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RECEPTACLE AND COMBINED POURING SPOUT, VENT, AND VALVE THEREFOR

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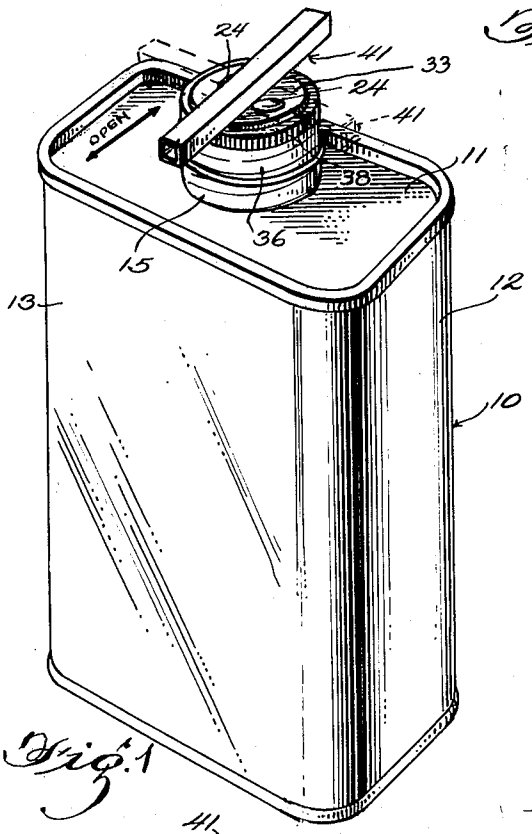


