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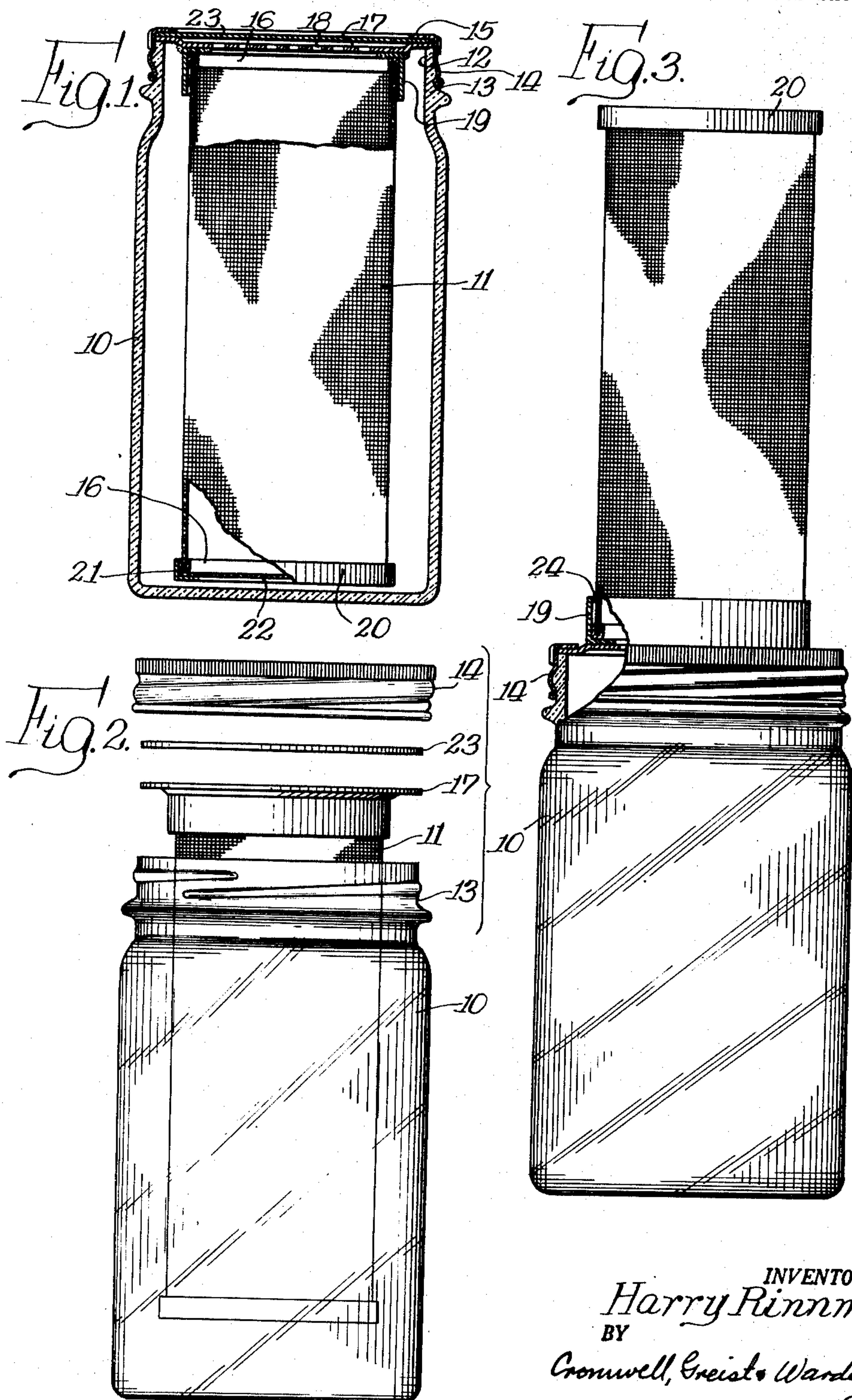
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**2,540,758**

