Aug. 15, 1933. J. V. PIDGEON 1,922,174

SIFTING AND MATERIAL DIRECTING DEVICE FOR CONTAINERS

Filed Nov. 4, 1931 2 Sheets-Sheet 1

Fig. 1

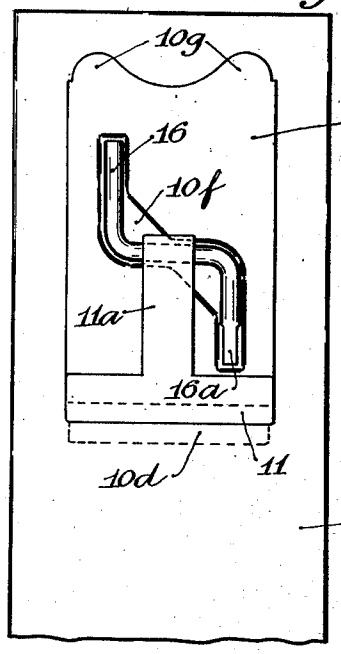


Fig. 2

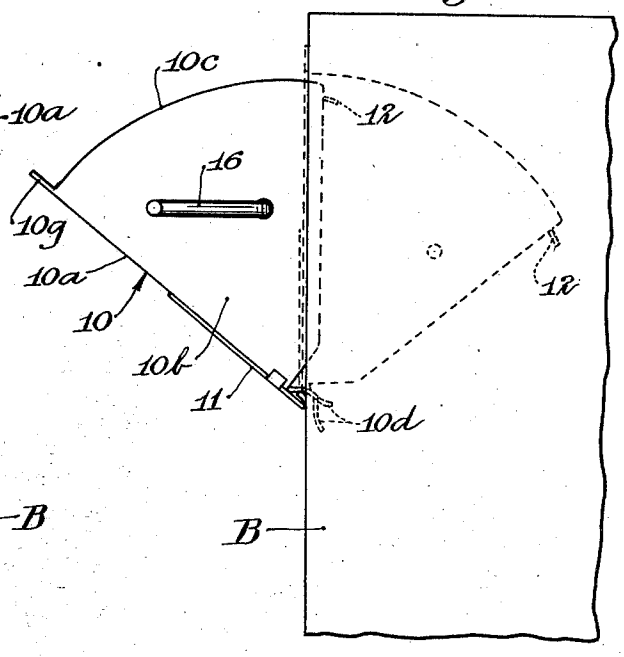
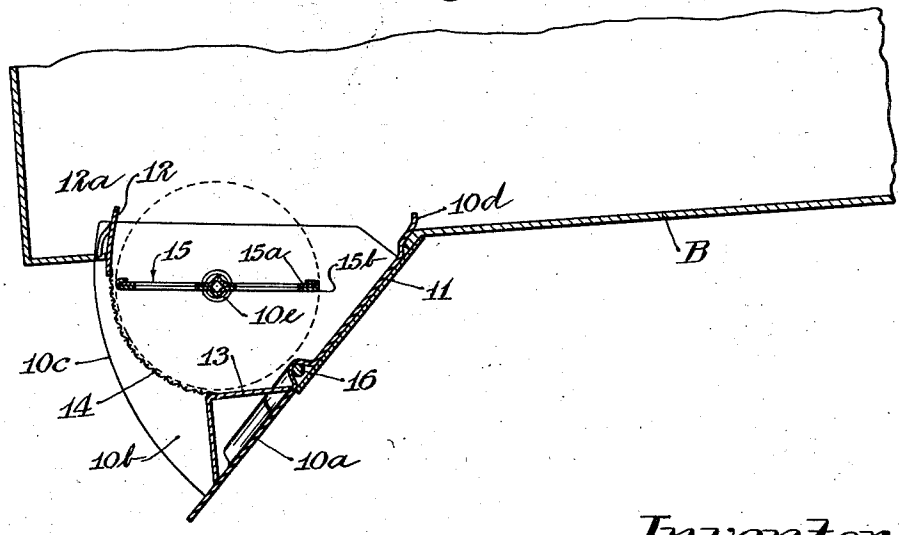


