

J. L. LEVY.
CLOSURE FOR BOXES, CANS, AND THE LIKE.
APPLICATION FILED MAR. 25, 1908.

1,002,531.

Patented Sept. 5, 1911.

3 SHEETS-SHEET 1.

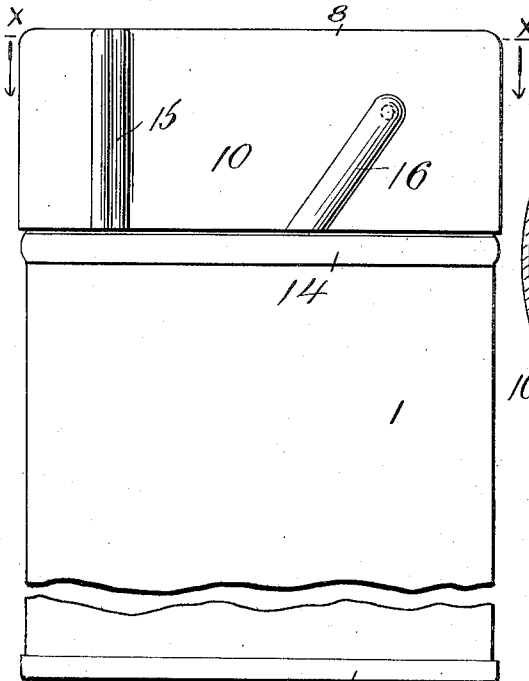


Fig. 1.

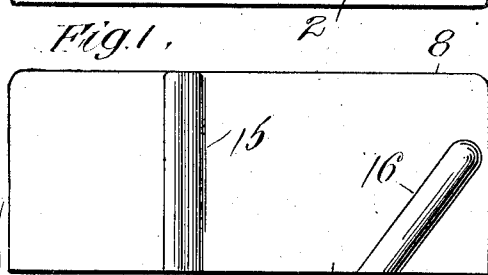


Fig. 2.

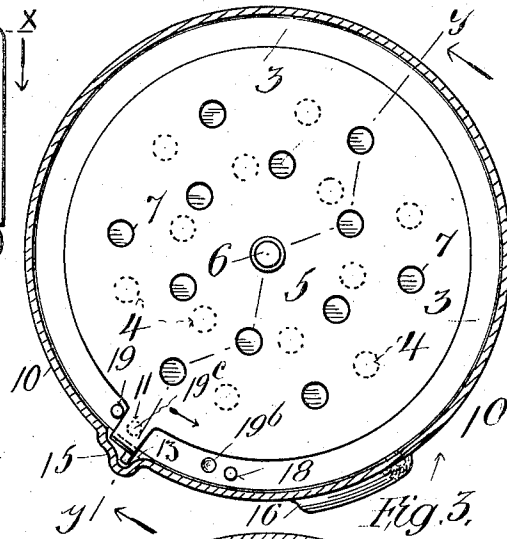
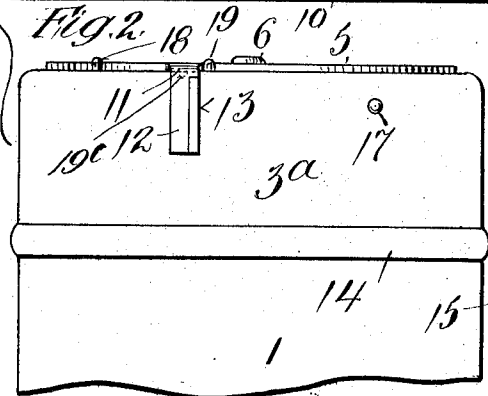


Fig. 3.

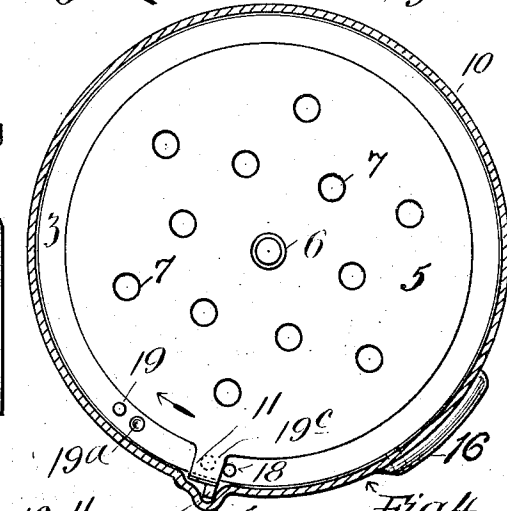


Fig. 4.

