W. S. ELLIOTT.

MULTIPLE STRAINER SYSTEM.

APPLICATION FILED JUNE 20, 1914.

1,213,764.

Patented Jan. 23, 1917.

3 SHEETS—SHEET 1.

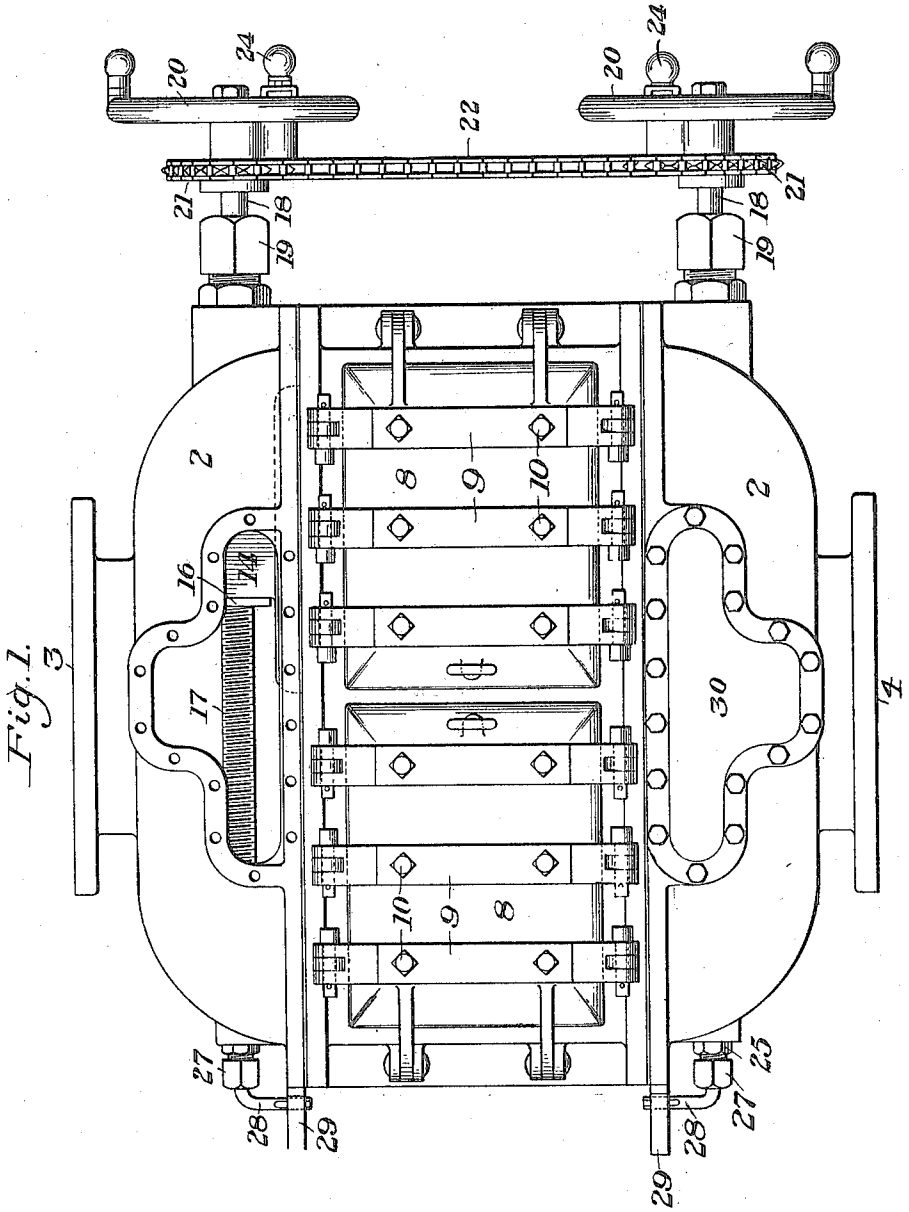


Fig. 1.