Fig. 3



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Fig. 4

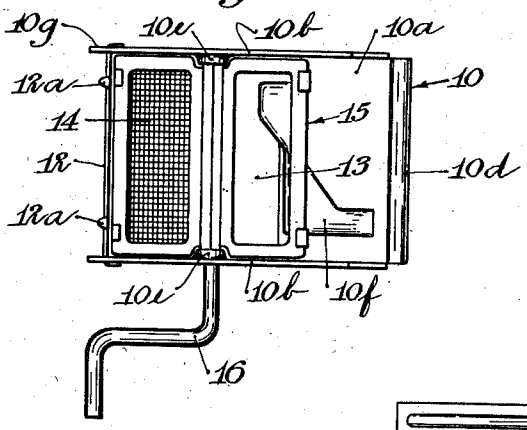


Fig. 5

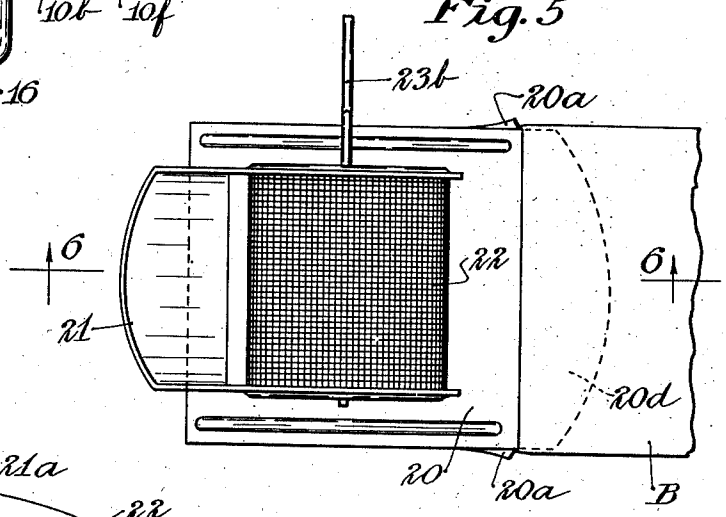


Fig. 6

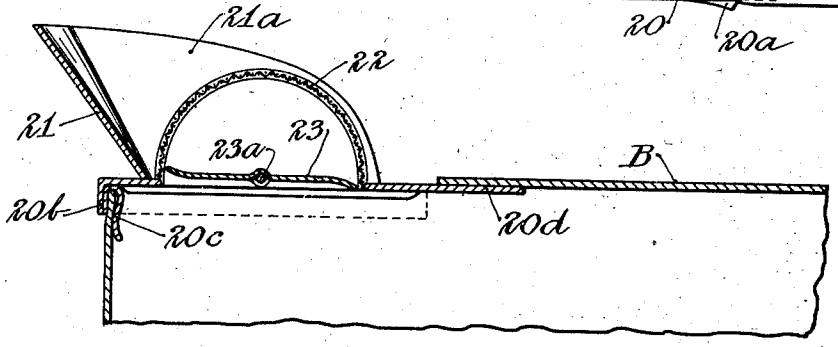
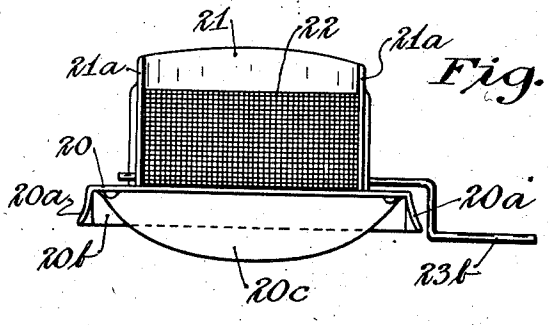


