

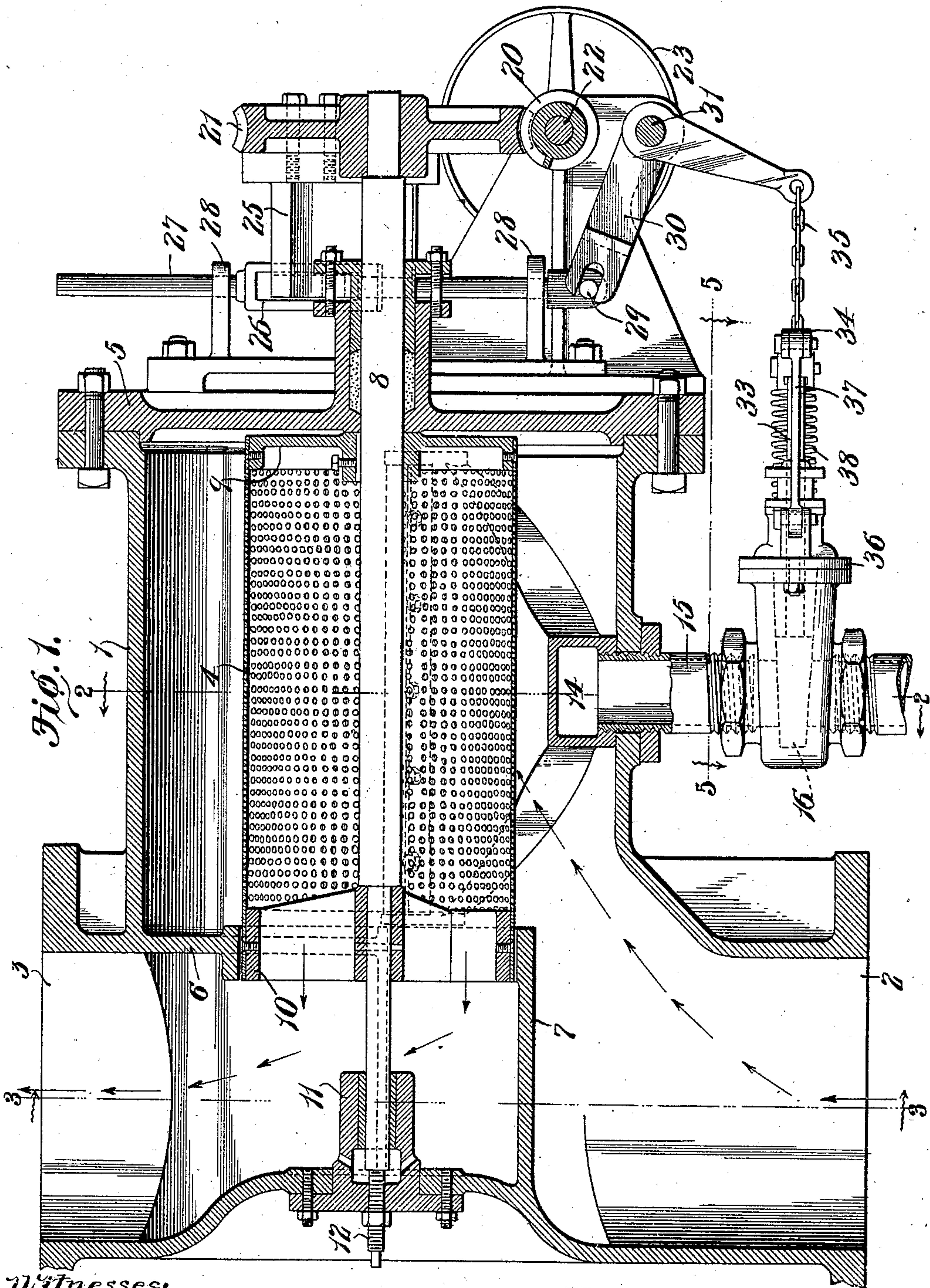
No. 842,602.

PATENTED JAN. 29, 1907.

H. WURDACK.  
AUTOMATIC LIQUID STRAINER.

APPLICATION FILED JULY 20, 1906.

3 SHEETS—SHEET 1.



Witnesses:  
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Wells & Church

Inventor, *Hugo Wurdack.*  
By *Bracewell Cornwall* Attys.

