This invention relates to combination container and diffuser device for volatilizable materials, such as air freshening agents and the like. More particularly the invention relates to combination container and diffuser devices of the class described having multipurpose characteristics adapting same for several different types of use.

Regarded in certain of its broader aspects the combination container and diffuser device in accordance with the present invention comprises a cylindrical container part having substantially greater diameter than height, a cover part rotatably interfitting with the upper edge of said container part, a plurality of circumferentially spaced cut-outs in overlapping portions of said container and cover adapted to be rotatably moved from fully registering to fully non-registering alignment in providing for the circulation and non-circulation respectively of air through said container, cooperating means on said container and cover stopping relative rotation therebetween when said cut-outs are in fully non-registering position, and means comprising a restricted area of thin walled rupturable structure in at least one of said container and cover parts adapting said device to a secondary manner of use.

In prior Patents No. 2,603,532 dated July 15, 1952 and No. 2,657,090 dated October 27, 1953 issued to applicant's assignor, there are disclosed therein diffuser devices embodying overlapping circumferential ports having cut-outs which in relative rotation thereof provide for the opening and closing of vapor passages. Patent No. 2,603,532 relates in particular to combination vapor diffuser and ashtray, whereas Patent No. 2,657,090 relates in particular to combination diffuser device and article supporting base.

The multi-purpose container and diffuser device in accordance with the present invention can be utilized in conjunction with devices disclosed in the above mentioned patents, but can also be utilized in various ways which are impossible with the previously patented devices. The various uses of the new multi-purpose device can be summarized as follows:

a. It can be used essentially as a shipping container for insertion, after removal of the cover, in a device of the type disclosed in said prior patents.

b. It can be used in conjunction with devices of said prior patents without removing the cover, but with rotary adjustment of the cover providing a secondary control of air circulation therethrough.

c. It can be utilized as a diffuser device complete in itself for resting, in use, on any horizontal surface.

d. It can be utilized as a diffuser device complete in itself for hanging against a wall or other vertical support by rupturing a weakened portion provided in the base or container part to provide engagement with hook means, or the like, on the vertical support.

e. By rupturing a weakened portion in the cover part and coupling a flexible tube, or the like, therewith, the device can be used for the forced circulation of air through the container in contact with volatilizable material therein. In such use, which may be in association with air circulating or air conditioning means, the circulation of the air can be provided either by forced circulation of air to the container, or by suction, causing air at an accelerated rate to be drawn into the container through the circumferential ports or apertures.

The structure of my improved device will be readily apparent from the accompanying drawing illustrating preferred adaptations thereof with various parts of the device identified by suitable reference characters in each of the views and in which:

Fig. 1 is a perspective view of one form of the device showing the peripheral apertures in a partially open position;

Fig. 2 is a partial plan view of the assembled device with part of the structure broken away and in section;

Fig. 3 is a partial sectional view substantially on the line 3-3 of Fig. 2;

Fig. 4 is a partial sectional view substantially on the line 4-4 of Fig. 2 with the parts in exploded relation to better bring out the detail thereof; and

Fig. 5 is a partial sectional view substantially on the line 5-5 of Fig. 2 indicating a modified form of rupturable means in the cover part.

As shown in the drawing, the combination container and diffuser device comprises a container part 10 having a peripheral side wall 11 and bottom wall 12 and an interfitting cover 13 having a top wall 14 and a peripheral flange 15. The upper edge 11a of the peripheral wall 11 (note in Figs. 1 and 4) is substantially perpendicular to the bottom wall 12 to provide close rotatable engagement with the flange 15 of the cover part, while the remainder of the peripheral wall 11 can be tapered slightly as seen in Fig. 4 to facilitate molding of the device. In this connection, it should be noted that the device can be fashioned from various materials, including metals and plastics, but is preferably molded from a plastic, such as polystyrene.

