Sept. 20, 1960 E. L. PALKOWSKI 2,953,283

DEVICE FOR REMOTE OPERATION OF AEROSOL

Filed April 15, 1957 3 Sheets-Sheet 1

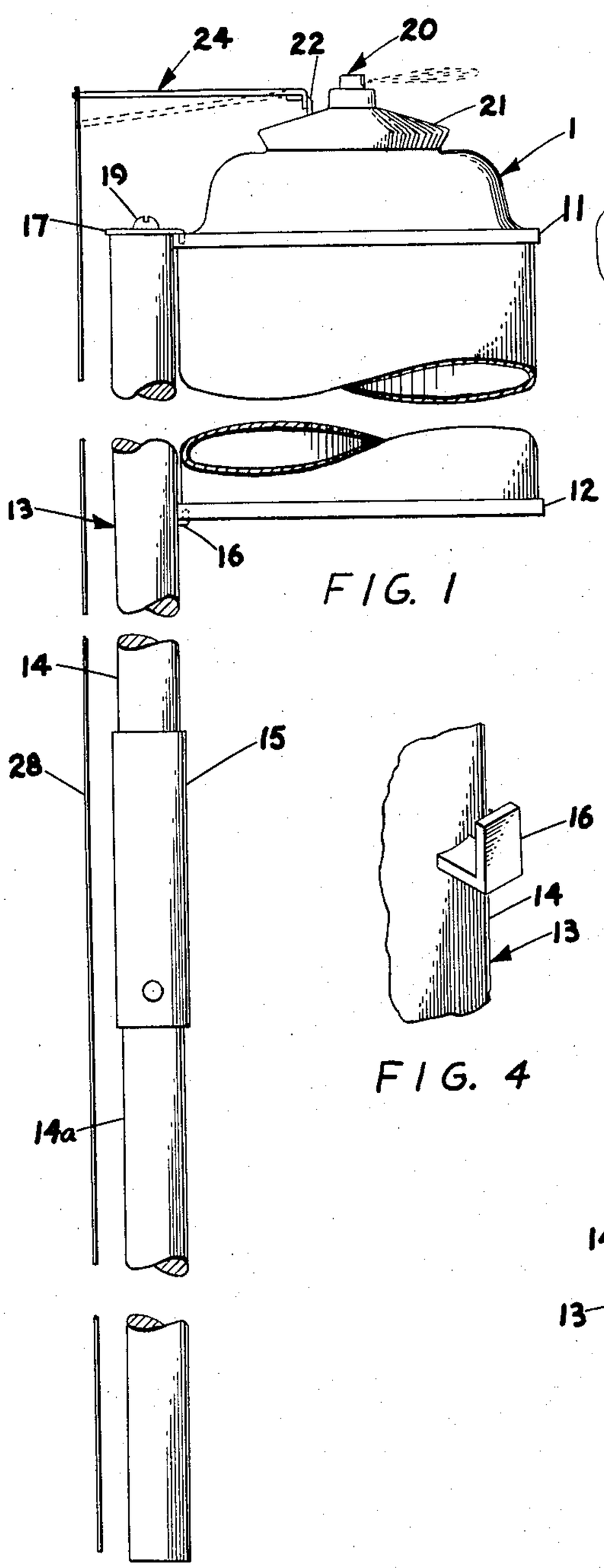

FIG. 1

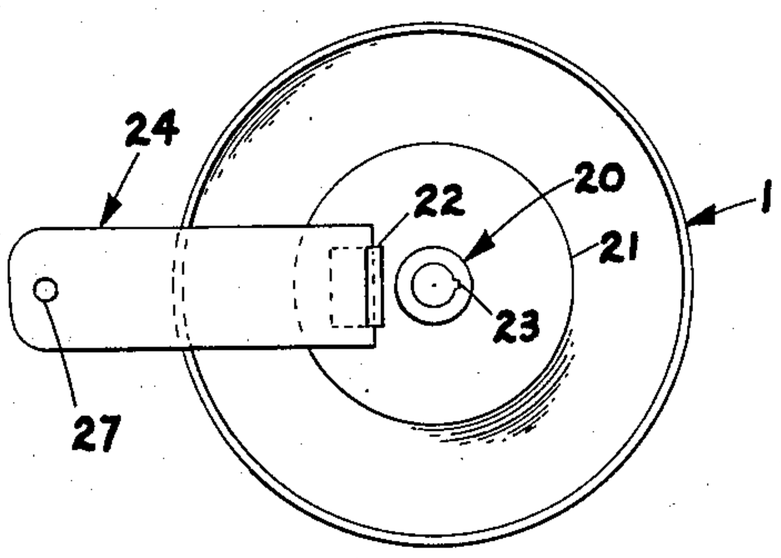

FIG. 2

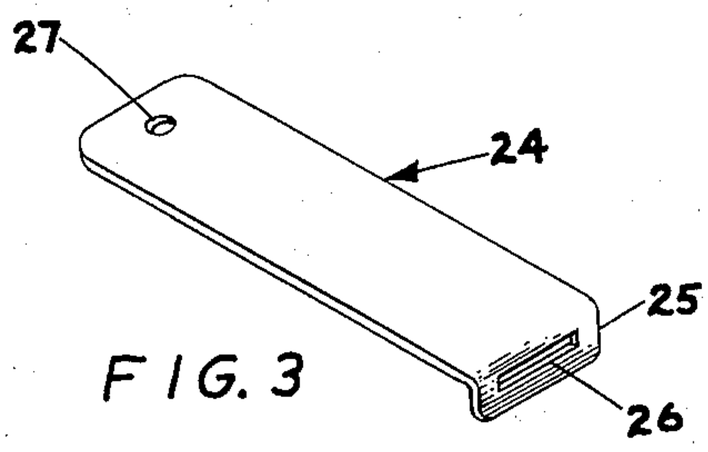