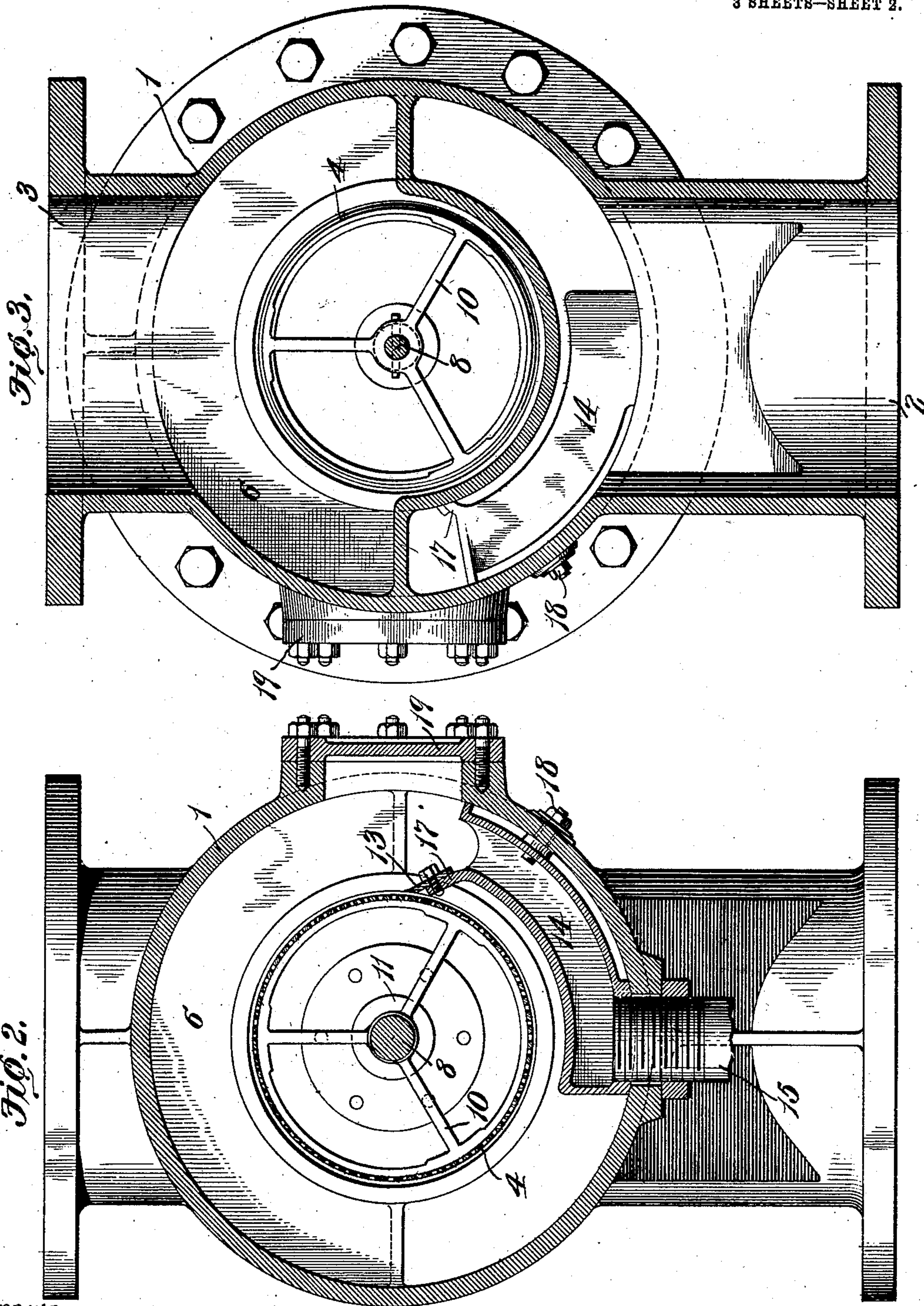


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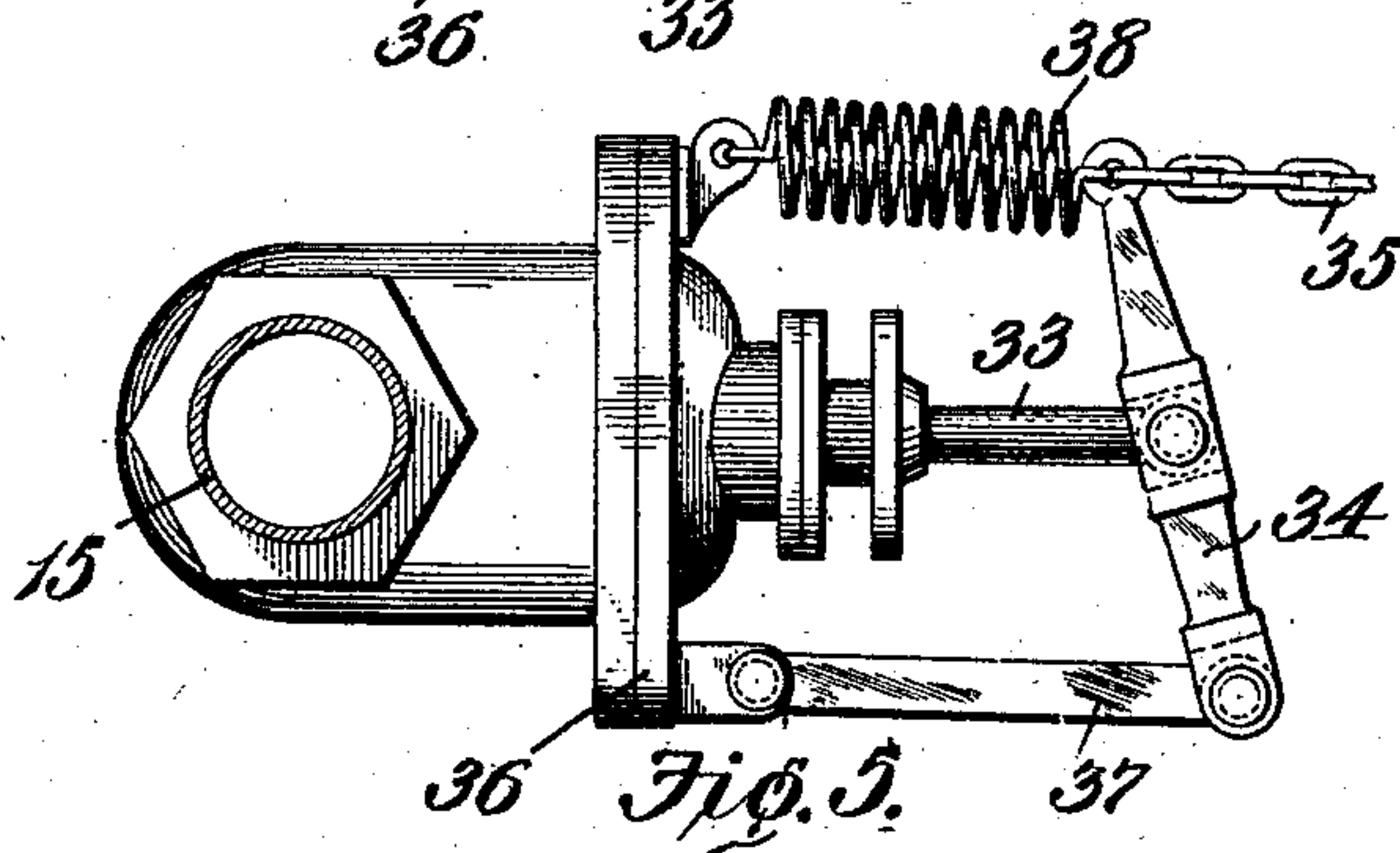