Fig. 7



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UNITED STATES PATENT OFFICE

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SIFTING AND MATERIAL DIRECTING DEVICE FOR CONTAINERS

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Application November 4, 1931. Serial No. 572,943

11 Claims. (Cl. 209—283)

My invention relates to sifting and material directing devices for containers which hold powdered or pulverized material. The invention while well adapted for sifting and directionally dispensing most materials of the classes above specified and while applicable with most conventional types of containers such as boxes, packages, cans, tins, etc., has special application and utility for the household type cake flour box or package usually constructed of cardboard or other fibrous material.

It is an object of my invention to provide a simple, inexpensive and highly efficient device which may be associated with containers of the classes described and which will efficiently sift the powdered or pulverized material and will in addition dispense the sifted material in a desired direction to prevent scattering and waste of the same.

In its preferred form my invention comprises a trough-like spout of sector shape which is associated with an apertured portion of the container and which has mounted therein an efficient, preferably rotary sifting mechanism. The spout or trough which forms the housing for the sifting mechanism is preferably hinged or otherwise telescopically connected with the apertured portion of the box or container, normally lying substantially flush with one of the walls or ends and being projectable therefrom for use.

A further object of my invention is to provide a compact device of the class described which may be operatively positioned and attached to a container by merely inserting it in place in the apertured portion, the parts being so constructed and arranged as to interlock without danger of displacement or separation under ordinary usage.

Another object is to provide a sifting and material directing device of the class described wherein the outer side or front of the spout forms an efficient closure for the container and also detachably and conveniently carries the operating handle for the sifting mechanism.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings, in which like reference characters refer to similar parts throughout the several views, and in which:—

Fig. 1 is a front elevation of a preferred embodiment of my invention applied in closed position to a rectangular package or box for containing powdered material such as flour, the operating handle being conveniently carried by the outer side or bottom of the trough-like spout;

Fig. 2 is a side elevation of the same showing the trough-like spout in open or projected position with the operating handle applied thereto;

Fig. 3 is a section taken longitudinally through the container and my sifting and directing device, said device being in open or operative position with the container tilted for sifting and dispensing material;

Fig. 4 is a plan view of the device detached from the container looking at the interior or open end thereof;

Fig. 5 is a top plan view showing another form of the invention applied to a rectangular package;

Fig. 6 shows a vertical section taken on the line 6—6 of Fig. 5, and

Fig. 7 is a rear elevation of the device shown in Figs. 5 and 6 detached.

Referring to the drawings, the form of my invention illustrated in Figs. 1 to 4 inclusive is associated with a conventional type of cardboard box B containing flour or other pulverized material. Box B is provided in one of its vertical walls and adjacent its upper end with a rectangular discharge aperture which accommodates my sector-shaped spout.

My spout, designated as an entirety by the numeral 10 may be conveniently constructed from a single blank of sheet metal, cardboard or other suitable material and has an outer wall or front 10*a* from which extend perpendicularly a pair of spaced sector-shaped sides 10*b*. The sector-shaped spout is adapted for hinged attachment to the apertured portion of the container, the vertex of the trough-like spout fulcruming on the horizontal edge of the container defining the lower end of the aperture. The curved edges 10*c* of the sector sides are concentric with the line of fulcrum and preferably work in short vertical slots (not shown) formed in the apertured wall of the container communicating with the upper end of the aperture and extending coincident with the longitudinal edges defining the aperture. By means of said slots the trough-like spout is guided for inward or outward swinging movement and a tight joint is formed between the connected parts.

The front 10*a* of the spout is provided with an inwardly offset preferably integrally formed lip 10*d* which cooperates with the lower edge of an inverted T-shaped element 11, preferably constructed of resilient material to form a horizontal clip which straddles the lower edge of the apertured portion of the container, as clearly

shown in Figs. 2 and 3. The upwardly extending arm 11*a* of member 11 lies substantially flush against the exterior of front 10*a* constituting a spring retaining finger, for a purpose hereafter to be fully explained.

