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239

[56] **References Cited**
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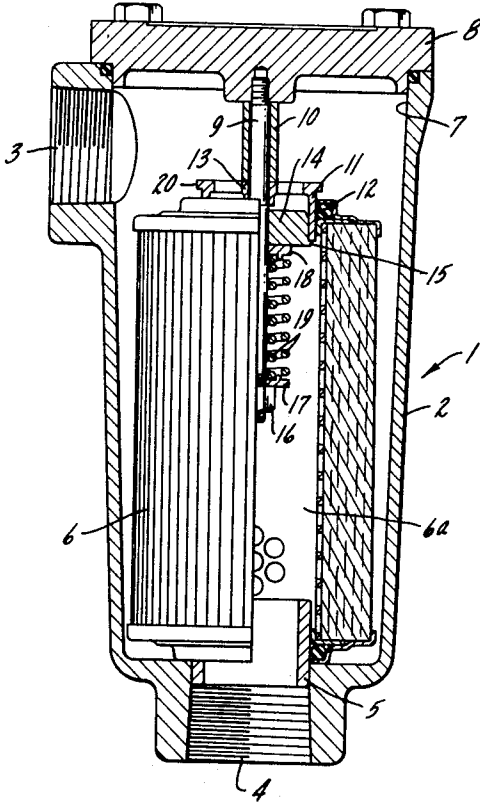
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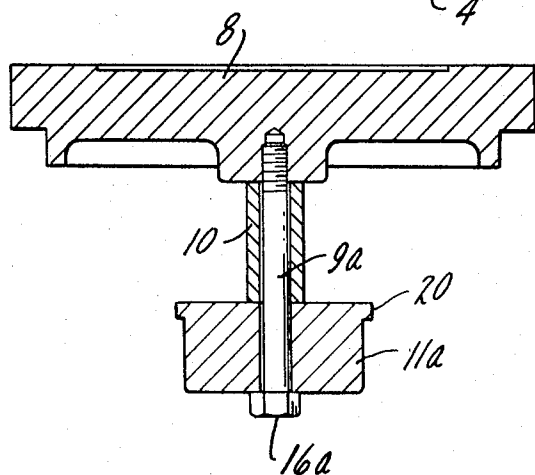
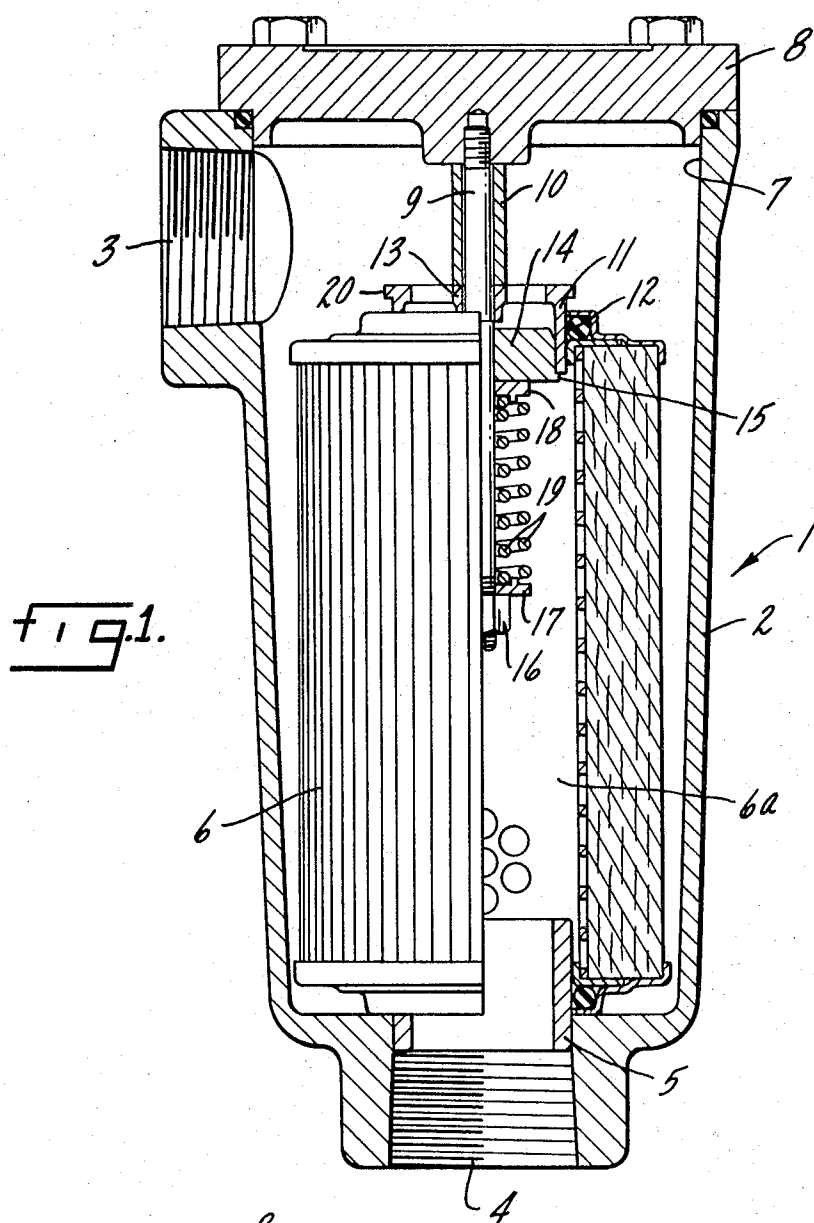
[54] FILTER ASSEMBLY BYPASS KIT
4 Claims, 2 Drawing Figs.