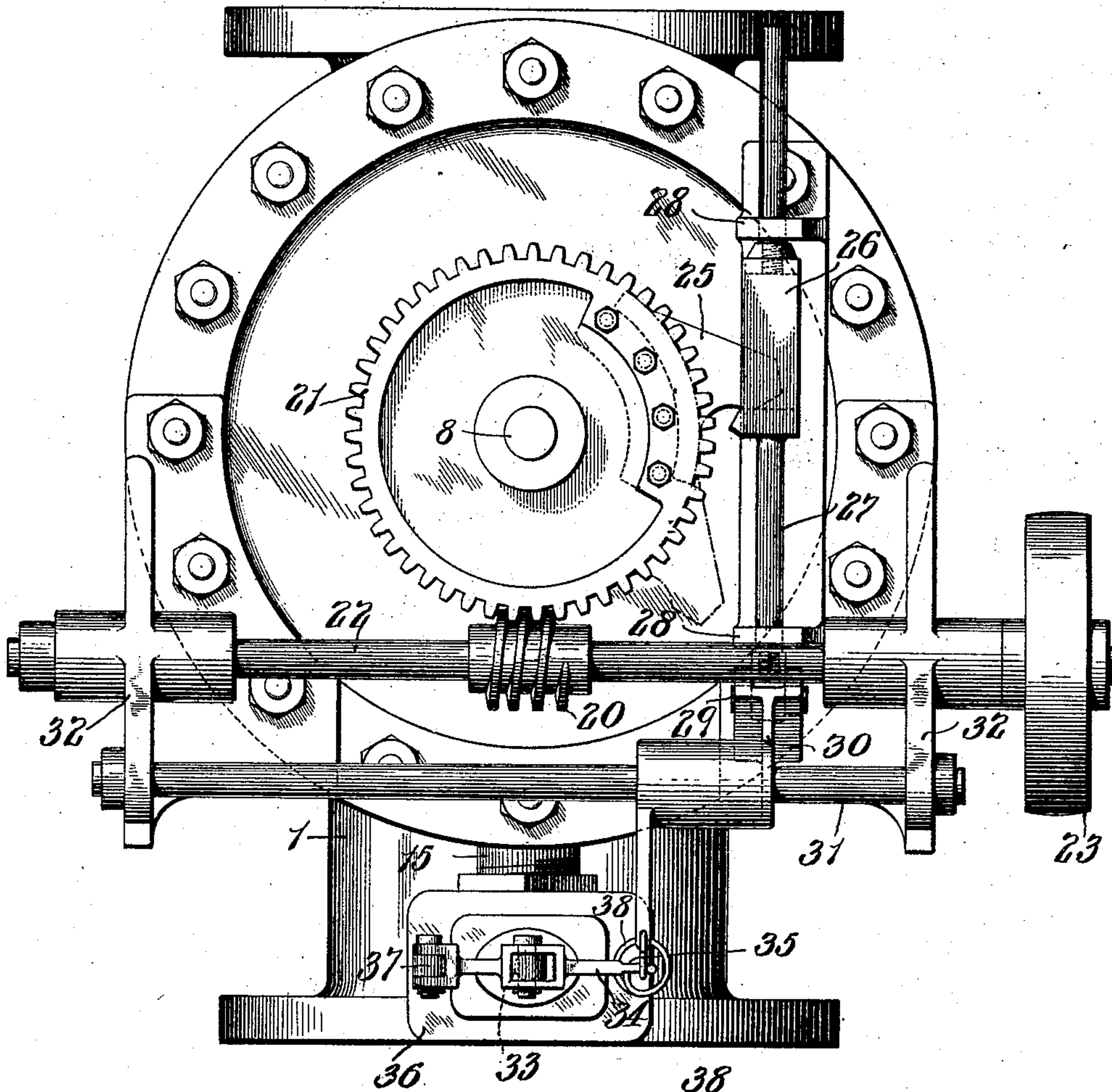
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3 SHEETS—SHEET 3.