Trough-like spout 10 is provided adjacent its open and rear end and spaced slightly inwardly of the curved edges 10*c* with a narrow transverse plate 12 which rigidly connects the sector sides 10*b* and as shown is provided with a pair of forwardly extending strike-ups or lugs 12*a* serving as stops to engage the edge of the apertured wall above the upper end of the aperture to limit the outward movement or projection of the spout when the same is operatively applied to the container.

An angle plate 13, as clearly shown in Fig. 3, is affixed to the inner surface of the front 10*a* traversing said front and connecting the sector sides and an arcuate sieve 14 is suitably affixed to plates 12 and 13 completely traversing the space between the sector sides of the spout and spaced inwardly some distance from the curved edges 10*c*.

Mounted transversely within the trough-like spout 10 and pivoted between the sector sides 10*b* is a rotary agitator 15 of any suitable construction. As shown, agitator 15 is formed from a pair of metal plates 15*a* and 15*b* having symmetrically arranged registering apertures at opposite side of its axis and secured flush together by inturning the outer longitudinal edges of the plate 15*b* upon the corresponding edges of the plate 15*a*. The longitudinal central portions of plates 15*a* and 15*b* are angularly crimped forming a socket of square cross section which extends axially of the agitator and as shown the ends of said socket are journaled in bearing 10*e* formed on the interior faces of sides 10*b*. Said bearings may be conveniently formed by aperturing said sides and drawing the material inwardly. The ends of the longitudinal and axial socket are thus exposed through apertures in the sector sides 10*b* and a suitable operating handle, as shown in the form of a crank 16 may be non-rotatively connected with the agitator at either side of the device, said handle having a squared engagement end 16*a* for connection with the square socket. A suitable groove 10*f* is formed in the front 10*a* of the trough-like spout for receiving the operating handle or crank 16 and the medial portion of this groove is normally covered by the free end of the spring retaining finger 11*a*, said finger detachably holding the crank handle in groove 10*f* disposed substantially flush with the outer surface of the front 10*a*. Groove 10*f* may be provided with widened diagonal portions disposed adjacent its middle to assist in the insertion of the operating handle within its groove or seat.

It will be noted that the axis of agitator 15 is so disposed with reference to the rear end of the spout, and the radius of the agitator is such, that the rotary path of movement of the agitator extends within the container some distance beyond the rear end of the spout, as clearly shown by the dotted lines in Fig. 3.

The upper end of the front wall 10*a* is provided with one or more extensions or finger pieces 10*g* adapted to lap the apertured wall of the container above the aperture when the spout is closed to limit its inward swinging movement and so disposed and formed as to permit the nail of the thumb or finger to be inserted under the extensions to facilitate opening of the spout.

It will be seen that when the spout is closed the discharge aperture of the container is sealed against leakage as well as the entrance of dust and moisture and the spout and sifting mechanism with the exception of the front wall 10*a* are housed within the upper portion of the container or box permitting the container to be packed in close engagement with others of its kind for storage, shipment or display.

In use the spout is quickly opened by means of the finger piece, 10*g*, the sector shaped trough swinging on its vertex at the lower edge of the aperture in the container. The outward swinging movement is limited by engagement of the stop lugs 12*a* with the apertured wall and the operating handle 16 may then be removed from beneath spring retainer 11*a* and connected with the square socket of the agitator. The package or box may then be tipped as shown in Fig. 3 and the material sifted and dispensed by revolving the crank handle. Revolution of the agitator not only sifts the flour or other powdered material through the screen 14 but moreover agitates and loosens the material within the container adjacent the rear and open end of the spout 10. This function materially improves the feeding and introduction of the powdered material into the spout and prevents packing or clogging of the spout. The material is cleanly and efficiently sifted and is then dispensed in a desired direction through the outer end of the trough-shaped spout. It cannot be scattered or deflected laterally because of the sector-shaped sides 10*b*. Spilling, waste and misdirection are thus obviated.

