Dec. 29, 1953 R. G. GOBIN 2,664,226

POWDER DISPENSER FOR ATTACHED POWDER PUFF

Filed May 3, 1950 2 Sheets-Sheet 1

Fig. 1

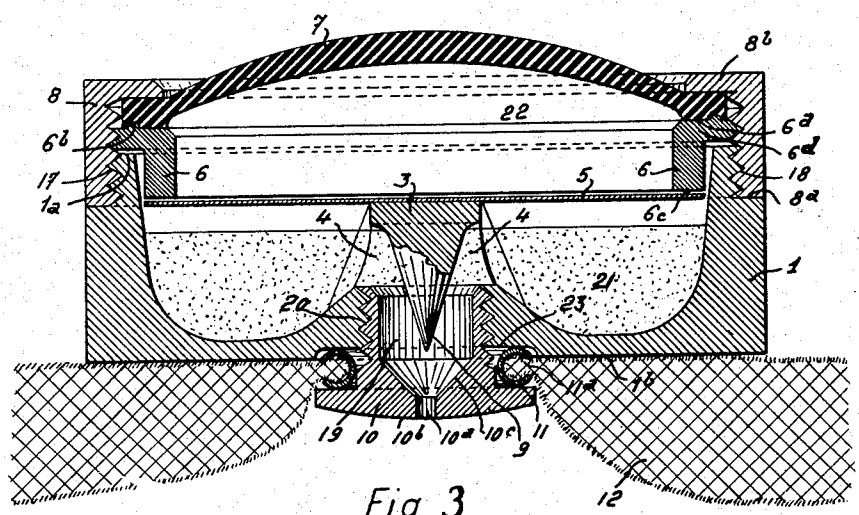


Fig. 3

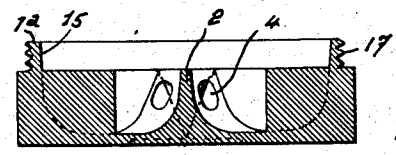
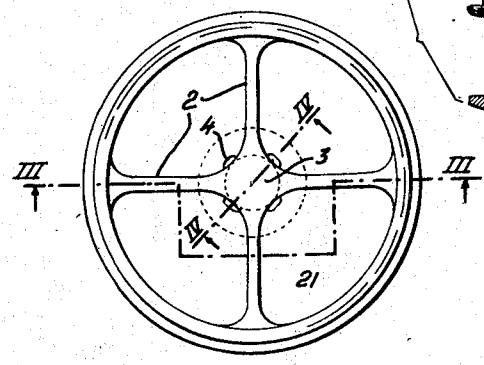
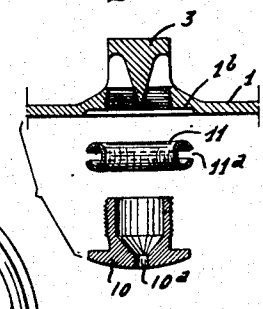


Fig. 4

Fig. 2





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Filed May 3, 1950 2 Sheets-Sheet 2

Fig. 5

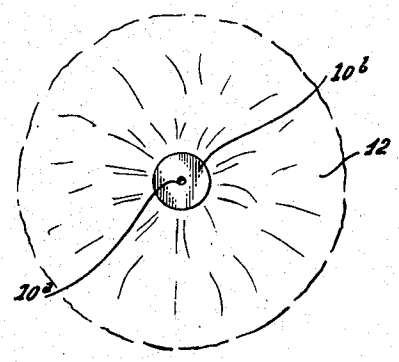


Fig. 6

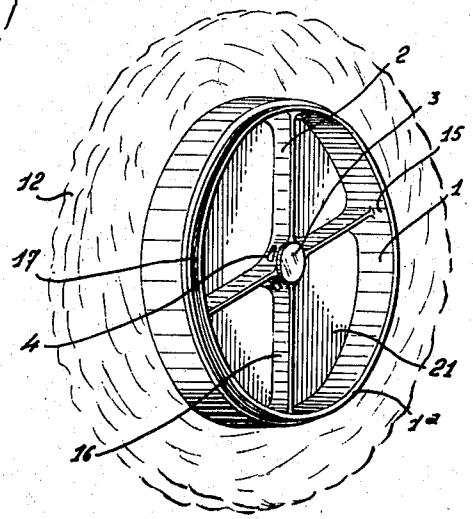


Fig. 8

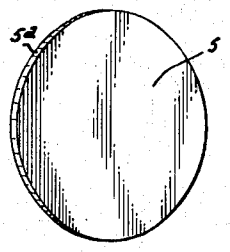


Fig. 7

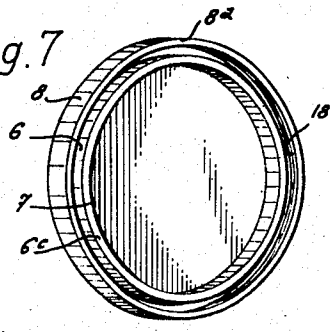
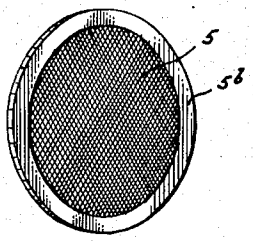


Fig. 9



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POWDER DISPENSER FOR ATTACHED POWDER PUFF

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Application May 3, 1950, Serial No. 159,730

Claims priority, application France May 18, 1949

3 Claims. (Cl. 222—193)

1

Powder puffs are already known which are combined with a powder container from which powder is dispensed to the puff according to the quantity of powder needed by the user at every moment. But the known devices of this type are objectionable because they are complicated, difficult to handle, and not easily controllable.

