July 15, 1952 A. E. TOTH 2,603,385

MECHANISM FOR PUNCTURING CONTAINERS AND DISPENSING LIQUIDS THEREFROM

Filed April 18, 1949 3 Sheets-Sheet 1

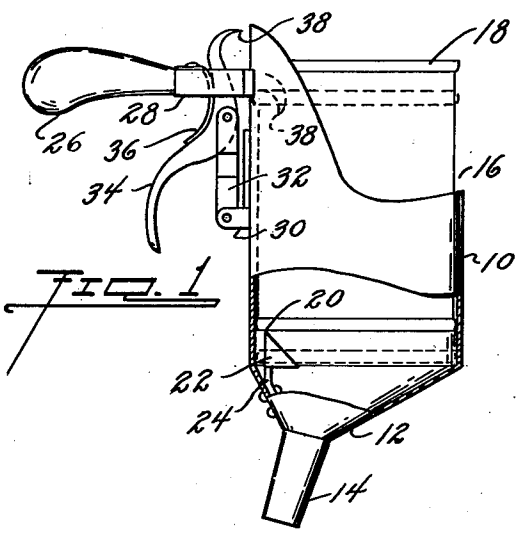


FIG. 1

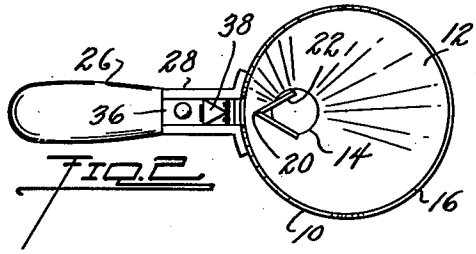


FIG. 2

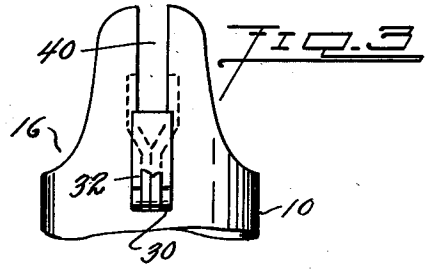


FIG. 3

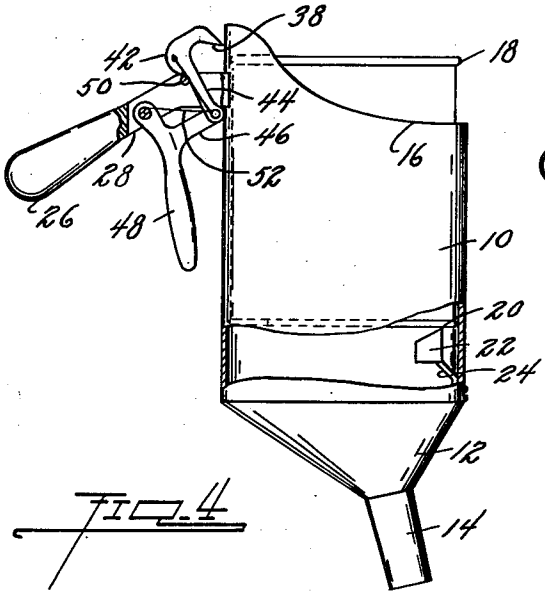


FIG. 4

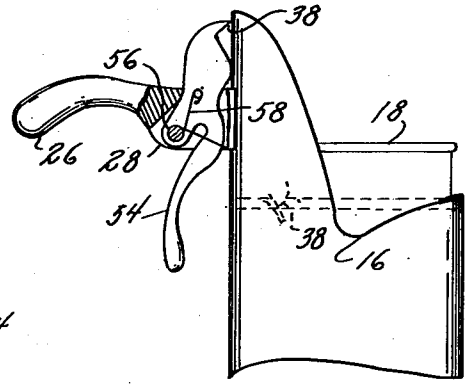


FIG. 5

