Dec. 8, 1936. H. G. KAMRATH 2,063,743

FILTER ELEMENT

Filed July 5, 1932

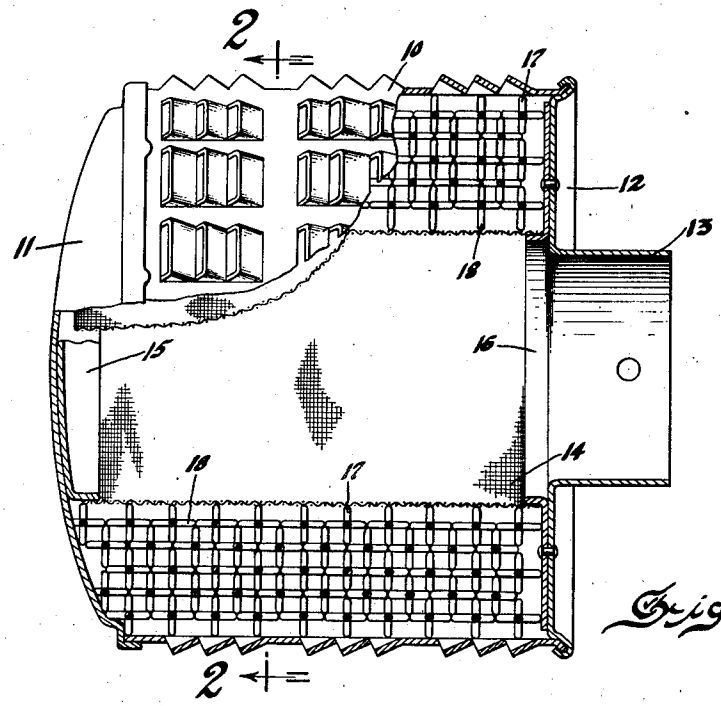


Fig. 1

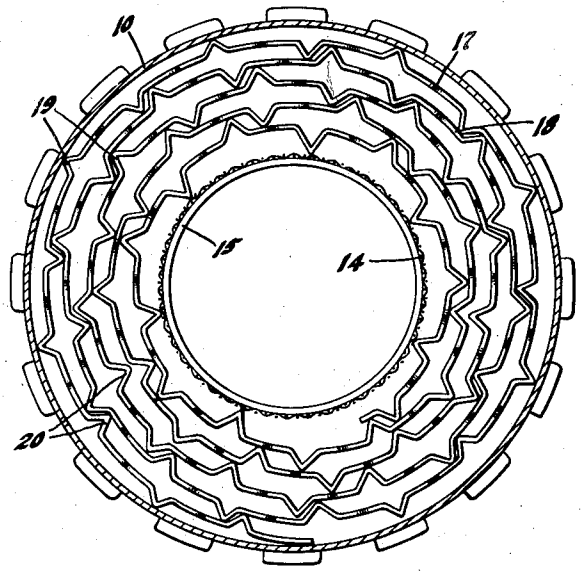


Fig. 2

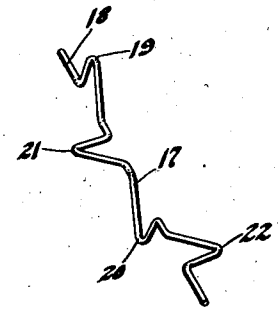


Fig. 3

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FILTER ELEMENT

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3 Claims. (Cl. 183—45)

This invention relates to air cleaners of the oil-wetted filter type.

It is an object of this invention to provide a dust-collecting medium for filters of the oil-wetted type which is of uniform and stable porosity, which will offer a low, uniform and stable resistance to the passage of air therethrough and yet will efficiently remove the foreign matter therefrom and which may be economically produced in large quantities.

For a better understanding of the nature and objects of the present invention, reference is made to the following specification in which there is described the preferred embodiment of my invention which is illustrated in the accompanying drawing.

