June 6, 1933. P. D. PETERSON 1,912,385

DISPENSING CONTAINER

Filed Nov. 4, 1931 4 Sheets-Sheet 1

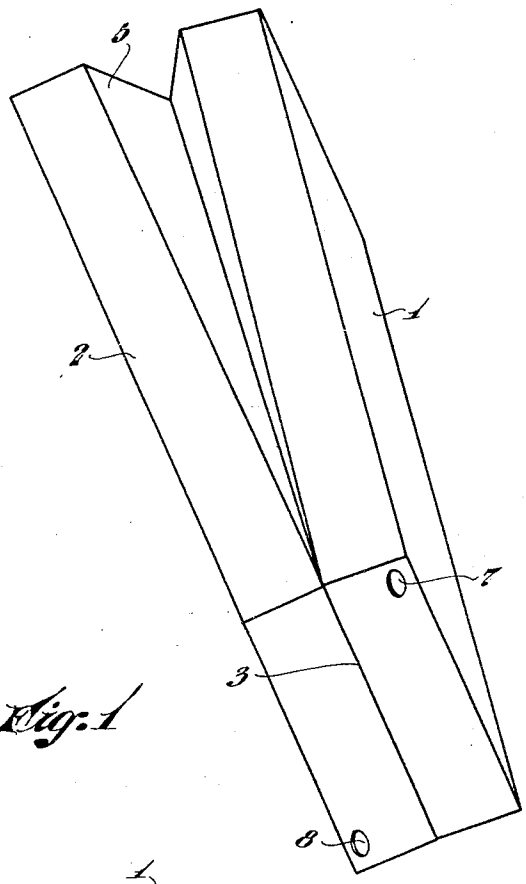

Fig. 1

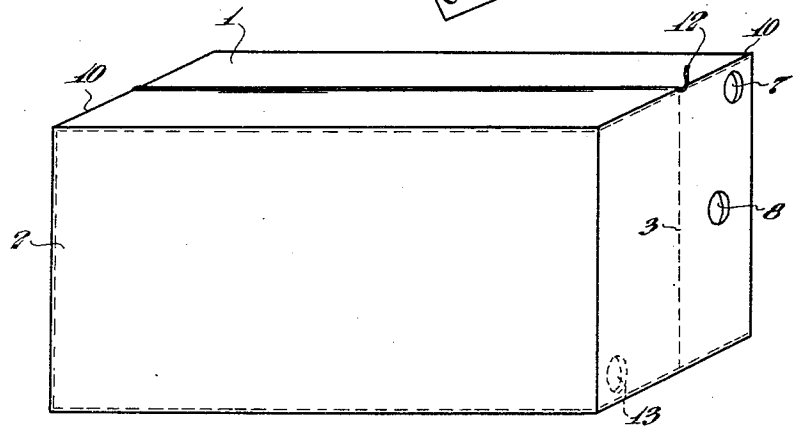

Fig. 2

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DISPENSING CONTAINER

Filed Nov. 4, 1931 4 Sheets-Sheet 2

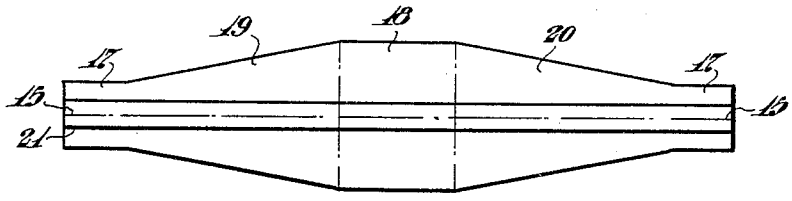

Fig. 3

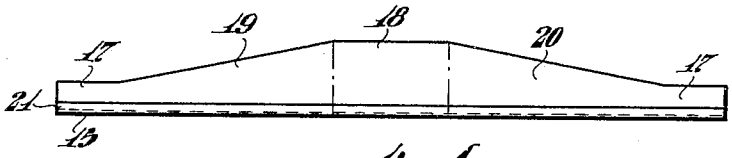

Fig. 4

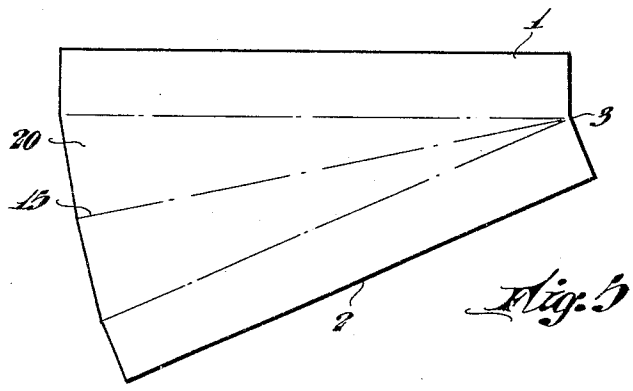

Fig. 5

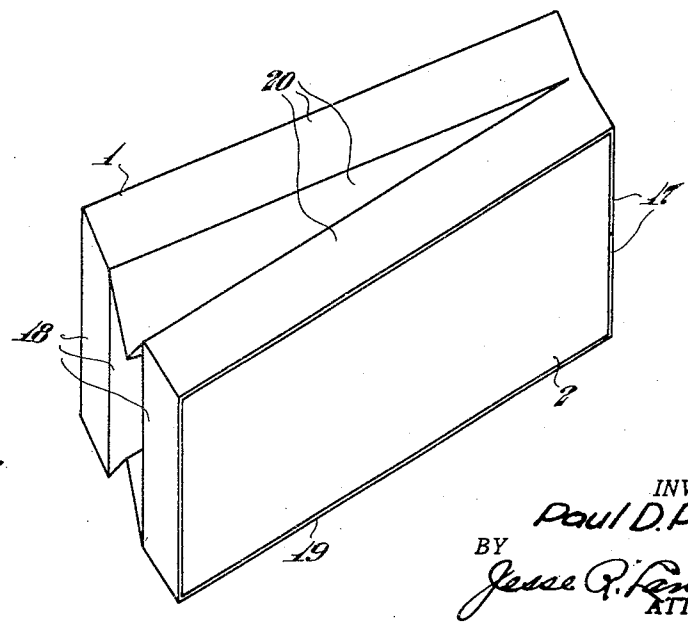

Fig. 6

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DISPENSING CONTAINER

Filed Nov. 4, 1931 4 Sheets-Sheet 3

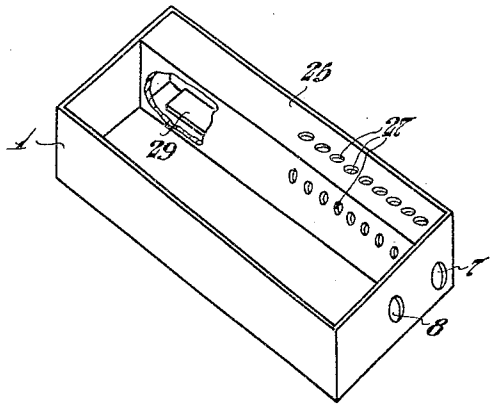

Fig. 7

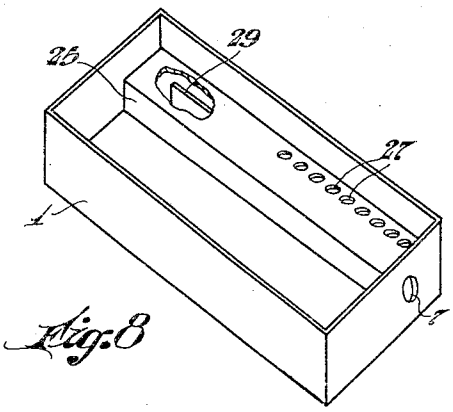

Fig. 8

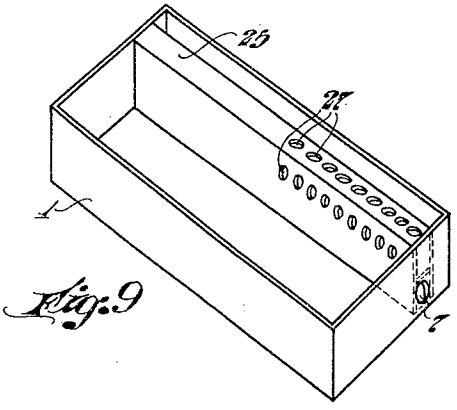

Fig. 9

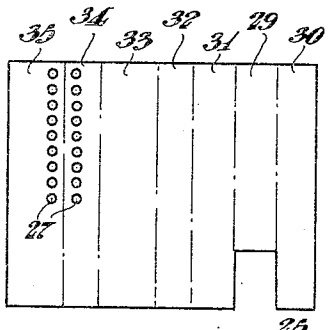

Fig. 10

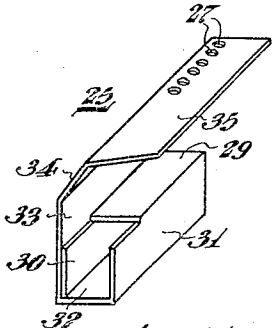

Fig. 11

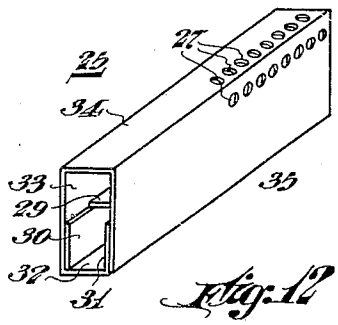

Fig. 12