This invention has for its object the avoidance of the aforesaid drawbacks and it consists in the provision of a powder sprayer made of a box having dispensing or delivery means associated with the box so that the powder contained in the box can be easily and accurately delivered from the box at every moment.

This sprayer is intended primarily for use in combination with a powder puff, as known per se, and will be described in detail in the following specification as combined with a powder puff. But, of course, the sprayer can be used alone or in any other combination without departing from the principles of the invention.

In the accompanying drawings:

Figure 1 is a central vertical section, in the plane of line IV—IV of Figure 2, to an enlarged scale of one construction of powder sprayer and powder puff device in accordance with the invention and by way of example.

Figure 2 is a plan view, to a smaller scale, of the powder container as seen from above in Figure 1 and with the upper members removed.

Figure 3 is a cross section on the line III—III of Figure 2.

Figure 4 is a section through the central portion of Figure 2 and on the line IV—IV therein, the several parts through which the section passes being separated one beneath another but in the order in which they are when assembled as in Figure 1.

Figure 5 is an inverted plan, also to a smaller scale, of the puff seen in Figure 1.

Figure 6 is a perspective view, to a larger scale than Figure 5 but smaller scale than Figure 1, of the powder container uncovered with an indication of the powder puff to which it is attached.

Figure 7 is a perspective inside view of a cover for the powder container seen in Figure 6.

Figure 8 is a perspective view of a plate or diaphragm to be interposed between the cover, Fig. 7, and the container, Fig. 6, and serving for confining the powder to the container, and

2

Figure 9 is a perspective view of a modified construction of plate or diaphragm.

Referring to the drawing, and in particular to Figure 1, 12 indicates a puff formed in the usual manner of suitable material such as velvet, velour, down and so on. Upon the puff there is fixed a box 1 comprising a bottom in the center of which is secured a part 10 forming an extension which has a central bore 19 terminating at its lower end in a small discharge orifice 10a.

The space within box 1 is divided into segmental compartments by four partitions 2 united at the centre in a lozenge-shaped boss 3. In the angle enclosed by the partitions 2, holes 4 are made in the boss 3 to give communication between the interior of the box and an opening 19 in the bottom 1b of the box. This opening or cavity 19 has, as a bottom outlet, the small orifice 10a and a hollow conical surface 10c preferably connects the larger diameter of the cavity 19 with the small diameter of the orifice 10a. At the lower side of the boss 3, and preferably as an integral piece, there is an inverted cone 9 the apex of which extends down into the cavity 19 and into the neighbourhood of the base or largest diameter of the hollow cone 10c. In the example illustrated, the extension 10 is a separate ferrule screwed into the bottom of the box by a screw thread 20, the cavity 19 and orifice 10a being formed in this ferrule and a smooth surface 10b being presented as a curved surface of the inverted head of this ferrule which is extended at its periphery to form a peripheral flange for a purpose to be explained. It will be seen, therefore, that there are four compartments 21 within the box communicating through the four holes 4 with the cavity 19 and so with the small orifice 10a.

The box thus constructed may be closed by a cover which incorporates the means for projecting the powder. This cover is seen in Figures 1 and 7, and comprises two rings 6 and 8, the ring 8 being an external ring and the ring 6 internal. The external ring 8 is formed with an inward flange 8b and the internal ring 6 is formed with an outward flange 6d. The two rings are screw threaded at 17, so that the flange of the ring 6 can be screwed into the cylindrical part of the ring 8. First, however, a flexible and elastic membrane 7 of suitable material such as rubber

is inserted in the ring 8 and so that the rim of such membrane lies against its flange 8^b of the ring 8, whereupon the ring 6 is screwed in tightly so that the said rim is firmly clamped between the two flanges 6^d and 8^b as seen in Figure 1. For obtaining the best hermetic tightness, the flange 6^d of the ring 6 may be formed with a projecting rib 6^b which indents the rubber when the ring 6 is screwed in as above described. This assembly constitutes the cover of the box and is attachable to the latter by prolonging the screw threaded part 17 of the ring 8 beyond the flange 6^d of the ring 6 so that such prolongation can be screwed on to a screw threaded upper end portion of the box 1. Between the cover and the four compartments 21 of the box there is interposed a thin and slightly flexible plate or diaphragm 5 made of any appropriate material, such as, for example, one of the so-called plastics. This diaphragm 5 rests upon the upper edges of the partitions 2 and upon the upper surface of the boss 3 and fits loosely into the space bounded by the upper cylindrical part 15 of the box 1. The diaphragm 5 is prevented from rising by the lower edge 6^c of the ring 6. However, the construction is such that owing to the flexibility of the diaphragm 5 and the slight play that it can have between the upper edges of the partitions 2 and the edge 6^c, it is possible for air to pass around the edge 5^a, Fig. 8, of the diaphragm 5 from the compartments 21 into the interior 22 of the cover and inversely. The space is insufficient, however, for permitting the passage of grains of powder out of the compartments 21.