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3 Sheets-Sheet 2

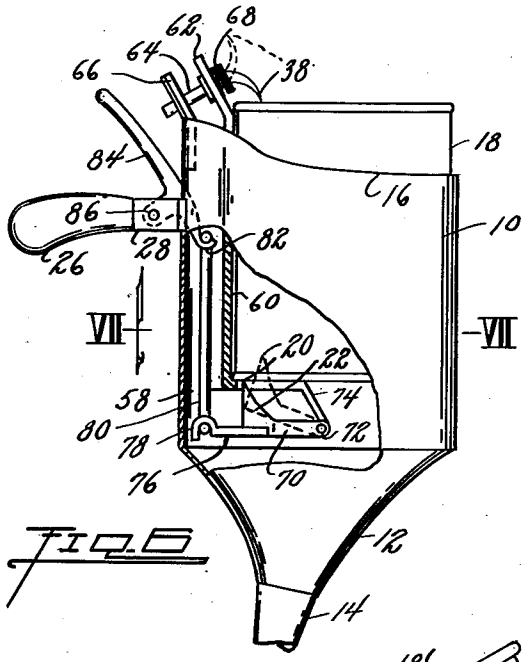


FIG. 6

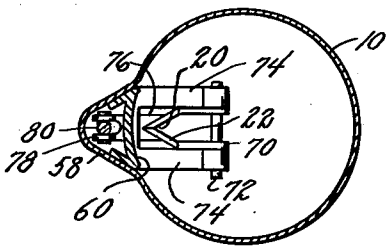


FIG. 7

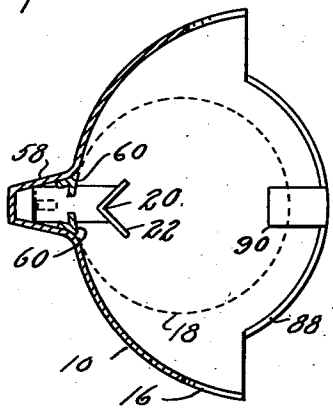


FIG. 9

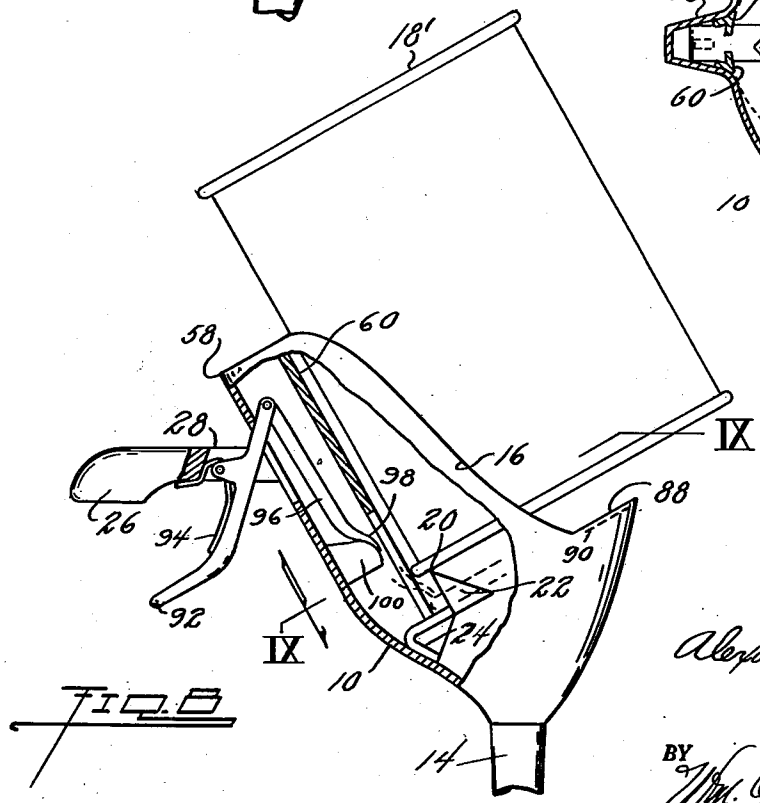


FIG. 8

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MECHANISM FOR PUNCTURING CONTAINERS AND DISPENSING LIQUIDS THEREFROM

