
 50 ports or passages 16^a , 16^b , 16^c therethrough, and the said disk 15 having a transfer port or passage 17 therethrough, said disks arranged in the said chamber and operating
 55 against the ends of the segmental portions thereof.

Signed at New York, N. Y., this 4th day of May, 1903.

EMIL A. JULY.

Witnesses:

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 C. F. CARRINGTON.