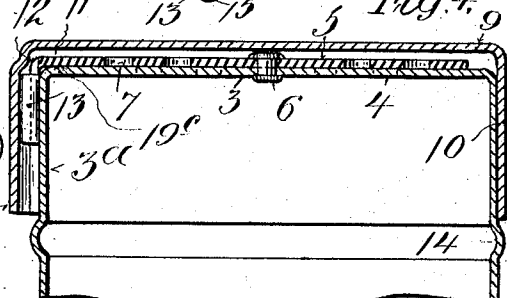


Fig. 5.

Witnesses:
Benjamin
L. D. Linn

Inventor
J. L. Levy

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3 SHEETS—SHEET 2.

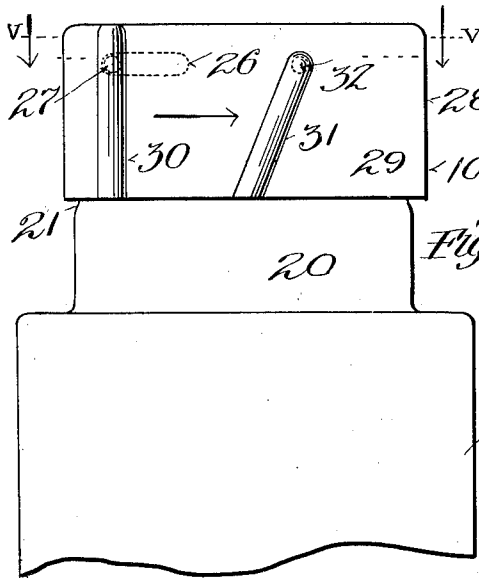


Fig. 6.

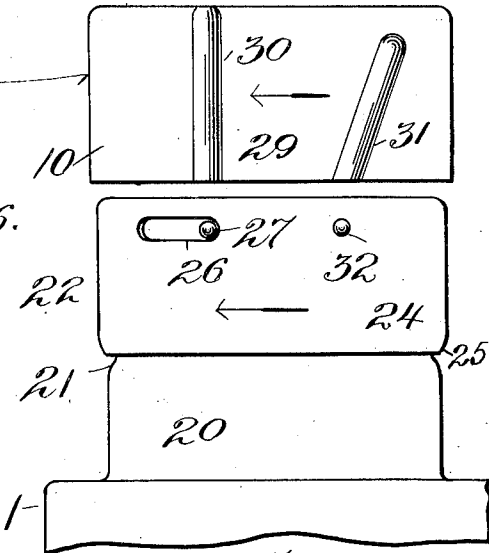


Fig. 7.

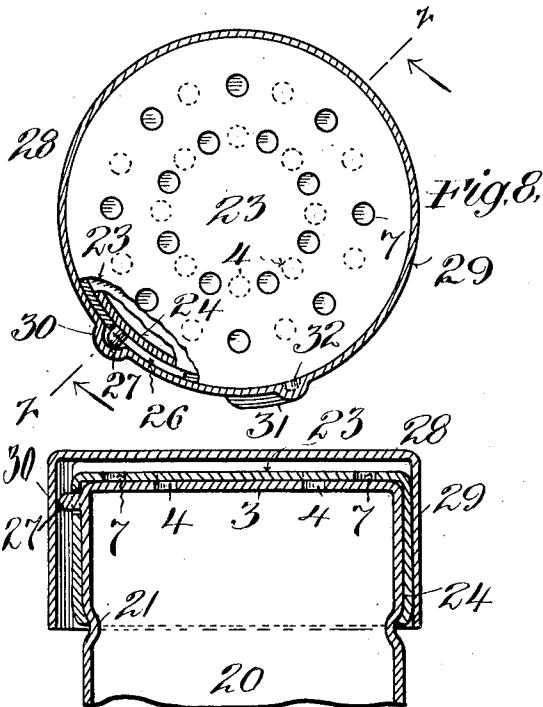


Fig. 8.