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June 6, 1933. P. D. PETERSON 1,912,385

DISPENSING CONTAINER

Filed Nov. 4, 1931 4 Sheets-Sheet 4

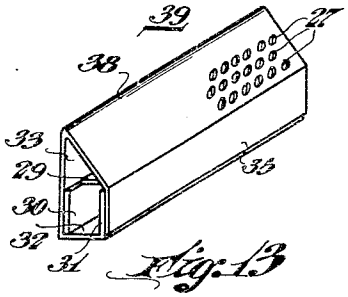

Fig. 13

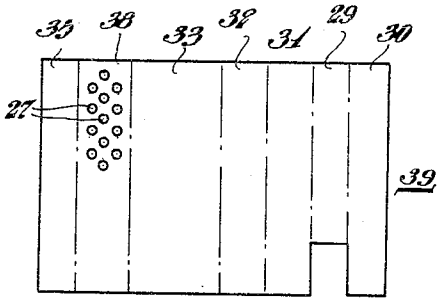

Fig. 14

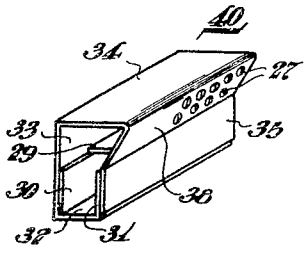

Fig. 15

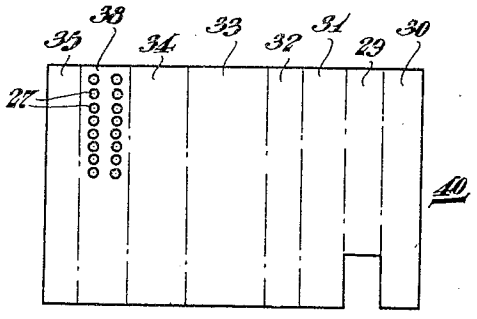

Fig. 16

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UNITED STATES PATENT OFFICE

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DISPENSING CONTAINER

Application filed November 4, 1931. Serial No. 572,918.

This invention relates to the art of packaging substances in powdered form. It relates especially to dispensing containers for pulverulent materials, such as fungicides, insecticides, dusting powders, and the like.

An object of my present invention is to provide an improved dispensing container from which insecticides and the like may be efficiently discharged in any desired direction without waste.

A second object of my invention is to provide a simple and compact container for pulverulent material which also serves as a dispenser or dust gun of high efficiency.

My invention has for further objects such other advantages and results as are found to obtain in the container hereinafter described and claimed, and in the process of manufacturing said container.

A dispensing container of high efficiency is described in my copending application Serial No. 498,023, filed Nov. 25, 1930. This container combines a dust gun or dispenser of the bellows type with a compact and attractive carton of regular shape, thereby forming a dispensing container of high efficiency which is economically manufactured and which is of such shape that it is well adapted for use in the sale or shipment of insecticides and the like. In some aspects, my present invention may be considered an improvement on the container described in the aforementioned application.

