

H. B. HOLT.  
STRAINER.  
APPLICATION FILED NOV. 3, 1910.

989,975.

Patented Apr. 18, 1911.

2 SHEETS—SHEET 1.

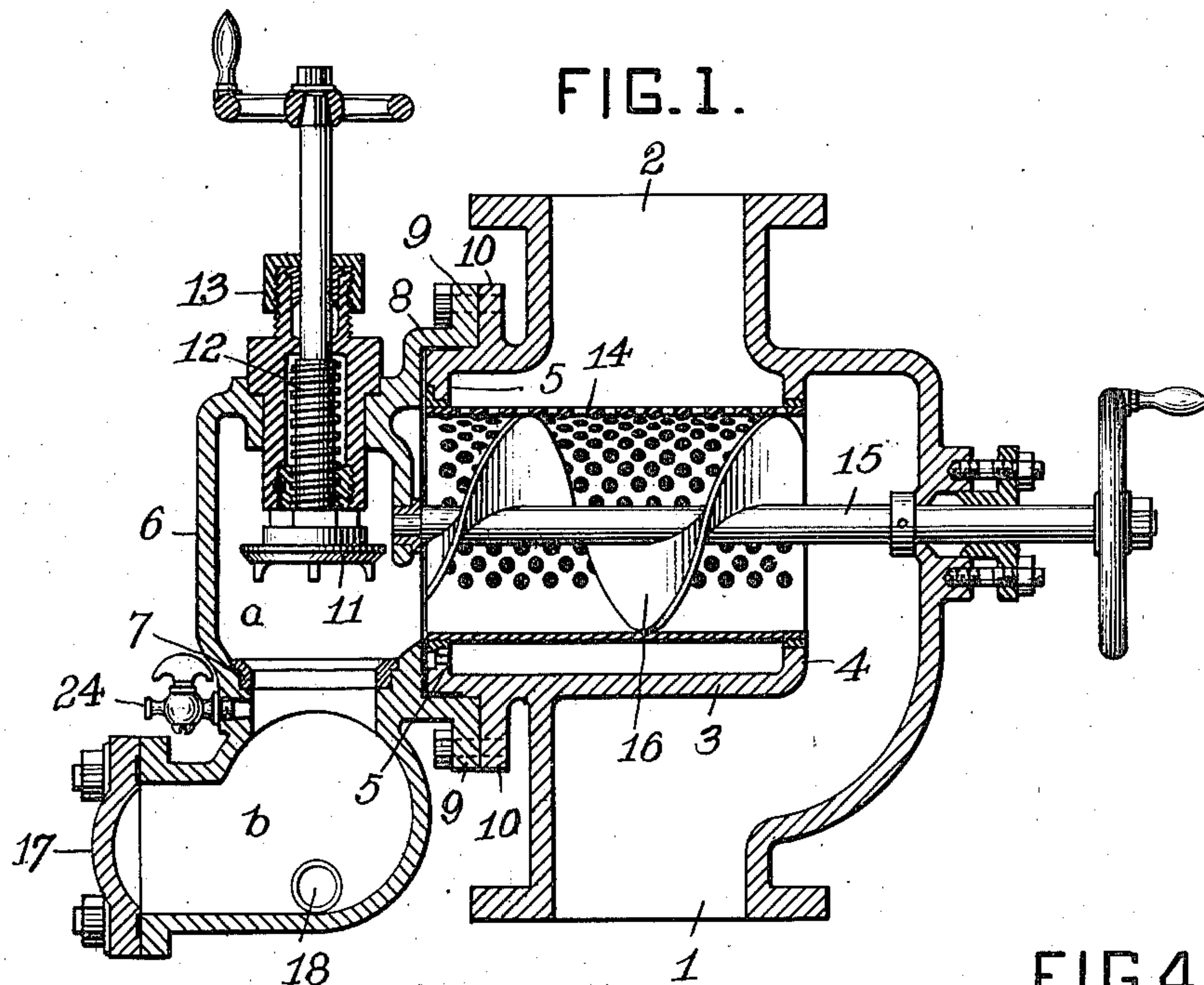
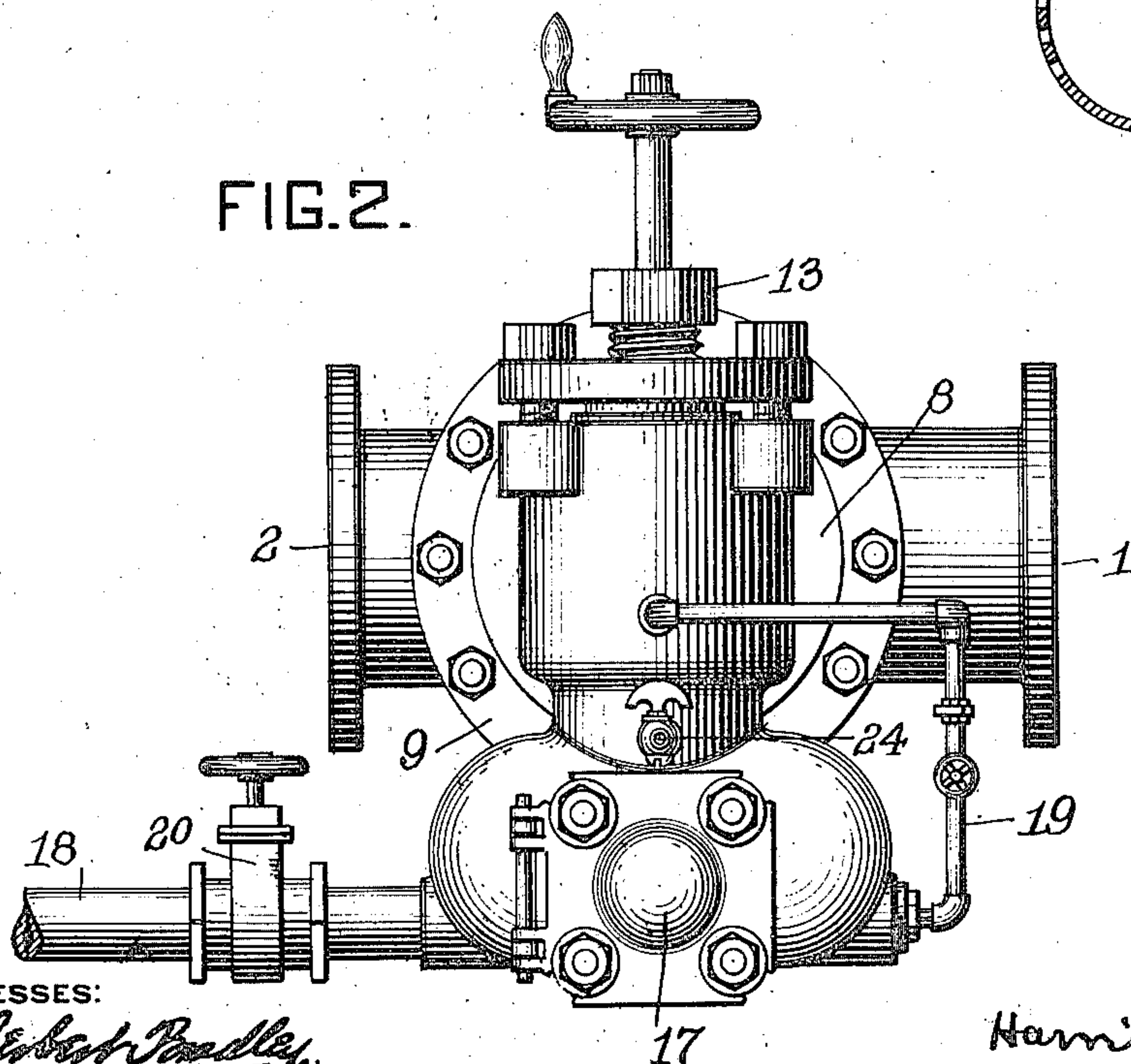
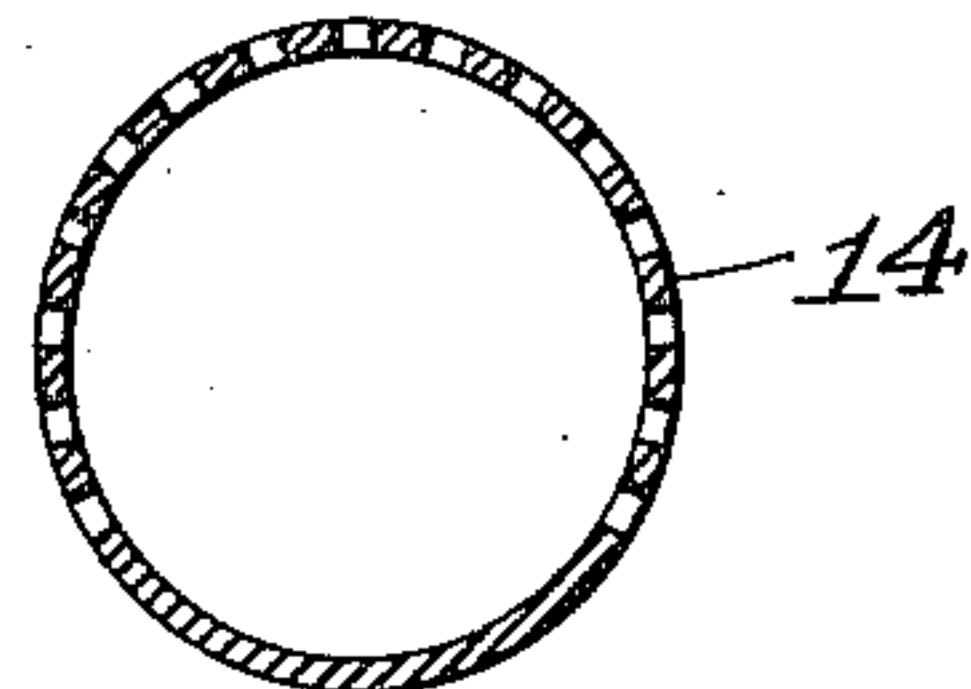