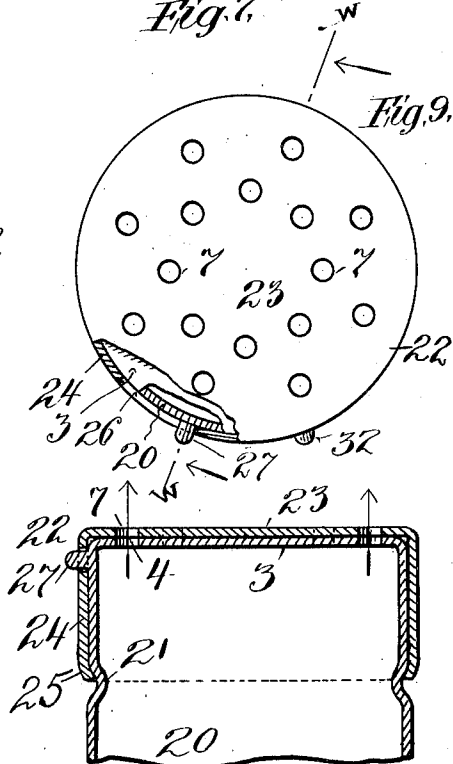


Fig. 9.

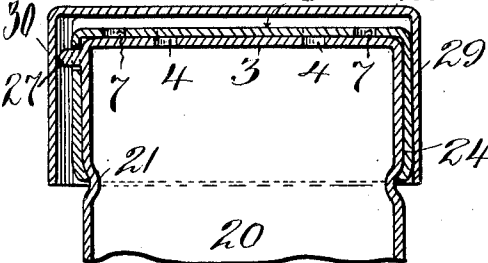


Fig. 10.

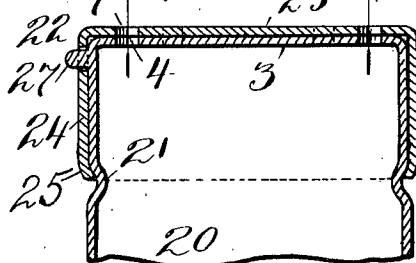


Fig. 11.

Witnesses:
C. W. Benjamin
J. D. Cunniff

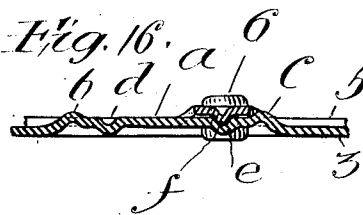
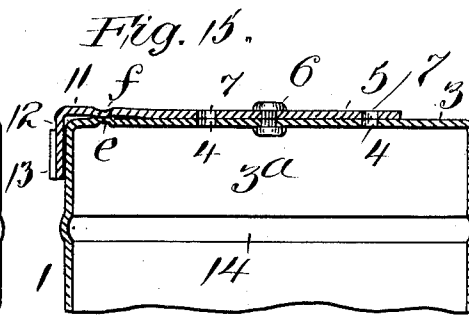
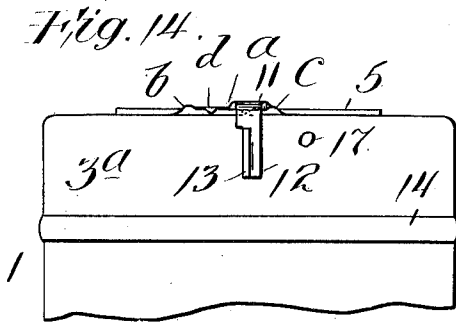
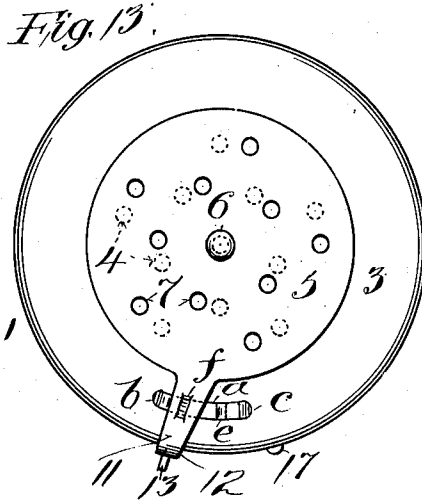
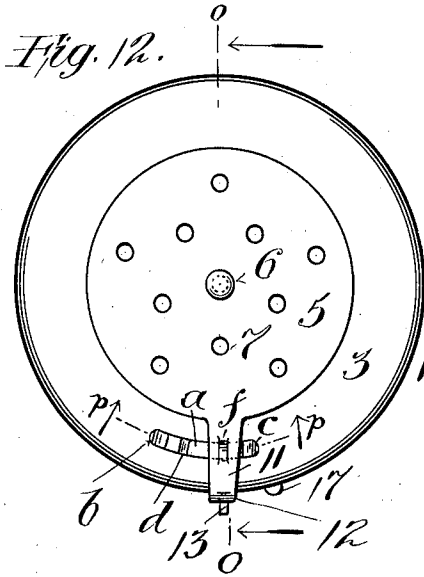
Inventor
J. L. Levy

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3 SHEETS—SHEET 3.