AIR CONDITIONING DEVICE

Filed Aug. 21, 1947

2 Sheets-Sheet 1



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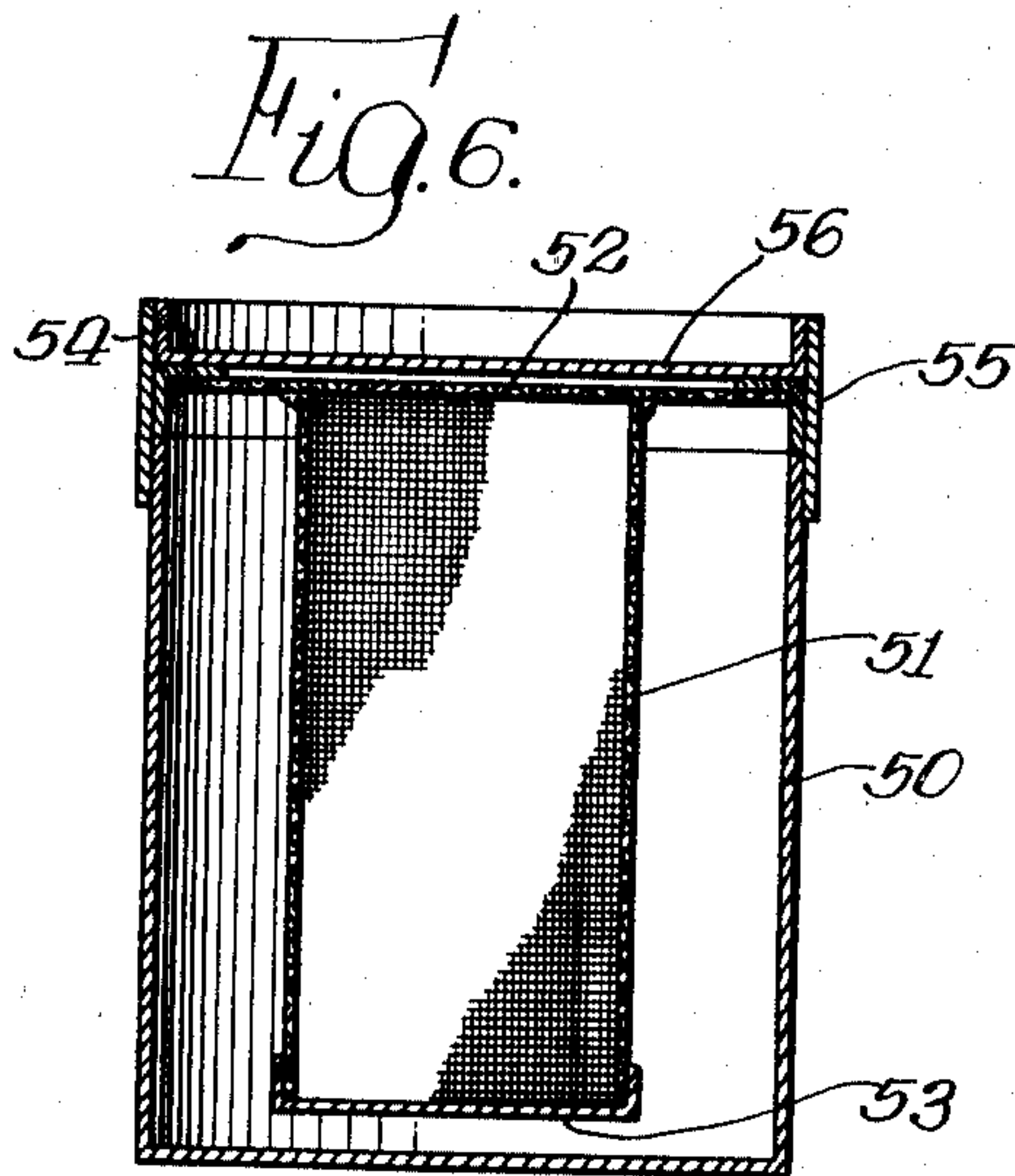
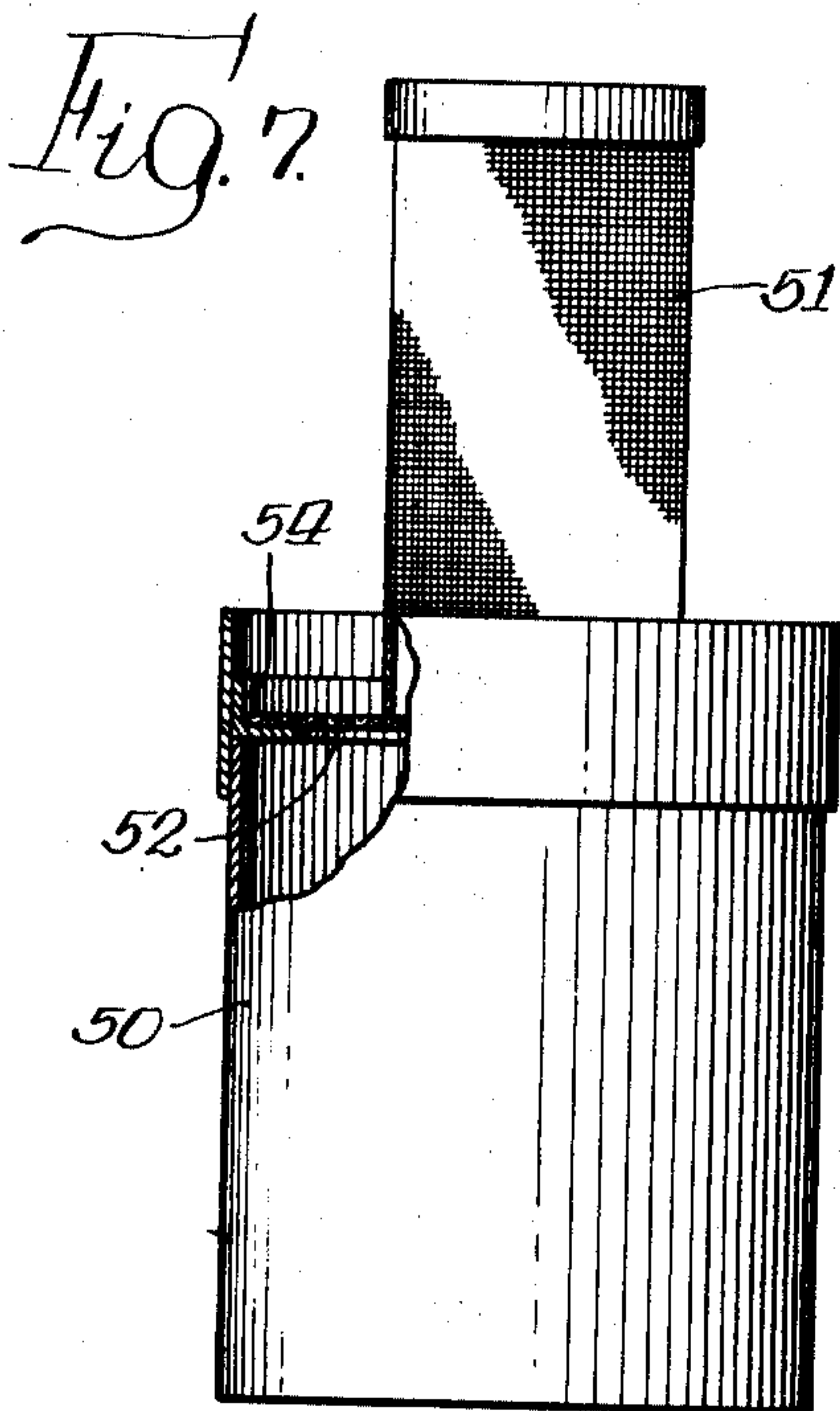
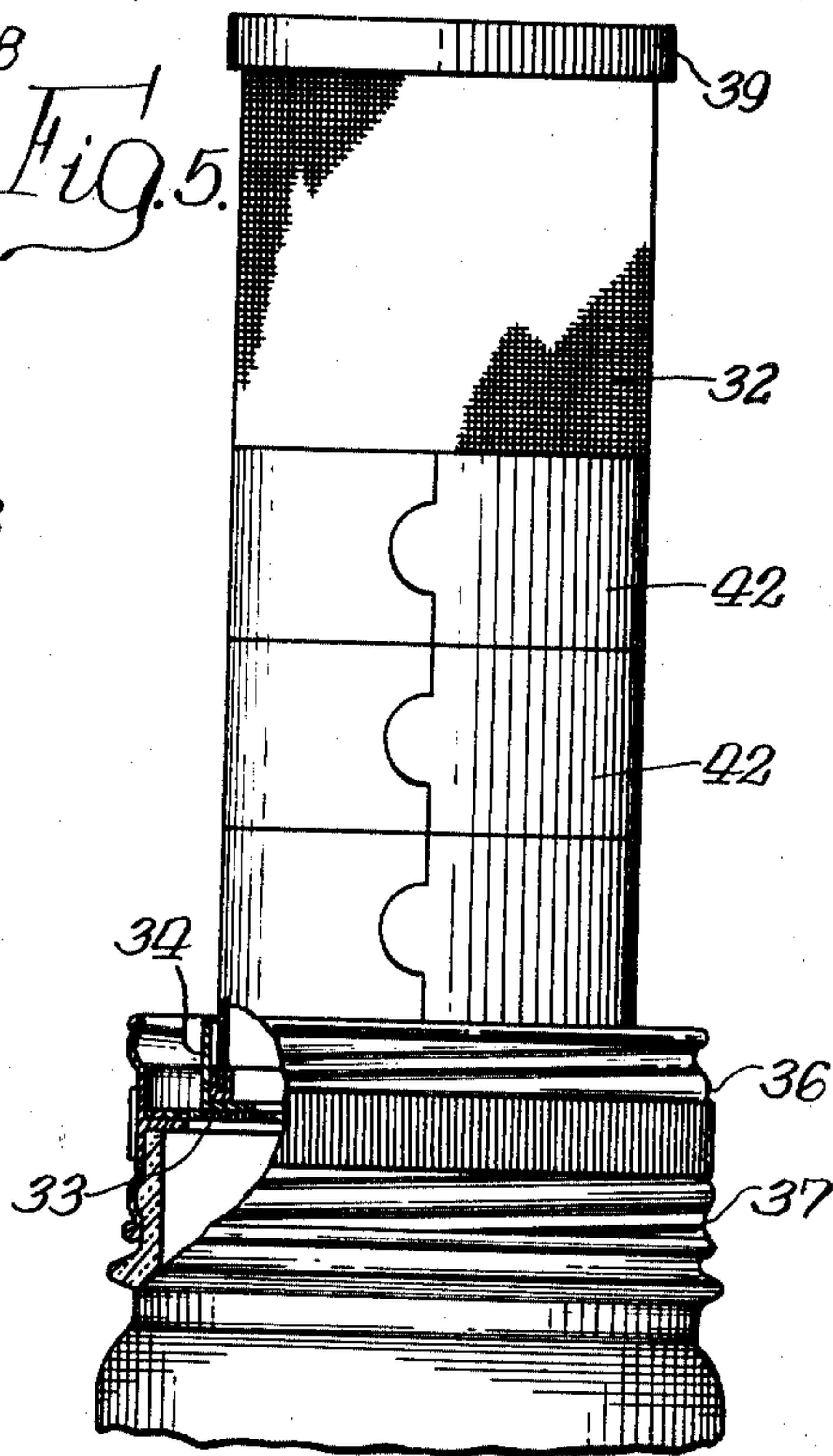
