# United States Patent [19]

**Beaubien**

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[54] **MOVABLE EXTENSION FOR A FUNNEL**


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[52] **U.S. Cl.** ..... **141/333;** 285/DIG. 22

[51] **Int. Cl.²** ..... **B65B 39/00;** B67C 11/02

[58] **Field of Search** ..... B65B/39/00; B67C/11/02; 141/199–205, 297–300, 331–345, 383–386, 392; 285/DIG. 22



[56] **References Cited**

UNITED STATES PATENTS

| | | | |
|---|---|---|---|
| 367,599 | 8/1887 | Conant | 141/334 X |
| 1,636,789 | 7/1927 | Sigley | 141/334 |
| 3,070,812 | 1/1963 | Skrmetta | 141/334 X |
| 3,151,845 | 10/1964 | Leuze | 141/334 X |

FOREIGN PATENTS OR APPLICATIONS

| | | | |
|---|---|---|---|
| 464,623 | 10/1968 | Switzerland | 285/DIG. 22 |



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[57] **ABSTRACT**

A movable, detachable extension or spout which fits inside the exit end of a plastic funnel and is retained therein by flexible tabs grasping a circumferential ridge inside the funnel.


**5 Claims, 4 Drawing Figures**

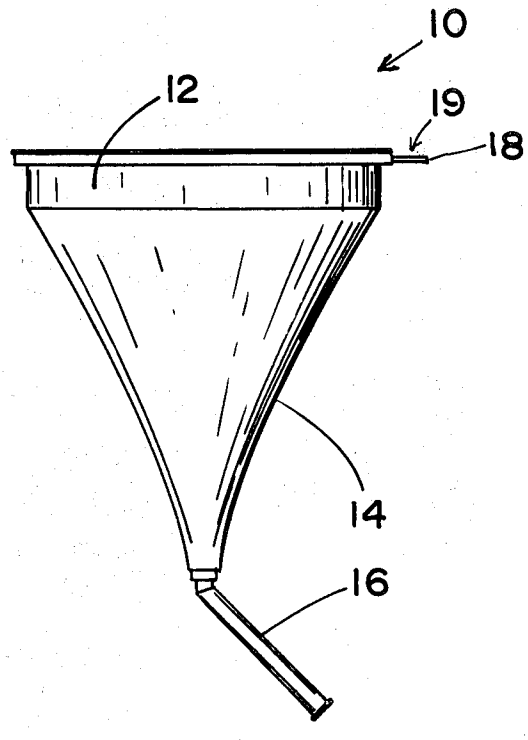


FIG. 1

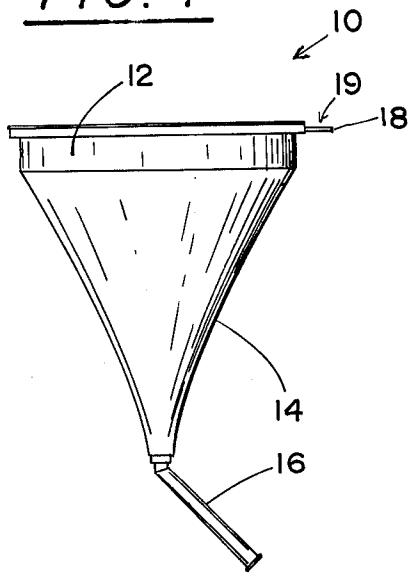



FIG. 2

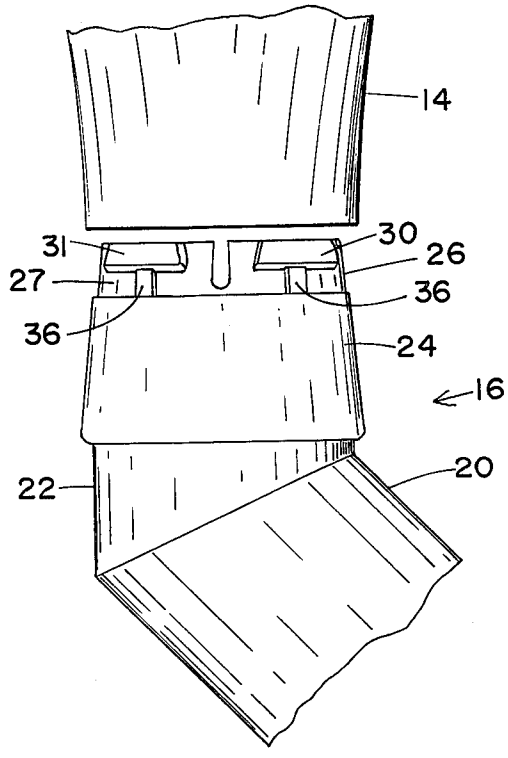



FIG. 4

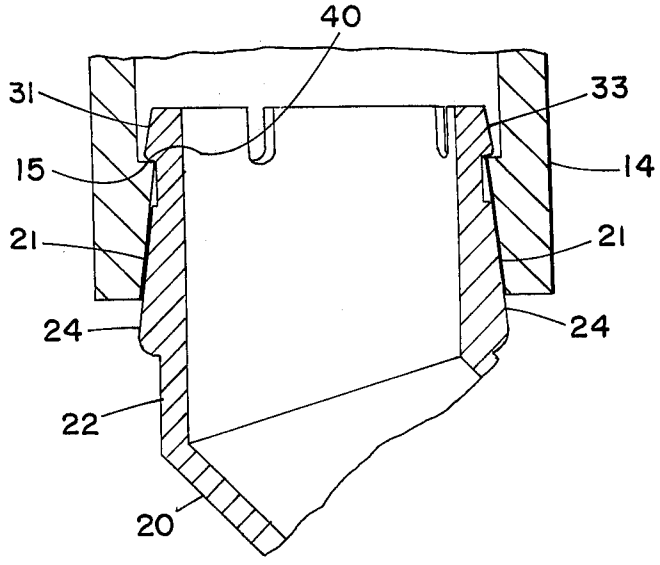
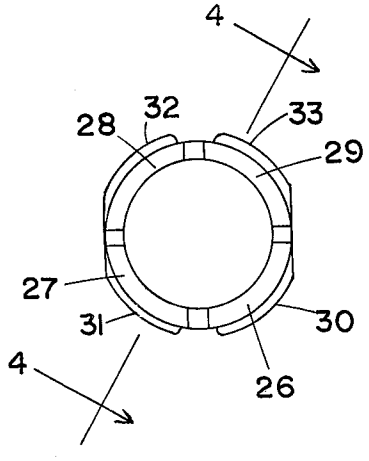



FIG. 3



# MOVABLE EXTENSION FOR A FUNNEL

## BACKGROUND OF THE INVENTION

This invention comprises an improvement to my co-pending continuation-in-part patent application Ser. No. 562,551 for a Screen Funnel filed originally on Feb. 19, 1974 and continued on Mar. 2, 1975. In my co-pending application a new type of funnel is disclosed which incorporates a special removable cone-shaped filtering screen inside. Since this funnel can be used with different types of filtering screens it is suitable for use with a number of different fluids such as oil, wine, gasoline, or water. However, this funnel, and other prior art funnels use a straight, fixed diameter outlet tube which may not be completely suitable for some fluid delivery tasks. For example, one common problem encountered with prior art funnels is that they are difficult to utilize with respect to transferring gasoline into an automobile since most modern automobiles have their filler pipes either in the side of the fender or beneath the rear license plate in such a position that the delivery of fluid must be done at a steep