Witnesses:
Wm. B. Benjamin
Geo. F. Curran

Inventor
Joseph L. Levy

UNITED STATES PATENT OFFICE.

JOSEPH L. LEVY, OF NEW YORK, N. Y.

CLOSURE FOR BOXES, CANS, AND THE LIKE.

1,002,531.

Specification of Letters Patent.

Patented Sept. 5, 1911.

Application filed March 25, 1908. Serial No. 423,177.

To all whom it may concern:

Be it known that I, JOSEPH L. LEVY, a citizen of the United States, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Closures for Boxes, Cans, and the Like, of which the following is a specification.

My invention has relation to devices or closures to be used upon cans, boxes and other receptacles for the purpose of at one time permitting the contents of the box to be emptied therefrom, and at another time to close the opening in the box so as to prevent such emptying.

My invention is more particularly related to boxes, cans, or like receptacles intended for holding powder or any other granulated or pulverulent material, and which permit the dusting or sprinkling of the powder from the box.

Powder boxes now most generally used are provided with perforated tops or crowns upon which is superimposed a rotative and perforated disk, the apertures in both crown and disk being adapted to be alined and disalined for the purpose of discharging and preventing the discharge of the contents. Over the disk and crown is placed a detachable cap or cover. Another form of closure consists in providing the box with a contracted and upwardly extending and perforated head, over which a perforated cap is adapted to move, the cap being held on the head in any desirable manner, and means are provided for limiting the movement of the cap, so as to aline and disaline the aperture for a like purpose. Both of these forms of closures are open to many objections. In the first form, in order to produce a sufficiently tight closure between the opposite faces of the box crown and the disk, it has to be so secured as to move with considerable friction. It is desirable that in the process of transporting the boxes for sale, and while in use, that the apertures be disalined. This is done by moving the disk with the fingers or a tool. Considerable difficulty is found in doing this, and unless a tool of some kind is employed, the fingers of the operator are made to suffer. If the box is not closed then the powder is spilled out from the box into the cap, and on re-

moving the cap, the powder is not only lost, but may be spilled over the person of the user and elsewhere. With regard to the second form of the above described closures. It is usually made so small in order to save expense that the area of the discharge opening is unduly contracted, which detracts from the facility of pouring out the contents; and in order to prevent the inadvertent discharge of the contents in use or in transportation, the box must invariably be closed by hand.

The object of my invention therefore is to provide a closure, economical in construction, which will not necessarily involve the addition of any more parts or elements than are contained in the devices heretofore mentioned, and which will render the opening or closing of the box compulsory and automatic with the emplacement or removal of the cap or cover of the box.

Several embodiments of my invention are shown in the drawings forming part hereof, to which reference is made, and in which similar reference characters indicate like parts.

Figure 1 is a side elevation of a box embodying my improvements, being partly broken away to save space in illustrating. Fig. 2 is a side elevation of a box embodying my improvements, with the cap or cover removed. Figs. 3 and 4 are plan views of the box, partly in section on the line $x-x$ Fig. 1, looking in the direction of the arrow, Fig. 3 showing the box in the "closed" position, and Fig. 4 showing it in the "open" position. Fig. 5 is a sectional elevation of the upper portion or head of the box with the parts in the same position as shown in Figs. 1 and 3, the section being taken on the line $y-y$ Fig. 3, looking in the direction of the arrow. Fig. 5^a is a plan view of a portion of the disk-arm inverted. In Figs. 6 to 11 inclusive, is shown a modification of the structure shown in Figs. 1 to 5^a. Fig. 6 is a side elevation of the upper part of a modified form of box with the cap on, and Fig. 7 is a like view with the cap removed. Fig. 8 is a plan and section taken on the line $v-v$ Fig. 6, the disk and crown of the box being partly broken away for illustrative purposes. Fig. 9 is a plan view of the top of the box with the cap removed, the disk and crown