FIG. 3

FIG. 4

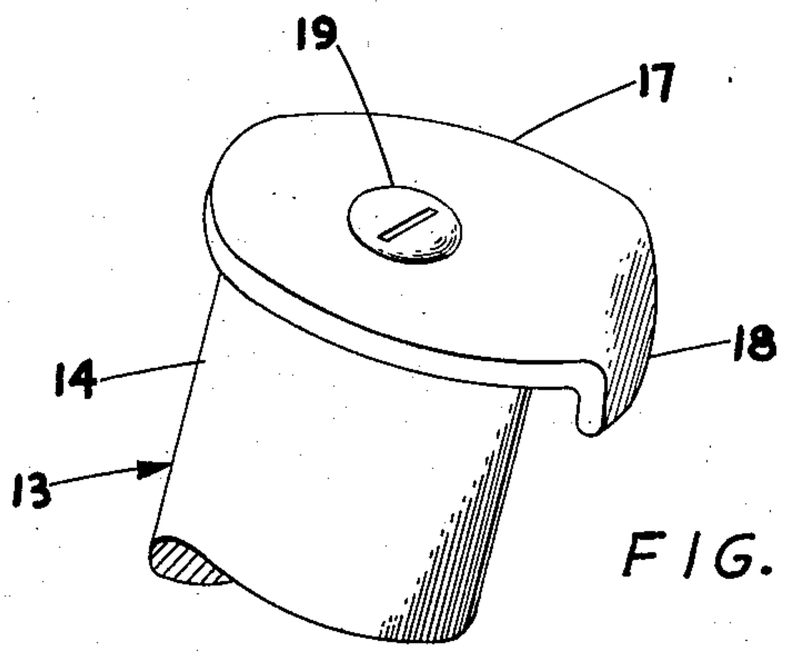

FIG. 5

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DEVICE FOR REMOTE OPERATION OF AEROSOL

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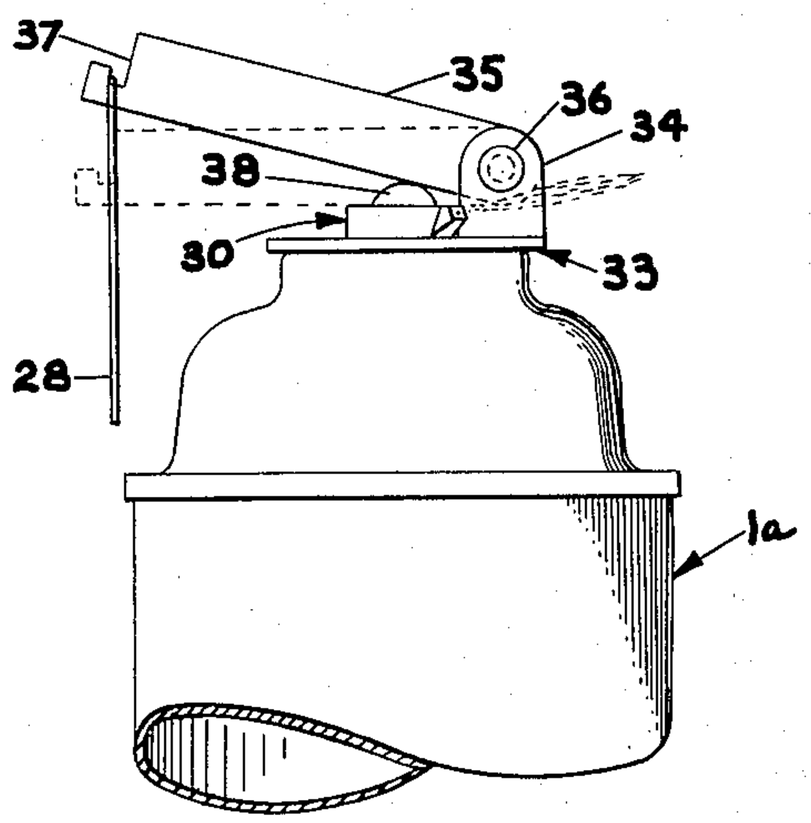

