June 3, 1930. M. P. HARWOOD ET AL 1,761,915

OIL FILTER

Filed Oct. 5, 1927

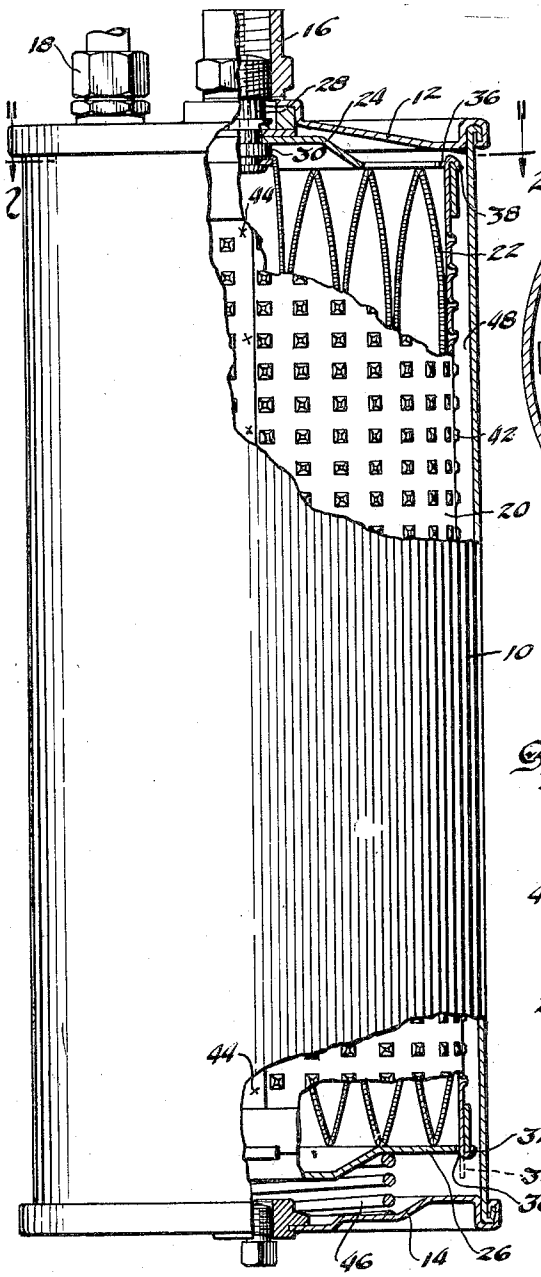


Fig. 1

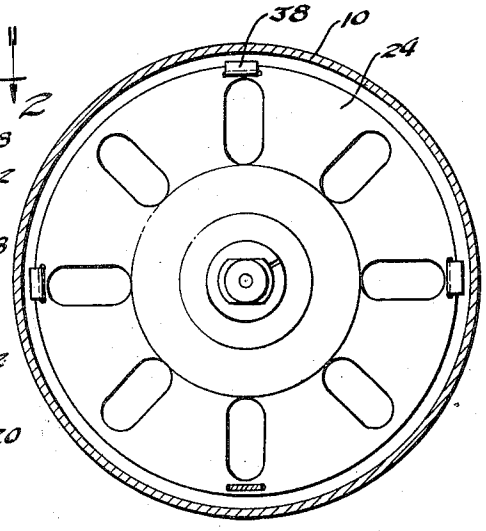


Fig. 2

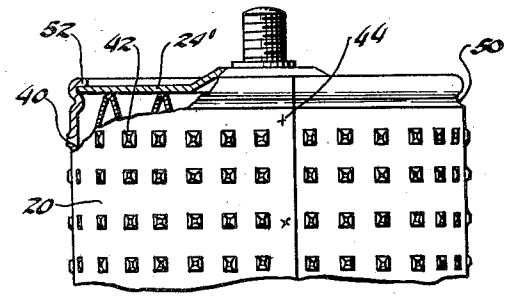


Fig. 4

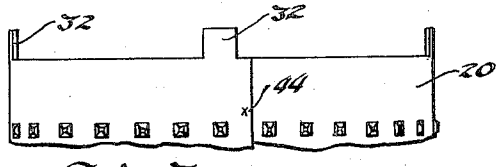


Fig. 3

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UNITED STATES PATENT OFFICE

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OIL FILTER

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This invention relates to oil filters and particularly to a means for securing the outer supporting member of the filtering material to the upper and lower supporting plates.

