

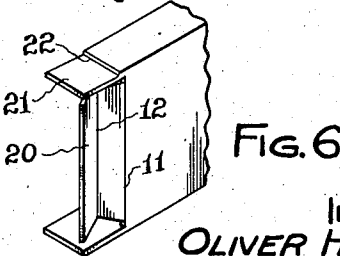
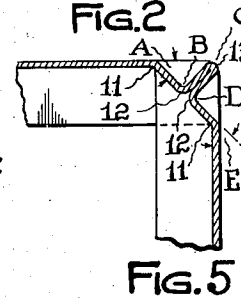
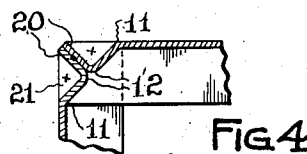
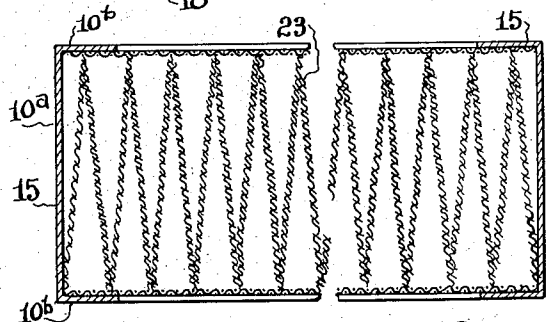
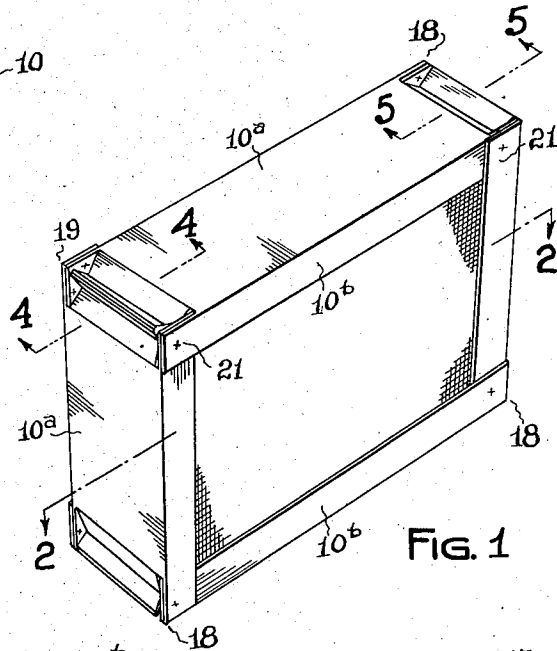
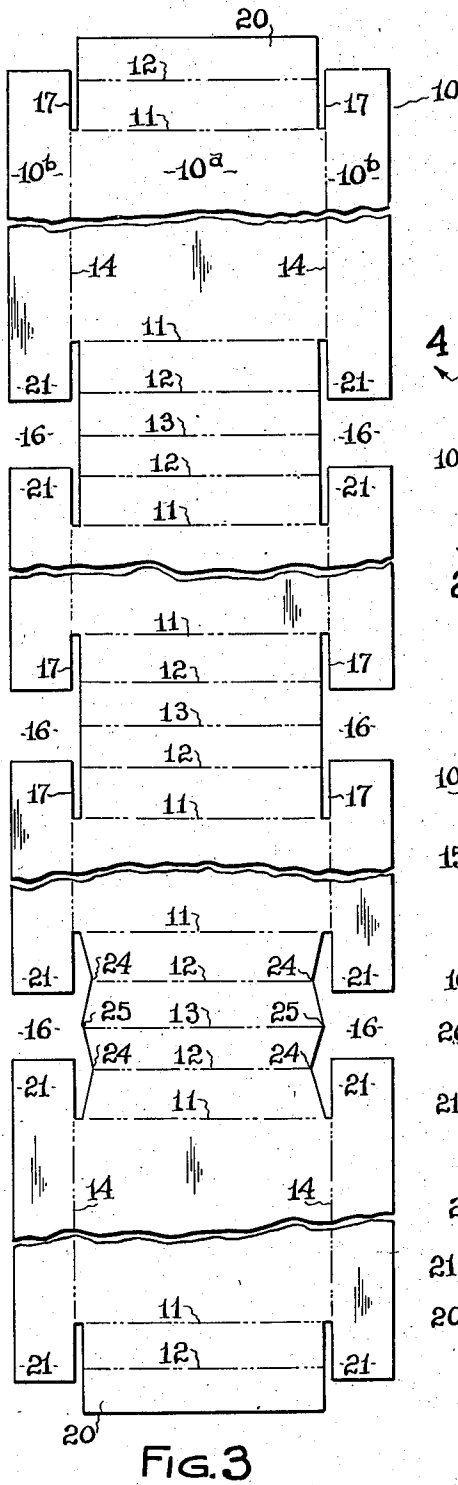
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FRAME FOR FILTERS

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2,393,419

FRAME FOR FILTERS

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2 Claims. (Cl. 183—44)

This invention relates to improvements in a frame for an air filter or the like.