FIG. 6

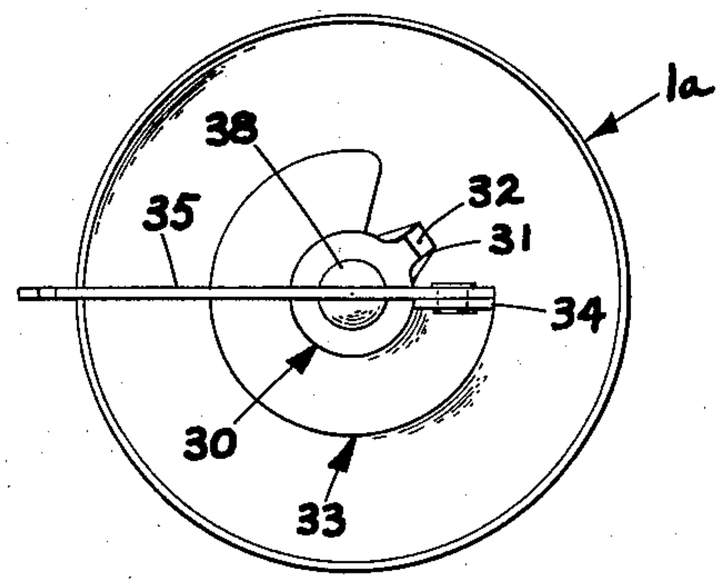

FIG. 7

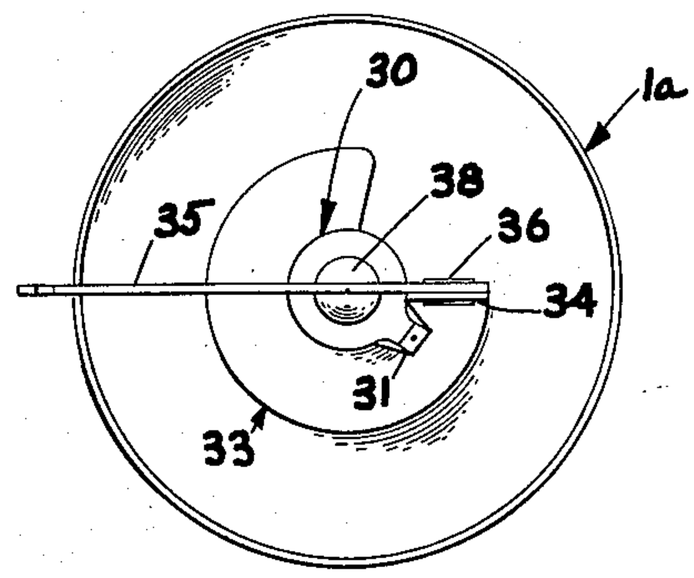

FIG. 8

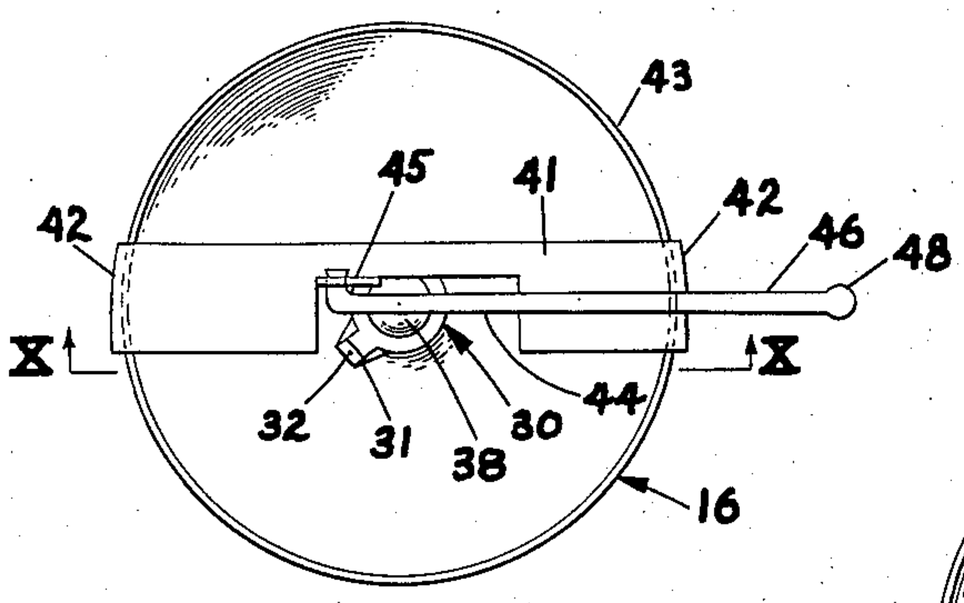

FIG. 9

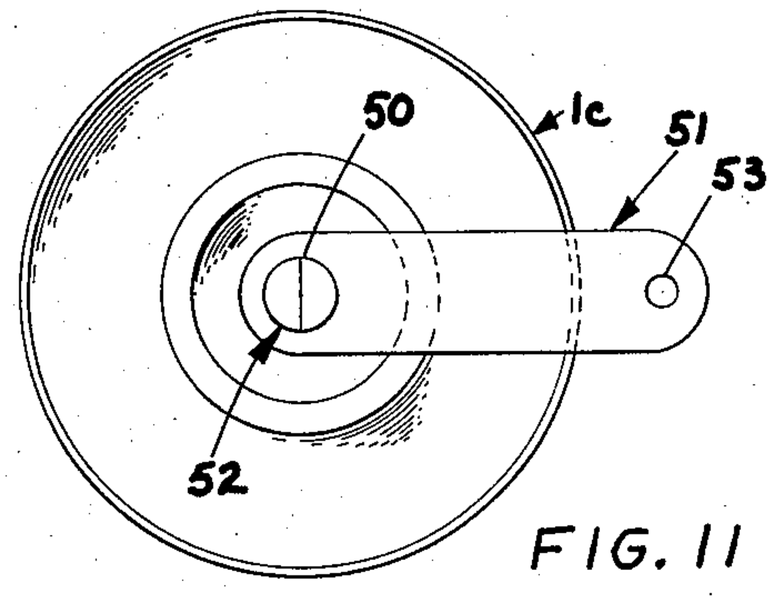

FIG. 11

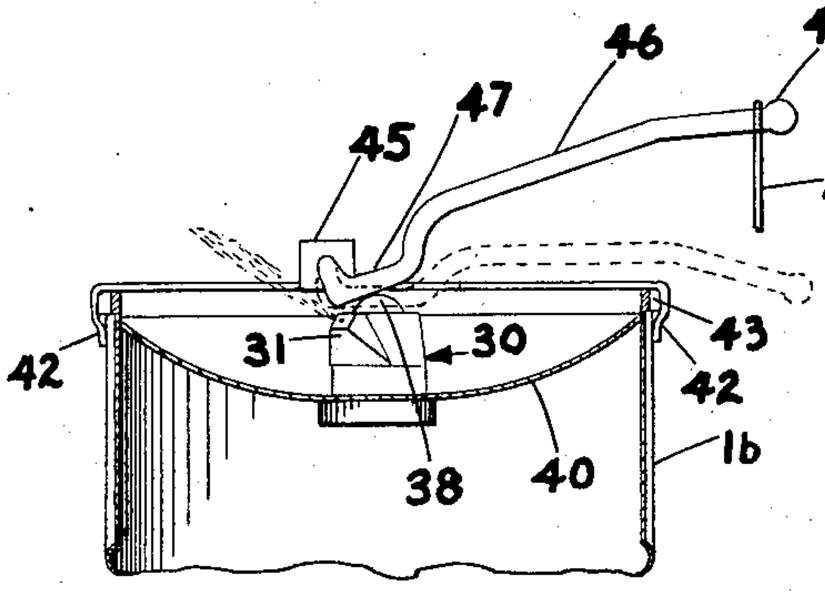

FIG. 10

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DEVICE FOR REMOTE OPERATION OF AEROSOL

