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2,274,352

FILTER

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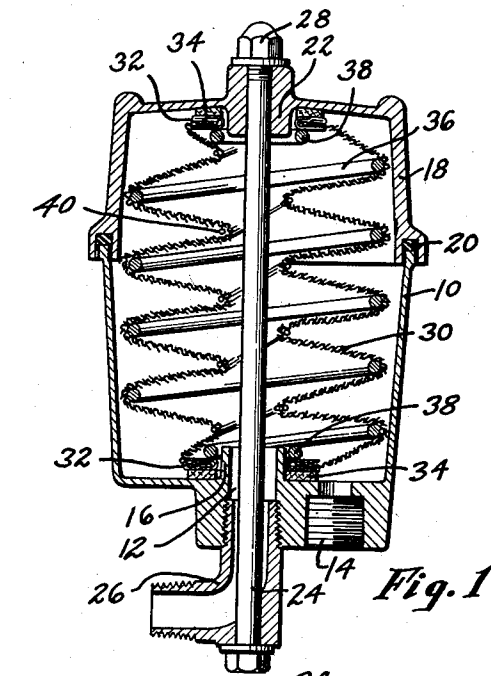


Fig. 1

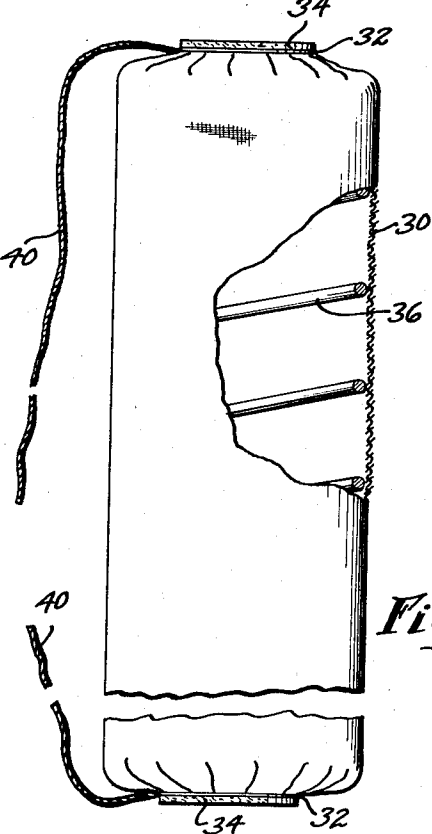


Fig. 2

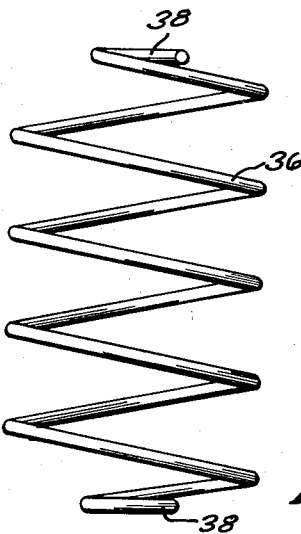


Fig. 3

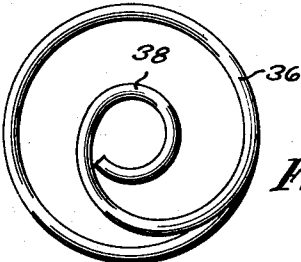


Fig. 4

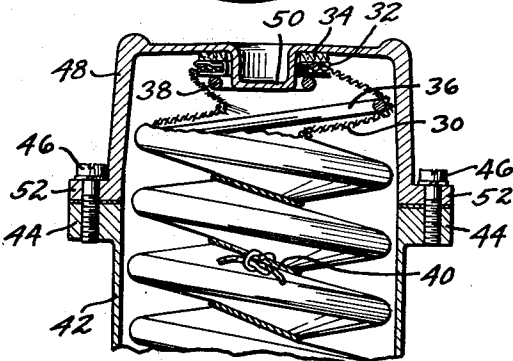


Fig. 5

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FILTER

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5 Claims. (Cl. 210-164)

This invention relates to filters and more particularly to filters adapted to be placed in a liquid line to remove foreign particles from liquid flowing therethrough.

One of the objects of the invention is to provide a filter which is simple and inexpensive to construct and assemble and which is efficient and reliable in operation.

Another object of the invention is to provide a filter having an interchangeable filtering element which can be changed quickly and easily and which is secured in place without the necessity of any complicated fastenings. According to one important feature the filter element includes a spring which acts as a support for the filtering material and also to hold the filter element in position in the casing.

Still another object of the invention is to provide a filter element which is resilient lengthwise so as to seal itself in a filter casing.

Other objects, advantages and novel features of the invention will be apparent from the following description of the embodiment shown in the accompanying drawing, in which:

Figure 1 is a central section of a filter embodying the invention;

Figure 2 is an elevation of a filtering element with parts broken away;

Figure 3 is a side view of the spring;

Figure 4 is a top view of the spring; and

Figure 5 is a partial section similar to Figure 1 illustrating a modified construction.

The filter of Figure 1 comprises a lower casing half 10 which may be a die casting or the like and which is formed at its lower end with tapered openings 12 and 14. The opening 12 is arranged axially of the casing and is formed with a tubular projection 16 extending upwardly into the casing. The casing is completed by upper half 18 formed to seat around the upper edge of the casing half 10 with a sealing gasket 20 therebetween. A boss 22 is cast axially into the upper end of the casing half 18 and is formed with a bore thereto for a purpose to appear hereinafter.