Fig. 1

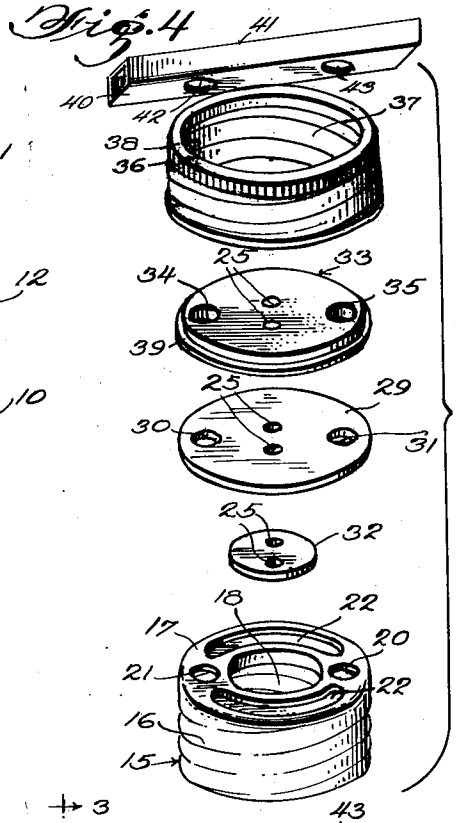


Fig. 4

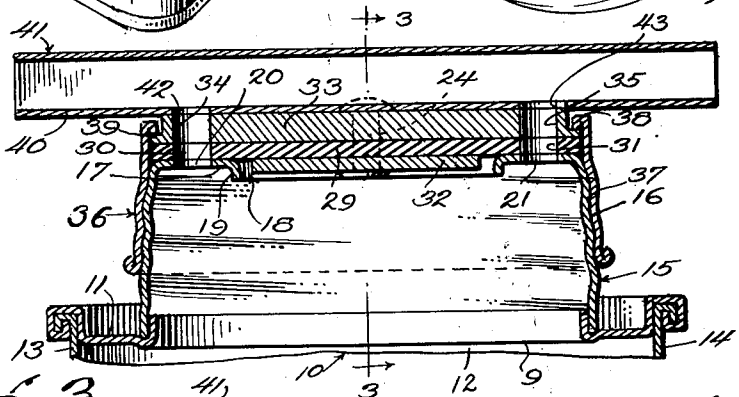


Fig. 2

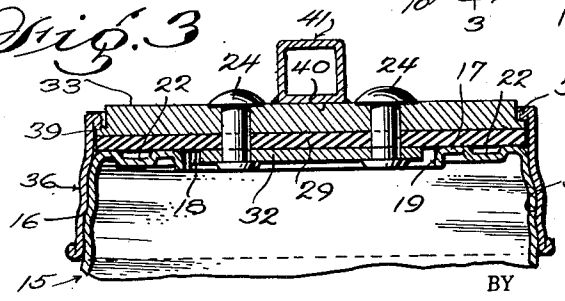


Fig. 3

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RECEPTACLE AND COMBINED POURING SPOUT, VENT, AND VALVE THEREFOR

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2 Claims. (Cl. 222—484)

(Granted under Title 35, U. S. Code (1952), sec. 266)

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The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

My invention relates to receptacles and to combined vents, dispensing valves and pouring spouts therefor. The device according to the invention is particularly adapted for the dispensing of liquids but may be utilized for the dispensing of semi-liquids, powdered or like material.

Devices of this character are particularly useful in connection with pocket sized containers for lantern or stove fuel for use in the field by military personnel or by campers. However, it is obvious that when so used, the device must not only be compact but it also should be free from projections likely to tear the fabric of the pocket. Moreover, the device should have considerable strength to withstand field use and should be so constructed as to permit the container to be readily refilled. Obviously, the device should incorporate a valve capable of being securely held in the closed position and such valve should also be so formed and arranged as to permit the position of the valve to be detected in the dark by the sense of touch. Finally, the construction of the device should lend itself to stacking whereby comparatively large numbers of the same can be conveniently packed in a comparatively small carton with a minimum of waste space.

Devices analogous to that of the invention are known but are inferior in design, structure and operation and are unsuitable for the above purposes. Therefore it is an object of the invention to provide an improved combination of receptacle and combined vent, pouring spout and valve.

A further object is to provide an improved dispensing valve for a receptacle.

A further object is to provide an improved combined vent and pouring spout for a receptacle.

A further object is to provide an improved combination of dispensing valve and a combined pouring spout and vent therefor.

A further object is to provide an improved receptacle which incorporates a novel combined filling and dispensing neck or collar which incorporates separate filling, venting and dispensing ports.

A further object is to provide in a receptacle such as that last described novel dispensing and venting means therefor.

A further object is to provide in a combination such as that last described, a novel dispensing and venting valve and/or a novel dispensing and venting spout for the valve.

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Other objects and advantages reside in the particular structure of the device, in the several elements forming the same, combinations and sub-combinations of such elements, all of which will be readily apparent to those skilled in the art upon reference to the attached drawing in connection with the following specification wherein the invention is shown, described and claimed.

In the drawing:

Figure 1 is a perspective view of a receptacle in which the invention has been incorporated;

Figure 2 is a fragmentary vertical sectional view on an enlarged scale and taken substantially centrally of the upper part of Figure 1;

Figure 3 is a fragmentary transverse sectional view taken substantially on the plane of the line 3—3 of Fig. 2; and

Figure 4 is an exploded perspective view of the valve and spout assembly according to the invention.

Referring specifically to the drawings, wherein like reference characters have been used throughout the several views to designate like parts, 10 designates generally a receptacle incorporating the invention. In the embodiment illustrated, the receptacle 10 is of rectangular configuration to provide a top wall 11, relatively narrow side walls 12 and relatively wide front and rear walls 13 and 14. However, it is to be understood that the receptacle illustrated may vary somewhat within the scope of the invention as hereinafter claimed.

As best seen in Fig. 2, the top wall 11 of the receptacle has fixedly secured thereto in any suitable manner an upstanding collar or neck 15 which surrounds a filling and dispensing opening 9 formed in the top wall. The collar or neck 15 is provided with any suitable means such as the external threads 16 for readily detachably securing a combined dispensing venting valve thereto. The collar 15 has an upper edge formed with a radially inwardly directed annular flange 17 which defines an axially disposed filling opening 18. The inner edge of the flange 17 is formed with a depending lip 19 to give rigidity to the flange. Likewise, as is best seen in Figs. 2 and 4, the flange 17 is formed with a pair of spaced ports 20 and 21. In use, and as will appear hereinafter, one of the ports 20 or 21 always comprises a dispensing port while the other comprises a venting port. The ports 20 and 21 are identical and are used interchangeably for dispensing and venting. Between the ports 20 and 21, the flange 17 is formed with a pair of

arcuate strengthening ribs 22 which are disposed concentrically of the filling opening 18.