angle. It would be desirable if the funnel could be angled at the bottom so as to turn the flow of fluid sideways in order to reach into the filler pipes. A funnel which is permanently angled is not desirable, however, since the funnel would would then not be useful for more conventional operations wherein it is better to have the fluid travel straight down. As a consequence, it would be nice to have a discharge outlet which could be pivoted around and positioned at an angle to the funnel but which could be removed when it was desired to use the funnel in a more conventional fashion. The present invention accomplishes this end.

## SUMMARY OF THE INVENTION

Briefly, my invention contemplates an inexpensive, removable extension which can be inserted into a funnel to direct the flow of fluid therefrom to a desired angle. The extension is provided with compressible tabs at one end so it can be inserted internally into the bottom of a funnel wherein the tabs lock the spout in a tight sealing relationship therewith by engaging an internal circumferential ridge inside the funnel. Such a construction has the advantage that the extension outlet may be pivoted in any direction simply by rotating it inside the exit end of the funnel. A tight seal is maintained, however, since the bottom most portion of the funnel is provided with a conical sealing surface which matches a similar surface on the outside of the spout. By using different diameter extensions the size of the outlet and thus the rate of flow may be varied. Consequently, it may be seen that it is an object of my invention to provide an improved funnel apparatus which is more versatile due to the fact that a removable exit extension is connectable thereto to permit the funneling of fluids into hard to reach spots and at varying rates. Additional objects and advantages will become apparent from the following detailed description and drawings.

## BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an elevational side view of a funnel with the detachable extension of the present invention connected thereto.

FIG. **2** is an enlarged fragmentary view of the lower portion of the funnel of FIG. **1** showing the connecting



portion of the extension in position proximate to the funnel as it would be if about to be inserted.

FIG. **3** is a top view of the connecting end of the extension as shown in FIG. **2**.