In order that the nature of the improved container and the process of its manufacture may be more readily understood, I will now describe it in connection with the accompanying drawings, in which

Figure 1 is a perspective view of the container with the bellows partially open;

Fig. 2 is a similar view of the container sealed for shipment and sale;

Figs. 3 and 4 are views of the bellows blank and the partially folded bellows;

Fig. 5 is a plan or horizontal view illustrating the application of the bellows to the complete container;

Fig. 6 is a perspective view showing the bellows creased and partially closed;

Figs. 7, 8 and 9 are similar views of one-half of the container with a non-dumping manifold in place therein;

Fig. 10 is a plan view of a blank from which one type of manifold is folded;

Fig. 11 is a view of the partly folded manifold;

Fig. 12 is a perspective view of one type of manifold when completed;

Fig. 13 is a similar view of a modified manifold;

Fig. 14 is a plan of the blank from which the manifold illustrated in Fig. 13 is folded;

Fig. 15 is a perspective view of another type of manifold; and

Fig. 16 is a plan of the blank from which this manifold is folded.

Referring to Fig. 1, my improved container comprises two rectangular box-like sections 1 and 2 which are preferably, but not necessarily, substantially equal in size. These two sections are brought together along one edge 3 and joined by a hinge which is not shown on the drawings. On the other three sides, the two sections are joined by a bellows 5. The sides may be constructed of cardboard or other suitable relatively rigid material and the bellows may be made of paper with or without reinforcements of cloth or other material, as will be described in detail hereinbelow.

One of the side sections is provided with a discharge port 7 through which air is drawn in and air and dust are discharged by action of the bellows. This port may be of any size or shape and located in any desired part of the end of the carton. In the same side or section of the container, or alternatively, in the other section, as illustrated in the present instance, a filling hole 8 is provided. This hole may also be of any

desired size and shape and in any desired position, either in an end of the container or on one of its sides.

As a matter of convenience and economy in manufacture, it is sometimes preferable to have the filling hole of the same size and in the same relative location as the discharge port, but in the other side section of the container, as shown in the present instance. When this arrangement is employed, both of the side sections are substantially identical.

When the container is assembled as shown in Fig. 1, it is ready for filling and shipment or sale. The bellows may be closed, bringing the two sections of the container into parallel relation, as shown in Fig. 2. They are retained in this position by means of a strip or seal of adhesive material 10 of any desired width extending part or all of the way around the container. In the drawings, the strip 10 is equal in width to the thickness of the closed container, to which it is attached on three sides.

A rip cord 12 is preferably laid around the dividing line between the two sections prior to application of the seal, with one end of the cord extending beyond the seal, as shown in the present instance. Alternatively, the rip cord may be fastened to the seal or wrapping before the latter is applied to the container, in which case the rip cord and seal are simultaneously applied in a single operation. The rip cord may extend completely around the box or only part way around as, for instance, along one side and across the end opposite the hinge.

Fig. 2 also shows an alternative position for the filling hole 8, in the same side section 1 of the container as the discharge port 7. The filling hole may, of course, be at point 13, indicated by dotted lines in this figure and corresponding to the position shown in Fig. 1.

A form of blank from which the bellows are conveniently folded is illustrated in Fig. 3. This blank may be cut from fairly strong paper or any other desired material, and it will be observed that its shape is such that blanks can readily be stamped out of any sort of sheet material with very little waste. After the blank is prepared, several alternative methods of procedure are available for completing and applying the bellows.

In this improved type of bellows, only one fold or folding line is necessary before the application of the bellows to the package. The required line is the center line 15, extending the whole length of the blank. This may be applied by means of a creasing device included in the die which stamps out the blanks, or the blank may be cut out and then folded in the position shown in Fig. 4.

The blank, as shown in Fig. 3, includes two end tabs 17, which may, in some instances, be omitted or abbreviated. When such end tabs are employed, they are folded down across the hinged end of the completed package, where they reinforce or, in some instances, may replace the other hinges. The blank also includes an end section 18 and two side sections 19 and 20.