Filed April 15, 1957 3 Sheets-Sheet 3

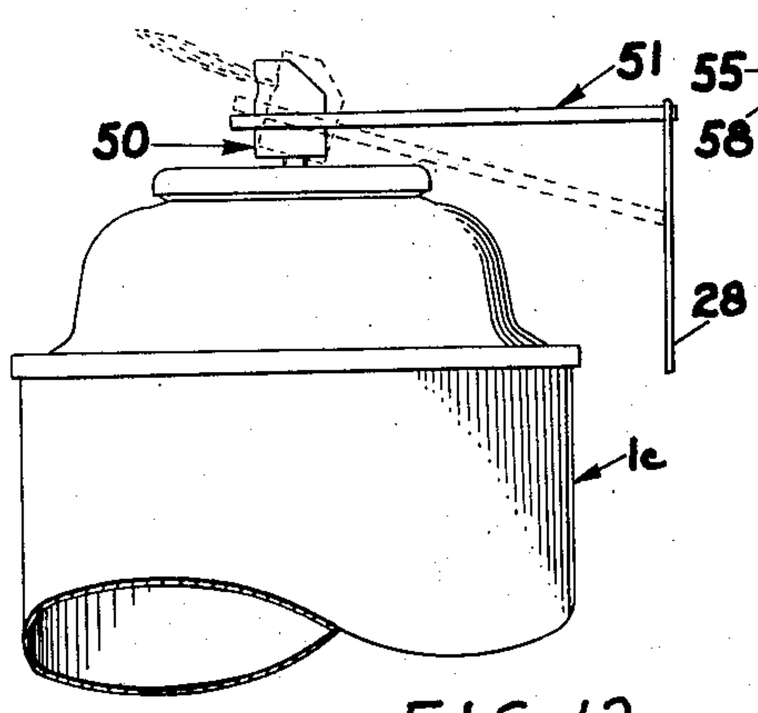

FIG. 12

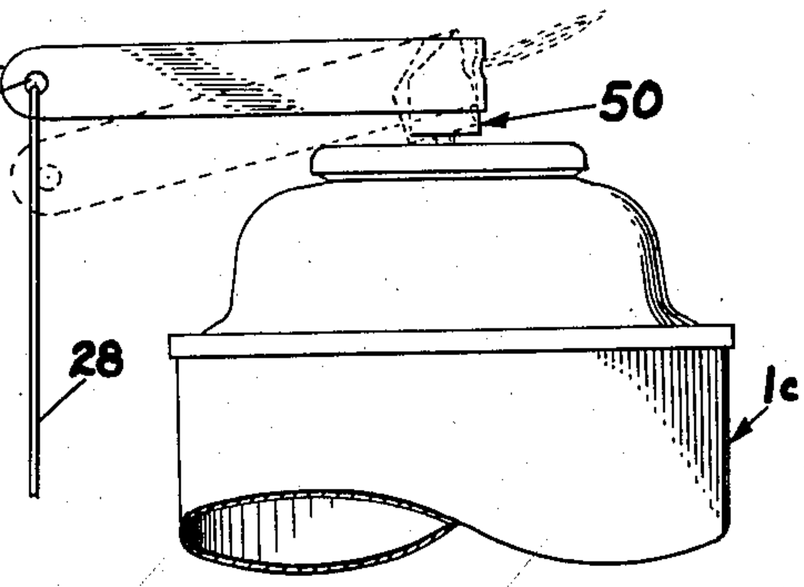

FIG. 13

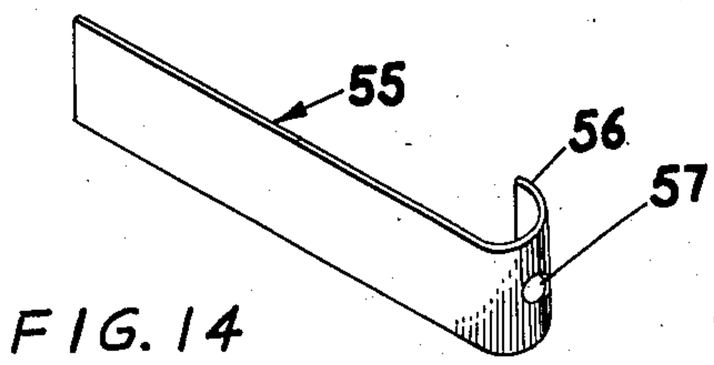

FIG. 14

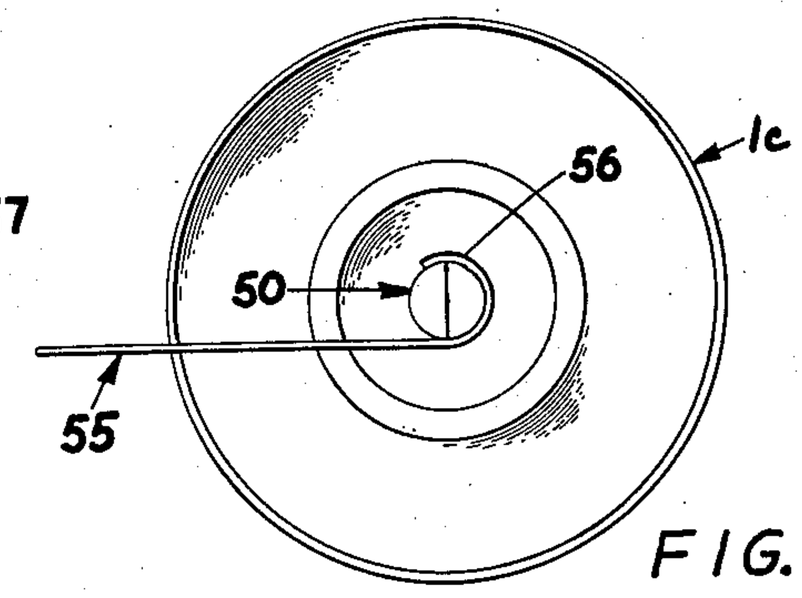

FIG. 15

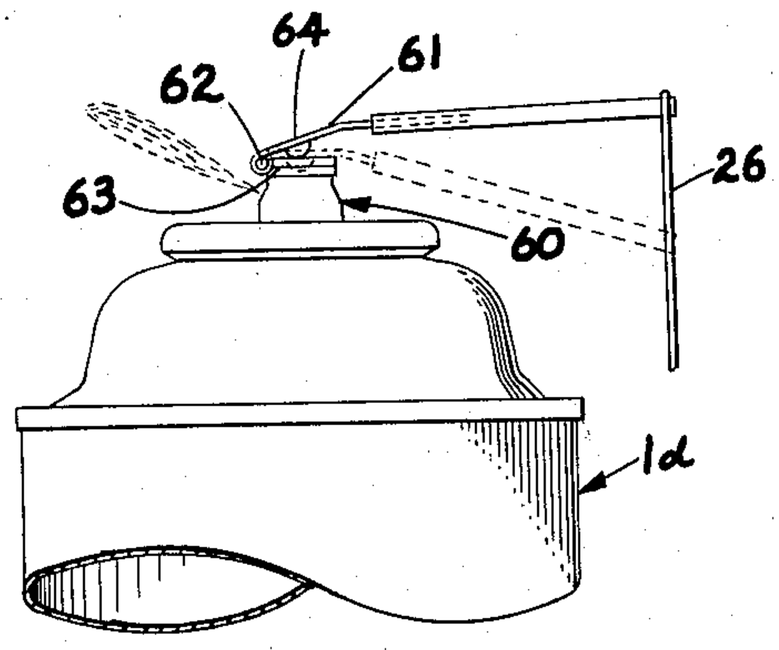

FIG. 16

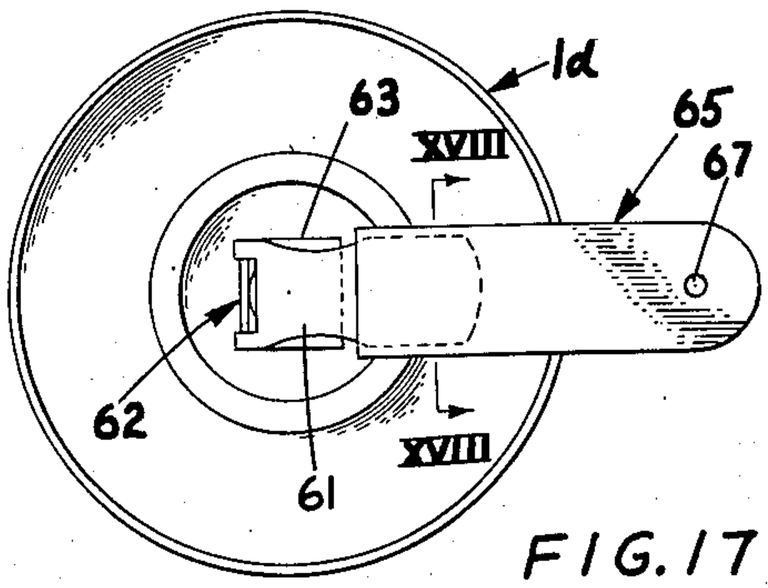

FIG. 17

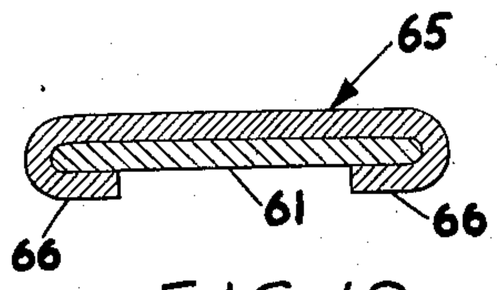

FIG. 18

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United States Patent Office

2,953,283

Patented Sept. 20, 1960

2,953,283

DEVICE FOR REMOTE OPERATION OF AEROSOL

Emil L. Palkowski, R.F.D. 2, Spring Lake Township, Ottawa County, Mich.

Filed Apr. 15, 1957, Ser. No. 652,865

8 Claims. (Cl. 222—394)

This invention relates to means to be attached to a standard portable aerosol dispenser by which the valve of the spray nozzle can be actuated from a point remote from the can.