The diaphragm 5 plays an important part in this construction and arrangement which is not obvious at first sight. It serves two purposes:

First, it prevents the air pressure obtained by pressing upon the membrane 7 from causing an intense turbulence of the powder in the compartments 21, which would result in powder being carried into the upper part of the cover in the neighbourhood of the membrane 7 so that a very small part of the powder would be delivered through the holes 4 to the orifice 10^a. Second, it regularizes or modifies the pressure in the compartments 21 when the membrane 7 is sharply or irregularly depressed. By this means, a regular or uniform jet of air and powder emerges from the orifice 10^a without carrying with it clots of powder.

The puff 12 is fixed against the bottom of the box 1 and in the example illustrated, as will be understood from Figures 1 and 4, this fixing is obtained by the head flange of the ferrule 10 pressing against the bottom of the box a tubular annulus 11 having a peripheral split or slot 11^a in which is inserted the edge of the central hole in the puff 12. By screwing in the ferrule 10, the tubular annulus 11 is clamped so that the said annulus clips the puff 12 in the slot 11^a.

Preferably a circular recess or seating 23, Figure 1, is formed in the bottom 1^b of the box 1 for the reception and centering of the annulus 11.

The operation of the puff device is as follows: After removing the cover, seen separately in Figure 7, and the diaphragm 5 from the box 1, the compartments 21 of the box 1 are charged with powder and the cover is then screwed on. When it is desired to use the device, the puff 12 is applied lightly to the face and at the same time pressure is applied, by the forefinger for example, once or several times upon the membrane 7. The air contained in the space beneath the membrane 7 is thus forced into the compartments 21 and carries powder with it through the openings 4, into the cavity 19 and out through the small orifice 10^a. The air and the powder are guided by the exterior of the cone 9 towards the orifice 10^a. A light jet of powder then issues into that part of the puff situated in the neighbourhood of the orifice 10^a and comes on to the skin beneath that part. By moving the puff on the face, the powder is distributed over the surface of the skin as when using an ordinary puff. The operation can be continued whilst applying several pressing actions against the membrane 7. When the powdering operation is finished, the puff 12 remains charged with only a minute quantity of powder so that there is practically none to leave the face or to fall upon objects or surfaces.

Instead of the flexible and elastic plane plate or diaphragm 5 it is possible to employ a disc 5, Figure 9, composed of a fabric screen of very fine mesh encircled by a rigid ring or a ring of rubber 5^b, or even a disc pierced with very fine holes close together. The essential thing is that the air must be able easily to pass through the disc or around its edge 5^a whilst the powder, practically, cannot so pass.

What I claim is:

1. A powder sprayer comprising a box having on its bottom a projection formed with an axial bore, presenting a small exit orifice, radial partitions in said box, said partitions having openings therebetween near the centre of the box giving communication with the said axial bore, an axial inverted cone disposed in said box so that its base limits the openings between the partitions whilst its apex penetrates the said bore into the neighbourhood of the said exit orifice, and air forcing means fixedly mounted on the box and adapted for forcing air from the box through said openings and into said bore.

2. A powder sprayer comprising in combination a box having on its bottom a projection formed with an axial bore communicating with the interior of the box and presenting a small external exit orifice, radial partitions in said box, said partitions having openings therebetween near the centre of the box giving communication with said axial bore, an axial inverted cone disposed in said box so that its base limits the openings between the partitions whilst its apex penetrates said bore into the neighbourhood of said exit orifice, a central boss integral with the base of said cone and standing flush with the upper edges of said radial partitions, a flexible diaphragm plate having substantially the internal diameter of the box and disposed so as to rest upon said boss and partitions, an hermetic closure adapted for being mounted on said box and comprising an elastic membrane adapted for being deflected to produce air movements within said box and through said openings and exit orifice.

3. A powder sprayer comprising in combination a box having on its bottom a projection engaged in said hole and the said projection being formed with an axial bore communicating with the interior of the box and presenting externally a small exit orifice, radial partitions in said box, said partitions having openings therebetween near the centre of the box giving communication with said axial bore, an axial inverted cone disposed in said box so that its base limits the openings between the partitions whilst its apex penetrates said bore into the neighbourhood of said exit orifice, a central boss integral with the

base of said cone and standing flush with the upper edges of said radial partitions, a disc of fine mesh fabric having substantially the internal diameter of the box the central portion of this disc resting upon the said boss and the outer rim portion resting upon the edges of said partitions, cover mounting means on said box and means comprising an internal annular part bearing upon the rim portion of said disc, and an hermetically tight cover for said box in the form of an elastic membrane engaged by said mounting means and adapted for being deflected to produce air movements in said box and through said openings and exit orifice.

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