A reinforcing strip 21 of cloth or other suitable material is preferably applied along the center line of the bellows blank before folding and applying it to the container. This reinforcing strip may be of adhesive tape, or one whole surface of the blank may be coated with glue or the like before applying it to the container, in which case it is not necessary to have adhesive material on the reinforcing tape.

Fig. 5 illustrates the method in which the bellows is applied to the container. The two side sections 19 and 20 are folded at right angles to the end section 18, with the reinforcing strip 21 on the inside. The blank has preferably been previously coated with glue or other suitable adhesive material on the inner side, either completely or in part. The two side sections 1 and 2 of the container, which have previously been hinged together, are then inserted within the bellows in a somewhat open position, as shown in Fig. 5, and the end tabs 17, when they are included, are folded down over the hinged end.

A fast or quick-drying glue is preferably employed for holding the bellows to the container sides. When the entire inner surface of the bellows is coated, the glue serves to reinforce and stiffen those sections of the bellows which are not in contact with the sides of the container. Stiffeners of cardboard or the like may also be employed if desired, as described in my copending application. When the glue sets sufficiently, the sides 19 and 20 of the bellows are pushed in along the center line, giving the bellows the form shown in Fig. 6. Fig. 1 also shows the bellows at this stage.

A non-dumping manifold is an essential part of my improved dispensing container. One of the side sections 1 of the container with an improved type of manifold 25 in place is shown in Fig. 7. The function of the manifold is to prevent dumping or direct discharge through the port 7 of the insecticides or other material with which the carton is filled.

The manifold 25 illustrated in this drawing consists of a rectangular outer casing of substantially the same length and depth as the side section of the container with which it is to be employed, and at least as wide as the corresponding dimension of the discharge port. This casing is provided with perforations 27 on one or more sides. The perforations may be of any desired shape and in any desired arrangement.

The interior of the casing is divided into

two parallel passages of substantially equal size by means of a middle lamella 29. This lamella extends from the end of the manifold adjacent to the discharge port 7 to a point near the other end of the manifold. A passage is thus provided for dust and air through the perforations 27 and around the lamella 29 to the discharge port.

The area of the section omitted from the end of the lamella next to the end of the container opposite from the discharge port, and also the total cross-sectional area of the perforations 27, should not be less than the area of the discharge port 7, and in some instances may be considerably greater.

By means of this manifold 25, the dumping of the pulverulent material with which the container is filled is prevented in any position in which the container may be operated as a dust dispenser. In the horizontal position with the discharge port in the upper left-hand corner, the bulk of the dusting powder is not in contact with the manifold and therefore no dumping takes place.

When the container is pointed downward for dusting, part of the perforations 27 may be covered by the contents, but even if some of the material passes through these perforations it cannot reach the discharge port 7 without passing up around the lamella 29. When dusting upwardly, dust rises from the body of the material within the container, passes through the perforations 27, and then down around the lamella 29 before discharge.

The perforations 27 should be extended far enough back from the end adjacent to the discharge port so that they are not completely covered by the contents of the container even when it is tilted downwardly, and they should be small enough in size to prevent the passage of large lumps of material therethrough. The preferred dimensions of the discharge port, the manifold, and the perforations therein, depend on the size of the container and the nature of the material to be dispensed thereby.

For manufacturing reasons, it is sometimes preferable to have the discharge port 7 removed some little distance from the corner of the box. That also makes the corner stronger and more durable. These results are readily obtained when using a manifold 25, such as the manifold described in connection with Fig. 7, by placing this manifold on its side, as shown in Fig. 8, or by spacing the manifold some little distance from the side wall, as shown in Fig. 9. This latter alternative is not usually preferable, however, as it wastes part of the space within the container and reduces its capacity, and also because positioning the manifold away from the side wall requires an additional manufacturing operation, thereby adding to the cost of the container.

A manifold 25 of the type illustrated in Figs. 7, 8 and 9 is conveniently prepared from a substantially rectangular blank of cardboard or the like, having the form shown in Fig. 10. This blank is divided into seven sections by parallel folding lines. These sections are designated by numbers 30, 29, 31, 32, 33, 34 and 35. Section 29 is the second section from the right in the view shown in Fig. 10, and constitutes the middle lamella of the completed manifold. Sections 30 and 31 are substantially equal in width, as are sections 32 and 34, and sections 33 and 35.