of the box being partly broken away for the purposes of illustration. Fig. 10 is a sectional elevation of the upper portion of the box through the disk, crown and cap, on the line $z-z$, Fig. 8, and Fig. 11 is a like view of the parts shown in Fig. 9, the sections being in line $w-w$, Fig. 9. Fig. 12 shows a plan view of the box provided with modified means for positioning the disk-shifting arm, the perforations in the box and disk being alined. Fig. 13 is a like view, showing the apertures disalined. Fig. 14 is a side elevation of the upper portion of the box. Fig. 15 is a sectional elevation of the upper portion of the box on the line $o-o$, Fig. 12, looking in the direction of the arrows. Fig. 16 is an enlarged sectional view substantially on the line $p-p$ Fig. 12, looking in the direction of the arrows.

In all the views the box is shown as much larger than the usual size of powder boxes.

The preferred form of my invention is shown in Figs. 1 to 5 inclusive, which will be first described. At 1 is the box or receptacle, which may be cylindrical or of other form. It may be made in any desired way and of any desired material. It is provided with a closed bottom 2 and a crown-piece or head 3, provided with a series of perforations 4 (shown in dotted lines in Fig. 3) which permit the contents, granular or pulverulent, to be discharged. At 5 is a rotative disk held on and over the crown-piece by the headed pin 6, which disk is provided with perforations 7 adapted to be alined with the perforations 4 in the crown of the box. The disk is formed so as to fit over the perforated portion of the crown of the box snugly. The rotation of the disk on the perforated crown of the box causes the apertures in both to be at one time alined, thus "opening" the box as in Fig. 4, and when disalined, as shown in Fig. 3, "closing" the box. In order to make the operation of opening and closing the box, as thus described, automatic and insuring the proper positioning of the perforated disk at the various stages of its rotation or oscillation, or in other words, providing means whereby the box may be "opened" or "closed" I have provided a cover or cap 8, comprising the crown 9 and an annular pendant flange 10, with means for connecting it with the perforated disk, and further means for so determining and confining the movement of the disk that its proper position at the termination of both the opening and closing movement can be maintained permanently, thereby insuring the alinement of the apertures in the box crown on the removal of the cap and their disalinement upon the emplacement of the cap. At 11 is an arm extending outwardly, preferably radially, from the periphery of the disk, provided with a downwardly extending portion or projection

12, which projection is strengthened and reinforced by upsetting a portion of it forming the lug 13. The flange 10 of the cap is adapted to be placed over the cylindrical upper portion of the box, its downward movement being arrested by the annular rim or shoulder 14 formed in the box as is the usual construction. At 15 is an upright or perpendicular groove formed in the annular flange 10 of the cap. The groove is adapted, as shown in Figs. 3, 4 and 5, to embrace the downwardly projecting portion 12, 13 of the disk arm 11. An inclined groove 16 is formed in the annular flange 10 of the cap. The two grooves may be located closely adjacent to each other or any suitable distance apart. At 17 is an outwardly extending nib or stud formed in the annular side or body of the box adjacent the crown piece thereof. It will be apparent that the location of the two grooves with respect to each other and with regard to the nib or lug and the projection on the disk-arm compels the alinement of these instrumentalities at the time of the emplacement of the box cap over the box, as shown in Fig. 1.

The parts being in the position shown in Fig. 2, the apertures in the crown-piece of the box and the disk are alined as shown in Fig. 4. On placing the cap on the box the arm 12-13, the groove 15, the nib 17 and groove 16 will be united as shown in Fig. 4. During the downward movement of the cap the inclination of the groove 16 will cause, by contact with the nib 17, the cap to slightly rotate about the upper annular portion of the box, carrying with it the projection 12-13 of the disk arm, and rotating the disk so that the perforations in the box crown and disk will be disalined as shown in Fig. 3. The reverse rotation of the disk 5 is secured by removing the cap, which is done by slightly rotating it on the box in the reverse direction under the guidance of the nib 17 and groove 16, thereby rotating the disk, alining the apertures, and opening the box.

The construction thus far described effects the automatic alinement and disalinement of the companion apertures upon the removal or emplacement of the box cap, thereby opening and closing the box.

