

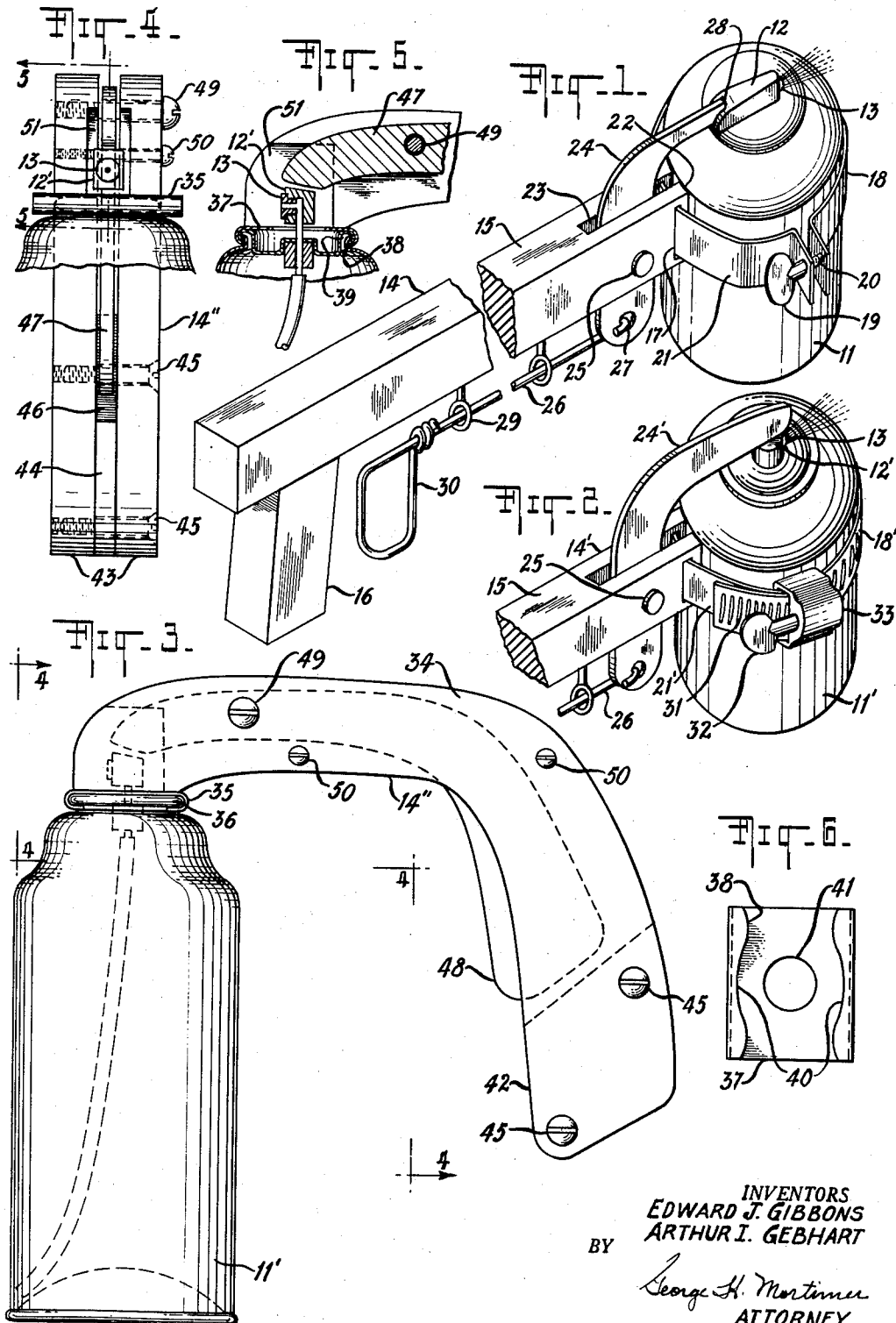
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AEROSOL SPRAYER

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AEROSOL SPRAYER

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This invention relates to a device for dispensing pressurized aerosol sprays.

