April 27, 1926. 1,582,450

D H. CHESTER

DUPLEX STRAINER

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Fig. 2.

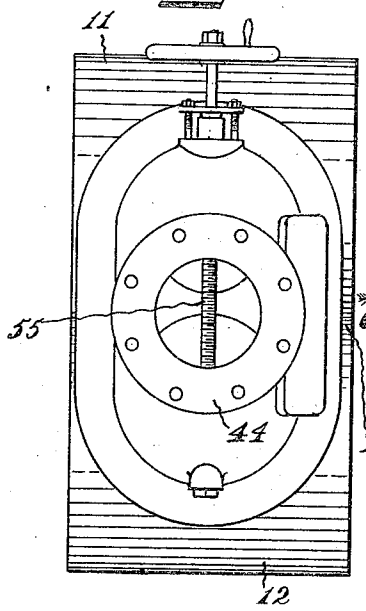


Fig. 1.

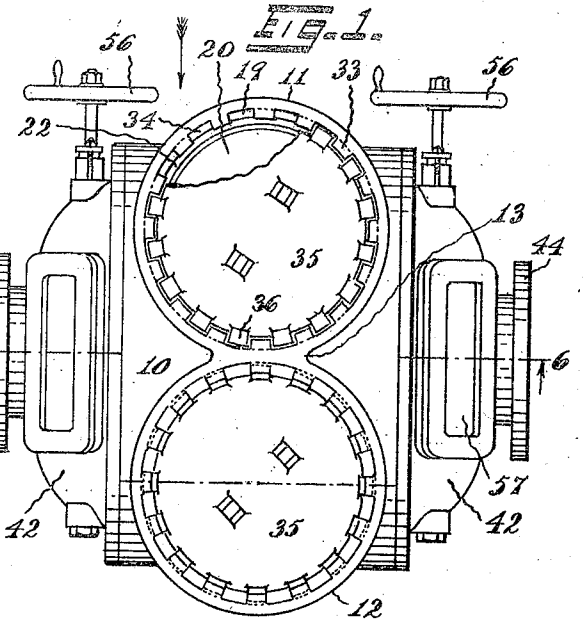


Fig. 4.

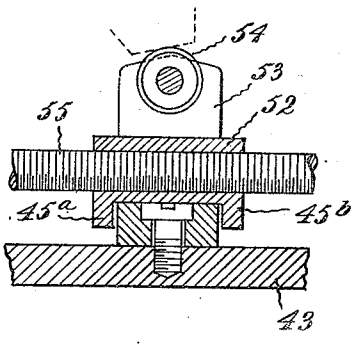
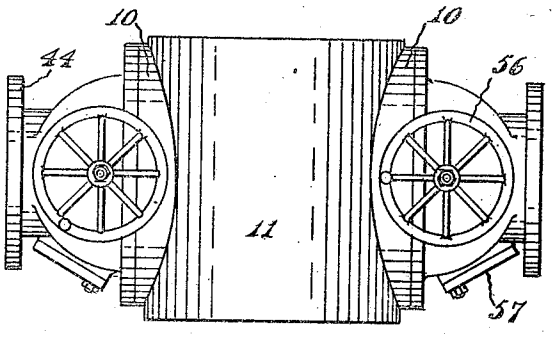


Fig. 3.



Witnesses:
H. B. Badeau
H. D. Penner

Inventor:
D Hubert Chester,
By his Att'y, T. H. Richards

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D H. CHESTER

DUPLEX STRAINER

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Fig. 4.