A combined dispensing and venting valve has been provided for cooperation with the ports 20 and 21 of the flange 17. Such valve is best seen in Fig. 4 and comprises a valve washer or gasket 29 which is adapted to rest atop the flange 17 in overlying relation to the ports 20 and 21 therein. The gasket 29 is formed with a pair of ports 30 and 31 corresponding to the ports 20 and 21 of the flange 17 and adapted at times to register therewith. The gasket 29 may be supported from below by a reinforcing plate 32 of a substantially smaller diameter. A cap plate 33 overlies the gasket 29 and is formed with ports 34 and 35 corresponding to the ports of the gasket. The gasket 29, reinforcing plate 32 and cap plate 33 are rigidly connected together in any suitable manner as by rivets 24, Fig. 3, which extend through registering holes 25 formed in the reinforcing plate, gasket and cap plate. The assembly of the valve body just described, is supported atop the flange 17 by a cap 36 which is provided with internal threads 37 or other means complementary to the means 16 of the collar 15. The cap 36 has an upper edge formed with an inwardly directed flange 38 which overlies a complementary flange or ledge 39 formed on the lower edge of the cap plate 33. As is apparent from Figs. 2 and 3, the flange 38 operates to clamp the valve body assembly to the flange 17 of the collar when the cap 36 is tightened thereon. However, when the cap 36 is loosened slightly, the valve body assembly may be oscillated about the axis of the collar 15 to and from the open position (Fig. 2) wherein the several ports of the valve body register with the ports 20 and 21 of the flange and the closed position indicated in broken lines in Fig. 1 wherein such ports are out of registry. As shown, the central portion of the gasket 29 overlies the filling opening 18 and seals the same at all times while the valve is in place.

As seen in Figs. 2 and 3, the top surface of the cap plate 33 lies above the uppermost plane of the cap 36. Such top surface of the top plate is complementary to the undersurface 40 of a combined pouring and vent spout 41. The spout 41 is rigidly secured to the cap plate 33 in any suitable manner so that the complementary surfaces aforesaid are in intimate contact throughout their abutting area. The undersurface 40 of the spout 41 is formed with a pair of ports 42 and 43 which register with the corresponding ports 34 and 35 of the cap plate. In the form illustrated, the undersurface 40 of the spout 41 and the top surface of the cap plate 33 are flat and the spout itself is of rectangular tubular configuration.

The spout 41 has a length greater than the width of the sides 12 of the receptacle 10 and the fixed ports 20 and 21 are so disposed that when the spout and valve are turned to the open position, both ends of the spout extend beyond the planes of the front and rear walls 13 and 14 of the receptacle, Fig. 2. On the other hand, the spout 41 has a length which is less than the width of the front and rear walls 13 and 14 whereby when the spout and valve are turned to the closed position as illustrated in broken lines in Fig. 1, the spout lies entirely within the planes of the front, rear, and side walls of the receptacle 10. In this arrangement, a number of receptacles may be readily stacked in abutting relation yet may be separately withdrawn without damaging the spouts of adjacent receptacles. At the same time, when the valves and spouts are turned to the dispensing point, pouring is facilitated by the projection of the ends of the spouts beyond the planes of the front and rear walls of the receptacle. Also, because the fixed ports 20 and 21 lie in a plane normal to said front and rear walls 13 and 14, they are located substantially nearer said front and rear walls than to the side walls 12. With the spout 41 in the dispensing position (Figure 2), the ends thereof project beyond said front and rear walls and either end of the spout may be used for dispensing. Whichever fixed port 20 or 21 is used to vent the can is uncovered almost immediately the can is tilted to a dispensing position, even when the can is full, because of the relative proximity of the fixed ports to the front and rear walls.

