

Jan. 12, 1971

F. G. HARRINGTON ET AL
ANCHOR FOR PLIABLE SHEET MATERIAL

3,553,942

Filed Feb. 26, 1968

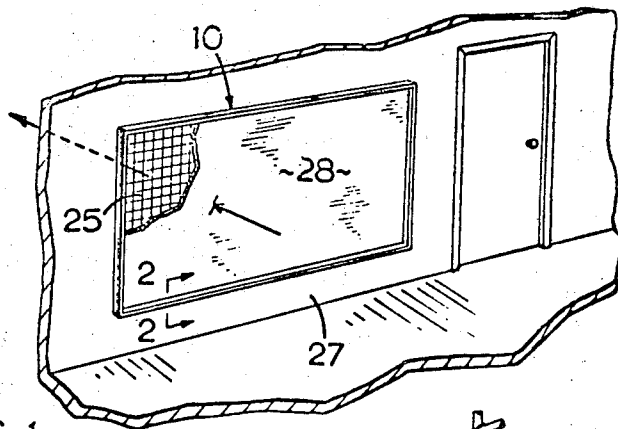


FIG. 1

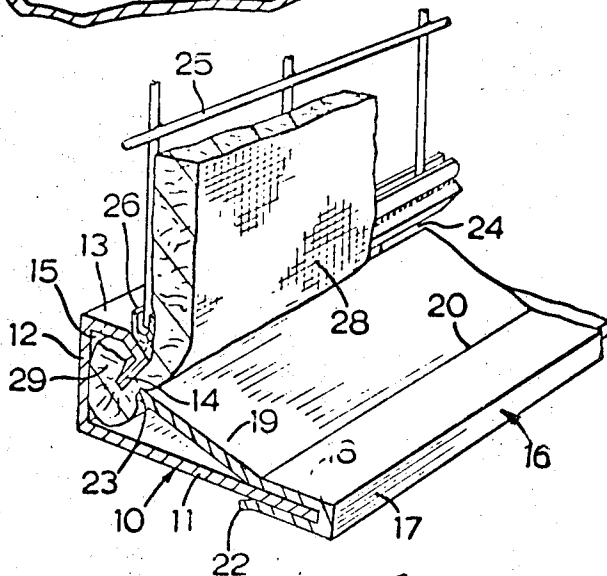


FIG. 2

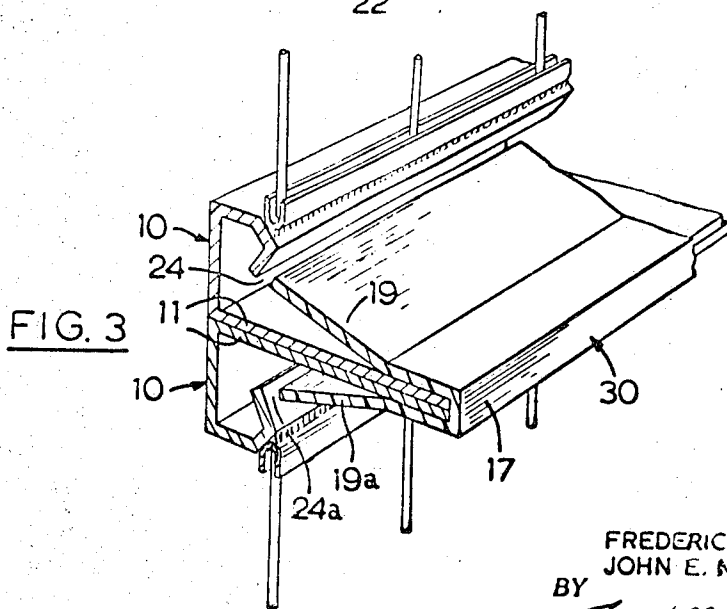


FIG. 3

INVENTORS
FREDERICK G. HARRINGTON
JOHN E. MULLAN
BY *Westell & Hanley*

1

3,553,942

ANCHOR FOR PLIABLE SHEET MATERIAL

Frederick G. Harrington, 24 Leith Hill Road, Willowdale, Ontario, Canada, and John E. Mullan, 9 Lothian Ave., Toronto, Ontario, Canada

Filed Feb. 26, 1968, Ser. No. 708,238

Int. Cl. B01d 50/00

U.S. Cl. 55—483

8 Claims

ABSTRACT OF THE DISCLOSURE

An anchoring device for pliable sheet material in which the edge of the material is releasably gripped in a frame. One strip member, forming the frame, has a convoluted base terminating in a fixed tongue and carries a resilient flange co-operating with the tongue to form a slot. The flange is movable in one direction obliquely with respect to the tongue to expand the slot for insertion of the edge of the sheet material and reduces the slot when moved in the opposite direction.