One or more of the sections, such as sections 35 and 34 in the present instance, are provided with perforations 27 for the purpose previously described. To form a manifold from this blank, the adjacent sections are folded at right angles, always in the same direction, as shown in Figs. 11 and 12. Adjoining sections in the completed manifold, such as sections 30 and 33, and/or sections 35 and 31, may be fastened together in any suitable manner as by gluing, stapling, or the like.

When the manifold is inserted in a horizontal position to permit removal of the discharge port from the corner, as shown in Fig. 8, rather than in the vertical position shown in Figs. 7 and 9, the number of perforations exposed is decreased when a manifold of the type illustrated in Figs. 10, 11 and 12 is employed. Since this position for the manifold has certain advantages, as previously stated, it is desirable to overcome the disadvantage of exposing a smaller number of the perforations.

This may be accomplished by employing modified manifolds of the types shown in Figs. 13 and 15, which are folded from blanks having the form illustrated in Figs. 14 and 16. These manifolds are similar to the manifold 25 previously described, except that the manifold casing has an inclined face 38 in which the perforations 27 are made.

In the manifold 39 illustrated in Fig. 13, the inclined face 38 takes the place of the face 34 and part of the face 35 of the manifold 25 previously described. Because of its slope, more area is exposed to the interior of the container when the manifold is inserted in the horizontal position illustrated in Fig. 8 than when the manifold 25 is so inserted, and consequently there may be more exposed perforations 27 per unit of length of the manifold. This manifold 39 also takes up less space than the rectangular manifold 25. It is folded from a substantially rectangular blank illustrated in Fig. 14 in a manner similar to that previously described for folding the manifold 25, except that the angles between adjacent sections are not all right angles.

In the manifold 40 illustrated in Fig. 15,

the face 38 is inclined in the opposite direction from the face 38 of manifold 39, and takes the place of part of the side 35 of manifold 25. This type of manifold takes up somewhat more room than a manifold of similar capacity of either of the other types, but has the advantage that the inclined face containing the perforations 27 is more directly exposed to the contents of the container than in manifold 39. Furthermore, this face may be made of any desired size by widening section 34 of the manifold.

The blank for this manifold 40, illustrated in Fig. 16, is substantially rectangular and consists of eight sections instead of the seven in the blanks for the other manifolds. The method of folding is similar to that previously described.

I have found that the employment of a manifold of either type 39 or 40 is a satisfactory solution to the problem of removing the discharge port 7 out of the corner of the container without materially sacrificing capacity or efficiency and without increasing the cost of manufacture. For this purpose, these manifolds are inserted in the horizontal position shown in Fig. 8, but it is to be understood that they may also be used in the vertical position as shown in Figs. 7 and 9.

It will now be readily understood how my improved dust-dispensing container is assembled and employed. Two side sections 1 and 2, preferably rectangular and substantially equal in size, are prepared from cardboard or other suitably rigid material. A discharge port 7 of suitable size is punched or otherwise made in section 1, and a filling hole 8 is made in one of the sections as previously described. A non-dumping manifold of the type 25, 39 or 40 is inserted in section 1 to cover the discharge port, as shown in Figs. 7, 8 or 9.

Before or after inserting the manifold, the two sections 1 and 2 are laid end to end and joined with a hinge of heavy paper, cloth, or other suitable material along the edges 3; the sections are then partially closed by rotation around the hinged edge, bringing them into the position shown in Fig. 5. A bellows blank of the shape illustrated in Fig. 3, with or without previous creasing, reinforcing, and/or coating with glue, is fastened onto the hinged side sections with glue or otherwise, and the end tabs 17 are folded down over the hinged end of the container.

The container and bellows are now in the fully extended position, shown in Fig. 5. When the glue has set sufficiently, the sides 19 and 20 and the end 18 of the bellows are pushed in along the center line 15, causing the bellows to fold and the container to close into the position shown in Figs. 1 and 6.

This type of bellows is simple and strong, readily made and applied, does not require previous folding, and when in place has a single inwardly extending fold on each side, giving it maximum strength and durablility. It is to be noted that this bellows differs from the bellows described in my copending application previously mentioned in that the single side folds extend the full length of the container. By this means, points of weakness where folding lines intersect are removed from the sides of the bellows, which, in most instances, must support the weight of the contents when the container is employed for dusting.