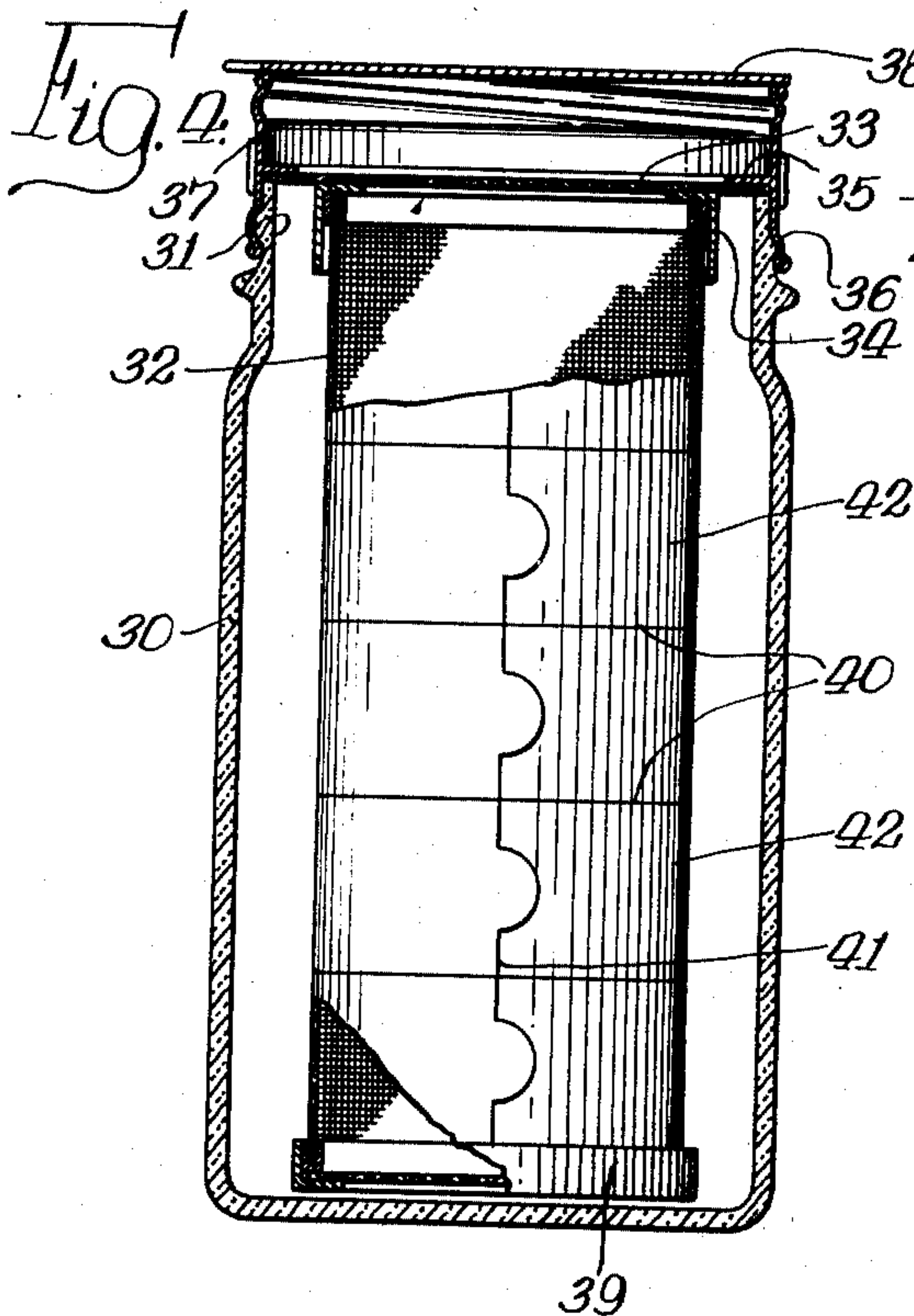
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## UNITED STATES PATENT OFFICE