The peripheral flange 15 of the cover part is provided with a plurality of uniformly spaced cut-outs 16 which are somewhat shorter than the portions of the flange 15 therebetween and the upper portion 11a of the container part is provided with an equal number of cut-outs 17, the cut-outs 17 being of the same length as the cut-outs 16 so that when the container and cover parts are rotated one with respect to the other, the cut-outs 16 and 17 can be brought to coinciding position forming a plurality of ports or apertures for the passage of air and volatilizable air treating agents and the like. Since the solid portions between the cut-outs 16 and 17 respectively are wider than said cut-outs, it will be evident that in certain positions of rotary adjustment the cut-outs of one part will be completely blocked by the solid peripheral portions of the other part, thereby closing the ports or apertures. Between the fully closed and fully open positions, any degree of partial opening of the parts or apertures can be provided by the relative rotation of the container and cover parts.

The inner surface of the peripheral wall 11 of the container part is provided at one point, and preferably in two diametrically opposed positions, with inwardly extending stop means or rib 18 adjacent the right-hand end of a cut-out 17, as seen in plan view. The cover part is provided on the inner surface of the top wall 14, and slightly spaced inwardly from the flange 15, with a downward protrusion or stop means 19 which is located adjacent the left-hand end of the cut-out 16 as seen in plan view through the top thereof, (note Fig. 2 of the drawing). This arrangement of the stop means 18 and
permits the cover to be relatively rotated in a clockwise direction with respect to the container part, or assembled with the container and so rotated, to a stop position which automatically aligns the cut-outs in each part with the solid portions of the opposing part to thereby close all of the circumferential ports. It will be evident that while a single stop means of the type above described is sufficient to provide this result, the presence of two such stop means at diametrically opposed positions enables one using or assembling the device to adjust the same to the fully closed position by a single and natural manipulation of the hands.

As shown in Fig. 1 of the drawing, the top wall 14 of the cover part is provided with an outwardly extending tubular extension 20 terminating in a thin walled rupturable part 21 extending across the tubular extension. The rupturable part 21 can be either an integrally molded part of the cover, or can be a separate part adhesively or otherwise secured to the tubular extension 20 providing the primary function of closing the end of the tubular extension 20 during the initial shipping and storage of the container when filled with air treating material. When the thin walled rupturable part 21 is removed or ruptured, a flexible tube 22 can be applied to the tubular extension 20 and connected with a suitable source of air under pressure, or to a reduced pressure system. When air under pressure is passed through the tube 22, a mixture of air and air freshening material within the container will pass outwardly through the peripheral apertures of the device, whereas if the tube 22 is part of a reduced pressure or vacuum system, then fresh air will be drawn inwardly through the peripheral aperture and a mixture of the air with freshening material will pass through the tube 22.

Fig. 5 of the drawing illustrates a certain modified form of construction in which the outwardly extending tubular part 20 is replaced by an inwardly extending annular projection 23 which is initially closed by a thin walled rupturable or removable diaphragm 24. When the diaphragm 24 is removed or ruptured, a tube 25 having spaced annular beads 26, 27 at the end thereof extends through the aperture thus formed in the top wall 14 of the cover part for firm interlocking engagement therewith. The tube 25 can be coupled with a high pressure or low pressure system, and function in the same manner as previously described in connection with the tube 22.

In the bottom wall 12 of the container part, as clearly shown in Figs. 2 and 3 of the drawing, there is provided a restricted area of general keyhole contour as indicated at 28 of thin walled structure forming a rupturable diaphragm 29 and preferably surrounded by a slight reinforcing rib as will be seen in Fig. 3 of the drawing. When the diaphragm 29 is ruptured, it will be evident that the aperture of the key-hole contour 28 thus formed provides means for hanging the device against a vertical support by means of a hook, nail, or the like.

The provision of the rupturable portion 28 in the bottom wall of the container part is applicable both to devices having the conversion means for coupling the tube 22 or 25 therewith and devices in which the cover part is of uniform contour having no rupturable means therein. It will be noted, however, that the form of construction as shown in Fig. 5 for the cover 14 lends itself to an all purpose device having a minimum of bulk for packing and shipping and serving equally well as a diffuser for natural air circulation and, with rupturing of the diaphragm 24, as a diffuser for forced circulation.