In the use of aerosol dispensers of the type normally sold for household use it is frequently desirable to operate them at a point which is difficult to reach such as under the eaves of a building or adjacent a ceiling. Heretofore this has necessitated the operator's standing on a stool or ladder to bring the container close enough to the target to be effective. This is particularly true where the object is to spray a film of insecticide on a surface such as under the eaves of a building. While it is possible to elevate the container to a suitable point adjacent the target, this does not solve the problem. The operator then has no way of actuating the valve of the container.

This invention eliminates this difficulty by providing not only a means for supporting the container at a distance remote from the operator but also by providing means permitting the operator to actuate the spray nozzle at a substantial distance from the container. Since the average aerosol dispenser for household use is small and its capacity is quite limited, it is desirable that the equipment used both for supporting the container and for actuating the valve be so designed that it is readily transferable from an exhausted container to a new one. It is also desirable that this mechanism be removable from the container, since if attached while the container is in shipment, it would require special packaging to prevent accidental actuation while in transit.

Another problem adding to the difficulty of developing a suitable device of this type is the wide variety of valve types utilized on the more commonly available aerosol dispensers. Various means of attachment to and association with the valve tripping mechanism of the dispenser must be utilized. This invention also solves this problem.

These and other objectives of this invention will be readily understood by those acquainted with the design and use of aerosol dispensers upon reading the following specification and the accompanying drawings.

In the drawings:

Fig. 1 is a fragmentary side elevation view of a typical dispenser mounted on a supporting rod and having a valve actuating lever mounted thereon.

Fig. 2 is a plan view of the container illustrated in Fig. 1.

Fig. 3 is an oblique view of the actuating lever for the valve illustrated in Fig. 1.

Fig. 4 is an enlarged fragmentary view of the lower anchor for the dispenser.

Fig. 5 is an enlarged fragmentary oblique view of the top anchor for the container.

Fig. 6 is a fragmentary side elevation view of a modified form of this invention.

Fig. 7 is a plan view of the actuating mechanism illustrated in Fig. 6 showing the mechanism as it is initially placed on the discharge member.

Fig. 8 is a plan view of the actuating mechanism illustrated in Fig. 6 showing the mechanism after it is clamped in operating position.

Fig. 9 is a plan view of further modified form of this invention.

Fig. 10 is a fragmentary sectional elevation view taken along the plane X—X of Fig. 9.

Fig. 11 is a plan view of a still further modified form of this invention.

Fig. 12 is a side elevation view of the form of the invention illustrated in Fig. 11.

Fig. 13 is a side elevation view of an actuating lever designed to wrap about the discharge member of the container.

Fig. 14 is an oblique view of the lever illustrated in Fig. 13.

Fig. 15 is a plan view of a container mounting the lever illustrated in Figs. 13 and 14.

Fig. 16 is a fragmentary side elevation view of a container having a further modified form of this invention mounted thereon.

Fig. 17 is a plan view of the container and lever mechanism illustrated in Fig. 16.

Fig. 18 is a sectional view taken along the plane XVIII—XVIII of Fig. 17.

Figures 1 through 5

Referring specifically to the drawings, the numeral **1** indicates an aerosol container or dispenser. There are many varieties of the container **1** but basically all are fabricated of metal and are designed to withstand a substantial internal pressure. These containers are charged with liquid plus a low boiling propellant such as Freon. The useful charge within the container may be an insecticide, a paint, an enamel, a stain or any other of numerous sprayable materials.

The conventional aerosol container has an upper rim **11** and a lower rim **12**. These join the top and bottom of the can with its sides. To support the container for manipulation at a point remote from the operator, a rod **13** is provided. This rod may be simply a wooden dowel or it may be of metal, tubular construction. It may consist of one or more sections. As illustrated, it consists of an upper portion **14** and a lower portion **14***a* joined by a slip collar **15**. This arrangement provides a relatively long rod separable into shorter lengths to facilitate storage and shipment.

The upper portion of the rod **13** has an L-shaped catch **16** (Figs. 1 and 4) designed to seat under and around the container's lower rim **12**, firmly securing it. It will be recognized that a rivet or screw having a head may be substituted for the L-shaped catch. The upper end of the rod has a disk **17** equipped with a downwardly extending finger designed to seat over and clamp the upper rim **11** (Figs. 1 and 5). The disk **17** may be secured to the rod **13** in any suitable manner such as by the screw **19**. It is essential that the means used for securing it to the rod will permit the disk to be separated from the rod sufficiently to disengage the conatiner **1**. This permits replacement of the containers.

It will be recognized that various types of clamping devices such as spring clips for securing a container to a rod may be used, provided they are light, simple and permit the containers to be readily changed.

At the top of the container is a discharge member **20**. These discharge members are of various constructions. Each, however, contains a valve mechanism which, by manipulation of the discharge member or of some portion of it, may be opened to release the contents of the container in the form of a spray. The particular discharge member **20** is surrounded by a cap **21**, the lower end of

which is spaced away from the top of the container permitting it to be rocked. Rocking of the disk **21** opens the valve in the discharge member **20**.

To effect remote operation of this discharge member **20**, an L-shaped hook **22** (Figs. 1 and 2) is secured to disk **21** opposite from the discharge nozzle **23**. The hook **22** is designed to detachably anchor one end of the lever **24**. The lever 24 has a downwardly flanged end **25** provided with a slot **26** for receiving the end of the hook **22**. The other end of the lever **24** projects beyond the sides of the container **1** and is equipped with a small hole **27**.

