

March 4, 1930.

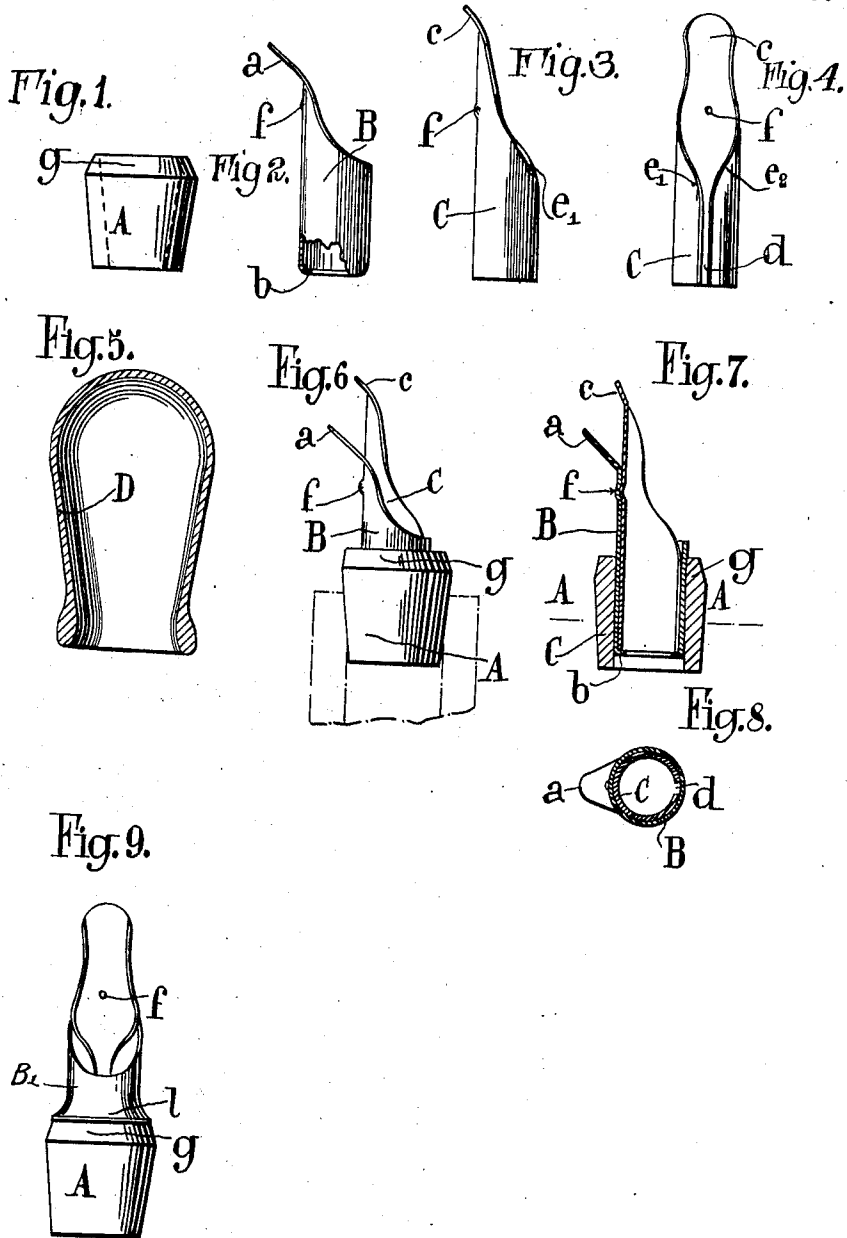
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1,749,253