*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

HUGO WURDACK, OF ST. LOUIS, MISSOURI.

## AUTOMATIC LIQUID-STRAINER.

No. 842,602.

Specification of Letters Patent.

Patented Jan. 29, 1907.

Application filed July 20, 1906. Serial No. 327,072.

*To all whom it may concern:*

Be it known that I, HUGO WURDACK, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Automatic Liquid-Strainers, of which the following is a full, clear, and exact description, 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, forming part of this specification.

This invention relates to devices for straining liquids; and the object of my invention is to provide a device of the character described in which the substance or refuse matter that is removed from the liquid which passes through the device will be automatically discharged, and thus prevent the device from becoming clogged.

My device is intended to be used principally for straining unfiltered water which is used for commercial purposes; but it will of course be understood that said device is not limited to this use and could be used equally well for other purposes without departing from the spirit of my invention.

The main object of my invention is to provide a device for straining liquids which is so constructed that all of the refuse matter which is strained from the liquid will be automatically discharged from the device, and thus dispense with the necessity of manually cleaning out the device.

Figure 1 is a vertical cross-sectional view of a device embodying the features of my invention. Fig. 2 is a transverse sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a transverse sectional view taken on the line 3 3 of Fig. 1. Fig. 4 is a rear end elevation of the device, and Fig. 5 is a detail top plan view taken on about the line 5 5 of Fig. 1.