2,540,758

## AIR CONDITIONING DEVICE

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10 Claims. (Cl. 299—24)

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This invention relates to improvements in air conditioning devices of the type which employ a chemical substance for changing the condition of the surrounding atmosphere.

The general object of the invention is to provide a device for positioning an air treating chemical substance in exposed relation with the surrounding atmosphere in places where it is desired to condition the air, such as in cellars, vaults, clothes closets, containers, or even an entire room or building, which device consists of an outer receptacle and a holder for receiving the chemical substance which is adapted to be selectively mounted relative to the receptacle whereby the substance may be initially enclosed in a substantially airtight manner and whereby it may be quickly and conveniently exposed to the surrounding atmosphere.

A further object of the invention is to provide a device for containing a chemical substance having moisture absorbing properties which includes a container and a holder for the substance which are so arranged that the substance may be enclosed in the container in a substantially airtight manner when not in use and when desired it may be conveniently and quickly exposed to the surrounding atmosphere to attract moisture from the atmosphere and to deliver excess accumulated moisture into the container.

A more specific object of the invention is to provide a water receiving receptacle having an apertured cover member and a desiccant containing holder which is adapted to be secured to the receptacle by the cover member in one position in which the desiccant is enclosed in a substantially airtight manner and in another position in which the desiccant is exposed to the surrounding atmosphere and excess moisture attracted by the desiccant will be accumulated in the receptacle.

