July 8, 1947. C. G. VOKES ET AL 2,423,741

FILTERING DEVICE

Filed Dec. 11, 1944

FIG. 1.

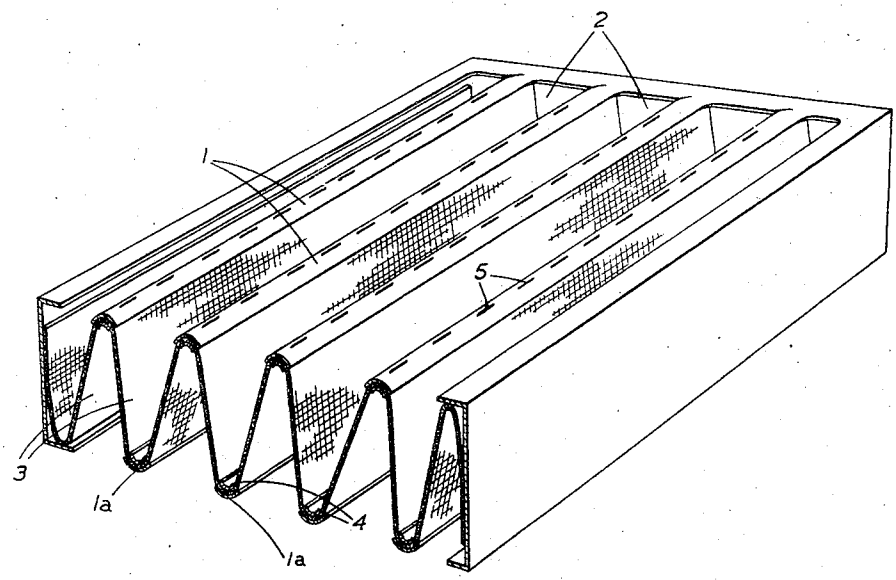
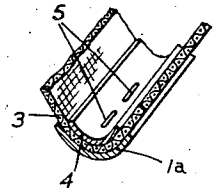


FIG. 2.



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2,423,741

FILTERING DEVICE

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1 Claim. (Cl. 183—71)

1

A filter is often used on aircraft for filtering air passing to the engine intake and for other purposes in which a deeply crimped or pleated screen is formed of fine fibrous material, such for example as cotton or cellulose down, enclosed between layers of rather coarse textile fabric, such for example as buckram, and between outer layers of wire gauze. In other cases other soft fibrous material such as felt or soft textile fabric is stitched to or enclosed between layers of wire gauze.

It is found that as the surface of a screen of this nature approaches more nearly to perpendicular to the impact of sharp gritty particles travelling at very high velocity there is a tendency for the filter down or soft material to be destroyed by the sand-blasting effect, which may even leave parts of the bends almost denuded after a period of use. The practicable size of unsupported panels of screens of this kind is in any case limited, so that it is common practice to subdivide the total area of air flow by some form of subdivided frame giving support to relatively small areas. The present invention provides means which combine the function of protecting the bends with that of helping to stiffen and support the screen.

The above and other parts of the invention are embodied in a typical form which is illustrated by the accompanying drawings. The parts of the invention for which a monopoly is desired are those delimited by the claim.

In the drawings—

Fig. 1 is a broken perspective view,

Fig. 2 is a fragmentary underside view to a larger scale.

As shown a slotted plate or grid with channelled bars 1 between the slots 2 is used to protect the angles or bends of a screen 3 of the general kind described above. The air passes through the slots between the bars which lie along each angle in the position requiring protection. It is found that the bends at the outlet side sometimes also require protection and the preferred construction includes a similar grid with bars 1a on the outlet side of the screen. Protection is given to the inside of the bends by the use of suitably formed interior bars 4, so that there is a complete protection inside and outside the bends. Preferably light metal plate of relatively thin

2

gauge will be used to form the grids and a loose bar 4 on the opposite side of each bend can if necessary be riveted through to the bar of the grid, staples 5 being shown for this purpose. A grid may be arranged with a number of sets of slots to make up a panel covering a large area from a number of strips of the pleated filtering screen, the ends of the pleats being suitably closed. Moreover, the wire gauze can sometimes be omitted and buckram or like supporting layers stiffened and the formation maintained by the bars.

We claim:

A filter including a slotted plate comprising parallel integrally connected channeled bars in spaced relation, as screen of deeply crimped formation having a plurality of offset oppositely disposed bends, the bends at one side of the screen underlying and nesting with said channeled bars, a second plate comprising parallel integrally formed channeled bars which are offset with respect to the first mentioned bars so as to underlie and nest with the screen bends at the opposite side of the screen, an independent bar nested with and extending the length of the inner side of each screen bend to form with the outer bars a supporting and wear resisting binding for each of said screen bends, and tying elements extending through the screen and the inner and outer bars at each screen bend to maintain the bars and screen in relatively fixed relation.

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ARTHUR ALBERT SMITH.

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