FIG. 4.



WITNESSES:

*J. Herbert Bradley*  
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Harris B. Holt  
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H. B. HOLT.

STRAINER.

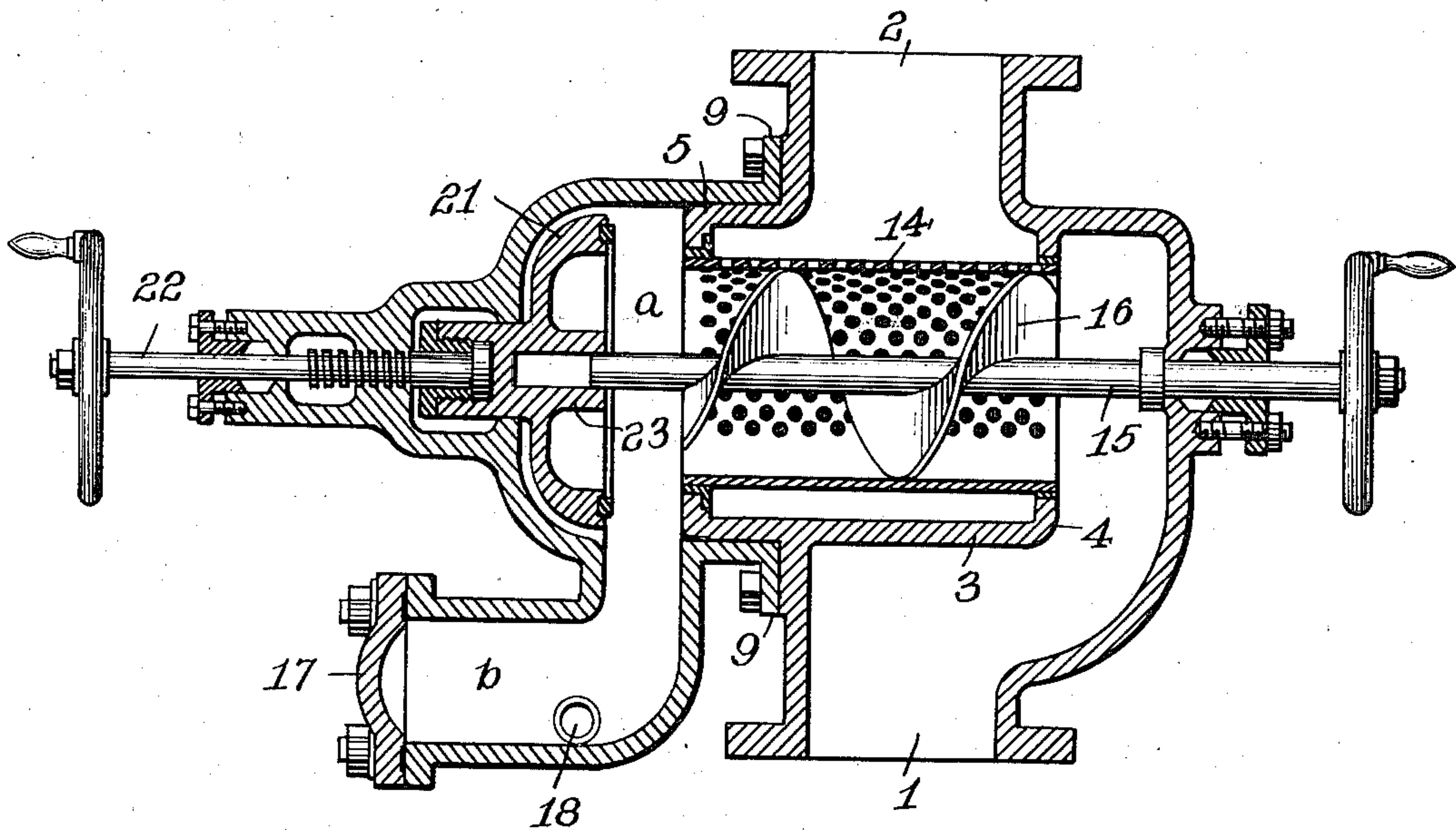
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2 SHEETS—SHEET 2.