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[51] Int. Cl.	

[51] **Int. Cl.**.....**B01d35/14,**
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ABSTRACT: A filter assembly kit including a closure, a support rod removably secured to the closure, a spacer on the rod, and interchangeable plug and bypass valve elements alternately positionable on the rod.





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FILTER ASSEMBLY BYPASS KIT**SUMMARY OF THE INVENTION**

This invention relates to filters and has for one purpose the provision of a filter assembly kit including interchangeable bypass and nonbypass elements.

Another purpose is to provide a standardized housing closure usable with bypass and nonbypass elements.

Another purpose is to provide an assembly kit whereby bypassing and nonbypassing filters may be selectively assembled at minimum cost.

Other purposes may appear from time to time during the course of the specifications and claims.

BRIEF DESCRIPTION OF THE DISCLOSURE

The invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

FIG. 1 is a side elevation in partial cross-sectional and illustrating a bypassing assembly, and

FIG. 2 is a detail in cross section illustrating nonbypassing elements.

Like parts are indicated by like numerals throughout the specification and drawings.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, and particularly to FIG. 1, the numeral 1 generally designates a filter housing. The housing 1 includes a main, chamber-defining, substantially cylindrical section 2. A side inlet 3 is formed adjacent one end of the housing 1, and an axial outlet 4 is formed at the opposite end thereof. A sleeve 5 extends inwardly from outlet 4 and receives, in sealing engagement therewith, one end of filter element 6 positioned within housing 1.

The open end 7 of housing 1, adjacent inlet 3, carries in sealed engagement therewith a closure 8. The closure 8 has removably secured thereto and extending axially inwardly therefrom rod 9. The rod 9 as shown in FIG. 1 is threaded in an axial well on the inside of closure 8 and extends through the axial opening in element 6 opposite that surrounding sleeve 5. The rod 9 of FIG. 1 extends a substantial distance into the hollow perforated core 6a of element 6.

Carried on rod 9 and spaced from closure 8 by the rod-surrounding spacer sleeve 10 is a bypass collar 11. The collar 11 has an external cylindrical diameter formed and adapted for sealing engagement with an appropriate seal carried by element 6 as indicated at 12. One end collar 11 carries an open web having a central portion 13 engaging spacer sleeve 10. The remainder of collar 11 is hollow for sliding engagement with a bypass valve element 14. Element 14 has an annular extending circumferential flange 15 for engagement with the inner edge surface of collar 11.

A fastener means 16 is carried by the threaded distal inner end of rod 9 for positioning a spring retainer 17. An opposite spring retainer 18 engages valve 14, and spring 19 has its opposite end in engagement with retainers 17, 18 for urging valve 14 into the closed position shown in FIG. 1.

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Referring now to FIG. 2, it will be observed that a rod 9a has been substituted for the rod 9 in FIG. 1. Rod 9a may be of substantially less lineal extension and may carry the head 16a for clamping a solid plug 11a against the spacer sleeve 10. It will be observed that the plug 11a has an external diameter identical to that of collar 11 whereby, it will be understood, the plug 11a is formed and adapted for sealing engagement with the appropriate seal carried by element 6 as indicated at 12 in FIG. 1.

The main cylindrical outer surfaces of collar 11 and plug 11a are of sufficient lineal extensions to provide the sealing engagement indicated at 12 with filter elements 6 of varying lengths. Both collar 11 and plug 11a carry at their ends adjacent closure 8 an annular extending flange 20 limiting the penetration of collar 11 or plug 11a into element 6.

The use and operation of the invention are as follows:

A housing 1, closure 8 and element 6 form the basic elements of the filter assembly. When the user desires a bypassing capability, the rod 9, spacer sleeve 10, collar 11, valve 14 and spring structure 16-19 are secured to closure 8. The closure 8 is then moved toward housing section 2, positioning collar 11 within the seal of element 6 as indicated at 12, and positioning the parts as shown in FIG. 1. Thereafter, upon sufficient pressure differential created externally and internally of element 6, valve 14 will open and fluid will pass through collar 11 and core 6a to outlet 4.

When the user does not desire a bypass capability, rod 9a, spacer sleeve 10 and plug 11a will be secured to closure 8 and the cover will be moved into position on housing section 2 in the same manner as described with respect to FIG. 1. Thereupon, the plug 11a will be placed in sealing engagement with the element 6 as shown at 12, and the fluid entering inlet 3 will be limited solely to passage through the element 6.

It will be understood that rod 9 could be employed with plug 11a, additional threads and preferably a washer (not shown being provided for positioning the nut 16 adjacent plug 11a, without departing from the nature and scope of the invention.

I claim:

1. For use with a filter housing having an open end and a filter element having an axially open seal, a closure for said housing open end, a rod removably secured to said closure and extending inwardly through said seal, a spacer sleeve surrounding said rod adjacent said closure, a bypass collar and a plug alternately positionable in sealing engagement with said seal and means for alternately positioning said collar and plug on said rod and against said spacer sleeve.

2. The structure of claim 1, characterized by and including a bypass valve member having a sliding closing relationship with the inner end of said collar, a spring surrounding said rod and urging said valve member into its closed position and means retaining said spring on said rod.

3. The structure of claim 1 characterized by and including head means carried by said rod and engaging the opposite end of said plug from that engaged by said spacer sleeve.

4. The structure of claim 1 characterized by and including an axial threaded well in the inner surface of said closure and formed and adapted for threaded engagement with said rod.

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