Dec. 5, 1944. C. G. VOKES 2,364,573

FILTER

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FIG. 1.

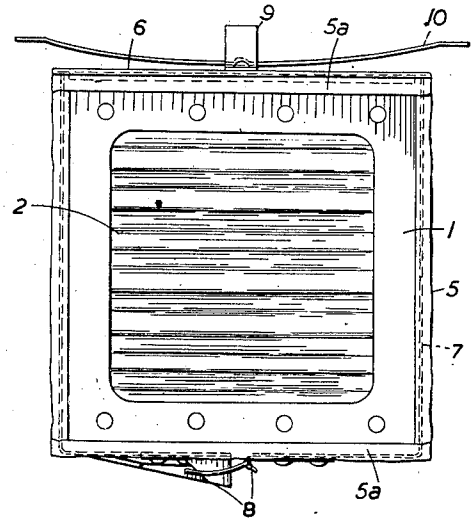

FIG. 2.

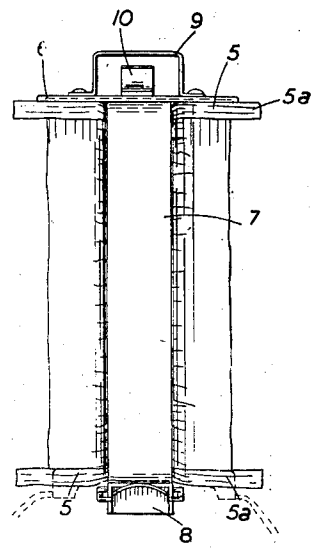

FIG. 3.

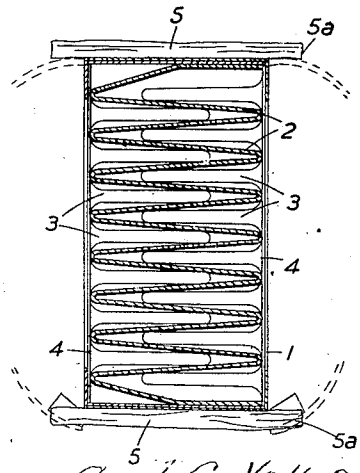

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FIG. 4.

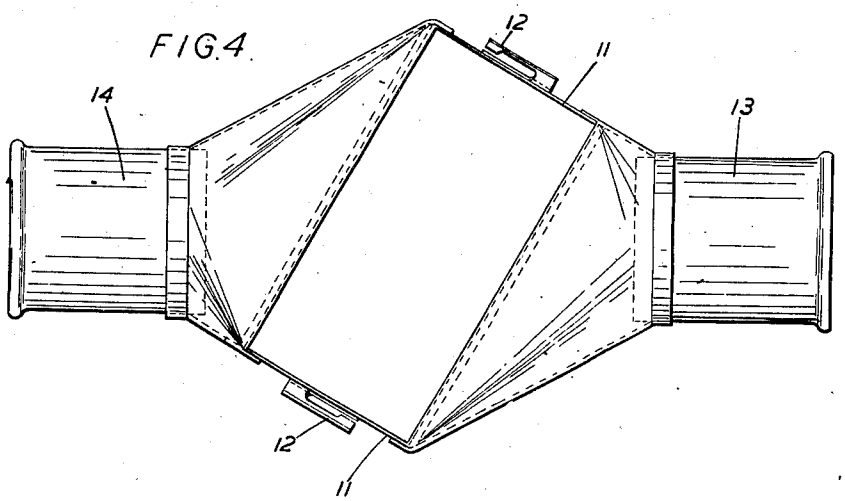

FIG. 5.