FIG. **4** is a sectional view of the extension and the lower portion of the funnel, connected together, taken on line **4**—**4** in FIG. **3**.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. **1** a funnel **10** is shown with the extension **16** of the present invention connected thereto. Funnel **10** may comprise any type of funnel well known to those skilled in the art but is preferably molded from plastic and of the type described in my above referenced co-pending application. The funnel comprises a narrow exit portion **14** connected to a generally large inlet end **12**. The extension **16** is angled at an approximate 45° in the preferred embodiment and may be rested directly in the filler pipe of a gas tank or any other hard to reach location. But of course, the extension may be straight or any other angle. The funnel may be held in place by attaching handle **18**, which has a hole **19** through it, to a suitable support nearby. Since the extension can be pivoted in any direction relative to the outlet end of the funnel the handle **18** can serve to fasten the funnel to a support in virtually any direction. The extension **16** is held in funnel **10** by being inserted internally thereto and retained by a generally annular protuberance inside the funnel. This may be more clearly seen in FIGS. **2** and **3**.

As can be seen in FIG. **2**, the extension **16**, which may easily be molded from plastic, comprises an outlet portion **20** formed at a desired angle relative to a short length of straight tube **22** which in turn is attached to a sealing portion **24**. The outlet diameter can be chosen as appropriate to the desired task. Sealing portion **24** includes a conical surface on the outside designed to fit inside the bottom of the funnel **10** as shown in the sectional view of FIG. **4**. On the connecting end of the extension **16** are molded a plurality of compressible tabs **26, 27, 28** and **29**. Four tabs are used in the preferred embodiment although more or less are obviously possible. Each of the compressible tabs **26** through **29** includes a projection **30, 31, 32** or **33** thereon each of which fit over the annular protuberance inside the funnel. Reference to FIG. **4** will show that in the connected position these projections fit over an annular ledge **15** which is formed in the internal wall of the funnel **10**. Below annular ledge **15** is a conical interior surface **21** which is angled in such a way as to mate smoothly with the conical exterior surface **24** on the extension **16**.

In the preferred embodiment the bottom edge of the projections **30, 31, 32** and **33** are angled slightly as shown by the angled surface **40** in FIG. **4**. Thus, when the extension is pushed into the exit end of the funnel the four compressible tabs **26** through **29** are caused to bend inward until they go above the annular ridge **15** whereupon they spring back to lock the sealing surfaces **21** and **24** tightly together. The extension **16** is pulled up snuggly against the funnel due to the fact that the bottom angled surface **40** of the projections operate against ledge or protuberance **15** to pull the extension into a good sealing relationship with the funnel.

Referring again to FIG. **2** it may be seen that in the preferred embodiment small reinforcing ribs **36** are incorporated onto the compressible tabs **26** through **29**

just underneath the projections **30** through **33.** These additional ribs serve to make the compressible tabs somewhat stiffer and also prevent the annular protuberance **15** inside the funnel from locking too solidly underneath the projections **30** through **33.** Because of these ribs it has been found that it is somewhat easier to remove the extension from its locked position. The annular protuberance or ledge **15** inside funnel **10** extends completely about the inside of the funnel so that the extension may be pivoted through a complete 360° arc. It will be obvious to one skilled in the art, however, that ledge **15** could occupy only some portions of the interior surface of funnel **10.** With this arrangement the extension could be locked into position in some rotational positions and easily removed in other rotational positions. Clearly a number of modifications may be made to the design shown without departing from the spirit and scope of the invention and therefor I intend to be limited only to the appended claims.

I claim:

**1.** An articulated movable extension for a funnel which funnel has a large inlet end tapering down to a smaller outlet end, the improvement comprising a generally annular ledge about the inside of the outlet end of the funnel, said ledge projecting radially inward, and further comprising an extension with a connecting end adapted to fit snuggly inside the outlet end of the funnel and including a plurality of compressible tabs extending from the peripheral edge of the connecting end of the extension which tabs have annular ledge engaging projections thereon which comprise an angled surface extending radially outward and adapted to pull the extension into the funnel as the compressible tabs spring outward over said generally annular ledge so as to hold the extension in sealing relation with said outlet end and including risers molded just below the annular ledge engaging projections to keep the angled surface from locking too tightly over the annular ledge, and also including a cone shaped tapered surface on the inside of said funnel outlet end and a matching cone shaped tapered surface on the connecting end of said extension so as to provide a sealing joint, both tapered surfaces having a greater diameter nearer the outlet end of the funnel so as to be pulled into a sealing relationship under the action of said compressible tabs.

**2.** The apparatus of claim **1** including a flow directing tube connected at an angle to the connecting end of said extension.

**3.** The apparatus of claim **2** in which four tabs are used to lock the extension to the funnel.

**4.** The apparatus of claim **3** in which the funnel and the extension are molded from plastic.

**5.** The apparatus of claim **1** in which four tabs are used to lock the extension to the funnel.

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