Filed April 18, 1949 3 Sheets-Sheet 3

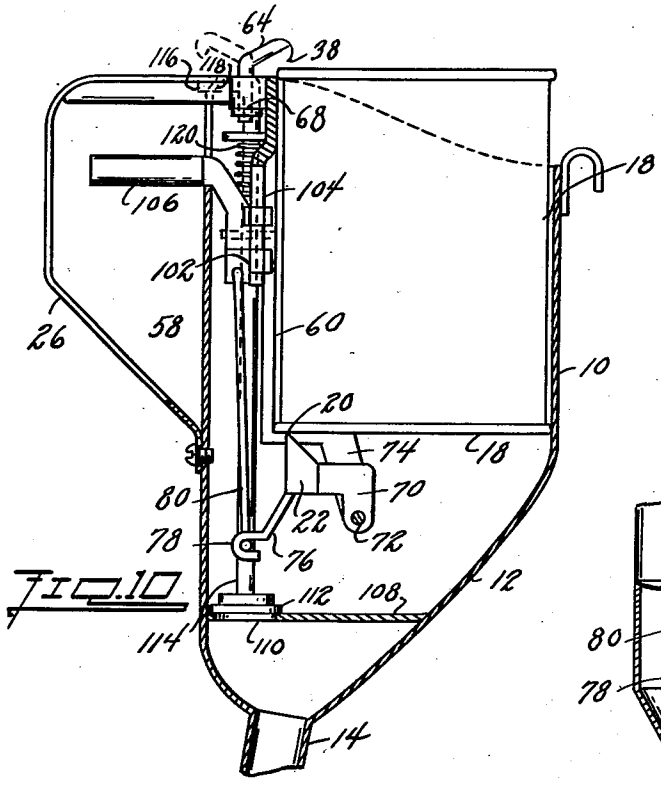


FIG. 10

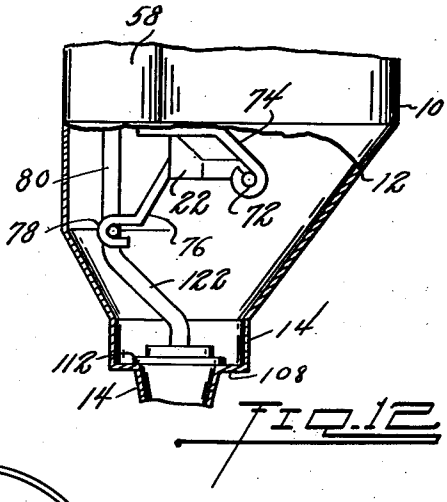


FIG. 12

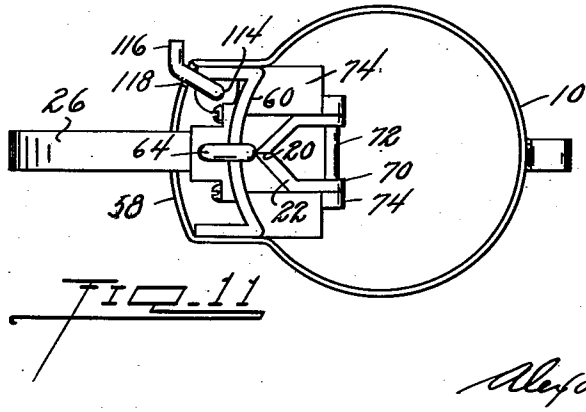


FIG. 11

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Patented July 15, 1952 2,603,385

UNITED STATES PATENT OFFICE

2,603,385

MECHANISM FOR PUNCTURING CONTAINERS AND DISPENSING LIQUIDS THEREFROM

Alexander E. Toth, East Toledo, Ohio

Application April 18, 1949, Serial No. 88,134

3 Claims. (Cl. 222—83.5)

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This invention relates to the handling of pourable materials, primarily the dispensing of liquids from containers and is particularly adaptable for supplying oil from metal packages to motor vehicles.

An object of this invention is to provide a funnel into which a container of liquid may be deposited and by the operation of incorporated mechanism, the container or "can" may be opened, the contents allowed to flow therefrom and be directed into a desired receptacle.

Another object of this invention is to provide a mechanism incorporated in a funnel which not only ruptures the enclosed container to establish a drain opening, but also cuts or punches a vent thereinto to aid in the drainage operation.

Another object of this invention is to provide a mechanism incorporated with the funnel to establish drainage and vent openings, which mechanism may be operated by one hand, leaving the other hand of an operator free to replace the emptied containers, open closures for the receptacles into which the contents are to be delivered, or any other necessary or desirable operation.

Still another object of this invention is to provide a funnel which may be filled with a predetermined quantity of material, either from a container within or without the funnel, and to hold the same until the time and place for discharge is reached and then control the drainage.

And another object of this invention is to provide a funnel which may incorporate any one or any combination of the features heretofore enumerated.