Pressurized aerosol sprays and dispensing containers for them are well-known and have been utilized for spraying such diverse compositions as insecticides, paints and lacquers, odor counteractants, weed killers, fire extinguishers and moth proofers.

In the commercial low pressure aerosol containers on the market there is provided at one end, usually considered the top, a valve which is opened when the accompanying valve button or finger piece is depressed or moved laterally by finger pressure, whereby the pressurized fluid contained is allowed to pass through the valve and is atomized.

The user of a typical aerosol spray product generally holds the container in one hand and actuates the valve mechanism with the index finger or thumb of that hand. Often the valve button is difficult to move and holding the valve open can be painful to the finger and tiring to the hand because of the unnatural strain placed on it when both supporting the can weight and actuating the valve. In the case of sprays containing toxicants, pigments or dyes, malodorous substances or objectionable solvent, the consumer is necessarily within arm's length of the spray cloud at the moment of application. If spraying out of reach objects, he may have to either bend down or employ a ladder. Thus in many instances aerosol valves are difficultly actuatable, the user of aerosols must approach objectionably close to the object being sprayed and in addition such close approach is often impossible, inconvenient or dangerous.

The present invention is of a device for holding a container of pressurized aerosol spray material and actuating the valve thereof which permits one to conveniently apply aerosol sprays. The structure, function and further advantages of the invention will be apparent from the following detailed description taken in conjunction with the drawing in which:

Fig. 1 is a perspective view of an embodiment of the combination supporter-actuator of this invention affixed to an aerosol container;

Fig. 2 is a perspective view of part of another embodiment of the invention affixed to an aerosol container of a different type;

Fig. 3 is an elevation of a pistol-shaped modification of the invention attached to a can of aerosol spray;

Fig. 4 is an end view of the pistol-shaped device seen along 4—4;

Fig. 5 is a section view along 5—5;

Fig. 6 is a bottom view of the clamp of Fig. 5.

In accordance with the present invention there is provided a device for holding a container of pressurized aerosol spray material and actuating the discharge valve thereof which comprises in combination: a supporting member having a handle; means remote from said handle for removably holding a said container on the support-

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ing member, said means being free from obstructions which would be in the path of an aerosol spray discharge from a fastened container directed parallel to the longitudinal axis of and away from the supporting member; and means for actuating the discharge valve from a position adjacent to the handle.

Referring now to the drawing, in which, for purposes of illustration, several preferred embodiments of the invention have been shown, in Fig. 1 the numeral 11 designates a low pressure type cylindrical aerosol container having a discharge valve (not shown) at the top thereof which opens when its stem is inclined or moved laterally and a dip tube (not shown) affixed to said valve. A valve button 12 which opens the discharge valve when laterally displaced a certain distance and a spray nozzle 13 complete the aerosol container.

A holder 14 for container 11 comprises a longitudinal supporting member 15 adapted to be held manually at handle 16 located at or near one end. Attached to member 15 through mortise 17 therein is a strap clamp 18 of the type commonly referred to as a radiator hose clamp. Thumbscrew 19 and internal thread 20 are the means for fastening the strap 21 tightly around the cylindrical wall of container 11, and thereby holding can 11 and spray nozzle 13 in desired relationship with holder 14. Supporting member 15 is arcuately shaped at end 22 so as to allow better holding of container 11.

In a slot 23 in the supporting member an actuator plate 24 is pivoted on pin 25 and is operatively connected to a pull rod 26 at 27. The actuator plate is so shaped that on motion of pull rod 26 toward handle 16, the end 23 of the actuator will move in a direction roughly parallel to the longitudinal axis of supporting member 15 and away from that member, and will engage valve button 12 and move it in the same direction, opening the discharge valve and allowing the aerosol material to spray out through nozzle 13. The travel of pull rod 26 is guided by eyes 29. Pull rod 26 terminates near handle 16 in a loop 30 adapted for finger engagement.