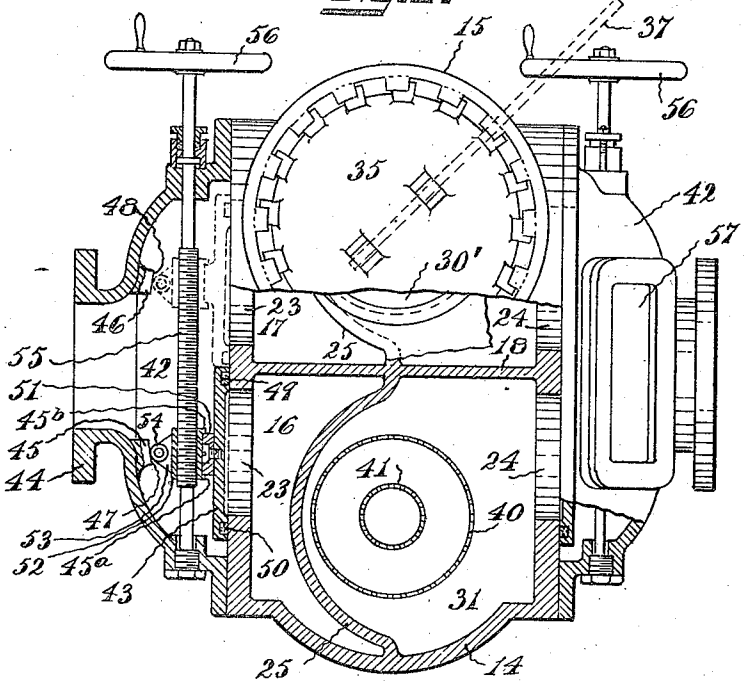
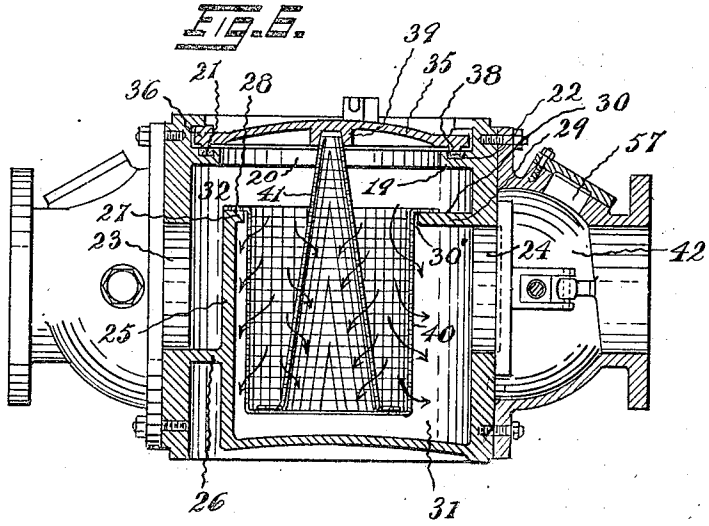


Fig. 5.



Witnesses:
L. B. Badeau.
M. D. Penney

Inventor:
D. Hubert Chester,
By his Atty, F. H. Richards

Patented Apr. 27, 1926. 1,582,459

UNITED STATES PATENT OFFICE.

D HUBERT CHESTER, OF BUFFALO, NEW YORK.

DUPLEX STRAINER.

Application filed July 28, 1922. Serial No. 578,256.

To all whom it may concern:

Be it known that I, D HUBERT CHESTER, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Duplex Strainers, of which the following is a specification.

The present invention relates to apparatus for filtering or straining.

A leading object of the present invention is to furnish in a duplex strainer an organization of structural members adapted for economical manufacture and for effective operation when duly assembled, this mechanism comprising operative details for shifting the flow through one or another of a plurality of strainer chambers, or for so locating the valves that the flow may be through either of two chambers of a twin-chamber.

A further object is to provide for using duplicate valve chests and flow-directing heads, one on either side of a central chamber-member; said heads being of such construction that they are readily applicable to strainer chambers of different proportions and of different heights, as occasion may from time to time require. Thus the said heads are in the nature of valve chests, and these are herein shown provided with means for operating the valves back and forth between two positions and also with means for pressing the valve on its seat in each of its terminal positions.

I attain these objects and such other objects and advantages as may appear in the course of the subjoined description by way of example of one of the possible embodiments of the invention shown in the accompanying drawings in which Figure 1, is a plan view.

Figure 2, is a side view looking in the direction of the lower arrow of Fig. 1.

Figure 3, is an end view looking in the direction of the upper arrow of Fig. 1.

Figure 4, is a fragmentary view, partly in section, of valve parts.

Figure 5, is a plan view partly in section, and

Figure 6, is a sectional view on the line 6—6 of Fig. 1.

Similar reference characters denote similar parts throughout the several views.

The invention comprises a case or housing formed by casting having the body portion 10, oval in end view, which has arranged transversely thereof the twin cylindrical portions 11 and 12, joined together for a portion of their circumferences as at 13, and providing, when viewed as in Fig. 1, substantially 8-shaped bosses or extensions of the body portion 10, there being formed within the body portion 10 and cylindrical portions 11 and 12 a box-like interior, seen in Fig. 5, having outwardly curving extensions 14 and 15. This box-like interior is divided into twin chambers 16 and 17, or chambers of like contour and dimensions, by the partition wall 18 extending from the bottom of the box-like interior to near the top thereof in the line of connection between the cylindrical portions 11 and 12.

Each of the chambers 16 and 17 has therein a top plate 19 provided with a central opening 20, the top plate having in its upper side the annular recess 21 in which is arranged a water tight packing such as 22.

