June 26, 1923. 1,459,784

J. LOUFEK

POWDER DISPENSING BOX

Filed Dec. 28, 1921

Fig. 1

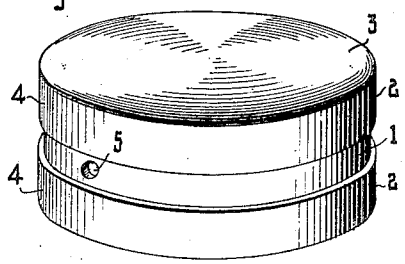


Fig. 2

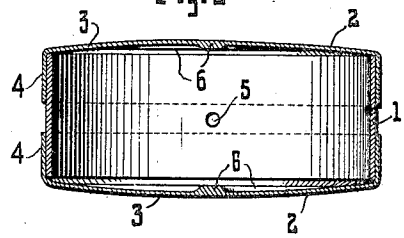


Fig. 3

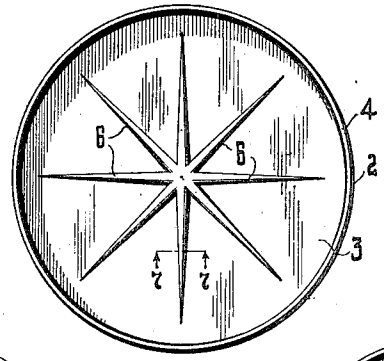


Fig. 4

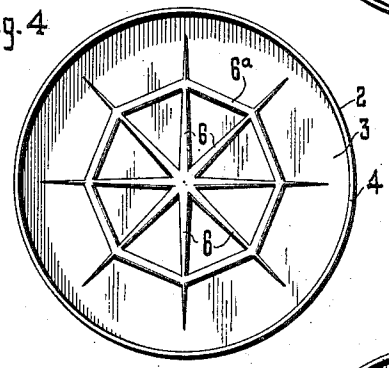


Fig. 5

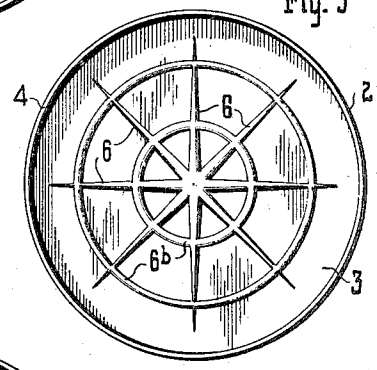


Fig. 6

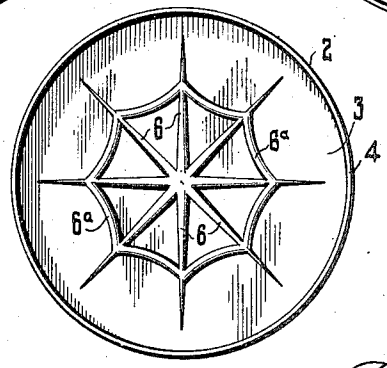
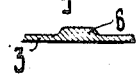


Fig. 7



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Patented June 26, 1923. 1,459,784

UNITED STATES PATENT OFFICE.

JOSEPH LOUFEK, OF KEOKUK, IOWA, ASSIGNOR TO IOWA CAN COMPANY, OF KEOKUK, IOWA, A CORPORATION OF IOWA.

POWDER-DISPENSING BOX.

Application filed December 28, 1921. Serial No. 525,425.

To all whom it may concern:

Be it known that I, JOSEPH LOUFEK, a citizen of the United States, residing at Keokuk, in the county of Lee and State of Iowa, have invented a new and useful Improvement in Powder-Dispensing Boxes, of which the following is a specification.

This invention relates to powder dispensing boxes.

The object is to provide a cheaply constructed box formed of heavy paper or paste board capable of being packed with powder or insecticide at the factory and shipped for use by the consumer in the manner of a bellows to discharge the contents in a spray through a minimum sized orifice too small to permit the accidental discharge or leakage of the same.

Another object is to provide such a box formed entirely of paper having outwardly bowed, circular heads or end walls provided with reinforcing ribs on the interior thereof, said ribs being formed of the material comprising the box and extending radially to strengthen the same and to cause said walls to return to their normally extended positions when the pressure of the hand is removed, such pressure being applied for the purpose of causing a discharge through the aforesaid opening or orifice of the powdered contents of the box.

A full and complete understanding of the invention may be obtained from a consideration of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification, it being understood that while the drawing shows a practical form of the invention, the latter is not to be confined to strict conformity therewith, but may be changed or modified, so long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the appended claim.

In the drawing, in which similar reference characters designate corresponding parts throughout the several figures:

Figure 1 is a perspective view of the improved box.

Figure 2 is a vertical transverse sectional view of the same.

Figure 3 is a plan view of the interior of one of the heads.

Figures 4, 5 and 6 are similar views of slightly modified heads.

Figure 7 is a detail sectional view taken on the line 7—7 of Figure 3.