In assembling the valve body, the gasket 29, reinforcing plate 32 and cap plate 33 are first secured together as by the rivets 24. Thereafter the cap 36 is applied thereover. Finally, the spout 41 is fixed to the top surface of the cap plate in any suitable manner as by being soldered, welded or brazed thereto. Thus, cap 36 is permanently connected to the assembly of valve body and spout but is freely rotatable relative thereto to permit application of the combined structure to the neck or collar 15 of the receptacle.

By connecting the assembly to the neck or collar 15 for ready detachment, it is a simple matter to refill the receptacle by merely unscrewing the cap 36, whereby the filling opening 18 is uncovered. At the same time, there is no need for a separate adapter to provide the fixed valve ports. This feature is of some importance as it is important that at least one of the fixed ports 20 or 21 be disposed permanently in a location which requires that the valve and spout be turned so that one end of the latter projects beyond the plane of the front or rear wall of the container when the valve is open. This would be difficult to achieve if the ports were located on an adapter which was itself screwed onto a conventional neck of a container.

By providing a spout which is straight and horizontally disposed, the same lies comparatively close to the top wall of the receptacle, permits stacking of several layers of receptacles in packaging the same and likewise provides a convenient handle for manipulating the valve and for carrying the receptacle. By forming the under surface of the spout complementary to the top surface of the valve, a much more secure joint can be formed between the spout and the valve than would be the case were separate pouring and vent spouts secured endwise to the valve in communication with the ports thereof or than would be the case were the undersurface 40 of the spout not complementary to the topsurface of the valve, as, for instance, if the spout 41 were of circular instead of rectangular cross section.

It is apparent, therefore, that the structure and arrangement shown and described is far superior to the conventional forms of known analogous valves. Moreover, while I have shown and described what is now thought to be a preferred embodiment of the invention, it is to be understood that the same is susceptible of other forms and expressions. Consequently, I do not limit myself to the precise structures shown and described hereinafter except as hereinabove claimed.

I claim:

1. A receptacle formed of top, bottom, side and end walls, said top wall provided with an

internal filling opening, a tubular collar fixed to the top wall and encircling said filling opening, an inturned flange on the upper end of said collar and forming an external filling opening in alignment with said internal filling opening, said flange formed with diametrically opposed ports, a valve body seated on said flange and being oscillatable thereon to open and closed positions, said valve body being provided with a pair of diametrically spaced ports adapted to register with the ports in said flange when the valve body is in open position, a gasket fixed to the underside of the valve body and provided with diametrically opposed ports registering with the ports in the valve body, a reinforcing plate centrally disposed on the underside of said gasket between the ports of the gasket and disposed in said external filling opening, a horizontally disposed open ended tubular member fixed on the top of the valve body and extending diametrically across the same, said tubular member being formed with a pair of longitudinally spaced ports registering with the ports of the valve body to provide a combined pouring spout and vent for said receptacle.

2. A receptacle formed of top, bottom, side and end walls, said top wall provided with an internal filling opening, a tubular collar fixed to the top wall and encircling said filling opening, an inturned flange on the upper end of said collar and forming an external filling opening in alignment with said internal filling opening, said flange formed with diametrically opposed ports, a valve body seated on said flange, an annular ledge on the valve body, a screw

cap provided with an inturned flange engaging said ledge, said valve body being provided with a pair of diametrically spaced ports adapted to register with the ports in said flange when the valve body is in open position, a gasket fixed to the underside of the valve body and provided with diametrically opposed ports registering with the ports in the valve body, a reinforcing plate centrally disposed on the underside of said gasket between the ports of the gasket and disposed in said external filling opening, a horizontally disposed open ended tubular member fixed on the top of the valve body and extending diametrically across the same, said tubular member being formed with a pair of longitudinally spaced ports registering with the ports of the valve body to provide a combined pouring spout and vent for said receptacle.

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