Each of the chambers 16 and 17 has an inlet 23 and an outlet 24, and each of said chambers has therein a wall 25 extending from the bottom of the chamber upwardly and connected on one side to the body portion 10 by the web 26 located at the lower edge of the inlet 23, the wall 25 extending in a curve as shown in Fig. 5, across the chamber 16 or 17, as the case may be, from about the middle of the partition wall 18 on one side of the chamber to about the middle of the outwardly curving extension 14 or 15 on the other side of the chamber. The wall 25 has at its upper end the portion 27 of a ledge later mentioned which forms on the wall 25 the top face 28. Each of the chambers 16 and 17 has therein the ledge or shelf 29 having a top face 30 on the same plane as the top face 28, there being an opening 30′ between the wall 25 and the ledge 29, the wall 25 and ledge 29 separating the chamber 16 or 17, as the case may be, into a strainer or filter chamber 31 and a channel 32 affording communication between said chamber and the inlet 23, the top faces 28 and 30 of the wall 25 and ledge 29 providing means for supporting thereon a strainer or filter element in each strainer or filter chamber.

Each of the cylindrical bosses or extensions 11 and 12 is provided at its top opening with a series of inwardly extending projections 33 with recesses 34 adjoining the projections.

A cover 35 of disk form is provided for each of the cylindrical projections 11 and 12,

this cover having around its edge on its upper side a series of upwardly and outwardly extending lugs 36 which are arranged to pass through the recesses 34, and when the cover is turned, as by the bar 37 shown in Fig. 5, to engage or bind with the under sides or faces of the inward projections 33, the cover having on its under side the annular projection 38 which engages the packing 22 in the recess 21 of the top plate 19, the cover when the lugs 36 are engaged under the projections 33, being held in closing water tight relation to its particular cylindrical extension.

Each cover 35 is provided on its under side with the central recessed lug 39, the purpose of which is later stated.

One feature of the present improvements relates to the manner of associating together a plurality of strainer elements, an outer strainer 40 and a central strainer 41, to form a strainer member whereby one of these elements, as for instance the central strainer 41, Fig. 6, operates as a means for holding in place the outer strainer element 40 which rests by means of an outwardly extending flange upon the top faces 28 and 30 of the wall 25 and ledge 29. This arrangement, as will be evident from said Fig. 6, is coactive with the cover 35, whereby the strainer chamber 16 or 17, as the case may be, is closed at the upper end thereof, the upper end of the central strainer 41 being received in the lug 39. By removing the said cover, it disengages at the lug 39 from the upper end of said central strainer element 41, and thereupon this central strainer may be lifted out of the outer strainer 40, or the two strainers may be lifted out together and afterward the central strainer removed from the outer one. In some instances the two strainers may be rigidly connected together at the bottom of the central strainer (Fig. 6), and this may be done by riveting or other well known means. It is, however, deemed to be preferable to make the two strainers 40 and 41 so that both are held in place by the operation of the said cover 35, as will be evident from the drawing.

Preferably, as shown in Fig. 6, the central strainer member 41 is conical in form with its enlarged lower end resting on the interior of the strainer member 40, and its diminished upper end engaged in the central recess of the lug 39, when the cover 35 is in closed position. By this conformation of the inner strainer member 41 and the lug 39, forming a position determining means, the lug 39 when in engagement with the strainer member 41 will serve, not only to anchor the strainer members against displacement, but will also serve to position the inner strainer member 41 relative to the outer strainer member 40.

Furthermore, by this conformation and cooperation between the conical strainer member 41 with the cover 35, the passage from the fluid inlet to the fluid outlet will be effectively covered by a strainer member, and at the same time, a maximum filtering surface afforded without sacrificing any surface area of the strainer.

It will, of course, be understood that the said strainers 40 and 41 may, in practice, be provided with walls, either single or compound in character and of such material and mesh as may be suitable for the work to be performed in any particular instance by the strainer apparatus.

The outer end faces of the body portion 10 are a smooth or plane surface for the distance from somewhat below the lower inlet 23, or below the lower outlet 24 as the case may be, to somewhat above the upper inlet 23 or above the upper outlet 24, a valve face thus being provided on each end of the body portion.

A valve chest 42 is arranged on each end of the body portion, being bolted or otherwise suitably secured thereto, each valve chest having therein a slidable valve member 43. Each valve chest has an attaching flange 44 with an opening therein for inlet or outlet as the case may be, and has on its interior the opposed dependent lugs 45 and 46 having cam faces 47 and 48 inclined in direction away from each other. The valve member 43 has in its under surface an annular recess or groove 49 having therein a suitable packing 50 for providing water tight engagement between the valve member and said plane surface of the ends of the body portion 10. The valve member 43 has secured to its upper side a block 51 which is received between the inward flanges 45^a and 45^b of the threaded traveller 52 whereby the valve member is slidably moved by the traveller 52. The traveller 52 has thereon, the support 53 which carries the roller 54 which is engageable with the cam faces 47 and 48 by slidable movement of the traveller, the traveller being limited in the length of its movement by this engagement, and the valve members 43 being forced down thereby into close engagement with the valve face of the body portion 10. For moving the traveler the threaded shaft 55 is provided, this shaft being operatively supported in the valve chest in a suitable water tight manner and operated by suitable means, such as the hand wheel 56.

