

## APPARATUS FOR CONTROLLING FLUID MEDIUM FLOW

This invention relates to an apparatus for controlling fluid flow, and especially flow through filter elements, wherein the control includes that of selectively flushing and cleaning the filter elements.

### BACKGROUND OF THE INVENTION

With a known device of this type, which is described in the publication "WIB 'wasser, luft und betrieb'" 7-8/79, p. 16, the filter elements are mounted in a common housing on a common filter carrier plate, which has filter connections connected here and there with the inside of each filter element. The orifice of a rotary valve can be brought into connection as desired with one of the filter connections in the filter carrier plate. This device has a complicated structure and is difficult to service, since it must be completely dismantled for servicing.

One known hoist device for power vehicles, shown in German patent No. 516,045, has a rotary slide valve constructed as a switching valve and a valve housing surrounding this slide valve with a plurality of radial boreholes. The lengthwise borehole in the switching valve can be brought into connection with one of the radial boreholes in the housing as desired through a radial borehole in the switching valve. The axial borehole of the switching valve can be brought into communication with any other radial borehole in the housing by turning the valve element.

### BRIEF DESCRIPTION OF THE INVENTION

An object of the present invention is to disclose a simple construction of a fluid handling device which can be serviced at low cost.

Briefly described, the invention includes an apparatus for controlling the flow of at least one fluid through a flow through element comprising a first hollow housing having an inlet opening for delivering fluid thereto and a plurality of outlet openings; means for supplying fluid under pressure to said inlet opening of said first housing; a plurality of second hollow housings, each capable of receiving a flowthrough element, each of said second housings having a conduit connected to receive fluid from one of said outlet opening of said first housing, and having an outlet opening; a rotary valve in said first housing having a valve element selectively connectible to any one of said plurality of outlet openings, and a discharge opening; and means for receiving fluid under pressure from said second housings; whereby when said rotary valve is connected to a selected one of said plurality of outlet openings a fluid flow path is established to said discharge opening, causing flow in the reverse direction through the one of said second housings connected to said selected outlet opening.

Since the rotary valve and each of the flowthrough elements has its own housing part, and the flowthrough element can even be a housing element in and of itself, the structure is very easily understandable and its individual parts are separately easily accessible. Because of the simple structure, the cost of servicing is very low. When it is desired to form a device for flushing out the filter element, it is possible to use a different medium from the filtered medium for the flushing.

In order that the manner in which the foregoing and other objects are attained in accordance with the inven-

tion can be understood in detail, a particularly advantageous embodiment thereof will be described with reference to the accompanying drawings, which form a part of this specification, and wherein:

FIG. 1 is a side elevation, in section, of an apparatus according to the invention, the section being along line I—I of FIG. 2; and

FIG. 2 is a plan view, in section, along line II—II of FIG. 1.

In the drawings a device for the flushing out of a filter having seven filter elements is shown as an exemplary embodiment of the invention.

The filter has a plurality of hollow, cylindrical, slightly tapered, filter elements 1, each of which is inserted separately in one of housing parts 2, 2a, . . . 2f (FIG. 2). Each of these housing parts has closed bottom and a removable cover 3 at the top through which the contained filter element 1 is accessible. Each filter element is suspended in its housing by a collar 4 which projects radially outwardly from the upper end of the filter and rests on a flange 5 which projects radially inwardly from the inner wall of each of housing parts 2-2f. Each of housing parts 2-2f has an upper radial borehole 6 and a lower radial borehole 7 near the top and bottom, respectively, the boreholes being connected respectively to tubular elements 8, 9, 8a, 9a, . . . 8f, 9f, which are welded onto housing parts 2-2f.

The other end of each of the tubular elements 9-9f is connected to a hollow, central cylindrical valve housing 10 having a circular cross section, each element being aligned with one of boreholes 11, 11a, . . . 11f which serve as filter connections. The central axes of boreholes 11-11f are arranged at the same level, i.e., they lie in the same transverse plane. Valve housing 10 is covered at the top with a cover 12 and at the bottom with a base plate 13. An inlet borehole 14 is axially offset from the plane containing boreholes 11-11f, is diametrically opposite borehole 11, and is of larger diameter than any of boreholes 11-11f. Connection borehole 14 is in connection with a tubular element 15 which is welded onto valve housing 10.

Within valve housing 10 is a rotary valve 16 which has an axially extending portion rotatably mounted at its ends in cover 12 and base plate 13, respectively, with both of the mounting points being sealed.

The end 17 of the rotary valve which protrudes through cover 12 is formed with a square shape for engagement of a tool to rotate valve 16. Valve 16 has a tubular radial projection 18, on the end of which is slidably mounted a mouthpiece. A compression coil spring 20 is compressed between rotary valve portion 16 and mouthpiece 19, urging the mouthpiece against the wall of valve housing 10. Projection 18 has an interior bore 21, which opens into an interior bore 22 in rotary valve 16, which bore opens to the outside in the area of base plate 13. A borehole 23, to which is connected a tubular element 24, is provided at the end of bore 22. Mouthpiece 19 has a hole 25 which tapers outwardly from the diameter of bore 21 to the diameter of the boreholes 11-11f and works with only one of these boreholes at a time. Borehole 25 is not connected to borehole 14 at any time.

Another valve housing 110 is arranged in mirror image to and coaxially with the first valve housing 10, housing 110 also containing a rotary valve 116 arranged in mirror image to rotary slide valve 16. Housing 110 also has a number of boreholes 111 corresponding to the number of filter housings 2-2f, each of which is con-