

[54] COLLAPSIBLE SHAFT FOR PAINT SPRAY BOOTH

[76] Inventor: **Sheila Hardy**, 400 North Avenue,
Dispo Spray Booths, Bartlett, Ill.
60103

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242/110

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[58] Field of Search.....242/52, 68, 72, 1,
242/110, 110.1; 279/2; 98/115 SB

[56]

References Cited

UNITED STATES PATENTS

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Primary Examiner—George F. Mautz

Assistant Examiner—Edward J. McCarthy

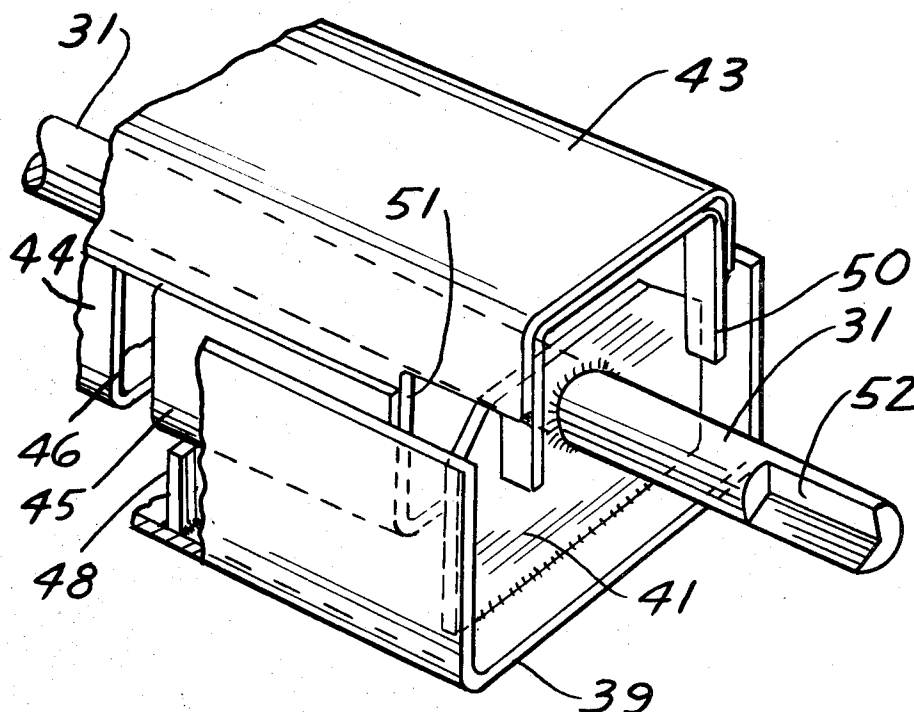
Attorney—Edward M. Apple

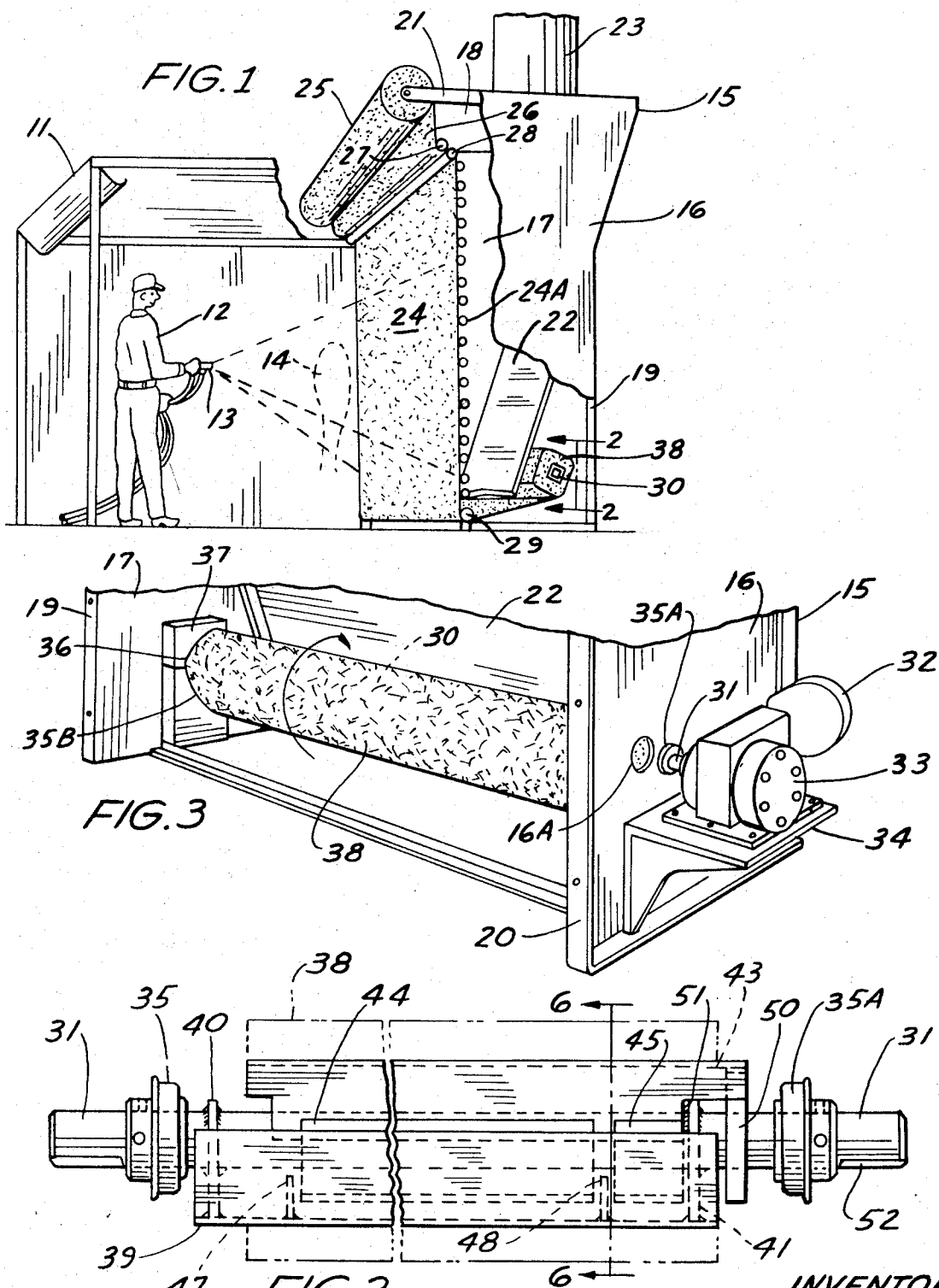
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ABSTRACT