In order to insure the location or positioning of the disk-arm 11-12 so that it will be in proper position to enter the groove 15 when the companion groove 16 is alined with the nib or lug 17, thereby compelling the emplacement of the cap on the box at one position only, and further to provide means for limiting the movement of the disk arm and hence the disk, and to provide further means for preventing accidental displacement or rotation of the said arm, I provide the following instrumentalities: In the top surface of the box or its crown

piece 3 I provide by punching or otherwise two nibs or stops 18, 19. The crown piece of the box is also provided with two depressions 19^a, 19^b, formed by punching down the material; and the under side of the arm 11 is provided with a nib or projection 19^c. The projection 19^c alternately engages with the depressions 19^a, 19^b. The arm 11 lies and works between the two nibs 18, 19, it preferably bearing with some friction on the box crown piece. With the box in the open position, that is with the apertures in the crown piece and disk alining, as shown in Fig. 4, the arm is caused to bear against the nib 18, and on the reverse rotation the disk arm will come to a rest against the nib 19, the engagement of the nib 19^c alternately with the depressions 19^a and 19^b preventing inadvertent rotation of the disk. In this manner the disk and arm are held in such position that the proper positioning of the cap with relation to the box is attained and the throw of the disk to open the box is accomplished and preserved, so that at all times with the cap removed the box remains "open" and the contents may be sprinkled until it becomes necessary to close the box again. With the emplacement of the cap on the box the disk is rotated, as before described, bringing the disk arm in contact with the nib 19, thereby limiting the amplitude of movement to such as is necessary to bring the parts together for the removal of the cover.

Instead of using the means heretofore described for limiting the movement of the disk and preventing its inadvertent rotation, that shown in Figs. 12 to 16 inclusive may be employed. The embodiment of my invention in this regard consists in providing an upwardly extending rib or raised surface *a* in the crown of the box, the ends of which are provided with upwardly extending lugs or stops *b*, *c*, and between these lugs and adjacent thereto are depressions *d*, *e*. The arm 11 is provided with a downwardly extending nib or dog *f* adapted to alternately engage the depressions *d*, *e*, in the rib *a*, and to have a frictional contact with the surface of the rib intermediate the depressions, the sides of the arm being likewise adapted to bear against the lugs in order to prevent the arm from moving out of its predetermined position in the event that the disk becomes loose on the crown of the box. It will be clear from the foregoing that during either the opening or closing movements of the cap, the disk will be brought to a stop at its predetermined position so that it will be at all times properly positioned. Either means for limiting the movement of the disk, and preventing its inadvertent rotation may be used in connection with the modification in Figs. 6 to 11 inclusive; and if for structural reasons neither

specific form can be advantageously employed, equivalent means can readily be applied.

In Figs. 6 to 9 inclusive my invention is shown as applied to another form of box. From the body 1 extends an annular neck 20 having an annular depression 21 formed within its vertical limits, with a crown piece 3 having apertures formed therein. Over the crown piece and the upper part of the neck 20 is fitted a disk-cap 22 comprising the disk head 23, having apertures 7 formed therein, and a pendant annular flange 24, the rim 25 of the flange being spun into the groove 21 to hold the disk cap on and cause the disk to bear on the crown piece 3. The parts are fitted with sufficient looseness to allow the disk cap to freely rotate about the neck 20, yet with sufficient tightness to make a working joint between the apertured disk and crown piece 3. As will be apparent the disk cap is intended to be rotated upon the crown piece to aline and disaline the apertures 4 and 7; and in order to limit the amplitude of rotation of the disk cap its pendant flange is provided with a slot 26, and the neck 20, with a stud 27, which projects into said slot. In order to rotate the disk cap 22 I provide the box with the cap 28, constructed in all substantial respects the same as the cap 8, the pendant annular flange 29 of which is provided with the upright positioning groove 30 and inclined operating groove 31; and the annular and pendant flange of the disk cap 22 is provided with the stud 32. The stud 27 is adapted to play in the groove 30 and the stud 32 in the groove 31 in the manner described in connection with the closure shown in Figs. 1 to 5, the operation being the same except that the slot 26 and pin 27 limit the rotation of the disk cap as do the nibs 18 and 19 of the preferred construction. As before stated means may be applied to this modification for limiting the rotation of the disk-cap 22 and preventing its inadvertent rotation.

I claim:—

1. In an article of the class described, the combination of a box having a discharge opening, a removable cap or cover for the box, and means rotatable by means of the cap or cover for opening and closing said aperture by the removal and emplacement of said cap or cover.

2. In an article of the class described, the combination of a box having a discharge opening, a removable cap or cover for the box, means rotatable by means of the cap or cover for opening and closing said aperture by the removal and emplacement of said cover, and further means for positioning said first mentioned means.