The device shown in Fig. 2 is a modification of that of Fig. 1 in which 11' indicates a low pressure cylindrical aerosol container having a discharge valve (not shown) which opens when its stem is moved axially inward (toward the main portion of the aerosol container) and a dip tube (not shown) affixed to said valve. A valve button 12' on the valve stem is adapted to open the discharge valve when moved axially inward.

In the various figures of the drawing primed and double-primed numerals indicate corresponding parts of the invented devices.

Strap clamp or hose clamp 18' is adjustable and can hold aerosol containers of various diameters. It comprises a strap 21' containing crescent-shaped aligned perforations 31 forming a planar screw thread, and a thumbscrew or worm portion 32 enclosed in a housing 33 fastened to one end of the strap. Turning of the screw either increases or decreases the diameter of the circle made by the strap. Actuator plate 24' is shaped to allow it to depress valve button 12' when rod 26 is pulled toward the handle. Pin 25, on which the plate pivots, is relocated accordingly. If container 11' is not equipped with a dip tube the device of Fig. 2 may be readily adapted for use therewith. It is only necessary to invert the whole unit (to allow pressurized aerosol material liquid to have access to the valve). The handle and pull rod may be relocated if desired for greater convenience.

Numeral 14'' in Figs. 3 and 4 denotes a holder of an aerosol container 11' which includes a pistol-shaped supporting member 34 and a releasable clamp 35 for affixation to the lip or rim 36 of container 11'.

As shown also in Figs. 5 and 6 the clamp 35 comprises a resilient strip 37, usually of metal, having inwardly bent ends 38 forming a slot 39 in which container lip 36 may be inserted therein. The width of the opening formed by end 38 is less than the diameter of the rim 36 but the strip is resilient enough so as to spread open during insertion of the lip and return as far as the lip permits. Arcuate grooves 40 of curved ends 38 fit the lip 36 and hold container 11' in fixed position relative to the clamp. Opening 41 is for the insertion of the valve button of an aerosol container. Holes and screws for fastening the clamp to support 34 are not shown.

Supporting member 34 has a handle portion 42. The handle and support unit is formed by sandwiching two sides 43 about spacer 44 with screws 45. The side pieces define a passageway 46 in which is movably fitted lever 47, slightly thinner than the passageway and having a trigger portion 48. Screw 49 serves as a pivot pin and screws 50 are stops for the lever. Recess 51 allows insertion of a valve button between side pieces 43 and assures that a spray from a well-directed nozzle will not impinge on the side pieces. Clamp 35 is held to longitudinal supporting member 34 by screws (not shown). When a container of aerosol spray material is clamped in place the lever 47 will depress the valve button when trigger portion 48 is squeezed.

The operation of the invention is believed to be plain from an inspection of the drawings and the foregoing description. A low pressure aerosol container is clamped to a holder in such manner that it can spray in a normal firing direction (like that of guns or rifles) and so that its valve may be actuated by the actuating plate or lever of the invented apparatus. The normal firing direction is referred to as parallel to the longitudinal axis of and away from the supporting member. The longitudinal axis mentioned runs through the supporting member, including the handle.

Any of various size containers may be used. The consumer holds the handle of the invented apparatus, directs the nozzle of the fastened container at the object to be sprayed and actuates the aerosol discharge valve by squeezing the "trigger."

If the aerosol container is large in size and correspondingly heavy, or if the supporting member is relatively long the user may desirably steady the holder with his other hand and employ it rifle-wise instead of like a pistol. In some cases it will be preferable to shorten the supporting member so that the torque or turning moment due to the weight of the container at the end of the supporting member may be decreased. The terms supporting member, support, etc. include a member so shortened to a stub or pistol form. Such a member will still be capable of conveniently actuating the aerosol valve button but of course the user will not be able to remain as far away from the point of spraying as he would if the supporting member was longer. It is not necessary to have a handle of the type indicated on the drawings. Instead, part of the supporting member itself may be held manually.