Referring to the drawings, which represent the preferred form of my invention, 1 designates a hollow T-shaped casting provided at its lower end with a receiving-opening 2, through which the water enters, and at its upper end with a discharge-opening 3. A screen 4 is located inside of the casting, and said screen is preferably of tubular form and constructed of perforated metal, although, if desired, wire mesh or any other suitable material could be substituted for the perforated metal. A head 5 is connected to the rear end of the casting, and on the interior of the casting is a wall 6, through which the front end of the screen 4 projects, said

wall closely surrounding the upper half of the periphery of the screen, as shown in Fig. 1, so that the water will have to pass through the screen and leave the open end thereof to reach the discharge-opening 3. The casting is also provided with an inwardly-extending wall 7, surrounding the lower half of the end portion of the screen and extending over the entrance-opening 2 to deflect the water into the main chamber of the casting in which the screen 4 is located. The screen 4, which, as previously stated, is of tubular form, is carried by a rotatable shaft 8, extending horizontally through the casting, said shaft having connected thereto a disk 9, to which the rear end of the screen is fastened, and a spider 10, to which the front end of the screen is fastened, the spider 10 being mounted on a reduced portion of the shaft, as shown in Fig. 1. The reduced portion of the shaft is mounted in a bearing 11, connected to the casting, and said bearing is provided with lubricating-ports leading into the hollow interior thereof and with an adjusting-screw 12, that bears against the front end of the shaft. The rear end of the shaft extends through the head at the rear end of the casting and through a stuffing-box carried by said head.

Preferably the water is forced into the casting by pressure, and as the water flows through the casting the refuse matter in the water will be deposited on the exterior of the screen 4, the water passing inside of the screen and out through the discharge-opening 3. A scraper 13, extending approximately the entire length of the screen, is arranged adjacent the screen, as shown in Fig. 2, so that as the screen revolves the refuse matter will be removed therefrom and drop into a conduit 14, which communicates with a discharge-pipe 15, in which a valve 16 is mounted, as shown in Fig. 1, said valve being actuated intermittently to permit the refuse matter to be forced through said discharge-pipe by the pressure of the water in the casting. The conduit 14 is preferably formed by a separate casting and has a contracted end, as shown in Fig. 1, the upper end of the conduit being approximately as wide as the length of the scraper which is fastened to a flange 17 thereon, the conduit being retained in position by fastening devices 18, which project through the wall of the main chamber of the casting 1, as shown in Fig. 2.

For enabling the interior of the conduit 14



to be reached the casting 1 is provided adjacent the upper end of said conduit with a removable cap 19, as shown in Figs. 2 and 3.

I have herein shown the discharge-pipe 15 as being provided with a gate-valve 16; but it will of course be understood that any suitable type of valve could be employed. Preferably the screen 4 is rotated by a worm 20, which meshes with a gear 21, fastened to the shaft 8, on which the screen is mounted, the shaft 22, on which the worm 20 is mounted, being provided with a drive-pulley 23. I prefer to utilize the rotary movement of the screen for actuating the release-valve in the discharge-pipe 15, and, as shown in Fig. 4, the gear 21 has an arm 25 connected thereto, which intermittently engages a block 26, fastened to a rod 27, mounted in bearings 28, connected to the head of the casting and provided at its lower end with a pin 29, which projects into the bifurcated end of a bell-crank lever 30, which imparts a reciprocating movement to the valve 16. The shaft 31, on which the bell-crank lever 30 is mounted, is carried by brackets 32, connected to the head of the casting, which brackets also support the main drive-shaft 22.

The stem 33 of the gate-valve 16 has a cross-arm 34, pivotally connected to its outer end, and this arm is connected to the bell-crank lever 30 by a chain 35, as shown in Fig. 1, the opposite end of said cross-arm being connected to the valve-casing 36 by a link 37. After the valve has been operated by the reciprocation of the rod 27 said valve, and also the rod 27, will be returned to normal position by means of a spring 38, which is connected to the valve-casing and to the end of the cross-arm 34, to which chain 35 is fastened, as shown clearly in Fig. 5.