POURING SPOUT

Filed Feb. 5, 1927

3 Sheets-Sheet 1



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POURING SPOUT

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3 Sheets-Sheet 2

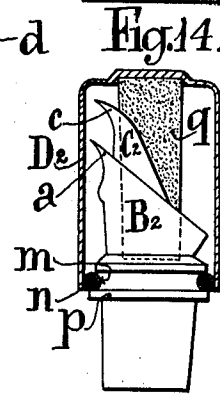
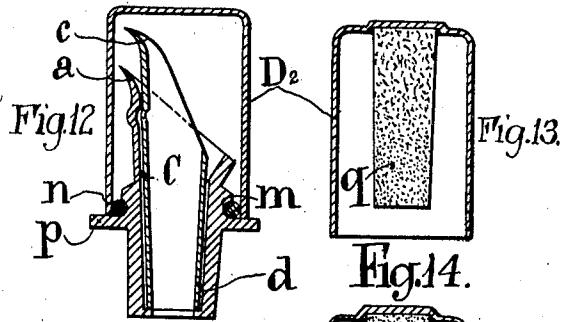
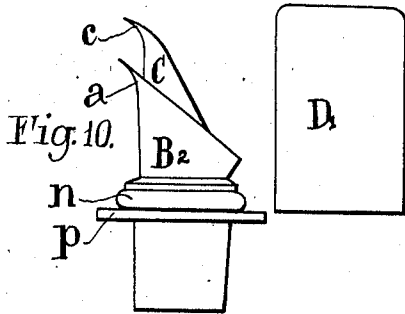
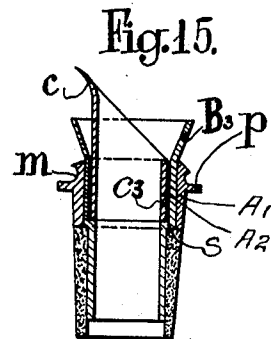
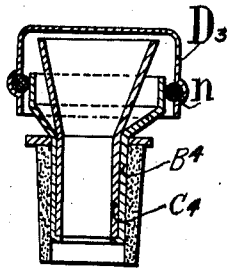


Fig. 16.



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POURING SPOUT

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Fig. 17.

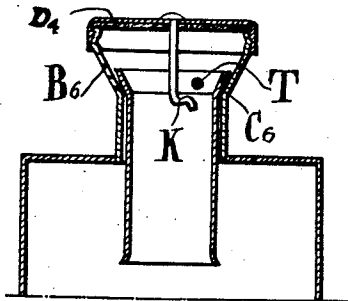
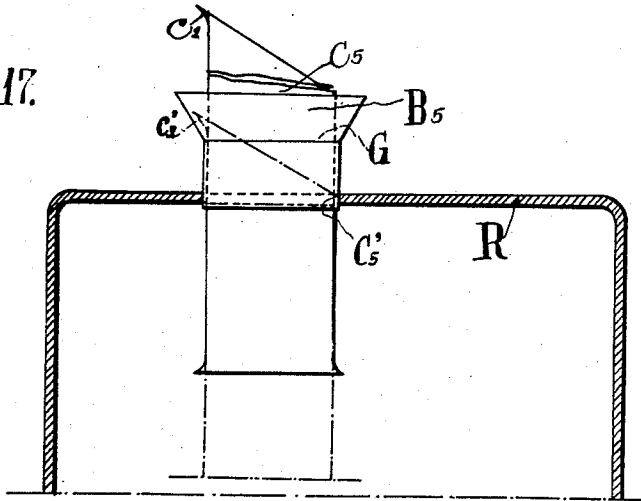


Fig. 18.

Fig. 19.

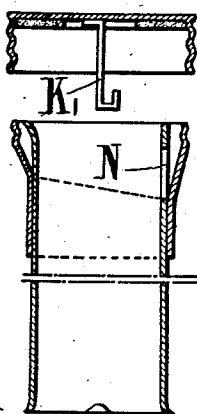


Fig. 20.

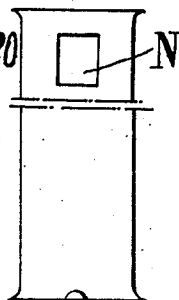
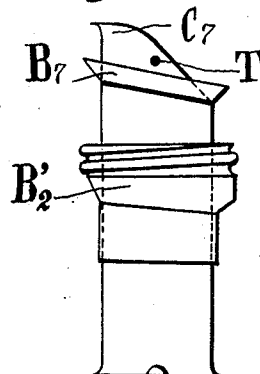


Fig. 21.



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UNITED STATES PATENT OFFICE

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POURING SPOUT

Application filed February 5, 1927, Serial No. 166,170, and in France February 9, 1926.

This invention relates to pouring spouts for vessels containing liquids whereby any drips of liquid forming at a pouring mouth or lip are caught in a gutter arranged round this pouring mouth or lip and are returned to the interior of the vessel.

The object of the invention is to provide such a pouring spout with means whereby the drips of liquid caught in the gutter are continuously returned to the interior of the vessel by the action of capillarity.

A further object of the invention is to provide the pouring spout with means whereby the capillary entry of the drips of liquid to the interior of the vessel is supplemented by a return by gravity.