The actuator plate and pivot pin are preferably so designed and located that the valve button may be actuated by the exertion of less force than would be needed to move it directly. However, even if no such mechanical advantage is obtained the invented device will be advantageous since a trigger or squeeze pull actuation is more familiar and more easily effected than direct actuation.

It is imperative that the clamping, or supporting and activating means does not block the path of a spray directed in the normal firing direction, i. e., parallel to the longitudinal axis of and away from the supporting member, since this is the only natural way to aim and use a projecting or spraying device of this type.

The supporting member, including handle, the clamp and the actuating elements etc. of the invented devices may

be made of any suitable material such as wood, metal, plastic and the like.

If the supporting member and handle are of light weight material, e. g., relatively thin-walled plastic, and the support is not overly long one may utilize the handle to tilt the aerosol can when the weight of its contents falls below a predetermined amount, and thereby inform the consumer that a new can must be purchased soon. Thus the can base will rest on a horizontal surface, supporting the holder in the air until a decrease in contents causes the can to be unbalanced by the weight of the holder.

The invented apparatus is generally useful for conveniently spraying aerosols. When equipped with a long supporting member it is ideal for spraying hard to reach items. Thus, herbicides may be directed on weeds without the necessity of the gardener bending over. Room baseboards and insect paths may likewise be sprayed with insecticides. In these applications, although the aerosol can should be so positioned as to provide only liquid at the upstream side of the discharge valve, the torque will be slight and relatively long supporting members may be used. The invented device is also suited for spraying trees to protect them against insects or their larvae.

While specific embodiments of the invention have been described and illustrated it is plain that various equivalents may be employed which are within the invention and the scope of the claims.

Having thus described the invention, what is claimed is:

1. An aerosol sprayer device for holding a container of pressurized aerosol spray material and actuating the discharge valve mechanism thereof in response to finger movement comprising, in combination: a longitudinal supporting member having a handle at one end; annular clamp means attached to the other end of the longitudinal supporting member and positioned in the same plane, adapted to encircle the container wall and to be contracted about said wall and thereby securely to support the container in fixed relationship with the longitudinal member at the end thereof, the clamp means being free of obstructions which would be in the path of an aerosol spray discharge from a container held thereby and directed parallel with the longitudinal axis of and away from the longitudinal supporting member; an actuator lever pivoted on the longitudinal supporting member and having a portion situated above said longitudinal supporting member adapted to contact the discharge valve mechanism of a clamped aerosol container; and pull means connecting at one end with the actuator and at the other end terminating near the handle and being adapted for finger engagement so that the discharge valve of the aerosol container can be opened by a pull of a finger of a hand grasping the handle of the aerosol sprayer device.

2. An aerosol sprayer for holding a container of pressurized aerosol spray material and actuating the discharge valve mechanism thereof in response to finger movement comprising, in combination: a longitudinal supporting member having a handle at one end; attached to the other end of the longitudinal supporting member and positioned in the same plane an adjustable annular strap clamp adapted to encircle the container wall, for holding a container of aerosol spray material in fixed relationship with the longitudinal member at the end thereof, the strap clamp being adjustable so as to be adapted to encircle container walls of different circumferential measurements and to be contracted about said walls to clamp the container securely in place, said clamp means being free of obstructions which would be in the path of an aerosol spray discharge from a container held thereby and directed parallel with the longitudinal axis of and away from the longitudinal supporting member; an actu-

ator lever pivoted on the longitudinal supporting member and having a portion situated above said longitudinal supporting member adapted to contact the discharge valve mechanism of a clamped aerosol container; and pull means connecting at one end with the actuator and at the other end terminating near the handle and being adapted for finger engagement so that the discharge valve

of the aerosol container can be opened by a pull of a finger of a hand grasping the handle of the aerosol sprayer device.

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