Other objects and advantages of this invention relating to the arrangement, operation and function of the related elements of the structure, to various details of construction, to combinations of parts and to economies of manufacture, will be apparent to those skilled in the art upon consideration of the following description and appended claims, reference being had to the accompanying drawings forming a part of this specification wherein like reference characters designate corresponding parts in the several views.

Referring to the drawings;

Fig. 1 is a side elevation of a funnel embodying features of the invention, parts being broken away;

Fig. 2 is a plan view of the funnel of Fig. 1;

Fig. 3 is a view from the left of Fig. 1, showing an upper portion of the funnel body;

Fig. 4 is a side view of a modified form of the funnel of Fig. 1;

Fig. 5 is a partial side elevation of a funnel showing an additional modification;

Fig. 6 is a side view of a funnel embodying some of the features of the funnel shown in Fig. 1 together with additional features incorporated therewith;

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Fig. 7 is a view on the line VII—VII, Fig. 6;

Fig. 8 is a side view of a funnel embodying features of the invention and adapted to handle a wide range of sizes of containers;

Fig. 9 is a view on the line IX—IX, Fig. 8;

Fig. 10 is a side elevation of a funnel similar to the disclosure of Fig. 6 but incorporating the added feature of controlled drainage therefrom;

Fig. 11 is a plan view of the device of Fig. 10; and

Fig. 12 is a fragmentary showing of a modified form of the device of Fig. 10.

In a preferred form of the invention (Fig. 1), the funnel includes a cylindrical body 10 having a tapered extension 12 to spout 14 canted in a calculated angle to the body to accommodate a wide range of oil intakes as found on many present day vehicles.

The body 10 has its upper edge configured to provide a funnel mouth with a cut-away region 16, thereby providing the body with ample container embracing extent yet exposing a container 18 sufficiently to permit ready removal of the drained can and the direction of a filled container into the funnel onto point 20 of fixed punch 22 mounted by bracket 24 to a lower portion of the funnel interior, herein shown as being on the inner side of the tapered portion 12.

The funnel is provided with handle 26 having split portion 28 fixed to the body 10. A bracket 30 fixed to and extending from the funnel side below the handle pivotally mounts one end of link 32, the opposite end of which is pivotally attached to a central portion of lever 34 normally held along the body side in a substantially upright position, by spring 36 in turn mounted on the handle and extending downwardly through the split portion 28 to urge the lever 34 toward the body 10.

The lever 34 extends between the portions of the split handle, which construction provides a steadying guide therefor, and terminates in a punch point 38 adjacent the upper rim of the funnel.

By grasping the handle 26 and lever 34, and squeezing them toward each other against the resistance of the spring 36, the movable punch 38 swings over into and downwardly in the funnel through slot 40 provided for that purpose.

A container 18 is now grasped between the fixed punch 20 and the movable punch 38, gripping the opposite ends of the container and as sufficient pressure is exerted on the operating handle and lever grip, the two punches will travel toward each other and penetrate through both ends of the container thereby providing a drain opening through the lower container end and a vent through the upper end. The container contents flow into the funnel for delivery through spout 14.

The features of the invention may assume various shapes which are adaptable to a wide range of assemblies. For example, the arrangement shown in Fig. 4 places the handle 26 diametrically opposite the fixed punch 22. The handle 26 is differently contoured as is the upper edge 16 of the body 10. The shiftable punch 38 is carried as an extension of cam 42 having arm 44 pivotally connected to extension 46 of lever 48 terminally pivoted in the handle portion 28. A pin 50 is fixedly positioned for the cam 42 to operate thereagainst to cause the punch to swing in and down through container 18 when the lever 48 is drawn toward the handle 26. A spring 52 returns the parts to their normal positions when the lever 48 is released.

The shiftable punch 38 together with the operating lever may be a single element as shown in Fig. 5. Herein the punch 38 is integral with the lever 50 centrally pivoted on shaft 56 across the split portion 28 of a handle 26. The edges of this element are contoured to cooperate with a desired handle form. Spring 58 operates to normally hold the lever 54 laterally positioned as to the body 10. In this form, the rupture of the container is more of a tearing or shearing action.