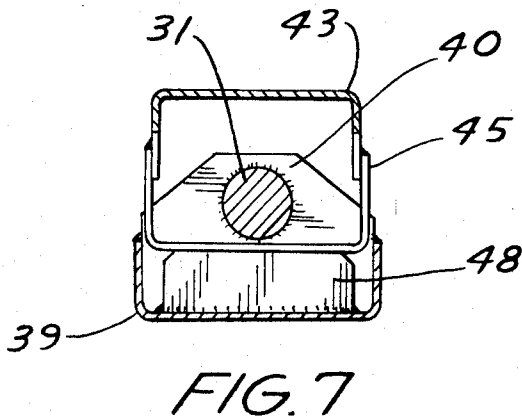
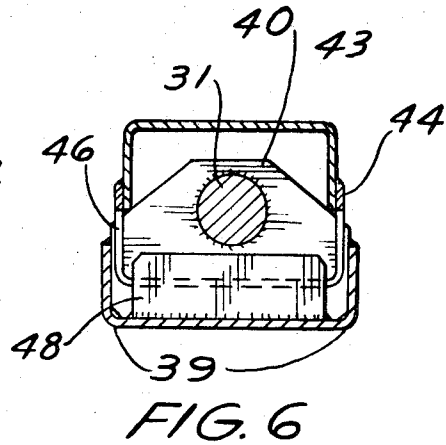
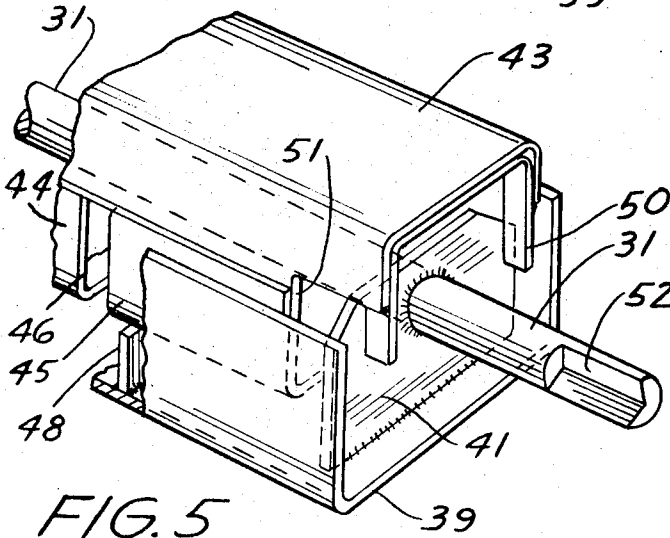
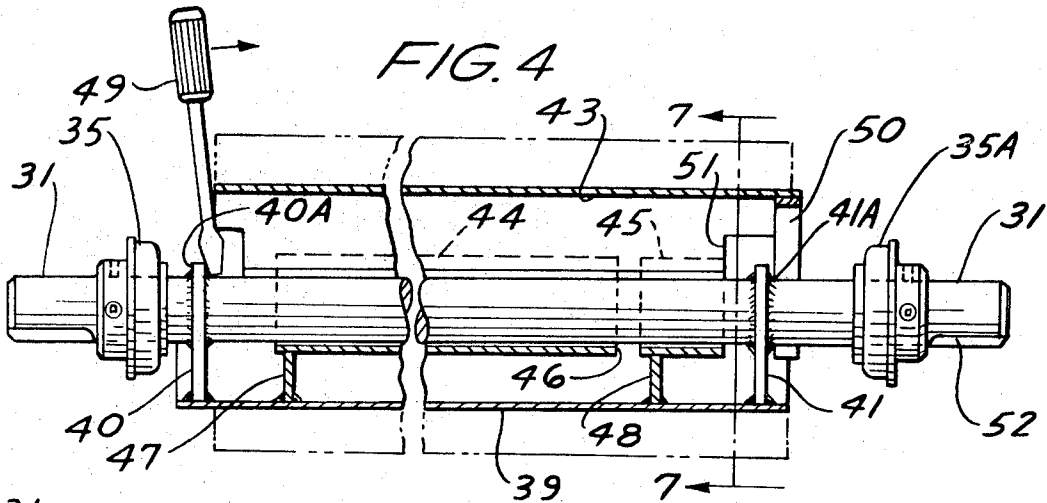
The invention resides in the particular combination and arrangement of elements and especially in the provision of an improved structure having a single, co-extending drive shaft and a single shiftable member to collapse the device, so that it may more easily be removed from a roll of paint laden material.

6 Claims, 7 Drawing Figures





INVENTOR
SHEILA HARDY
BY Edward M. Apple
ATTORNEY



INVENTOR.
SHEILA HARDY
 BY *Edward M. Apple*
 ATTORNEY

COLLAPSIBLE SHAFT FOR PAINT SPRAY BOOTH

This invention relates to the art of paint spraying and has particular reference to an improved, collapsible shaft for collecting paint laden portions of a disposable paint spray curtain, such as disclosed in U.S. Letters Pat. Nos. 2,841,073; 2,875,680 and 3,071,060 issued to me under my previous name, Shiela M. Forshee.

An object of the invention is to generally improve paint spray booth equipment and to provide an improved device which also improves the practice of the method disclosed in the foresaid patents previously issued to me.

Another object of the invention is to provide an improved collapsible shaft which is constructed and arranged with but one moveable part, to obviate the possibility of loss or misuse of various moveable parts disclosed in my previous patent.

Another object of the invention is to provide means for collecting paint laden curtain material by tightly winding the same on a collapsible shaft and removing the same intact so that no aeration or oxidation of the paint laden material may occur, thereby obviating any possibility of spontaneous combustion and conforming to the standards of the United States Fire Underwriters Association.

Another object of this invention is to provide a collapsible device for collecting and disposing of spray curtain material after it has been used in my process of trapping paint overspray.