Before filling, the two sides of the container are brought together in the position shown in Fig. 2. They may then be sealed in this position by means of an adhesive strip or wrapper with or without a rip cord, as shown and previously described, or the container may be filled before sealing. The discharge port 7 is closed with frangible or removable closing means, such as a cork or stopper, a movable metal disk, or a perforated seal of paper, cardboard or the like.

After the container is filled with insecticide, sulphur, dusting powder, or other pulverulent material, the filling hole 8 is closed with a cork, seal, metal disk, or the like, which is selected with regard to whether or not the container is to be refillable. The filled container may then be wrapped in a decorated wrapper bearing instructions or the like, which wrapper serves as a seal to hold the container closed and the rip cord (if used) in place, or the two sides may have been previously wrapped separately or otherwise decorated.

In the latter case, an adhesive strip 10 may be applied as shown in Fig. 2. This strip may also extend across the hinged end of the container to cover the discharge port and filling hole, or to hold the closures for these ports in place. The rip cord may encircle the discharge port so that the port is opened when the bellows are freed. The adhesive strip and the rip cord may extend along one or more sides of the container, and an additional outside wrapper may be applied if desired. A compact, rectangular container is thus produced, ready for shipment or sale.

When the container is to be used, the rip cord is pulled or the bellows are otherwise released, and the discharge port is opened. The two side sections are held in the user's two hands, with the discharge port away from the user and in the upper left-hand corner. By alternately opening and closing the bellows, a cloud of dust is expelled through the discharge port in any desired direction, and no dumping or waste occurs because of the efficient manifold.

The size of my container may be varied in accordance with the nature of the material to be sold or dispensed therein. Convenient

external dimensions for a dispensing container for sulphur and other insecticides and fungicides are 8⅝″ long by 4″ wide by 2¾″ deep. The discharge port for this container may be ½″ to ⅝″ in diameter, and a corresponding manifold of the type 25 is ⅝″ wide, 1¼″ deep, and 8½″ long. The maximum distance between the two side sections of the container, with the bellows fully extended, is 3 to 3½ inches. Any of these dimensions may be varied as desired, however.

It will be obvious to those skilled in the art that certain modifications can be made in the several parts of my dispensing container and the several steps in its manufacture without departing from the spirit of my invention, and it is my intention to cover in the claims such modifications as are included within the scope thereof.

I claim as my invention:

1. In a dust-dispensing container comprising relatively rigid rectangular side sections forming the body of the container, a port in one of the side sections, and a bellows connecting the side sections, a non-dumping manifold establishing indirect communication between the port and the interior of the container, said manifold comprising a casing within which is mounted a lamella, the lamella being flat and shorter than the casing.

2. A non-dumping manifold for dust-dispensing containers, comprising a casing within which is mounted a middle lamella, the lamella being flat, shorter than the casing, and parallel with a side of the casing throughout its length.

3. A non-dumping manifold for dust-dispensing containers, comprising a casing open at the ends and a lamella parallel with at least one side of the casing and shorter than the casing, whereby the casing is divided into two parallel passages connected by a passage around one end of the lamella.

4. A non-dumping manifold for dust-dispensing containers comprising a casing open at the ends, and a middle lamella dividing the casing into two passages of substantially equal cross-sectional area, the lamella being flat, shorter than the casing, and parallel with at least one side of the casing, and perforations being provided through at least one wall of the casing into the passage on one side of the lamella.

5. A non-dumping manifold for dust-dispensing containers comprising a rectangular casing and a middle lamella dividing the casing into parallel passages of similar cross-sectional area, the lamella being flat and shorter than the casing, the perforations being provided through at least one wall of a passage on one side of the lamella.

6. A non-dumping manifold for dust-dispensing containers comprising a casing divided into two parallel passages by a middle lamella, one passage being rectangular and the other passage having one sloping side which is not parallel or perpendicular to the remaining sides, the sloping side being perforated.

In testimony whereof, I have hereunto subscribed my name this 29th day of October 1931.

PAUL D. PETERSON.