In some instances it may be desirable to have the lower punch 22 operate as the shiftable one of the punch pair, while the upper punch 38 is held in a fixed position to have the container pushed thereagainst. Such an arrangement is illustrated in Fig. 6. The funnel body 10 is configured to provide lateral channel 58 having its body connecting side closed by a partition 60 which not only completes the circumferential extent of the body interior but extends upwardly and outwardly therebeyond to provide ear 62 as a mount for pin 64 carrying the punch point 38. A reinforced ear 66 from the funnel serves as an additional support for the pin 64. Spring and washer clutch device 68 holds the pin in such rotated position as it may be placed by manual shifting either to have the punch in container engaging position or turned away permitting easier placement of a container into the funnel. The punch 22 is now mounted on arms 70 pivotally mounted on shaft 72 carried by extensions 74 from the partition 60. These extensions 74 also serve as a seat for the initial placement of the can 18 into the funnel.

The shiftable punch structure includes an extension 76 terminated in a hook 78 engaging one terminus of a rod 80, the opposite end of the rod engaging hook terminus 82 of lever 84 centrally pivotally mounted on pin 86 in the split portion 28 of the handle 26.

In the event the funnel is to be adapted to handle a range of container sizes, the body 10 may be configured so the cut-away 16 provides a ledge 88 supplemented by an inwardly extending lug 90.

The partition 60 has its container engaging face on a radius to fit the minimum size container 18 for which the device is primarily designed to handle, while the adjacent funnel body portion is on the radius of a maximum size container 18'. The fixed punch 22 is mounted in the lower region of the funnel adjacent the spout 14.

Lever 92 intermediately pivoted in the handle portion 28 operating against spring 96 also pivotally engages arm 96 in the channel 58. This arm 96 has claw terminus 98 to engage a bead about a container end and is moved into and out of position by cam 100.

This structure allows the grip device to force the can down onto the punch where it is not feasible to employ two opposing punches operating on the opposite ends of a container. Thus, large containers may be manipulated with one hand as readily as the smaller sizes.

It may be desirable to drain the container contents into the funnel before placing the spout for discharge, or it may be desirable to draw the material such as oil from a bulk source, measuring the quantity by its depth in the funnel.

An arrangement of the parts is conveniently made to be augmented with a discharge control valve. The upper terminus of rod 80 may be attached to slide 102 reciprocable in track 104 struck out from the partition 60. This slide carried handle 106 is movable toward and from handle 26. The pin 64 may be mounted in the upper reach of this form of the handle 26.

A partition or dam 108 across the funnel between the body 10 and spout 14 is provided with port 110 therethrough normally closed by valve 112 on rod 114 upwardly extending through the channel 58 to terminate in offset 116 as an operating handle therefor. This offset normally rests in niche 118 in the rim of the funnel as held by operation of spring 120 and holds the valve 112 to close the port 110. A lifting of the offset or handle 116 permits the funnel contents to be discharged. A twist of the offset onto the funnel edge away from seat 118 will hold the discharge open.

The discharge control may be fixed with the punch operator by mounting the valve 112 on an extension 122 of the rod 80.

It is to be understood that the above detailed description of the present invention is intended to disclose an embodiment thereof to those skilled in the art, but that the invention is not to be construed as limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawings, since the invention is capable of being practiced and carried out in various ways without departing from the spirit of the invention. The language used in the specification relating to the operation and function of the elements of the invention is employed for purposes of description and not of limitation, and it is not intended to limit the scope of the following claims beyond the requirements of the prior art.

What is claimed and is desired to secure by United States Letters Patent:

1. A funnel of the class described comprising a body having a mouth at one end and a spout extending from the other end, a first punch mounted on said funnel to extend inwardly from the mouth thereof, a second punch disposed adjacent the spout extending toward said first punch, means for moving said second punch toward and from said first punch, a drainage valve for the funnel into said spout, and means interconnecting said valve and second punch operating mechanism whereby operation of the second punch operates said valve.

2. A funnel of the class described comprising a cylindrical body having a mouth at one end and a spout extending from the other end, a longitudinal channel outwardly extending from said body, a partition along the entrance into said channel providing a continuity of the body interior across said channel, a first punch mounted on an upper portion of said partition and disposed to extend inwardly over the mouth of the funnel, a second punch mounted on a

lower portion of said partition adjacent the spout and disposed to extend toward the first punch, a slide mounted on said partition between the punches providing a handle to execute movement thereof along the partition, and means between said slide and second punch for moving said second punch toward and from said first punch.

3. The structure set forth in claim 2 wherein a bearing is provided on said partition for mounting the first punch permitting said punch to be moved over the mouth of said funnel or turned away therefrom.

ALEXANDER E. TOTH.

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