The hole **27** permits attachment of suitable means for manipulating the lever **24**. This means may be a flexible element such as a chain or cord. It extends approximately to the bottom of the rod **13**. The operator, while supporting the container at the end of the rod **13**, can actuate the valve of the discharge member **20** by pulling on the cord **28**. This pivots the lever **24** downwardly, rocking the disk **21**.

Figures 6, 7 and 8

These figures illustrate the valve actuating mechanism designed for an aerosol dispenser in which the discharge member is rigid and the valve is actuated by an element projecting from the top of the discharge member. The container **1***a* is, for all practical purposes, the same as container **1** except for the design of the discharge member **30**. The discharge member **30** is of circular shape except for the outwardly and upwardly inclined nozzle **31**. The nozzle **31** has a discharge port **32**.

To mount the invention on this structure, a ring-like anchor member **33** is provided. It is open on one side, the opening being wide enough that the anchor member may be seated about the discharge nozzle **30** with the nozzle passing through the opening. The anchor member is then rotated about the discharge member **30** until a portion of the anchor member is firmly seated beneath the nozzle. Preferably, the end of the anchor member having the upturned arm **34** is located adjacent the nozzle **31**. The lever **35** is pivotally secured to the arm **34**. In any case, the anchor **33** is so turned that the lever **35** extends generally away from the nozzle **31**.

The lever is rigidly secured to the arm **34** by means of the rivet **36**. The other end of the lever **35** projects beyond the sides of the container and has a suitable hook **37** for securing the end of a chain or cord **28**. Intermediate its ends, and preferably closely adjacent the arm **34**, to obtain mechanical advantage, the lever **35** seats on the upwardly projecting valve actuator **38**. The lever **35** is supported by the upward bias of the valve actuator **38**. This upward bias is provided in this type of valve by any suitable means such as rubber or a spring incorporated in the valve. This mechanism is not illustrated as it is conventional and is no part of this invention. It will be seen that by pivoting the lever **35** downwardly, the valve will be opened.

Figures 9 and 10

These figures illustrate a modified form of the mechanism illustrated in Figs. 6 through 8. In this case, the container **1***b* replaces the raised top with a concave top **40** (Fig. 10). This lowers the discharge member into the silhouette of the container. The discharge member **30** is identical to that shown in Fig. 6 but being lowered into the silhouette of the container it is possible to secure the lever by an anchor member **41** extending across the top of the container and having terminal ears for clamping it to the container's top rim **43**. The anchor member **41** may be designed to slide into place from one side of the container or it may be somewhat resilient and snapped over the rim. In either case, its operation is the same.

The operation of the anchor member **41** overlying the discharge member **30** is cut away at **44**. At one end of the cut away portion, a flange **45** is turned upwardly on the anchor member. The flange **45** is adjacent to one side of the discharge member **30**. Rigidly mounted to the flange

45 is a lever **46** having a downwardly depressed portion **47** overlying the discharge member **30**.

The depressed portion provides a contact area adapted to rest directly on the valve actuator **38** so that downward movement of the lever **46** will depress the actuator **38** opening the valve within the discharge member **30**. The end of the lever **46** projects beyond the sides of the container and has means such as the nob **48** to which a suitable core member such as a string **28** may be attached.

Figures 11 and 12

The container or dispenser **1***c* is equipped with a discharge member **50** incorporating a valve of a type which is open when the discharge member is rocked either forwardly or backwardly. The discharge member contains a resilient element normally holding it upright and closing the valve.

To actuate this type of valve, a lever **51** is provided. This lever is equipped with an aperture **52** (Fig. 11) of such diameter that the lever may be seated over the discharge member **51**. Sufficient frictional engagement occurs between the discharge member **50** and the walls of the aperture **52** that the lever **51** is held firmly in position. However, the lever may be removed from the discharge member when desired. The lever projects beyond the sides of the container **1***c* and is equipped with a hole **53** for attachment of a suitable pull element such as a string **28**.

Figures 13, 14, and 15

These figures illustrate a modified form of lever for actuating the same type of discharge member as that illustrated in Figs. 11 and 12. In this construction, the lever **55** instead of being flat is arranged vertically and at one end is wrapped around to form a hook **56** (Figs. 14 and 15). The radius of the hook **56** is such that the discharge member **50** can be pressed into it with the hook gripping the discharge member firmly. Most of the discharge members of this type have a body of plastic. This body is slightly compressible and the lever **55** is particularly designed to utilize this characteristic because it compresses slightly the discharge member, attaining a firm tight grip upon it. Where the discharge member is of a non-resilient material, it would be better to use the lever **51** illustrated in Figs. 11 and 12 unless the hook **56** is made resilient.

Since it is desirable to have the lever extend oppositely from the spray pattern to avoid interference with the pattern, the hook **56** wraps over the spray port of the discharge member **50**. Thus, it is provided with an aperture **57** aligned with the spray port. The other end of the lever **55** extends beyond the sides of the container and is provided with a hole **58** for attachment of a pull member such as the cord **28**.

Figures 16, 17 and 18

Some of these dispensers are equipped with an upstanding discharge member **60** having a depressible valve actuating unit at their upper end. In addition, the discharge member **60** is equipped by the original equipment manufacturer with a short lever **61** pivotally secured by the hings structure **62** to a plate **63**. The plate **63** is an integral part of the discharge member **60**. While these levers may be of various constructions, some of them are equipped with a small valve opening dome **64** on their lower surface. These levers are short and hardly extend beyond the central portion of the container.

To apply this invention to this type of valve structure, a lever handle **65** is provided. The sides **66** of the lever handle are folded under providing a slot for receipt of the outer end of the lever **61** (Fig. 18). The lever handle **65** is attached simply by sliding it on the end of the lever **61** and may be removed by sliding it in the opposite direction. The lever handle **65** is of suffi-

cient length that it projects substantially beyond the sides of the container 1*d*. This outer end has a hole **67** for attachment of any suitable type of pull member such as the cord **28**.