The filter with which the present invention is concerned is of the type in which a filtering cloth is placed in spiral form in a container. This filtering material is usually supported by top and bottom members, and is customarily surrounded by a supporting screen which serves as a spacer between the top and bottom members. The top and bottom members are united by means of straps, the ends of which are secured to these members and the body portions of which pass outwardly over the screen.

By the use of the present invention the screened supporting member and the straps are made in one piece, thereby eliminating the straps.

In place of the usual screen, we make use of a flat plate which has punched therein a plurality of holes, the punched out metal projecting from one side of the flat surface. The plate is then bent into the circular form and its overlapping edges are secured together, preferably by welding.

The ends of the cylindrical retainer are secured to the supporting members either by means of crimping over the edges or by means of a tongue and slot connection, the tongues being preferably placed on the cylindrical supporting member.

The invention is disclosed on the accompanying drawing on which:

Figure 1 is a view of an oil filter with parts broken away and portions shown in section to disclose the invention.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a view of the upper portion of the perforated plate supporting member of Figure 1 before the tongues are bent over the supporting member.

Figure 4 is a view of a modified form of construction.

Referring to the numbered parts on the drawing, 10 indicates an oil filter having a top 12 and bottom 14. The filter has the usual inlet 16 and outlet 18.

Our invention is particularly concerned with the outer supporting member 20 which supports the filter bag 22. The supporting member 20 and the filter bag 22 form a part of a filtering unit comprising the head 24 and the bottom 26. To the head 24 is secured the threaded inlet member 28 which has secured thereto as at 30 the filter bag 22.

The upper and lower ends of the cylindrical member 20 are provided with a plurality of tongues or fingers 32, preferably four in number, which in the unassembled state are preferably straight as shown in Figure 3, and in dotted outline at 34 in Figure 1. The head 24 and the bottom 26 are provided with a plurality of openings 36, preferably four in number, to correspond to the fingers 32. In assembling, the head 24 and bottom 26 are placed so that the openings will conform to the fingers and allow them to pass therethrough. The fingers are then bent over as shown at 38 in Figures 1 and 2 to rigidly hold the parts together.

The member 20 is made from a flat sheet by punching therethrough a plurality of openings 40, the metal at the edges of the openings extending outwardly from the plane of the sheet as shown at 42. These projecting portions 42 all extend in the same direction and in final assembly are placed on the outside as shown in Figures 1 and 4. The projections 42 also act as spacers between the filter container 10 and the supporting member 20. The ends of the flat sheet overlap and are welded together as shown at 44 in Figures 1, 3 and 4.

A spring 46 is provided between the bottoms 14 and 26 to retain the filtering unit in position.

The perforated plate 20 affords a very cheap and efficient supporting member, and replaces the usual comparatively more expensive screen. By the use of the fingers 32 we are able to eliminate the usual straps which extend between the head 24 and the bottom 26 and by turning the extruding portions 42 toward the outside they do not in-

terfere with the filter cloth. The openings 40 afford a ready means to allow the oil to pass to the space 48 between the filter 10 and the perforated plate 20.

An optional and preferred construction is shown in Figure 4. In this form, the upper and lower edges of the perforated sheet 20 are provided with a bead 50 on which rests the head 24′ of the filtering unit. The upper edge of the perforated sheet 20 is bent over the head 24′ as shown at 52 to thereby form a rigid connection. In this species it will be noted that the straps which customarily fasten the screen between the head and bottom portions are eliminated.

We claim:

1. In a filter, a filtering medium therein, and a retainer for the medium comprising a sheet of metal provided with a plurality of openings and having the metal at the openings projecting from the plane of the sheet, said sheet formed to surround the filtering medium with its projecting metal portions on the outside.

2. In a filter, a container, a filtering medium therein, and retaining means for the medium, said means including a perforate metallic sheet having the metal about the perforations or openings projecting from one side only of the sheet to form spacer means between the retaining means and the container.

In testimony whereof we affix our signatures.

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