3. In an article of the class described, the combination of a box having a discharge

opening, a removable cap or cover for the box, means rotatable by means of the cap or cover for opening and closing said aperture by the removal and emplacement of said cover, and further means for restraining the movement of said first mentioned means.

4. In an article of the class described, the combination of a box having a perforated top, a movable and perforated disk on said top, a cap or cover for the box, and a connection between the cap and disk for shifting the latter and closing the perforations and interengaging means on the top and disk for holding the parts in their adjusted position.

5. In an article of the class described, the combination of a box having a perforated top, a movable and perforated disk on said top, a cap or cover for the box, connection between the cap and disk for shifting the latter and opening and closing the perforations, and interengaging means on said top and disk for positioning said disk with relation to said connections.

6. In an article of the class described, the combination of a box having a perforated top and a cap or cover for the same, with the following instrumentalities: means rotatable by engagement with the cap or cover for opening and closing the perforations in said top by the emplacement or removal of the cap or cover thereon, and interengaging means on the top and disk for limiting the movement of said first mentioned means.

7. The combination, in an article of the class described, of a box having a perforated top, a perforated disk rotatable upon said top, an arm extending from said disk, a cap or cover fitting over the said top and disk, and connections between said cap and disk whereby upon the emplacement of the cap on the box the disk will be rotated to disalign its apertures with those in the top of the box, and upon the removal of the cap said apertures will be alined and interengaging means on said top and disk for holding the parts in position.

8. The combination in an article of the class described, of the box having a perforated top, an apertured disk rotatable upon said top, a cover or cap for said box adapted to lie over the disk and top of the box, connections between the cap and said disk for rotating the latter, and means for confining the rotation of said disk to predetermined points and interengaging means on said top and disk for holding the parts in position.

9. In an article of the class described, the combination with a box having a perforated head or top, a perforated disk pivoted upon said head, an arm extending from said disk, a cap or cover for the box, and means on the cap and box for engagement with said arm,

whereby upon the emplacement of the cap on the box the disk will be rotated in one direction, and in the opposite direction upon the removal of the cap and interengaging means on said top and arm for holding the parts in their adjusted position.

10. The combination with a box having a perforated top, a perforated disk rotatable on said top, an arm extending from said disk, a lug on the box, a cap having a depending flange, a perpendicular groove in the flange for engagement with the disk-arm, cooperating interengaging friction means on the disk and top and an inclined groove in the flange for engagement with the box lug.

11. The combination with a box having a perforated top, a perforated disk rotatable on said top, an arm extending from the disk, an extension from said arm movable about the side of the box top, a lug on the box, a cap having a pendant flange, an upright groove in said flange to engage the said extension, cooperating interengaging friction means on the disk and top and an inclined groove on said flange to engage the box lug.

12. The combination with a box having a perforated top, a perforated disk rotatable on said top, an arm extending from said disk, a lug on the box, a cap having a depending flange, upright and inclined grooves in the flange for respectively engaging the arm and box-lug, cooperating interengaging friction means on the disk and top and stops on the box-head for limiting the movement of the disk.

13. The combination with a box having a perforated top, a disk rotatable on said top, an arm extending from said disk, a cap having a pendant flange, a lug on the box, grooves formed in said flange, depressions in the box top, and a projection on the disk-arm for engagement with said depressions.

14. The combination, in an article of the class described, of a box having a perforated top having depressions, a perforated disk rotatable on said top, an arm extending laterally from said disk and having a depending projection to engage the depressions in the top, a depending lug extending from said arm, a cap or cover adapted to be placed on the box over the top and disk and rotated on the box, grooves in the cap adapted to engage the arm and lug, one of said grooves being inclined to the perpendicular.

15. The combination in an article of the class described with a box having a perforated top, a disk rotatable on said top, a cap or cover for the box, means for engaging the cap and disk, and stops on the box for limiting the rotation of said disk in either direction.

16. In an article of the class described, the combination of a box, a top with perforations, a disk mounted on the top, a re-

movable cap and means on said cap and disk
embodying a lateral arm with depending
portion and angular reinforce for causing
said disk to uncover said perforations when
5 the cap is removed and for causing said disk
to cover said perforations when the cap is
replaced.

Signed in the city, county and State of
New York, the twenty-fourth day of March,
1908.

JOSEPH L. LEVY.

Witnesses:

GUSTAVE I. ARONOW,
B. V. MOHAN.