A further object of the invention is to provide a water receiving receptacle having a reversible cover member and a desiccant container attached at one end to the cover member whereby when the cover is placed on the receptacle in one position the desiccant is enclosed within the container and when the cover is reversed and then placed on the receptacle the desiccant is exposed to the surrounding atmosphere and wherein a temporary sealing member is initially removably secured on the receptacle cover when the cover is placed on the receptacle with the desiccant in the enclosed position.

Another object of the invention is to provide in a device of the character described a conven-

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ient means for selectively increasing the exposure of the moisture absorbing material to the surrounding atmosphere and thereby regulate the absorbing rate of the device.

A further object of the device is to provide in a device of the character described means whereby the device may be readily filled with a fresh supply of the moisture absorbing material or additional material may be readily added as desired.

While the invention is particularly adapted for use with a chemical substance for dehydrating or dehumidifying the atmosphere in a room or the like it is also effective for use with substances for fumigating, scenting, deodorizing, etc., which it may be desirable to retain in an airtight manner and at times expose to the atmosphere.

Other objects and advantages will appear hereinafter from a description of the preferred forms of the invention which are shown by way of illustration in the accompanying drawings wherein:

Fig. 1 is a sectional elevation of an air treating device embodying the principles of the invention, the holder for the chemical substance being enclosed within the outer receptacle and being shown in elevation with portions broken away;

Fig. 2 is an exploded elevational view of the device with the chemical holder partially withdrawn from the outer receptacle;

Fig. 3 is an elevational view showing the chemical holder supported on the top of the outer receptacle;

Fig. 4 is a view similar to Fig. 1 showing a modified form of the device;

Fig. 5 is a partial elevation of the device shown in Fig. 4 with parts broken away, the chemical holder being mounted in exposed position;

Fig. 6 is a sectional elevation of a further modified form of the device; and

Fig. 7 is an elevation of the device shown in Fig. 6 with parts broken away, the chemical holder being mounted in exposed position.

Referring to Figs. 1 to 3 of the drawings, the preferred form of the device comprises an outer imperforate receptacle or container 10 and a chemical receiving container or holder member 11 which is adapted to be selectively secured in a completely enclosed position within the receptacle 10 or in a completely exposed position above the same.

The outer receptacle 10 which is illustrated as tubular in form may be any desired shape and may be constructed of glass, metal, plastics, paper or any other suitable material. The receptacle 10 is provided with a relatively wide open mouth 12 formed by the neck 13 which is



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threaded to receive a threaded metal retainer ring 14 having a relatively narrow inwardly directed flange 15.

The chemical holder 11 may be formed of wire screen, perforated sheet metal or any similar material which is capable of holding or retaining a chemical substance such as calcium chloride, silica gel or the like in crystalline or cake form. The body of the holder member 11 is preferably the same form as the outer receptacle 10 and is somewhat smaller in cross section. It may be flanged at its ends or provided with reinforcing members 16 for greater strength. The base or bottom end of the holder 11 is mounted on a supporting disk 17 which is provided with perforations 18. The holder 11 is preferably rigidly secured within a flanged ring 19 which is rigidly secured to the disk 17. The top or free end of the holder 11 is provided with a removable cap member 20. The cap 20 which may be attached to the holder 11 by a simple friction fit as shown, or by a screw threaded connection, is illustrated as a flanged ring 21 having a perforated surface 22 formed of wire screen or similar material. It may also be formed from a single piece of imperforate material. The removable cap 23 is provided so that the holder 11 may be filled with the chemical substance from the free end. As an alternative construction the free end of the holder 11 may be permanently closed by either a perforated or imperforate member and the base end of the holder may be removably connected to the supporting disk 17. The supporting disk 17 is of the proper size to fit within the retainer ring 14 and when positioned against the top of the receptacle 10 may be clamped thereto by the flange 15 of the ring 14. A disposable imperforate disk member 23 is provided for positioning between the flange 15 and the supporting plate 17 to seal the receptacle 10 when the holder 11 is initially positioned within the same.