The valve members 43 being in the position shown in Fig. 5 for closing the inlet 23 and outlet 24 of the strainer chamber 16, the strainer chamber 17 being in operation, by turning the respective hand wheels 56, the respective valve members 43 may be moved to position for closing the inlet and outlet of the strainer chamber 17 and permitting operation of the strainer chamber 16 with-

out cessation of the straining or filtering. By removing the cover appurtenant to the strainer chamber 32, the strainer element or basket of this chamber may be removed for cleaning or other purpose.

The valve chests 42 are each shown provided with a closable opening, as 57 (Fig. 6), through which access may be had to the valves for the purpose of inspection and cleaning, and without requiring the valve chests to be removed as a whole for that purpose. In this connection it should be noted that the present improvements are intended for use in strainers of relatively large size, so that an opening of about the proportions indicated would in some cases be large enough for a hand hole through which the operator may reach the valve and its accessory devices.

It will be seen that if desirable the device may be operated for flow in reverse direction to that shown in Fig. 5, by simply utilizing the outlets 24 as inlets, and the inlets 23 as outlets.

Also that the strainer chambers may be made of greater length or greater width by lengthening or widening the case or housing in its construction, no alteration of the valve chests for use with the larger construction being necessary, provided the distance over which the valve member 43 is moved to cover or uncover the inlets and outlets is maintained the same in the one construction as in the other, thus permitting the use of valve chests of standard size.

Having thus described my invention, it should be understood that there may be modifications thereof and variations therein without departing from the spirit of the invention, or exceeding the scope of the appended claims.

What I claim and desire to protect by Letters Patent is:—

1. In a filtering or straining device, a housing having an interior provided with a fluid inlet and a fluid outlet, a wall adjacent said inlet and forming an inlet chamber adjacent said inlet and a filter or strainer chamber separated therefrom, a ledge formed above said outlet, a filter member extending into said filter or strainer chamber and having its upper end supported on said wall and ledge, and a cover for said housing engaging the upper end of said filter member when the cover is in closed position and cooperating with said filter member effectively to interrupt the passage of fluid from the fluid inlet to the fluid outlet.

2. In a filtering or straining device, a housing having an interior provided with a fluid inlet and a fluid outlet, a wall adjacent said inlet and forming an inlet chamber adjacent said inlet and a filter or strainer chamber separated therefrom, a ledge formed above said outlet, an outer filter member extending into said filter or strainer chamber and having an outwardly extending flange at its upper end resting on said wall and said ledge and having an inwardly extending flange at its lower end, and an inner filter member extending into said outer filter member and resting on said inwardly extending flange.

3. In a filtering or straining device, a housing having an interior provided with a fluid inlet and a fluid outlet, a wall and ledge cooperating with said housing for forming a filter or strainer chamber and providing a chamber for communicating between the filter or strainer member and the inlet of the housing, the outlet serving as the outlet for the filter or strainer chamber, an outer filter member extending into said filter or strainer chamber and having its outer upper end supported on said wall and ledge, an inwardly extending support formed on the inside of the lower end of the outer filter member, an inner filter member extending into said outer filter member and supported on said inwardly extending support, a cover, and a lug on said cover for receiving a portion of said filter member to position the same in place.

4. In a filtering or straining device, a housing having an interior provided with a fluid inlet and a fluid outlet, a wall adjacent said inlet and forming an inlet chamber adjacent said inlet and a filter or strainer chamber separated therefrom, a ledge formed above said outlet, an outer filter member extending into said filter or strainer chamber and having an outwardly extending flange at its upper end resting on said wall and said ledge and having an inwardly extending flange at its lower end, an inner filter member extending into said outer filter member and resting on said inwardly extending flange, and a cover for said housing engaging the upper end of said inner filter member when the cover is in closed position and cooperating with the strainer members effectively to interrupt the passage of fluid from the fluid inlet to the fluid outlet.

5. In a filtering or straining device, a housing having a fluid inlet and a fluid outlet, a support in said housing, an outer cylindrical filter member supported on said support, an inner conical filter member having its enlarged lower end supported in said outer filter member, and a cover for said housing engaging the upper diminished end of said inner filter member when the cover is in closed position to position the inner filter member in place.

D HUBERT CHESTER.