The present invention relates to a retaining device and more particularly to an anchoring means for pliable sheet material such as an air filter blanket.

In many types of apparatus it is necessary to stretch sheet material across a space or opening, an example being the use of a filter blanket in an air pollution control unit where a sheet of air filtering material is placed across an air passage. Since the sheet or blanket must be periodically renewed as it accumulates pollutants, it is necessary to provide means for anchoring the blanket in a manner which facilitates its removal and replacement. One such means consists of a channel-shaped strip of resilient material which has jaws intumed from the upper end of the arms to grip the edge portion of the blanket when it is forced between the jaws into the cavity of the strip, as shown in U.S. Pat. No. 3,293,834 issued Dec. 27, 1966 to Donachie. However, in such a device if the jaws are sufficiently flexible to provide a proper opening to receive the edge portion of the blanket they do not also insure an adequate grip to retain the blanket firmly and maintain it taut in its free central position. Furthermore, this device must be fixed by rivets or similar means to the filter panel frame.

The present invention overcomes these disadvantages by providing for a filter blanket, an anchoring device, which is simple in construction and efficient in holding and releasing the blanket as required.

Example embodiments of the invention are shown in the accompanying drawings in which:

FIG. 1 is a view in perspective of a device according to the invention, in situ and holding a filter blanket;

FIG. 2 is a view in cross-section taken along the line 2—2 of FIG. 1; and

FIG. 3 is a view in cross-section similar to FIG. 2 but showing an alternate embodiment of the device for holding filter blankets in a continuous plane.

The embodiment shown in FIGS. 1 and 2 of the drawings consist of a first member or frame 10 formed of a strip of rigid material which is substantially J-shaped in transverse cross-section to form an outwardly extending leg 11 and an upstanding base 12. Base 12 is intumed to form a shoulder 13 and the free end portion of the shoulder is doubled back to form a tongue 14 which is directed inwardly towards leg 11 and downwardly at an angle towards base 12. Thus base 12, shoulder 13 and tongue 14 form a cavity 15.

A second strip member 16, mounted on leg 11, co-operates with tongue 14 to form a releasable gripping

2

means for frame 10. Seen in transverse cross-section, member 16 consists of a U-shaped head 17 having one leg 18 extended to form a flange 19 which is angled with respect to head 17 along a hinge line 20. The other leg 21 of head 17 terminates in a short outwardly projecting edge portion 22. Member 16 is dimensioned to have head 17 press fit over the free edge of leg 11 and, when so positioned, to have the free edge 23 of flange 19 terminate adjacent tongue 14 of frame 10 to form an elongated opening or slot 24 running the length of the frame.

While frame 10 is of rigid material such as steel, member 16 is of a more resilient material such as polycarbonate which enables flange 19 to be pressed inwardly towards leg 11 about hinge line 20 when the member is mounted on the leg. As seen in FIG. 2 of the drawings, the plane of flange 19 is substantially normal to tongue 14 and intersects that region of the tongue adjacent its free edge. The slope of tongue 14 with respect to flange 19 is such that when the flange is pressed inwardly towards leg 11, edge 23 moves obliquely away from the tongue and widens slot 24 whereas when the flange moves outwardly towards its normal position of rest its free edge moves obliquely towards the tongue.

Usually a heavy wire lattice or screen is mounted on the frame to give lateral support for a blanket carried by the frame and FIG. 2 shows a screen 25 circumscribed by a trough 26 which is fixed to shoulder 13 on base 12.

In the operation of this device, frame 10 is fixed in a suitable position, for instance circumscribing an aperture in a wall 27, as shown in FIG. 1 of the drawing. Frame 10 may be fixed anywhere in the region between the juncture of leg 11 and base 12. If convenient, members 16 may be fitted onto frame 10 after the frame has been fixed to the wall. Frame 10 is then ready to receive a blanket 28 of filtering material which is laid against screen 25. Circumscribing edge portion 29 of blanket 28 is then forced through slot 24 into cavity 15 of frame 10 by pressing flange 19 inwardly towards leg 11 which enlarges the slot to receive the blanket. The slope of tongue 14 aids edge 29 in curling up into cavity 15. Flange 19 is then released and as it springs back outwardly away from leg 11 with its free edge 23 moving obliquely in the direction of tongue 14 it pinches blanket 28 and locks it in position. Any subsequent tension applied to blanket 28 to pull it out of slot 24 forces flange 19 further away from leg 11 which further reduces the width of slot 24 and wedges the blanket more securely between the flange and tongue 14.

To remove blanket 28 from frame 10 it is merely necessary to press flange 19 inwardly towards leg 11 whereby slot 24 is widened and the blanket is released from the wedging action between the flange and tongue 14.