An object of the invention is to provide a strong yet cheaply constructed frame of sheet material for an air filter or the like where a frame of polygon shape encircles the filter leaving open front and rear faces for the passage of a gaseous stream. The features of the invention will be apparent from the accompanying drawing and description, and the essential features thereof will be set forth in the appended claims.

In the drawing:

Fig. 1 is a perspective view of the device showing one embodiment of my invention;

Fig. 2 is a sectional view of the same taken along the line 2—2 of Fig. 1;

Fig. 3 is a plan view of a blank of sheet material from which my device is constructed;

Figs. 4 and 5 are fragmental sectional views taken along similarly numbered lines of Fig. 1; while

Fig. 6 is a perspective view of one end of the formed blank in the finishing corner of the frame.

My invention provides a strong frame for an air filter or the like and one which may be formed from a single blank of sheet material which may be cut out as illustrated in Fig. 3. This blank 10 has an uninterrupted central strip portion 10a adapted for later bending along the dot-dash lines indicated at 11, 12, and 13. Along each side of the central strip portion are wide strip portions 10b which are intended to be folded along the lines 14 to provide a frame generally channel-form in section as shown at 15 in Fig. 2. Here the portions 10a provide the web of the channel and the portions 10b provide the edge flanges at right angles to the web. Referring again to Fig. 3, the side strip portions 10b are interrupted as shown at 16 wherever a corner of the frame is to be formed. At these places, a portion of the side strip portions 10b is entirely removed and slots 17 are cut extending away from the cut-out portions in a manner to separate the web and flanges of the channel-shape section at these places.

The blank of Fig. 3 is first folded along the lines 14 to provide flanges at right angles to the central or web portion 10a. Then each of the three corners indicated at 18 (Fig. 1) is formed as shown in detail in Fig. 5. The web portion 10a is first folded along the line 11 so that the angle A is approximately 45 degrees. It is then folded along one of the lines 12, 90 degrees outwardly to form reinforcing ear as indicated at C. The

angle B is thus about 90 degrees. The web is then folded along the line 13 back upon itself approximately 360 degrees, then folded outwardly again on one of the lines 12 so that the angle D is approximately 90 degrees, then folded inwardly again along one of the lines 11 so that the angle E is approximately 45 degrees. At the fourth corner or finishing corner marked 19 on Fig. 1, the ends of the blank of Fig. 3 are brought together, and these ends are bent as shown in Figs. 4 and 6, this being made possible by slots 17 analogous to the slots 17 adjacent the previously mentioned openings 16. The end tongues 20 of the blank are then spot welded together as indicated in Fig. 4 so as to hold the frame securely together.

It will be noted that when the blank is folded as above described, the ears 21 of the side strip portions 10b overlap each other at the corners of the frame as clearly indicated in Figs. 1, 4, and 5. One of the overlapping portions may be offset by approximately the thickness of the sheet material as indicated at 22 in Fig. 6 so as to provide a flush construction at the corner. These overlapping ear portions 21 are then secured together either by riveting or as indicated in the drawings by spot welding.

The material within the frame forms no part of the present invention although I have indicated in Fig. 2 an air filter comprising a sheet 23 of woven screen mesh folded in zig-zag form and completely filling the frame. It will be noted that the web portions 10a of the frame completely encircle this filter material leaving the front and rear faces of the frame open for the passage of a stream or other gas to be filtered.

The above construction provides a cheap but strong frame because each of the corners has a diagonal strengthening strip represented by the material lying between the lines 11 and 12, and in addition, mid way of this diagonal there is an outwardly extending stiffening rib represented by the material lying between the lines 12 and 13 at the corners 18 or represented by the end tongues 20 at the corner 19. These in turn are further strengthened by the overlapping ear portions 21 rigidly secured together and abutting the ends of the strengthening diagonal and the strengthening rib.

Obviously, the frame could be made by four identical sections as would be formed by cutting the blank of Fig. 3 along each of the lines 13. In this form of construction all of the corners would look like that shown in Fig. 4, but I prefer the

device as shown made out of the single blank of Fig. 3.

What I claim is:

1. A generally rectangular frame of sheet material channel-form in section having a web and edge flanges, said web being severed from said flanges at the frame corners, said web at each corner being bent inwardly at approximately forty-five degrees, then outwardly ninety degrees, then inwardly approximately three hundred and sixty degrees, then outwardly ninety degrees, then inwardly approximately forty-five degrees to form the next side of the rectangle, said flanges of adjacent sides overlapping at each corner, and means there securing said flanges together. 15

2. A frame for a filter or the like comprising sheet material channel-form in section and bent to form corners of the frame, said channel-form having a web and two edge flanges, portions of said flanges being entirely cut away at said corners and adjacent portions of said flanges severed from said web, the web of said channel at a zone where said flanges are cut away being bent along a diagonal across the corner, there being excess web material folded substantially at a right angle from said diagonal, the flanges of said channel being overlapped at said corner, and means securing said overlapping flanges together. 5 10

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