The casing halves are secured together by means of a bolt 24 secured at one end into an elbow 26 screw-threaded into the opening 12. A crown nut 28 is screwed on the upper end of the bolt 24 and presses the casing half 18 tightly against the washer 20.

The casing contains a filtering element shown as comprising a tube or bag of cloth material or the like 30 having openings in its ends around which the material is gathered by grommets or eyelets 32 having an internal diameter substan-

tially the same as the diameter of the bosses 16 and 22. Suitable washers of felt or the like 34 are secured to the outer surfaces of the eyelets 32 and are adapted to be pressed sealingly against the ends of the casing. The filtering bag is supported by a coil spring 36 of a diameter less than the internal diameter of the casing and of a free length greater than the length of the casing. At its ends the spring 36 converges and terminates in closed rings 38 of substantially the same internal diameter as the eyelets 32.

The bag is of a length greater than the free length of the spring and strings 40 are secured in place by the eyelets 32 and may be wound around the bag to draw it into the convolutions of the spring as best seen in Figures 1 and 5.

When the filtering element is placed in the casing and the casing top 18 is drawn down, the spring will be compressed lengthwise and will press the washers 34 against the ends of the casing around the bosses 16 and 22. These bosses engage the rings 38 and serve to hold the spring in alignment in the casing. Due to compression of the spring, when the filter element is placed in the casing, no additional fastening or sealing means is necessary.

In use fluid to be filtered may enter one of the openings 12 or 14 and flow out through the other after passing through the filtering element. Preferably the fluid enters the opening 12 and flows through the boss 16 so that all material removed from the fluid will be retained inside the filtering element and the interior of the casing will be kept clean. When a filtering element becomes dirty it may be replaced merely by unscrewing the nut 28, removing the old element, slipping a new element over the bolt 24 with one of the eyelets 32 and rings 38 around the boss 16 and replacing the casing half 18 and the nut.

Figure 5 illustrates a modified casing construction in which the casing includes a lower half 42 formed with lugs 44 at its upper periphery threaded to receive fastening bolts 46. The upper casing half 48 has a closed upper end formed with a central boss 50 of a diameter to fit into the eyelet 32 and ring 38 and has peripheral lugs 52 through which the screws 46 may pass.

It will be apparent that other types of fastening means might be employed and that numerous other changes might be made without departing from the scope of the invention. It is, therefore, not intended that the form shown on the drawing shall be taken as a definition of the limits

of the invention, reference being had for this purpose to the appended claims.

What is claimed is:

1. A filter comprising a casing formed with an axial tubular boss at one end and having an opening spaced from said boss, said boss and opening providing inlet and outlet openings for fluid to be filtered, a flexible bag of filtering material in said casing having an opening in one end to fit over said boss, and a coil spring in said bag compressed against the ends of the casing and having an annular portion at one end fitting around said boss and pressing the bag into sealing engagement with the end of the casing around the boss.

2. A filter comprising a casing formed with an axial tubular boss at one end and having an opening spaced from said boss, said boss and opening providing inlet and outlet openings for fluid to be filtered, a flexible bag of filtering material in said casing having an eyelet in one end formed to fit closely around said boss, and a coil spring in said bag compressed against the ends of the casing and terminating at one end in a reduced closed ring of a diameter to fit closely around said boss and pressing said eyelet against the end of the casing around the boss.

3. A filter comprising a casing formed with an axial tubular boss at one end and having an opening spaced from said boss, said boss and opening providing inlet and outlet openings for fluid to be filtered, a flexible bag of filtering material in said casing having eyelets in its ends of a diameter to fit closely around said boss, a coil spring in said bag compressed against the ends of the casing and having its ends converging and terminating in closed rings of substantially the same diameter as the eyelets, one of said eyelets and rings fitting over the boss, and means at the other end of the casing entering the other eyelet and ring to center the spring and bag in the casing.

4. A filter comprising a casing having a removable head, bosses protruding within the casing at the center of the head and in the center of the opposite end of the casing, a passage through one of said bosses; a filter cloth tube, longer than the casing having its ends drawn together with eyelets and a cord attached, a spring longer than the casing and shorter than the tube within the cloth tube of smaller diameter than the inside of the casing, said spring having its ends converging and terminating in closed rings of the same inside diameter as the eyelets at the ends of the cloth tube and concentric with and perpendicular to the axis of the spring, resilient washers around the bosses, said eyelets and closed rings fittings over the bosses respectively, and means fastening the removable head to make it tight against the body of the casing and compress the spring to hold the eyelets against the resilient washers.

5. A filter comprising a two part casing formed with flat ends having central internally projecting bosses, one of said bosses being formed with an opening therethrough communicating with the interior of the casing, a tube of filtering material in said casing having eyelets in its ends fitting over said bosses, a coil spring in said tube terminating at its ends in closed rings fitting over said bosses and pressing the eyelets against the ends of the casing, and means for fastening the two parts of the casing together to compress the spring between the casing ends, and said means including a bolt extending through both of said bosses, and a nut secured to the bolt and engaging one end of the casing to press the casing parts together, said casing being formed with an opening spaced from the bosses, said opening and the opening through said one of the bosses providing inlet and outlet openings for fluid to be filtered.

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