Another object of the invention is to provide a spray curtain collector which is constructed and arranged so that in collapsing the device, it is only necessary to shift one member to effect the collapse of the collector.

Another object of the invention is to provide a collapsible shaft which may be collapsed by shifting a single member, using a simple tool, such as a conventional screw driver, or the like, in a simple prying operation.

Another object of the invention is to provide a collapsible member for collecting paint laden spray curtain material, which is simple in construction, economical to manufacture, and easy to assemble and disassemble.

Another object of the invention is to provide a device of the character indicated, which is constructed and arranged so that the overspray of a paint spraying operation may not contact the working parts of the collector.

Another object of the invention is to provide a device of character indicated, which is constructed and arranged so that fresh air may reach the interior of the device from either end, whereby to provide better ventilation for the device.

Another object of the invention is to provide a device of the character indicated which greatly facilitates the collection and disposal of wet, heavily laden, sections of material used as back-drop, or curtain, for catching the over-spray in a paint spray operation, as disclosed in my previous patents.

Another object of the invention is to provide a collapsible structure, which is formed primarily of a pair of telescoping channel members, which are supported about, and rotatable with a drive shaft element.

Another object of the invention is to provide a collapsible shaft of the character indicated which is constructed and arranged so that it cannot be installed in the booth in collapsed or improper condition.

The foregoing and other objects and advantages of the invention will become more apparent as the description proceeds, reference being made from time to time to the accompanying drawing, forming part of the within disclosure, in which drawing:

FIG. 1 is a front perspective view of a paint spray booth embodying the invention, with parts broken away in order to show the relation of other parts.

FIG. 2 is an enlarged elevational view with parts broken away, taken substantially on the line 2—2 of FIG. 1, and illustrating the shaft in collapsed condition.

FIG. 3 is an enlarged detail of the rear lower portion of the device shown in FIG. 1, with the compartment cover removed and showing the means for driving the shaft.

FIG. 4 is a longitudinal section taken through the device shown in FIG. 2, but showing the shaft in extended and working condition.

FIG. 5 is an enlarged fragmentary detail showing the drive end of the shaft in extended condition.

FIG. 6 is a section taken on line 6—6 of FIG. 2 with the shaft in collapsed condition.

FIG. 7 is a section taken substantially on the line 7—7 of FIG. 4, and showing the shaft extended and in working condition.

Referring now more particularly to the drawings, it will be understood that in the embodiment herein disclosed, the reference character 11, indicates in general, the protective canopy in which the operator 12 stands, while using the paint spray apparatus 13 to spray a work piece 14. It will be understood that the canopy 11 is closed on top and on either side, as disclosed in my previous patents, referred to hereinabove.

The canopy 11 is secured by any suitable means to the spray booth 15 which I will now describe. The spray booth 15 consists of side members 16 and 17 and a top member 18, all of which are preferably made of metal, and are secured to the frame members 19, 20, and 21, by welding or other suitable means. The booth 15 is provided with an air baffle 22 and an exhaust stack 23, all of which are more particularly defined in my co-pending application, Ser. No. 75,843, filed Sept. 28, 1970.

The front wall 24 of the booth 15 consists of a section of fabric material which is initially carried on a roll 25 above and outside of the booth 15. The material from the roll 25 is drawn downwardly, as at 26, and under a roller 27, and then up and over a second roller 28, and thence downwardly through the area 24. From the area 24, the material then proceeds under a roller 29 and hence to the collapsible shaft 30, where it is collected and disposed of as previously disclosed. The area 24 is the working area of the paint spray operation and is reinforced by a grid member 24A, which is preferably made of tubular members, or the like, welded together to form the grid.

I will now describe the collapsible shaft 30, (FIGS. 1, 2, and 3) which comprises the subject matter of the within disclosure.

The collapsible shaft 30 is driven by means of a drive shaft 31, which extends longitudinally through it. The drive shaft 31 is driven by a motor 32, through a suitable gear reduction system 33, which is mounted as at 34, at the side of the spray booth 15. The ends of the shaft 31 (FIG. 3) are provided with suitable bearings 35

and 35A, which are supported by suitable support members 35B, which are split as at 36, so that the top portions 37 may be lifted, to free the bearings, and the drive shaft 31 from its support. The collapsible shaft 30 may then be collapsed and the paint laden material 38 may be removed from the booth and be disposed of.