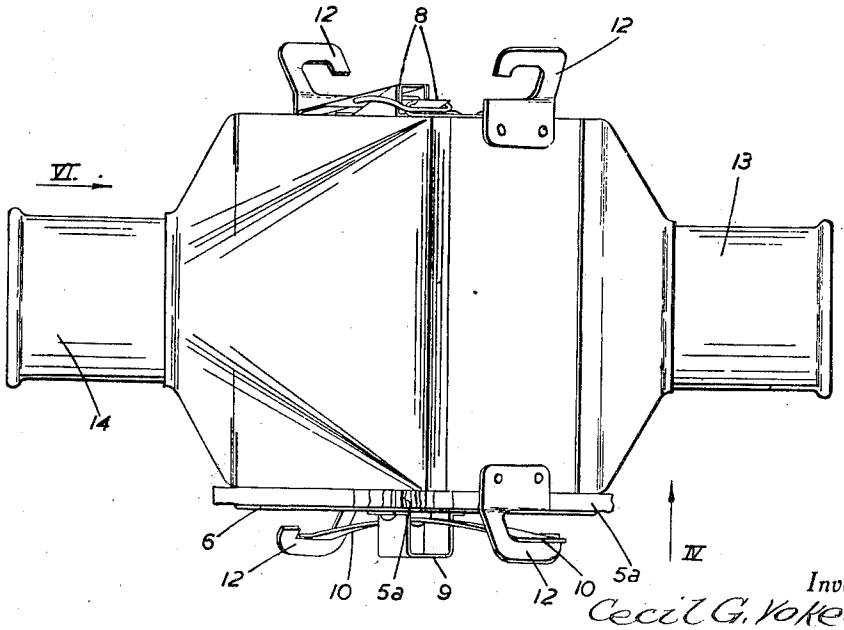

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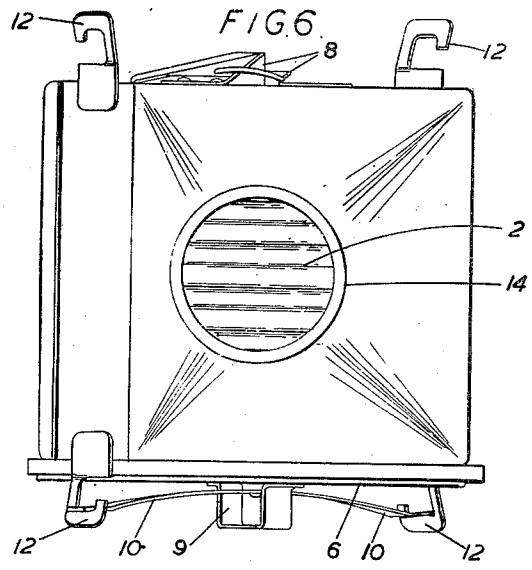
FIG 6



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2,364,573

FILTER

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Application November 20, 1942, Serial No. 466,309
In Great Britain November 19, 1941

2 Claims. (Cl. 183—71)

It sometimes happens when a filter is to be inserted in a pipe-line or the like that space is very limited and there is some difficulty in providing enough area to avoid undue back pressure. Pleated or deeply pocketted filters are extensively used to increase the filtering area of a panel or the like, but the useful depth of pleats or pockets is limited relatively to the area of the panel.

The present invention provides a convenient filter unit in the form of a box like panel which can readily be withdrawn from a filter casing for cleaning and replacement and which more especially facilitates the use of an inclined panel of considerable thickness (or depth of pleat) without using a casing of excessive length as well as diameter of enlargement. The improved unit has the jointing material, by which joint is made between the panel and the casing, attached to it: in this way the jointing material can be cleaned when the filtering screen is cleaned and replacement of a discarded panel also automatically renews the jointing material. In the preferred form of filter the panel is retained by a spring clip so that it is instantaneously withdrawable: and the preferred form of casing has oppositely disposed apertures, either of which can be used according to available space and convenience, for insertion and withdrawal of the unit, overlapping padding enabling joint to be made both at the front (or inner end) of the panel, as it is inserted, against the inside of the casing and at the back (or outer end) of the panel against the outside of the casing. A resilient clip element on a cover attached to the unit will facilitate making both joints and the cover can be readily removable from the box like panel and padding so that these can be discarded and the cover attached to a new unit when desired.