In the accompanying drawing:

Figure 1 is a side elevation, with parts broken away and in section, of an air cleaner in which is incorporated a dust-collecting medium in which my invention is embodied.

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

Figure 3 is an enlarged perspective view of a fragment of the element from which the dust-collecting medium incorporated in the air cleaner shown in the preceding figures is formed.

The air cleaner illustrated in the drawing includes a cylindrical louvred shell 10 over whose opposite ends there are secured heads 11 and 12. In the head 12, there is provided a centrally located circular opening which is surrounded by an outwardly extending neck 13. Between the heads 11 and 12, there extends a perforate or foraminous tube 14 which is disposed coaxially with respect to the shell 10 and the neck 13 and maintained in that position by locating elements 15 and 16 which are secured to the heads 11 and 12, respectively.

The annular space between the tube 14 and the shell 10 is filled with the dust-collecting medium 17 which consists of a single length of an element 18 wound into a coil whose outer and inner dimensions are, respectively, equal to the internal diameter of the shell 10 and the external diameter of the tube 14.

The element 18 consists of a plain or twisted strand of metal or other suitable material which may be round, flat or of any other desired shape in cross section, deformed so as to provide oppositely disposed coplanar corrugations 19 and 20, and oppositely disposed coplanar corrugations 21 and 22 which are disposed at a right or any other desired angle to the corrugations 19 and 20. The deformation may, of course, be effected by passing the strand twice between one pair of corrugating rolls or dies but is preferably effected by passing the strand successively between angularly disposed corrugating rolls or dies.

It will, of course, be understood that the air cleaner illustrated in the drawing and hereinbefore described is intended to be installed with the neck 13 connected to the air intake tube of a carburetor or other source of suction to which it is desired to supply clean air and that before it is put into operation the dust-collecting medium should be coated with oil or some other suitable liquid. When the apparatus on which the air cleaner is installed is operating, air will be drawn through the louvred openings in the shell 10, the dust-collecting medium 17 and the tube 14, into the interior of the tube 14, whence it will pass through the neck 13 to the source of suction. During its passage through the dust-collecting medium 17, any foreign matter carried by the air will be deposited on and retained by the film of liquid on the surface of the element 18 with the result that the air which enters the interior of the tube 14 will be free from foreign matter.

It will be apparent that a dust-collecting medium of the type herein disclosed may be economically produced in large quantities; will efficiently remove foreign matter from the air passing therethrough; and will, since the angularly disposed corrugations in the element 18 prevent undesirably close interfitting and packing of the convolutions thereof, be of uniform and stable porosity and offer a low, uniform and stable resistance to the passage of air therethrough.

It will, of course, be understood that a dust-collecting medium of the type herein disclosed may be made of other shapes than that disclosed and, for use in certain types of air cleaners, may be made solid instead of hollow.

I claim:

1. In an air cleaner, a strand of metal wound upon itself both longitudinally and transversely of the axis of the air cleaner a plurality of times so as to form a dust collecting element in which, both longitudinally and transversely, there are a number of superposed layers of the strand, the juxtaposed layers of the strand being in direct contact one with the other and the strand having therein transversely extending angularly related relatively deep non-coplanar corrugations which provide in the dust collecting element between the layers of the strand and distributed throughout the dust collecting element both longitudinally and transversely relatively large spaces through

which air may flow both longitudinally and transversely of the dust collecting element, and an adhesive coating on the strand to catch and retain foreign matter in the air which passes through the air cleaner.

2. In an air cleaner, a dust collecting element in which there is included an adhesive coated strand of metal wound upon itself a number of times, the strand having therein transversely extending angularly related relatively deep non-coplanar corrugations which prevent undesirably close interfitting and packing of the juxtaposed convolutions thereof.

3. In an air cleaner, a dust collecting element in which there is included an adhesive coated strand of metal fabricated into a body of predetermined structure, the strand having therein transversely extending angularly related relatively deep non-coplanar corrugations which prevent undesirably close interfitting and packing of the juxtaposed portions thereof.

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