I provide in the side member 16 a viewing aperture 16A, so that the operator may visually determine at any moment the amount of paint laden material 38, which has been collected on the collapsible shaft 30.

The collapsible shaft 30, (FIGS. 2-10) consists of a lower U shaped channel member 39, to which is welded, at either end, the plate members 40 and 41. The plates 40-41 are also welded to the shaft 31, as at 40A and 41A. A second channel member 43, with its side walls extending downwardly, and of smaller width than the channel member 39, is arranged to telescope or nest, in the channel member 39, as shown in FIGS. 2-7. Welded or otherwise secured to the side walls of the upper channel member 43, are inverted channel members 44 and 45, which are spaced from one another, as shown at 46, in FIGS. 2 and 4. It will be noted that the channel member 44 and 45 extend below the drive shaft 31 and box it in. Also welded to the inside of the channel member 39 are plates 47 and 48, which serve as supports for the upper channel member 43 and the inverted channels 44 and 45, when in extended and uncollapsed position, (FIGS. 4, 5 and 7.) In order to collapse the shaft 30, it only necessary to shift the upper channel member 43 to the right (FIG. 4), so that the end of the channels 43-44 fall off the plate 47 (FIG. 4). At the same time the plate 48 is received between the members 44-45, in the space 46 (FIG. 5). In this collapsed position the channel member 43 will be telescoped, or nested, in the lower channel member 39, as shown in FIGS. 2 and 6.

In order to collapse the shaft 30, it is only necessary to insert a screw driver 49, or other instrument, (FIG. 4) between the plate 40 and the upper edge of the upper channel member 43 and force it in the direction of the arrow, (FIG. 4). This permits the lower edges of the members 43-44 to ride on the plates 47 and 48 until the plate 47 is cleared, and the plate 48 is received in the space 46, between the members 44-45. This permits the upper channel 43 to fall and collapses the shaft 30. After the shaft 30 is collapsed, the entire assembly, including the paint laden material 38, is lifted from the booth. The shaft 30 is then removed and the paint laden material 38, may then be disposed of. Inasmuch as the shaft 30 is now collapsed, on the drive shaft 31, the elements comprising the collapsed member 30, may be easily withdrawn from the roll of paint laden material

38.

In order to limit the longitudinal movement of the upper channel 43 with respect to the lower channel member 39, I weld to the underside of the channel 43, an inverted U shaped, stop member 50. I also provide a cut out 51 in the side wall of the channel 43. The plate 41 contacts the edge of the cut out 51 when the channel 43 is moved to the right and contacts the stop member 50, when moved to the left.

As shown in FIGS. 4 and 5, the drive shaft 31 is provided with a key way 52, which engages a key on the motor shaft, so that the entire assembly of the drive shaft 31 and the collapsible shaft may rotate together.

It is believed that the operation of the device is obvious from the foregoing description.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A device for collecting a disposable spray booth curtain, comprising a pair of elongated channel members, one of which is receivable in the other, a drive shaft co-extensive with said channel members, plates welded to one of said channel members and to said shaft, means to hold, one of said channel members spaced from the other, and means to shift said last named channel member longitudinally to release said member from said holding means whereby to collapse the device.

2. The structure of claim 1, in which one of said channel members is provided with an inverted channel member, the sides of which are welded to the sides of said channel members and to the bottom of which boxes in said drive shaft and is receivable on said holding means when said device is in non-collapsed condition.

3. The structure of claim 1, in which said holding means consist of at least one plate member welded to the inside face of the said receiving channel member.

4. The structure of claim 1, in which said receiving channel member is provided with a plate member arranged to contact elements carried on said received channel to limit the relative longitudinal movement between said channels.

5. The structure of claim 1, in which said shaft is provided with bearings at positions beyond the ends of said channels, means to support said bearings and at least one key way on said shaft arranged to receive the key of a power drive source.

6. The structure of claim 1, in which said channel members are normally held in spaced, parallel relation about said shaft and arranged to receive thereon paint laden portions of a disposable curtain which forms one wall of a paint spray booth.

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