It will be apparent that within the scope of my invention the device may be built into the container by the manufacturer or may be applied as an attachment by the user, it being only necessary to engage the clip afforded by the offset lip 10*d* and the lower edge of T-shaped element 11 with the edge of the container wall defining the lower end of the discharge aperture and then swing the spout inwardly until the stop lugs 12*a* have passed the upper edge of the wall defining the aperture.

When the device is not in use operating handle 16 may be detached from the agitator and by then inclining the same and guiding it into the groove 10*f* it may readily be seated and yieldingly held in place beneath spring finger 11*a*.

In Figs. 5 to 7 inclusive a modified form of the invention is illustrated which is usually applied as an attachment to a box or container by the user. The device as shown is applied to the top of a box containing powdered or pulverized material and it will be apparent that it is equally applicable to one of the vertical walls of a container.

The container or box B may, if desired, be provided with rectangular scoring or perforations in its top to facilitate the formation of a rectangular discharge opening by the user. In this form of the invention it is preferable to form the discharge aperture so that it is defined by three of the vertical walls of the container and a horizontal edge formed by the top.

The modified device as shown comprises a rectangular attachment plate 20 having narrow depending longitudinal side flanges 20*a* and having a doubled depending flange 20*b* at its forward end which is associated with a wider depending lip 20*c* spaced therefrom a distance slightly less than the thickness of the container wall to form a spring attachment clip. Flange

20*b* and lip 20*c* may be formed integrally by properly bending the forward end of attachment plate 20. The rear end of attachment plate 20 is extended to form an attachment tongue 20*d* adapted to under-lie the top wall of the container adjacent the aperture as clearly shown in Fig. 6.

Plate 20 is provided with a substantially central discharge aperture and a trough or spout 21 surrounds said aperture extending upwardly from plate 20 and secured at its lower edges thereto. Spout 21 has a slightly concave front or pouring bottom and is provided with a pair of approximately sector-shaped parallel sides 21*a*. A semi-cylindrical sieve 22 is mounted within spout 21 between the sides 21*a*, said sieve completely surrounding and traversing the discharge opening in plate 20. An agitator shaft 23*a* is suitably journaled in the sides 21*a* of the spout disposed concentrically of the sieve 22 and rigidly carries a suitable agitator 23 of such radius as to lightly scrape the inner surface of the sieve. Agitator shaft 23*a* has a projecting crank handle 23*b* by which the device may be operated for sifting and directionally dispensing the powdered material.

My modified device is quickly and easily attached to the top of a container by telescoping the flanges 20*a*, and 20*b* with the upper edges of the vertical walls which define the discharge aperture of the container. The attachment tongue 20*d* is disposed beneath the top wall of the container and cooperates with the spring clip afforded by flange 20*b* and lip 20*c* to secure the device to the container against separation or displacement.

In operation the package or box is tilted and the crank handle 23*b* is operated to sift and dispense the material. It will be noted that in this form of the invention as well as in the preferred form the agitator moves through the interior of the container as well as cooperates with the sieve thereby loosening the material to be sifted and dispensed and assisting in the introduction of the material into the spout. The sifted material will be correctly directed by the sides and front of the spout and scattering and waste are thus eliminated.

From the foregoing description it will be seen that I have provided an improved, inexpensive and simplified device for efficiently sifting powdered or pulverized material and in addition for dispensing the sifted material in a desired and predetermined direction. It will further be seen that in both forms of my invention the device may be detachably connected with a container by merely inserting the device in place in an apertured wall of a container.

When operatively associated with a container the improved device may be conveniently manipulated to efficiently sift and dispense the powdered or pulverized material.