WITNESSES

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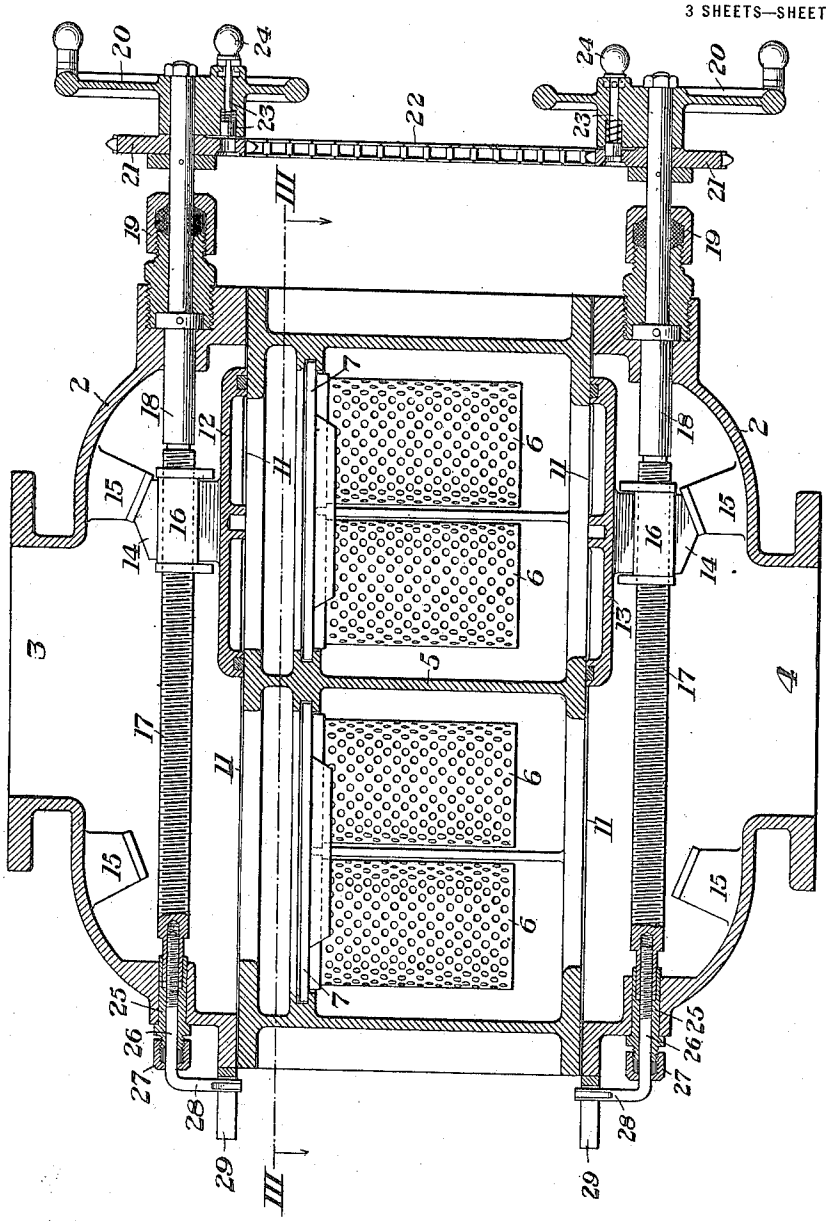


Fig. 2.

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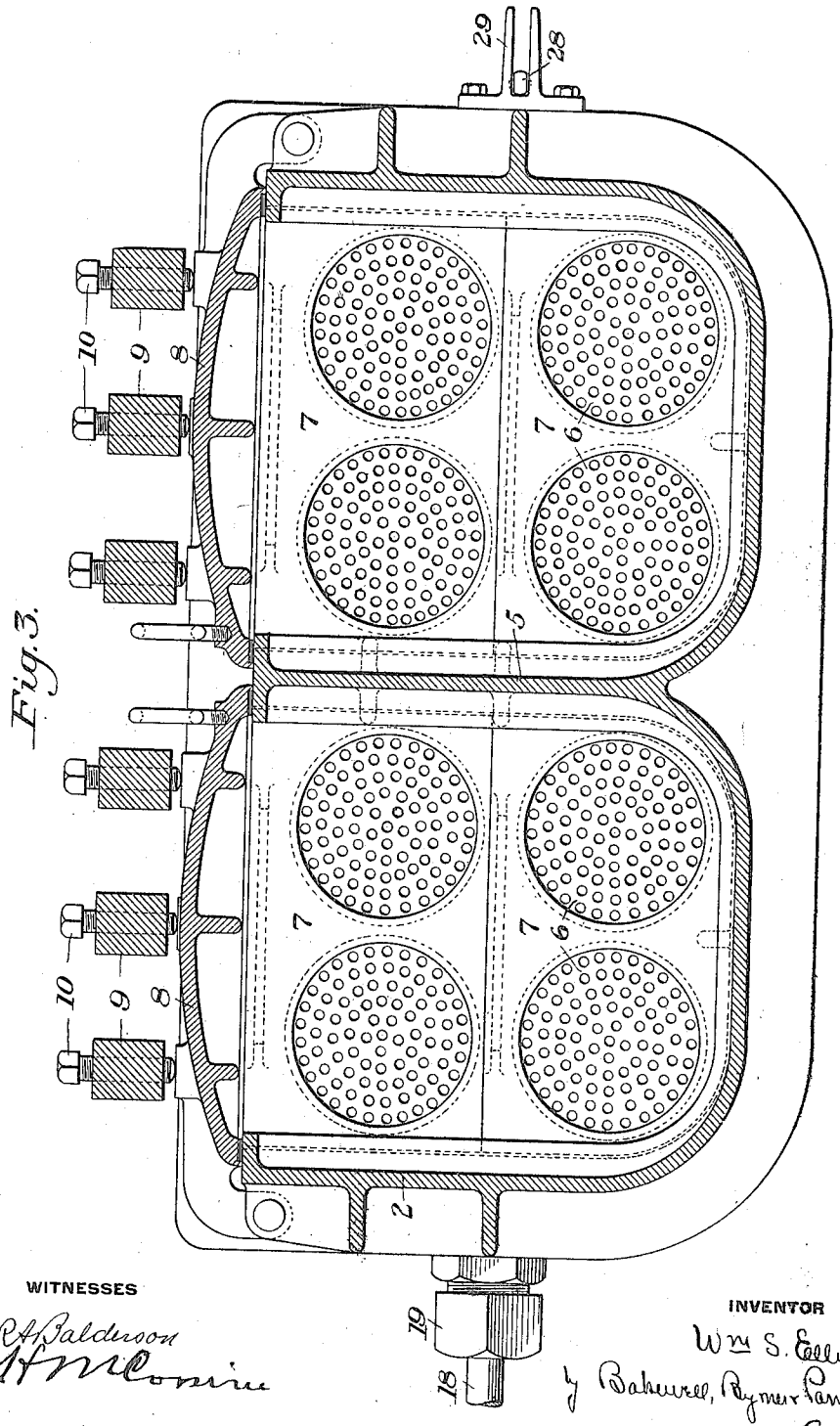