FIG. 3.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

HARRIS B. HOLT, OF VERSAILLES, KENTUCKY.

## STRAINER.

989,975.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed November 3, 1910. Serial No. 590,596.

*To all whom it may concern:*

Be it known that I, HARRIS B. HOLT, residing at Versailles, in the county of Woodford and State of Kentucky, a citizen of the United States, have invented or discovered certain new and useful Improvements in Strainers, of which improvements the following is a specification.

The invention described herein relates to certain improvements in strainers for pumps, etc., and has for its object a construction in which the foreign matter caught by the strainer may be removed quickly and with little labor from the separating surface and without removal of any of the parts and without any stoppage of the flow of the material being cleaned.

The invention is hereinafter more fully described and claimed.

In the accompanying drawing forming a part of this specification Figure 1 is a sectional elevation of my improved strainer the parts being adjusted for connecting the apparatus in a vertical line of pipe, Fig. 2 is a side elevation showing the parts adjusted for connection in a horizontal line of pipe, Fig. 3 is a view similar to Fig. 1 illustrating a modification of my improvement and Fig. 4 is a transverse section of the straining shell, on a reduced scale.

The straining apparatus consists of a main shell having its inlet 1 and outlet 2 suitably constructed for connection in a line of pipe. An angular diaphragm 3, 4 is formed across the shell one wall as 4 thereof being formed parallel or substantially parallel with the end wall of a circular boss or projection 5 forming a portion of the side wall of the shell. A second shell 6 divided into two compartments *a* and *b* by a diaphragm 7 is mounted on the boss or projection 5. Through the side wall of the chamber *a* is formed an opening which is surrounded with a circular rim 8 adapted to fit over the boss or projection 5. The rim is provided with a flange 9 which is adapted to be bolted to the flange 10 on the boss or projection. By regularly spacing the bolt holes in the flanges 9 and 10 the shell 6 can be adjusted on the boss so that its axis can be parallel or at any desired angle to the axis of the main shell.

An opening is formed through the diaphragm 7 and a valve 11 having a stem 12

passing through a stuffing box 13 on the end of the shell 6 is provided for closing the opening through the diaphragm 7.

A perforated diaphragm is arranged transverse of the flow of liquid through the shell 1 and in such relation to the opening into the receiving chamber *a* that material caught by the diaphragm may be readily forced into the chamber. It is preferred that straining member or diaphragm should be made in the form of an open ended cylinder 14 which is supported in openings formed through the portion 4 of the diaphragm of the main shell and the end wall of the boss 5. It is preferred that the cylinder should have its wall perforated for about three fourths of its perimeter as clearly shown in Figs. 1 and 3, and that the openings in which the perforated cylinder is supported, should be so arranged that the latter will be subjected to substantially equal pressure at all points internally and externally. The liquid being treated flows into one end of the cylinder, and the valve 11 being closed through the perforations to the outlet 2.

The perforated cylinder is so adjusted in position that its imperforate portion will be lowermost, thus preventing any sand or other small objects which may settle in the cylinder from passing again into the strained liquids.

In order to remove any material caught by the strainer a shaft 15 provided with a helically arranged blade 16 is mounted in suitable bearings so that the edges of the blade will sweep the entire inner surface of the strainer forcing any foreign objects into the chamber *a*. It will be readily understood by those skilled in the art that as the shaft 15 is small and the pitch of the blade 16 is large that the screw will not materially retard the flow of the liquid.

The chamber *b* is provided with a discharge opening which is normally closed by a cap 17. This opening is made of considerable size to permit of the removal of objects too large to be washed out through the discharge pipe 18. The removal of the sand and other small material through the pipe 18 which as shown in Figs. 1 and 2 is on or approximately on a level with the bottom of chamber *b*, is effected by a jet of water introduced through the pipe 19 connected to



the chamber *a* or other suitable part of the apparatus. The pipe is connected to chamber *b* in line with the discharge pipe 18.