As previously stated, I prefer to force the water through the casting by means of pressure, and when the device is operated on this principle the pressure of the water inside of the main chamber of the casting 1 will force the refuse matter out through the conduit and discharge-pipe. If desired, however, I can draw the water through the casting 1 by suction, and when the device is operated in this manner it will be necessary to connect the discharge-pipe with a pump or some suitable device for creating a suction to draw the refuse matter out of the discharge-pipe and conduit. While I prefer to construct the casting in the form of a T, with the entrance-opening at the bottom and the discharge-opening at the top of the casting, I do not wish it to be understood that this particular form of casting is at all essential to the successful operation of my device, for the discharge-opening could be formed in alignment with the end of the screen or the casting could be constructed in numerous other ways without departing from the spirit of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A device of the class described, comprising a shell or casing adapted to receive water, said casing being provided with a receiving-opening and a discharge-opening, a screen located inside of said casing for straining the refuse matter from the water which passes through the casing, a conduit, means for removing the refuse matter from the screen and discharging it into the conduit, and means for permitting the refuse matter to be discharged from the conduit automatically; substantially as described.

2. A device of the class described, comprising a shell or casing adapted to receive water, said casing being provided with a receiving-opening and a discharge-opening, a cylindrical screen rotatably mounted inside of the casing for separating the refuse matter from the water which passes through the casing, a scraper cooperating with the exterior of the screen to remove the refuse matter therefrom, a conduit for receiving said refuse matter, a valve for controlling the discharge of said matter from said conduit, and means for actuating said valve intermittently; substantially as described.

3. A device of the class described, comprising a shell or casing adapted to receive water, said shell being provided with a receiving-opening and a discharge-opening, a tubular screen rotatably mounted in said shell and so arranged that the water which passes through the shell will pass into the interior of the screen and thus deposit the refuse matter in the water on the exterior of the screen, a scraper for removing said refuse matter from the screen, a conduit for receiving said refuse matter, and a valve for controlling the discharge of the refuse matter from said conduit; substantially as described.

4. A device of the class described, comprising a casing adapted to receive water and provided with an entrance-opening and a discharge-opening, a tubular screen arranged horizontally in said casing for straining the refuse matter from the water which passes through the casing, means for rotating said screen, a scraper for removing the refuse matter therefrom, a conduit for receiving said matter, and an automatically-operated valve for controlling the discharge of the refuse matter from said conduit; substantially as described.

5. A device of the class described, comprising a casing, a screen arranged inside of said casing, a scraper cooperating with said screen, a conduit arranged adjacent said scraper, a valve for controlling the passage of matter from said conduit, means for rotating said screen continuously, and means for actuating the valve intermittently; substantially as described.



6. A device of the class described, comprising a casing, a screen mounted inside of said casing, a scraper cooperating with said screen, a conduit arranged beneath said scraper and provided with a contracted end, and a valve for controlling the discharge of matter from said conduit; substantially as described.

7. A device of the class described, comprising a casing, a screen located inside of said casing, a hollow member arranged beneath said screen to form a conduit, and a scraper fastened to the upper edge of said hollow member; substantially as described.

8. A device of the class described, comprising a casing, a horizontal shaft extending through said casing, a tubular screen carried by said shaft, a scraper cooperating with the exterior of said screen, a conduit arranged adjacent said scraper, a valve for controlling the passage of matter from said conduit, means for rotating said screen continuously, mechanism for actuating the valve, and a device which travels with the screen for actuating said mechanism intermittently; substantially as described.

9. A device of the class described, comprising a casing, a horizontal shaft extending through said casing, a tubular screen carried by said shaft, a scraper cooperating with the exterior of said screen, a conduit arranged adjacent said scraper, a valve for controlling the passage of matter from said conduit,

means for rotating said screen continuously, a reciprocating rod, a bell-crank lever connected to the lower end of said rod, a connection between the bell-crank lever and said valve, and means for actuating said rod intermittently; substantially as described.

10. A device of the class described, comprising a casing, a horizontal shaft extending through said casing, a tubular screen carried by said shaft, a scraper cooperating with the exterior of said screen, a conduit arranged adjacent said scraper, a valve for controlling the passage of matter from said conduit, means for rotating said screen continuously, a reciprocating rod, a bell-crank lever connected to the lower end of said rod, a cross-arm connected to the stem of said valve, a connection between said bell-crank lever and one end of said cross-arm, a link fastened to the other end of said cross-arm and to a stationary member, means for actuating said reciprocating rod intermittently to operate the valve, and a spring for returning said rod to normal position; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 3d day of July, 1906.

HUGO WURDACK.

Witnesses:

WELLS L. CHURCH,  
CORA BADGER.