Fig. 3.

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UNITED STATES PATENT OFFICE.

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MULTIPLE-STRAINER SYSTEM.

1,213,764. Specification of Letters Patent. Patented Jan. 23, 1917.

Application filed June 20, 1914. Serial No. 846,333.

To all whom it may concern:

Be it known that I, WILLIAM S. ELLIOTT, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Multiple-Strainer Systems, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to multiple strainers, particularly those of the type shown in Patent No. 782,866, dated February 21, 1905, issued to G. U. Merrill, although certain features of my invention may be applied to any multiple strainer system.

The object of my invention is to provide for simultaneous operation of the several valves from a common point, while at the same time providing for separate movement of each valve, when desired.

It also consists in providing an indicator by means of which the position of any of the valves may be determined at any time. This is preferably applied to all valves.

A further improvement consists in providing a plurality of strainer baskets for each compartment of the multiple strainer, for the purpose of increasing the amount of straining surface, without increasing the size of the compartment, and at the same time, to reduce the weight of each individual basket in order to facilitate the removal and replacement thereof. A further feature is the provision of a removable door or doors, through which the valves may be reached for inspection and repairs without disconnecting the strainer from the line in which it is installed.

In the accompanying drawings, Figure 1 is a front elevation showing one form of my improved apparatus; Fig. 2 is a sectional side elevation of the same; and Fig. 3 is a cross section on the line III—III of Fig. 2.

In the drawings, 2 represents a casing having an upper inlet 3 and a bottom inlet 4. This casing is divided into two compartments by a transverse partition 5, each of which compartments is provided with a plurality of baskets 6, shown as four in number. In the upper part of each compartment at the sides and rear are guideways, receiving the basket bases 7, 7, to which the basket elements are secured. I have shown two of these basket bases, in each compartment, these being slid in sidewise into position; one side of the casing being opened and closed by the doors 8, secured by the door straps 9, having set screws 10. Above and below the compartments are provided horizontal valve seats 11, on which slide top and bottom control valves 12 and 13. These control valves are provided with lugs 14, having wedge-shaped surfaces, which engage the correspondingly shaped surfaces of stop lugs 15, formed on the interior of the casing at the extreme point of travel of the valves. To actuate each valve, a nut 16 having projecting end portions engaging the lugs 14 is provided, these nuts surrounding threaded shafts 17, mounted in the casing. To operate these threaded shafts, I show two rotary shafts 18, projecting through suitable stuffing boxes 19 in the casing and having square socket connection with the ends of the shafts 17. In the form shown, hand-wheels 20 are secured to the shafts 18, and loosely surrounding each of these shafts is a sprocket wheel 21, these sprocket wheels being connected by a sprocket chain 22. The hand-wheels 20 may be connected or disconnected from the sprocket wheels by the spring latches 23, which may be held in retracted position by pulling out the knob 24 and turning it slightly.