As shown in the drawing, the box comprises an annular ring or body 1 formed of suitable material such as paste board, the said ring forming the body or side walls of the box, which is cylindrical in cross section, and which may be of any desired diameter and any desired length to constitute the height of the box, these dimensions determining the capacity of the box, as will be understood.

End heads 2 constituting the top and bottom of the box respectively are formed of similar material, and one of the heads may be securely fixed to the body 1 of the box, while the other is removable therefrom for the purpose of filling the box with the desired contents in powdered form.

Each head includes a circular disc 3 adapted to cover the open end of the annular ring to which it is applied, and is provided with an integral depending flange 4, the internal diameter of which is substantially equal to or slightly less than the external diameter of the said ring or body 1, to which the heads are adapted to be held by the frictional engagement of the flanges fitting over the ends of the same, and it has been found advisable in practice to apply a coat of glue or other adhesive to one end of the body where engaged by the end of one of the flanges to permanently hold that head upon the end of the ring and such head may be said to constitute the bottom of the box.

The discs 3 of the heads are formed concavo-convex, with the convex side outermost, with the opposed centers of the two heads farthest apart, and it will be seen that by the pressure of the thumb and fingers of the user, the internal area or capacity of the box is reduced and an outward pressure or flow of air within the box is exerted which finds exit through a small orifice 5 thus blowing the contents of the box in a spray in a well-known manner.

In order to strengthen the discs 3 of the heads and to insure their return to normally distended position, the inner or concave faces of the same are provided with reinforcing ribs 6 formed integrally therewith and located only on the inside of the box,

said ribs preferably extending radially from the center of the box and preferably diminishing in width and strength towards their outer ends as clearly shown in the drawing.

In Figure 3 a simple star formed of such ribs is shown, while in Figures 4 and 6 such ribs are connected by additional, circumferentially disposed ribs 6^a which serve to strengthen the same. In Figure 5 two concentric circles 6^b formed of such ribs connect the outer and intermediate portions of the star-points 6 and constitute another modification of the manner of reinforcing the heads of the box.

Bellows boxes have heretofore been manufactured in similar manner and placed upon the market, but have been found to be defective for the reason that after a short usage, the repeated movement of the heads required to exhaust the contents of the box, soon destroys the resiliency of the heads, with the result that said heads remain permanently depressed and of course it is then impossible to force any more of the contents through the outlet orifice. This defect has been overcome by the provision of the reinforcing ribs constructed in a manner to be further described and said ribs, especially as formed in Figures 4, 5 and 6 have the further advantage of preventing the cracking or breaking of the heads as has been the case with boxes heretofore constructed, and in addition to this, the bulged or dished heads tend to cause the depending flanges to hug the outer faces of the ends of the ring or body of the box in such manner as to prevent the accidental displacement of the head that is left unglued or unfastened.

After repeated experimentation to determine the most desirable material to withstand the strain of usage to which such a box is subjected, it has been found that a heavy paste board having what is commercially known as a manila covering on the outside and the inside being what is known as "news lined" is best adapted to give the desired results in excluding moisture and in receiving and holding the impressed beads forming the reinforcing feature of the heads by means of which the necessary spring or recoil is retained therein.

In the formation of the heads the prepared paste board is first dampened sufficiently to be pressed and formed in the following manner. A sheet of such board is passed through a punch press provided with a female die having a socket of the diameter of the outer face of the aforesaid flange. The bottom of this female die is concave in accordance to the desired curve of the head discs to be formed, and is smooth and it has been found advantageous to heat the said female die prior to the formation of the head. Adapted to enter into the female die is a male die of a diameter equal to the inner diameter of the flange of the head, the lower face of the same being convex corresponding to the curvature of the female die, and having recesses cut therein corresponding in design to the pattern of the rib formation desired. As the male die enters the female die with the sheet of material between the same and pressure applied thereto, the complete head is formed in one operation, the concavo-convex disc having the upstanding ribs in the desired formation thereon upon the concave side and the attached flange extending around the periphery of the same, the pressure serving to compact or compress the paste-board in a manner to provide for the ribs and to form a hardened surface upon the outside of the head to preserve its strength and to exclude the entrance of moisture.

From the foregoing it will be seen that a simple, cheaply manufactured box has been provided for the purpose of containing powder of any kind and of dispensing the same in the manner of a bellows, the ribs serving to maintain the resiliency of the heads until the contents of the box have been exhausted. The box may be made of any height or diameter depending upon the use to which it is to be put, and both heads may be either glued in position, after the box has been filled, or both may be left unglued, the frictional engagement of the flanges being depended upon to retain the heads upon the annular ring or body.

What is claimed is:

A box for dispensing powders, insecticides or the like comprising an open-ended paste board cylinder forming a body member, a concavo-convex head mounted at each end of the cylinder, with the convex side outwardly, each head being formed of paste-board and having an integral, depending flange adapted to embrace the ends of the cylinder, each head having impressed on its inner, concave side radially disposed ribs formed of the material of the head and adapted to strengthen the same and retain the normal concavo-convex form under pressure, the outer faces of each head being smooth.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature.

JOSEPH LOUFEK.