While the various levers illustrated herein may be made of any suitable material such as steel, aluminum or molded plastic, if a metal, it will be seen that they are particularly adapted to forming by blanking, punching or other conventional sheet metal working tools.

All forms of the invention operate essentially alike. In all cases the lever provided by this invention is adapted to be detachably connected to the discharge member of the container. Thus, the user need have only one lever of the type adapted for the particular make of container he is utilizing. When one container becomes exhausted and is replaced, the lever is simply transferred from the exhausted container to the new one. The same is true of the rod **13** since it is quickly movable from one container to another.

The operator is aided by this invention in obtaining access to remote locations whether he is spraying an insecticide, paint or any other material. The operator simply attaches the container firmly to the end of the rod and places the lever on the discharge member of the container. He then elevates the container to the proper position for spraying and by pulling the cord **28** causes the spray to be discharged in the desired area. The use of stools and ladders is eliminated.

This invention has the further advantage of removing the spraying operation from the immediate vicinity of the operator. He is less likely to breathe the spray, which is often noxious. Thus, the health hazard involved in the use of this type of aerosol dispenser is materially reduced. This is particularly true where the spraying must be done in a semi-confined area.

It will be seen that this invention materially increases the usefulness of this type of dispenser as well as facilitating its actual operation. At the same time, the cost of the components necessary to adapt the container to remote operation is small and the use is so simple that only the most rudimentary of instructions are necessary to properly inform the operator.

While I have described several forms of my invention, it will be recognized that forms other than those described may be made which incorporate the principles of this invention. Such of these modifications as incorporate the principles of the invention are to be considered as included in the hereinafter appended claims unless these claims by their language expressly state otherwise.

I claim:

1. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve adapted to be opened upon rocking of said discharge member; a lever; one end of said lever press-fitted about said discharge member and encircling said discharge member more than 180°; said lever being pivotally movable in a vertical direction to rock said discharge member and open said valve; the other end of said lever extending beyond the sides of said container and means secured to said other end of said lever for operating said lever from a point remote from said container.

2. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve adapted to be opened upon rocking manipulation of said discharge member; a lever; one end of said lever being apertured; said lever being formed to seat about said discharge member with said discharge member received through said aperture; said lever having the other end thereof pivotally movable in a vertical direction to rock said discharge member and open said valve; means secured

to said other end of said lever for operating said lever from a point remote from said container.

3. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve adapted to be opened upon rocking manipulation of said discharge member; a lever; one end of said lever being wrapped about said discharge member; a port in said discharge member and an aperture in said one end of said lever aligned with said port; said lever the other end thereof pivotally movable in a vertical direction to rock said discharge member and open said valve; means secured to said other end of said lever for operating said lever from a point remote from said container.

4. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve and depressible means on the top of said discharge member for opening said valve; a lever; an anchor member detachably secured to and stationary about said discharge member; one end of said lever pivotally secured to said anchor member adjacent said depressible means; said lever member intermediate its ends seated on and supported by said depressible means; the other end of said lever member projecting beyond the sides of said container; said lever being pivotally movable in a vertical direction to depress said discharge member and open said valve; means secured to the other end of said lever for operating said lever from a point remote from said container.

5. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve and depressible means on the top of said discharge member for opening said valve; said discharge member having a nozzle projecting from one side thereof; a split anchor ring for seating about said discharge member between said container and said nozzle; one end of said anchor ring having an upwardly turned arm; a lever; one end of said lever pivotally mounted to said arm; said lever member intermediate its ends seated on said depressible means; the other end of said lever member projecting beyond the sides of said container; said lever being pivotally movable in a vertical direction to manipulate said discharge member and open said valve; means secured to the other end of said lever for operating said lever from a point remote from said container.

6. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve and depressible means on the top of said discharge member for opening said valve; said discharge member having a nozzle projecting from one side thereof; a split anchor ring for seating about said discharge member between said container and said nozzle and with said nozzle received within the split part thereof; one end portion of said anchor ring being upwardly inclined and wedging under said nozzle; said one end of said anchor ring having an upwardly turned arm; a lever; one end of said lever pivotally mounted to said arm; said lever member intermediate its ends seated on said depressible means; the other end of said lever member projecting beyond the sides of said container; said lever being pivotally movable in a vertical direction to manipulate said discharge member and open said valve; means secured to the other end of said lever for operating said lever from a point remote from said container.

7. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve and depressible means on the top of said discharge member for opening said valve; an anchor member seated and extending across on the top of said container; said anchor member having terminal portions for frictionally

engaging the sides of said container; said anchor member having an upturned ear intermediate its end and adjacent said discharge member; a lever pivotally secured at one of its ends to said ear; said lever member intermediate its ends seated on said depressible means; the other end of said lever member projecting beyond the sides of said container; said lever being pivotally movable in a vertical direction to manipulate said discharge member and open said valve; means secured to the other end of said lever for operating said lever from a point remote from said container.

8. In combination with a portable container adapted to dispense a liquid under pressure in aerosol form, said container having a discharge member incorporating a valve adapted to be opened when said discharge member is rocked sideways; a cap seated over said discharge member and rockable therewith; a lever; a hook on said

cap; a lever having one end detachably seated over said hook; the other end of said lever member projecting beyond the sides of said container; said lever being pivotally movable in a vertical direction to manipulate said discharge member and open said valve; means secured to the other end of said lever for operating said lever from a point remote from said container.

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