Owing to lost motion and inaccuracies of construction as well as wear of the parts, the valves will not seat exactly simultaneously; and consequently, by the clutch connection shown or some means for severing the connection between the shafts, I can move the shafts simultaneously through the major part of the valve travel, and disconnect either of them in order to bring each valve to its proper seating position independently of the other.

In order to enable the attendant to ascertain the position of the valves at any time, I have provided an indicator system, by which the valve position may be ascertained. In the form shown, each threaded shaft 17, whose outer end is supported in a bearing 25, is provided with an internally threaded hole, engaging a correspondingly threaded rod 26, which extends out through stuffing

box 27 and in the form shown is provided with a pointer 28, moving along a scale or indicator device 29. When either valve is operated, it will move the pointer 28 along this indicator a short distance proportionate to the travel of the valve, and by proper markings on the scale, the position of the valve may be easily and quickly ascertained.

Heretofore, in the use of these multiple strainer systems, in order to gain access to the valves, it has been necessary to disconnect the strainer from the line. I have overcome this difficulty and provided for access to the valves without this disconnection by the provision of a special form of door, through which the valve may be withdrawn or inserted without disengaging the screw therefrom. These doors are shown at 30 in Fig. 1, they being held by tap bolts extending into suitable flanges formed around the openings. The door openings are of a shape generally conforming to the shape of the valve and its lugs, so that by providing these upper and lower door openings, the covers may be taken off and access had to the valves, which may be removed or replaced therethrough.

The advantages of my invention result from the special features above described. The simultaneous operation of the valves from a single control point greatly quickens their operation, while at the same time proper seating of the valves is insured through the independent operation of each. The indicator system provides a simple and efficient means for determining the position of the valve at any time; the provision of a plurality of baskets in each compartment increases the strainer capacity, without increasing the size of the compartment; and the valve doors provide for access to the valves and removal thereof, without detaching the strainer from the line.

The indicator device may be varied greatly in form and operation; the means for simultaneous operation of the valves and independent operation of each may also be changed; the number of baskets may be varied, as well as their form and means of support; the valve doors may be varied in shape and position, and other changes may be made without departing from my invention.

I claim:

1. A multiple strainer having a plurality of valves arranged to be translated from one operative position to another operative position, connections arranged to actuate said valves simultaneously from a single point of control to effect their movement of translation, and means whereby said valves may be operated independently after being translated to insure their proper independent seating action, substantially as described.

2. A multiple strainer having a plurality of bodily shiftable valves, and actuating devices connected to said valves whereby they may all be simultaneously shifted from a single point of control, said actuating devices having means whereby each valve after being shifted may be given an independent seating movement, substantially as described.

3. A multiple strainer having a plurality of bodily shiftable valves, means for insuring a close seating of said valves in each of their operative positions, and actuating connections for simultaneously shifting all of the valves from a single point of control, said actuating connections having means whereby each of the valves after being shifted may be given an independent seating movement in coöperation with the close seating insuring means, substantially as described.

4. A multiple strainer having a plurality of parallel strainer compartments, each of which is provided with separate inlet and outlet ports, valves for controlling said ports, each of said valves being bodily shiftable from the port of one compartment to the port of another compartment, and actuating devices connected to said valves to simultaneously shift them from a single point of control, said actuating connections having means whereby each valve after being shifted may be given an independent seating movement, substantially as described.

5. A multiple strainer having a plurality of parallel strainer compartments, each of which is provided with separate inlet and outlet ports, valves for controlling said ports, each of said valves being bodily shiftable from the port of one compartment to the port of another compartment, a screw shaft engaging each valve, and actuating connections for simultaneously operating the two screw shafts, said connections having means whereby each of said shafts may also be independently operated, substantially as described.

6. A multiple strainer having a plurality of valves arranged to be translated from one operative position to another operative position, connections arranged to actuate said valves simultaneously from a single point of control to effect their movement of translation, and means whereby said valves may be operated independently after being translated to insure their proper independent seating action, together with indicating devices arranged to show the position of each valve, substantially as described.

7. A multiple strainer having a plurality of parallel strainer compartments, each of which is provided with separate inlet and outlet ports, valves for controlling said

ports, each of said valves being bodily shiftable from the port of one compartment to the port of another compartment, a screw shaft engaging each valve, and actuating connections for simultaneously operating the two screw shafts, said connections having means whereby each of said shafts may also be independently operated, together with indicating devices for indicating the position of each valve, substantially as described.

In testimony whereof, I have hereunto set my hand.

WILLIAM S. ELLIOTT.

Witnesses:
GEO. B. BLEMING,
H. N. CORWIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D C."