During the normal operation of the apparatus the valve 11 is preferably left open provided the valve 20 in the discharge pipe 18 is closed so that any material forced into the chamber *a* by the cleaning screw, which may be given a few turns from time to time, will drop into the chamber *b*. When the latter is to be cleaned, the valve 11 is closed so that the cap may be removed without interfering with the operation of the apparatus. If the valve 11 is kept closed after the chamber *b* is cleaned this chamber should be filled with liquid by opening the valve in pipe 19 so as to equalize pressures in chambers *a* and *b* and thereby facilitating the opening valve 11.

When the straining apparatus is placed in the suction line of a pump it is preferred that the valve 11 be kept closed and before opening it, the pet-cock 24 should be opened and water admitted to chamber *b* through pipe 19 so as to force all air out of chamber *b*.

In Fig. 1 the shell 6 having the cleaning chambers is shown with its axis parallel with the axis of the shell 1 or the position of the shell 6 should have when the apparatus is connected to a vertical line of pipe. When the apparatus is connected to a horizontal line of pipe the shell 6 is adjusted to such a position that the materials caught by the strainer will when forced therefrom drop into the discharge chamber *b*.

It will be observed that the dirt receiving chamber *a* is practically a lateral extension of the main or strainer chamber of the apparatus being located at one end of the perforated shell 14 to receive foreign material forced from the cylinder 14. In the construction shown in Fig. 1, provision is made for closing the connection between the receiving and discharging chambers, when it becomes necessary to clean the discharge chamber *b* but if desired the receiving chamber may be cut off from the main chamber of the apparatus and the receiving and discharge chambers uninterruptedly connected, as shown in Fig. 3. As therein shown a valve 21 is so arranged that when shifted inwardly by the valve stem 22 it will so seat against the wall of the main shell as to close the end of the straining cylinder adjacent to the receiving chamber *a*. When so seated the discharge chamber *b* may be opened and cleaned. In this construction the inner end of the shaft 15 is mounted in a central boss or projection 23 formed on the valve 21 the bearing for the shaft being so constructed as to permit the movement of the valve independent of the shaft.

The shell 6 with its normally closed out-

let and a valve interposed between the discharge end of the straining cylinder and the outlet from the shell 6, form as it were a lock permitting of the removal of foreign material from the strainer without interfering with the flow of liquid through the straining apparatus.

I claim herein as my invention:

1. In a straining apparatus, the combination of a shell adapted to be connected to a line of pipe, a perforated diaphragm arranged transverse of the flow of liquid through the shell, means operative between the inlet of the shell and the diaphragm for the removal of material caught by the diaphragm, a shell arranged to receive material removed from the strainer and having a normally closed outlet and means interposed between the straining diaphragm and such outlet for preventing the escape of fluid through the outlet when opened.

2. In a straining apparatus the combination of a shell adapted to be connected to a line of pipe, a perforated diaphragm arranged transverse of the flow of liquid through the shell, means operative between the inlet and the diaphragm for removing material caught by the diaphragm, a chamber arranged to receive such material and a discharge chamber connected to the receiving chamber and a valve for closing the connection between said chambers.

3. In a straining apparatus the combination of a shell adapted to be connected to a line of pipe, a perforated cylinder so arranged in the line of flow that the liquid will enter one end and escape through the perforations, means for removing material caught by the cylinder, a chamber for the reception of the material removed from the cylinder, a discharge chamber connected to the receiving chamber and a valve for closing the connection between said chambers.

4. In a straining apparatus, the combination of a shell adapted to be connected to a line of pipe, a perforated diaphragm arranged transverse of the flow of liquid through the shell, means traversing the inlet side of the diaphragm for the removal of material, a shell provided with connected chambers adjustably mounted on the first shell with one chamber in position to receive the material caught by the diaphragm and a valve for closing the connection between said chambers.

5. In a straining apparatus the combination of a shell adapted to be connected to a line of pipe, a cylinder having open ends and perforated walls so arranged that the liquid will enter one end and escape through the perforations, a rotatable screw arranged in the cylinder, a chamber arranged to receive material removed by the screw, a discharge chamber connected to the receiving chamber a valve controlling the connection



between the chambers, a pipe connected for flushing the discharge chamber and an outlet pipe said pipes being connected to the chamber in line with each other.

- 5 6. In a straining apparatus, the combination of a shell adapted to be connected to a line of pipe a cylinder having a portion only of its wall perforated and having open ends the cylinder being so arranged with the  
10 imperforate portion lowermost that the liquid enters at one end and escapes through the perforations, means for removing the

material retained in the cylinder, a chamber arranged to receive such material, a discharge chamber connected to the receiving 15 chamber, and a valve for closing such connection.

In testimony whereof, I have hereunto set my hand.

HARRIS B. HOLT.

Witnesses

G. G. TRILL,

ALICE A. TRILL.