It will, of course, be understood that various changes may be made in the form, details, proportions and arrangement of the parts without departing from the scope of my invention, which, generally stated, consists in a device capable of carrying out the objects above set forth and in the novel parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. In combination with a container provided with an apertured wall, a directing spout telescopically mounted within said apertured portion of the container, a sieve traversing said spout and an agitator mounted within said spout and movable in close proximity to said sieve, said spout lying substantially flush against said apertured wall when telescoped to closed position.

2. In combination with a container provided with an apertured wall, a trough-shaped directing spout swingably mounted within the apertured portion of the container and having a front wall adapted to lie substantially flush against the apertured wall of said container when said spout is closed, a sieve mounted within said spout and traversing the same, said sieve being of arcuate cross section and a rotary agitator journaled within said spout on an axis concentric with said sieve and means extending exteriorly of said spout for operating said agitator.

3. In combination with a container provided with an apertured wall, a trough-shaped spout telescopically mounted within the apertured portion of said container, a sieve mounted within said spout, an agitator wholly mounted within said spout and journaled in the sides thereof and rotatable in close proximity to said sieve and an operating handle adapted to be non-rotatively connected with said agitator from without said spout.

4. The structure set forth in claim 3, and said spout having a front provided with a groove for receiving and accommodating said operating handle and means for retaining said handle in said groove.

5. In combination with a package or container provided with an apertured wall, a trough-shaped directing spout telescopically mounted within the apertured portion of said wall and having a front side constructed to close said aperture when in retracted position and to act as a bottom for the trough when in the extended position, a sieve traversing the interior of said spout and an agitator movably mounted within said spout for cooperation with said sieve and controllable from without said spout.

6. In combination with a package or container provided with an apertured wall, a trough-shaped directing spout swingably and telescopically mounted within the apertured portion of said wall, said spout having a front or bottom and angularly extending sides, said sides having arcuate guiding edges, means for swingably securing said spout to the marginal edges of said wall defining said aperture, said front being adapted to close said aperture when said spout is in retracted position, a sieve traversing the interior of said spout and extending between said side walls and a rotary agitator mounted within said spout for cooperation with said sieve and means having a handle disposed exteriorly of said spout by which said agitator may be operated.

7. In combination with a package or container provided with an opening for the discharge of material, a directing spout telescopically mounted in said container across said opening and having an outer side adapted to lie substantially flush against said container when said spout is in the retracted position, a sieve traversing the interior of said spout, and an agitator mounted for cooperation with said sieve.

8. In combination with a package or container provided with an opening for the discharge of material, a directing spout telescopically mounted in said container across said opening having an outer side adapted to cover said opening when said spout is in the retracted position, a sieve traversing the interior of said spout, and a ro-

tary agitator mounted for cooperation with said sieve.

9. In a package or container having a flat wall constructed of sheet material, said wall being provided with a discharge opening, a trough-shaped directing spout having means for attachment to the marginal edge of said wall which defines said opening, said means including a lip which underlies at least a portion of said edge, a sieve traversing said spout and an agitator mounted within said spout and controllable from the exterior of said spout and working in close proximity to said sieve.

10. In a package or container having a flat wall constructed of sheet material, said wall being provided with a discharge opening, a trough-shaped directing spout having means for attachment to the marginal edge of said wall which defines said opening, said means including a lip which underlies a portion of said edge and co-operating means engaging the exterior of said edge, a sieve traversing said spout and a rotary agitator mounted within said spout and working in close proximity to said sieve.

11. In combination with a container having a wall provided with an aperture for discharging the contents of the container, a directing spout assembly comprising a scoop-shaped device attached at one end to the container for cooperation with said aperture to form a discharge passageway, an agitator carried by said scoop-shaped device and disposed within said passageway closely adjacent said aperture for operation partially within said container and partially within said device, and a sieve disposed within said device in close cooperative relationship with said agitator, said sieve having at least one edge secured to said scoop-shaped device adjacent the margin of said aperture.

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