The device is adapted to be initially assembled as shown in Fig. 1 with a charge of the chemical substance in the holder 11 and with the sealing disk 23 clamped in position over the perforated plate 17 by means of the retaining ring 14. When it is desired to use the device, the metal retaining ring 14 is removed and the sealing disk 23 is disposed of. The plate 17 and the holder 11 are removed from the receptacle 10. After being inverted, the disk 17 is repositioned on the top edge of the receptacle 10 and clamped in position thereon by replacing the metal retaining ring 14, the central aperture in the ring 14 being sufficiently large to accommodate the holder 11 which projects above the receptacle 10. When the chemical substance within the holder 11 is a desiccant such as calcium chloride, the moisture in the surrounding atmosphere is absorbed by the calcium chloride forming the liquid hydrate which drips down through the solid desiccant as deliquescence and into the outer receptacle 10 where it remains until it can be conveniently removed. Any moisture running down on the outside surface of the holder 11 is directed within the holder 11 by flanged ring 19 which provides a relatively small circumferential pocket 24 (Fig. 3) between the same and the perforated wall of the holder.

A modified form of the device is shown in Figs. 4 and 5. The outer receptacle 30 is similar to the receptacle 10 shown in Fig. 1 and is provided with an open mouth 31. The chemical holder 32 is similar to the holder 11 shown in Fig. 1 and is permanently secured to the supporting

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plate 33 by a flanged ring 34. The plate 33 is formed of perforated material and is secured to an intermediate flange 35 on the retaining ring 36. The retaining ring 36 is reversible having a threaded outer extension 37 which is provided with a temporary sealing disk or plate 38. The disk 38 may be of any suitable material and is attached to the outer edge of the retaining ring portion 37 in any suitable manner to provide a substantially airtight seal when the ring 36 is initially secured on the receptacle 30. The free end of the holder 32 is provided with a removable cap 39 similar to cap 20 shown in Fig. 1.

An additional feature of this form of the device which is equally applicable to the other forms illustrated consists of a removable covering material of paper or the like which initially surrounds the perforated chemical holder 32 and which is weakened or perforated along the lines 40 and 41 to divide the material into strips 42 which may be successively torn off and removed to expose as much of the perforated surface of the holder 32 as desired when the holder 32 is exposed to the atmosphere.

This form of the device is used in the same manner as the preferred form illustrated in Figs. 1 to 3. The retaining ring 36 is removed from the outer receptacle 30 and the sealing disk 38 is separated from the same and discarded. The ring 36 is inverted and the extending portion 37 is replaced on the mouth 31 of the outer receptacle 30 to position the holder 32 (Fig. 5) in the exposed position in contact with the surrounding atmosphere.

A further modification of the device is illustrated in Figs. 6 and 7. This form of the device is particularly adapted for very economical manufacture. The tube-like outer receptacle 50 is preferably of paper or similar relatively cheap material. The chemical holder 51 is formed of any suitable perforated material and is secured to the supporting plate 52 which is preferably perforated. The holder 51 is provided with a removable closure cap 53 on the free end. The supporting plate 52 is secured to a flanged ring 54 which is secured intermediate the open ends of the sleeve-like retaining ring 55 which is adapted to be telescoped on the open top of the outer receptacle 50 in either the position shown in Fig. 6 with the chemical holder 51 disposed within the outer receptacle 50 or in the position shown in Fig. 7 with the chemical holder 51 supported in exposed position. A sealing cap 56 is provided for initially closing the top of the retaining sleeve 55 (Fig. 6).

In using this form of the device the sealing cap 56 is removed and the sleeve 55 is withdrawn from the outer receptacle 50. After being inverted, the sleeve 55 is repositioned on the receptacle 50 with the chemical holder 51 extending upwardly therefrom in exposed position.

In all of the illustrated forms of the invention, the holder for the chemical substance is attached at one end to a supporting disk or similar member which is secured in or forms a part of a retaining ring member for securing the chemical holder in either a completely enclosed position within the outer receptacle or in a completely exposed position extending above the open mouth of the outer receptacle. The retaining ring member preferably includes a disposable or separable sealing disk or cap which is initially secured in substantially airtight relation to the retaining ring and which is adapted to be removed when the retaining ring is separated



rated from the outer receptacle. The sealing disk may be permanently disposed of if it is the type illustrated in Figs. 4 and 5 or it may be retained with the device if it is the replaceable type illustrated in Figs. 1 to 3, 6 and 7 in the event that it is desired to reposition the chemical holder within the outer container and reseal the same therein.