Some embodiments of a pouring spout according to the invention are illustrated by way of example in the accompanying drawings, in which:

Figs. 1, 2, 3, 4 and 5 show the constituent parts of one form of the pouring spout.

Fig. 6 shows the pouring spout assembled.

Fig. 7 is a vertical section through Fig. 6.

Fig. 8 is a cross section taken along the line A—A in Fig. 7.

Fig. 9 shows a modified form of the pouring spout.

Figs. 10, 11 and 12 show in elevation, plan and vertical section, respectively, a further modification of the pouring spout with cover for the same.

Figs. 13 and 14 show a modification of this cover.

Figs. 15 and 16 show still further modifications of the pouring spout.

Figs. 17-21 illustrate other forms of the pouring spout.

The device shown in Figs. 1 to 5 comprises an annular stopper A made of cork or any other suitable material, a tubular body B, preferably metallic, which has at its upper part an abrupt bend and a spout a and at its lower part a circular internal rim or flange b , a tubular body C forming the pouring member, also preferably metallic, slightly curved forward at the upper part c which forms a spout, slotted at d along a generating line diametrically opposite the spout and slightly

pressed in at e_1 and e_2 to form two wing shaped parts.

Fig. 6 shows the manner in which these various parts are assembled together.

When the body B has been engaged in the stopper A, the tubular pouring member C is pushed therein and, on account of the fact that it is slotted, yields with sufficient elasticity until its lower end abuts against the flange B. Further, in order to facilitate assembly, the two parts are held in engagement by a punch mark formed in each part during construction at f .

This pouring spout arrangement will be mounted upon a bottle in the same way as an ordinary stopper. It is seen that the spouts or lips a and c have their axes in the same vertical plane. When it is not desired to make use of the contents of the vessel, the whole pouring arrangement may be covered with a cap such as D shown in Fig. 5, constructed of wood or metal, or of any other suitable material. This cap D bears upon the conical part G of the stopper, or upon any other suitable bearing surface formed for receiving it, either upon the body B or upon the container itself.

The operation of this pouring spout, which is explained by the observation of certain phenomena peculiar to hydrodynamics and the surface tension of liquids, is as follows:

When the containing vessel is canted over, the liquid is made to flow out through the spout C. It must be noted that, on account of the rim or flange b the liquid tends to jump over the joint which separates the parts B and C so that the liquid in movement will not penetrate into the annular space separating the parts.

The flowing liquid then meets the two wings e_1 and e_2 which deflect it on to the opposite or spouted side of the pourer C. When it has reached the end of the pourer C the stream of liquid tends, by virtue of its surface tension and on account of the lip or spout c being itself slightly curved, to adopt a circular cross section. It then escapes in the form of a well guided and substantially cylindrical jet. No liquid escapes through the spout a .

When the containing vessel is righted again, a drop or trickle of liquid is formed beneath the beak or spout *c*. The weight of this trickle causes it to descend along the outside of the beak C and its surface tension keeps it against the tubular member until it reaches the annular space separating the parts B and C. The surface tension then acts in a two fold manner and this drop spreads rapidly in the space between the surfaces B and C. In most cases the action of capillarity is sufficient to make this drop re-enter the container by the path of the capillary ring formed between the two surfaces, the outlet from which path is formed by the channel *d* and the rim *b*.

When the drops are numerous they collect under the effect of surface tension and gravity in the space comprised between the body B and the wings *e*₁ and *e*₂. They then pass into the interior of the tubular member C either by overflowing the wings or by following the channel formed by the slot *d*. The capillary space then removes the remaining drops.

It will be seen that this embodiment of the invention, in addition to providing for a liquid to be returned to the container by capillary attraction, also provides for surplus liquid to drain back into the containing vessel by the simple action of gravity, the combination of these means being in some cases desirable, but it is to be clearly understood that the liquid may be returned by capillary attraction only.

Among the advantages presented by this pouring spout arrangement must be mentioned that of great cleanliness. Not only are particles of liquid which trickle down the sides continually re-absorbed with the pouring spout described but drops are also carried back very rapidly into the container itself without remaining upon the device.

Moreover, the pouring spout comprises no mechanical or delicate member in which parts reached or cleaned with difficulty would make the apparatus unsuitable for use with liquids intended for human consumption.

The embodiment hereinbefore described is very simple, is dismantled by a simple pull and can be cleaned and even disinfected in a few moments.