The above and other parts of the invention are embodied in the examples shown by the accompanying drawings, the parts for which a monopoly is desired being those set out in the claims.

In the drawings:

Fig. 1 shows in front elevation a panel unit with cover and clip element attached,

Fig. 2 shows the same in side elevation, the assembly being shown as about to be inserted in the casing,

Fig. 3 shows the unit in side elevation with the box like frame in section to show a deeply pleated filter screen, with the assembly shown following its insertion in the casing,

Fig. 4 shows a filter casing looking in the direction indicated by arrow IV (Fig. 5),

Fig. 5 shows the filter assembled,

Fig. 6 is a view of the same looking in the direction of arrow VI (Fig. 5).

Looking first at Figs. 1, 2 and 3 the box like panel is formed as a frame of sheet material (metal or fibreboard or the like) 1 with the pleated filtering screen 2 secured inside it by adhesive. Spacing fingers 3 carried on flanges 4 may be used between and near the ends of the pleats. Secured to the outside of the frame by adhesive or by rivets or stitching is felt padding 5 which extends at 5a (at the outer and inner ends of the panel) beyond the panel on the inlet and outlet sides. A cover 6 has welded to it a metal band 7 which surrounds the panel and felt (helping to secure the latter) and is drawn tight by a toggle clip 8. Riveted to the cover is a handle 9 and so riveted as to be free to pivot is also a leaf spring 10 which forms one element of a spring clip device. The filter casing is shown at Fig. 4, looking directly through the transverse rectangular apertures into which the panel unit can be slid. The sides 11 against which the felt slides are shown with attached clip elements 12. The inlet is at 13 and the outlet at 14. When the panel unit with cover attached is slid into the casing, the assembly shown at Figs. 5 and 6 results, the leaf spring 10 engaging the clip elements 12 on the side through which the element was slid in. The complete filtering or replacement unit can be manipulated into position or withdrawn from either end of its inclined final position as desired. When pushed fully into position, the felt at the front (or inner end of the panel) comes up against the inside of the casing surrounding the rectangular opening at that end and that at the back (or outer end) against the outside of the casing surrounding the opposite opening. The cover compresses both felts and holds the unit in position. A second cover may be used at the opposite end, but this is not necessary.

It will be seen that such a filter can often be fixed in a limited or awkward space and arranged so that the unit can be got at for withdrawal for cleaning or replacement: the same parts can be used right or left handed. The pleats can be arranged to run up and down rather than across and the "dirty" side can incline downwardly so that there is a self-cleaning effect. In some cases a plug or flap can be arranged for, to enable accumulated dust to be withdrawn without removing the unit.

I claim:

1. A filter including a casing with inlet and outlet connections, a filtering assembly including

a box-like panel to be passed into the casing between said inlet and outlet connections, a filtering screen in said panel, a relatively thick sealing padding secured around the outer surface of the panel, said padding extending beyond the filtering inlet and outlet surfaces of the panel to provide bendable sealing sections to overlie the cooperative edges of the casing when the panel is inserted to seal such edges, means for clamping such sealing sections in sealing relation to the casing following insertion of the panel in the casing, a cover secured to one end of the panel to overlie the padding, and a band secured to the cover and extending therefrom to surround the panel beyond the cover to overlie the padding.

2. A filter including a casing with inlet and outlet connections, a filtering assembly including a box-like panel to be passed into the casing between said inlet and outlet connections, a filtering screen in said panel, a relatively thick sealing padding secured around the outer surface of the panel, said padding extending beyond the filtering inlet and outlet surfaces of the panel to provide bendable sealing sections to overlie the cooperative edges of the casing when the panel is inserted to seal such edges, means for clamping such sealing sections in sealing relation to the casing following insertion of the panel in the casing, clips secured to the sides of the casing beyond the path of movement of the panel, and a spring clip movably mounted on the end of the panel in position to be moved to interlock with said clips when the panel is in place in the casing to create a tension grip for the panel.

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