While specific details of construction and particular materials have been referred to in describing the illustrated forms of the invention it will be appreciated that other details of construction and other materials may be resorted to within the spirit of the invention.

I claim:

1. A device for supporting an air treating substance comprising an open top receptacle, a cover for closing the top of the receptacle, perforated plate means cooperating with said cover for supporting a quantity of the substance in either of two positions relative to the receptacle, the material being enclosed within the receptacle in one position and being exposed to the air without the receptacle in the other position, said cover selectively securing said perforated plate means on said receptacle in either of the two positions and a disposable sealing disk member adapted to be interposed between said plate means and said cover to provide a substantially airtight enclosure of the substance when it is positioned within the receptacle.

2. A dehydrating device, comprising a receptacle adapted to retain water and having a mouth opening, a cover for said opening including an imperforate disk and a clamping ring, a perforated container for supporting a dehydrating material, a perforated disk on one end of said container for supporting said container in said mouth opening whereby said container may be selectively positioned in enclosed relation in said receptacle or in exposed relation above said mouth opening, and said supporting disk cooperating with said cover clamping ring whereby said clamping ring will secure said perforated container in either enclosed or exposed position as desired.

3. A dehydrating device as recited in claim 2 wherein said perforated container is openable at one end thereof for providing access to the dehydrating material.

4. An air drying device comprising a container having an open mouth at its upper end, an air drying chemical holder having perforated walls, an apertured plate on one end of said holder, said plate being adapted to support said holder in said container mouth with said holder extending into said container or with said holder projecting above said container, an apertured securing band adapted to secure said supporting plate in said container mouth and a separable imperforate plate member cooperating with said securing band to provide an airtight closure of said mouth when said holder is supported within said container.

5. A device as recited in claim 4 wherein the chemical holder is provided with a sectional disposable wrapper which is adapted to be removed to progressively expose the perforations in the walls of the holder.

6. An air drying device comprising a container having an open mouth at its upper end, a perforated reversible cover member adapted to be secured on said mouth, a perforated desiccant containing holder secured at one end to said cover member whereby said cover member will support

said holder on said container in either an enclosed or an exposed position thereon, and a cover clamping member having an imperforate separable portion for initially securing said cover member on the mouth of said container in a substantially airtight manner with said holder in the enclosed position thereon.

7. An air drying device as recited in claim 6 and a separable portion on said perforated holder for providing access to the interior thereof to permit the holder to be refilled with the desiccant.

8. An air treating device comprising a container having an open mouth at its upper end, a chemical holder having perforated walls, an apertured plate secured on one end of said holder, said plate being adapted to selectively support said holder in said container mouth with said holder extending into said container or with said holder projecting above said container, an apertured cap for said container mouth adapted to clamp said supporting plate in either position in said container mouth and a separable imperforate member adapted to close the aperture in said cap to provide an airtight closure of said mouth when said holder is supported within said container.

9. An air drying device comprising a container having an open mouth at its upper end, a reversible cover member for said mouth adapted to be secured in telescoping relation on said container, a desiccant containing holder having perforated body and top secured at the top end within said cover member whereby said cover member will support said holder on said container in either an enclosed or an exposed position thereon, said cover member having a separable and disposable disc portion for initially sealing the perforated top of said container in a substantially airtight manner with said holder in the enclosed position thereon and a progressively removable wrapper on the body of said desiccant holder for covering the perforations therein whereby the degree of exposure of the desiccant to the surrounding atmosphere may be varied.

10. A receptacle for supporting an air treating material comprising a body portion, a cover having a perforate portion for closing the same, means cooperating with said cover for retaining a quantity of the material in either of two positions relative to the body portion, the material being enclosed within the body portion in one position and being exposed to the air without the receptacle in the other position, said cover securing said material retaining means on said body portion in either of the two positions desired, and a removable and disposable imperforate member adapted to be positioned in said cover to close said perforate portion thereof and provide a substantially airtight enclosure for the material when it is positioned within the body portion.

HARRY RINNMAN.

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