An alternate embodiment in the invention is shown in FIG. 3 of the drawings for use in securing a pair of filter blankets 25 to obtain coverage over a larger area. In this embodiment a pair of brackets 30 are fixed together with legs 11 in back-to-back relationship. A member 30 similar to member 16 is employed in this embodiment but in place of lip 20 it has a second flange 19a which is the mirror image of flange 19. Head 17 of member 30 is press fitted over combined legs 11 of frames 10 and in this manner a pair of parallel slots 24 and 24a are provided in parallel relationship, running the length of frames 10, to receive the edges 29 of a pair of blankets 28 and whereby a continuous filter blanket is obtained, broken only by the intersection of the frames.

It will be appreciated that frame 10 may be of any suitable cross-sectional configuration to produce the required interaction between tongue 14 and flange 19 on filter blanket 28; for instance base 12, shoulder 13 and

3

tongue 14 may extend arcuately from leg 11 as a convolution. Also, the plane of tongue 14 at its free edge may intersect either leg 11 or base 12; in the embodiments shown in the drawings the tongue is flat and its plane intersects the line of intersection between the leg and the base rather than the projected plane of one of them.

Of course frame 10 may be fabricated in any suitable manner, for instance shoulder 13 and tongue 14 may be formed as an integral unit which is attached to leg 11 and base 12 also formed as an integral unit. Furthermore, these two integral units may be attached one to another through outstanding flanges forming a shoulder to which screen 25 is fixed, thus replacing trough 26.

While in the described embodiment tongue 14 is normally urged towards leg 11 by the spring action of the material forming second strip member 16, it may also be urged towards the leg by the action of blanket 28.

We claim:

1. An anchoring device for pliable sheet material, comprising:

(a) an elongated first member forming a frame for the sheet material, said first member having in transverse cross-section an outstanding leg and a base transverse thereto, the base being inturned to form a shoulder terminating in a tongue projecting towards the leg and towards the plane of the base; and

(b) a second member mounted on the leg of the first member, said second member having a generally U-shaped in cross-section head having one leg of the U extended and forming a flange which is angled with respect to the remainder of the head along a hinge line, said outstanding leg being received in a press fit between the legs of said U-shaped head, said flange extending towards the tongue of the first member to form a slot therewith running the length of the frame, the flange being movable obliquely towards the leg to widen the slot for reception of the free edge portion of the sheet material and being movable obliquely away from the leg towards the tongue to narrow the slot and wedge the sheet material therein.

2. A device as claimed in claim 1 including a screen fixed to the frame along the shoulder of the first member.

3. A device as claimed in claim 1 in which the flange is pivotal towards the leg.

4. A device as claimed in claim 3 in which the flange is normally urged away from the leg.

5. A device as claimed in claim 1 having a pair of first members with the legs thereof fixed together in back-to-back relationship, the second member being mounted on the combined legs of the first members and having a

4

pair of flanges forming with the first members a pair of said slots in parallel relationship.

6. A device as claimed in claim 1 in which the first member is of steel and the second member is of polycarbonate.

7. An anchoring device for a filter blanket, comprising:

(a) an elongated first member forming a frame for the blanket, the first member having in transverse cross-section an outstanding leg and a base transverse thereto, the base being inturned to form a tongue projecting towards the leg and towards the plane of the base, and providing a cavity running the length of the frame; and

(b) a second member mounted on the leg of the first member, said second member having a generally U-shaped in cross-section head having one leg of the U extended and forming a flange which is angled with respect to the remainder of the head along a hinge line, said outstanding leg being received in a press fit between the legs of said U-shaped head, said flange extending towards the tongue of the first member to form a slot therewith opening from the cavity, the flange being movable obliquely towards the leg to widen the slot for reception of the free edge portion of the filter blanket into the cavity and being movable away from the leg towards the tongue to narrow the slot and wedge the blanket therein.

8. A device as claimed in claim 7 in which the U-shaped head is resilient, the flange being integral with the head, the flange being normally urged away from the leg and movable towards the leg under transverse pressure thereon.

References Cited

UNITED STATES PATENTS

1,104,151	7/1914	Stein	55—FFUX
1,171,952	2/1916	Higgin	55—FFUX
1,865,674	7/1932	Carter	55—FFUX
2,111,448	3/1938	Hoffman	55—FFUX
2,908,348	10/1959	Rivers et al.	55—484X
2,935,157	5/1960	First	55—483
3,058,279	10/1962	Metcalfe	55—495
3,076,303	2/1963	Durgeloh	55—511
3,293,834	12/1966	Donachiue	55—511
3,373,546	3/1968	Setnan	55—501

DENNIS E. TALBERT, JR., Primary Examiner

U.S. Cl. X.R.

55—484, 493, 501, 511; 160—371, 382