The device may be employed for various purposes, for wines, oils, syrups, perfumes, solutions of sodium hypochlorite for cleaning and bleaching, vinegar, acids, table water, inks, etc., in all cases when it is desired to avoid soiling table linen, burns such as those produced by caustic liquids, soiling the outside surfaces of flagons, or unpleasant contacts with fatty or syrupy liquids which have overflowed their containers.

Various other forms of this pouring spout may be adopted.

Thus, for example, it may be constructed

at the same time as the container, certain of its parts being formed upon the latter.

In a general manner, the embodiment of the invention hereinbefore described is only given by way of example, and modifications may be made in the shape, dimensions and materials employed for the members, without on that account, going outside the scope of the invention.

The outer tubular member may be modified, as shown at B₁ in Fig. 9 and comprise a small collar *l* which is adapted to abut against the stopper A.

Figs. 10, 11 and 12 illustrate a modification in which the outer tubular member B₂ of the device is itself made to form a stopper and is provided with a flange *p* which may be of varying size. A rubber ring *n* engages in a groove *m* formed in the member B₂ above this flange and a cover D₁ is adapted to grip this ring and, in the form shown in these figures, abut against the flange when placed in position, an operation which only requires the exertion of a simple pressure. Dust or air is thus prevented from entering the container. The flange also permits the whole device to be placed in position on the container or withdrawn in a very clean manner, by taking this flange between the fingers.

In the case of dangerous liquids which it is desired to enclose with safety, the cover may be provided with a plug made of cork, rubber or other suitable material, as shown in Figs. 13 and 14, in which a cap D₂ is provided with a central plug *q* adapted to engage in the inner pouring member C₂ of the pouring spout arrangement. As in the previous embodiment, the cap D₂, when in position, engages on a rubber ring *n* fitting in a groove *m* of the outer member B₂.

Naturally, the usual closing devices may be employed, either separately or at the same time as the cap and the rubber ring *n*.

Instead of making the internal member descend as far as the inner end of the stopper, as shown for example in Fig. 12, this member may be stopped off at a certain distance from the inner end, as shown in Fig. 15, in which the outer member B₃ of the pourer is formed with a shoulder *s* against which abuts the inner member C₃. In this embodiment the stopper is formed in two parts A₁ and A₂, and the groove *m* and the flange *p* are formed on the part A₁.

As stated above, the liquid may be returned to the container by capillarity alone.

Fig. 16 shows, by way of example, a pouring spout in which the drops re-enter simply through the capillary space formed between an outer tubular member B₄ and an inner pouring member C₄. In this example, the cover D₃ itself carries the closing ring *n* by means of which it is engaged over the member B₄.

Fig. 17 illustrates a telescopic pouring

spout mounted on a can R. In this embodiment of the invention the inner pouring member c_1 may be at a considerable distance from the outer member B_5 for pouring purposes, and on the contrary, located within the said outer member after use. In this case, the drops which are formed at the pouring member c_1 flow down along the tube C_5 and are collected in the gutter or groove G formed between C_5 and B_5 .

When the tube C_5 is pushed into the can the pouring member c_1 takes up the position c'_1 shown in dotted lines, so that the drops which were at the bottom of the gutter G re-enter through the point C'_5 in the pouring member and then enter the can R.

Figs. 18-21 show modified forms of a telescopic pouring spout, and illustrate various ways in which the pouring member may be drawn out.

In Fig. 18 a cover D_4 adapted to screw upon the outer member B_6 is provided with a hook K which can be engaged under a pin T, secured to the inner slidable pouring member C_6 , in order to pull the latter out.

In Figs. 19 and 20 a suitable slot N is formed in the pouring member, and a hook K_1 on the cover is adapted to engage in this slot for pulling out the pouring member. Other suitable means for enabling the pouring member to be drawn out may be imagined.

Fig. 21 illustrates a pouring spout similar to that shown in Fig. 17, but with the difference that a receiving member B_7 follows the movement of the pouring member C_7 when the latter is pulled out. The member B'_2 is screwthreaded to receive a cover with which it will form a fluid tight casing in which the pouring member is enclosed after use.

What I claim is:

1. A pouring device for vessels containing liquids comprising a tubular member mounted on the vessel, a tubular pouring member proper mounted with annular clearance within said first member, said first member having a flare at its outer end to form a gutter between said two members, said annular clearance being such as to form a passage whereby drips of liquid collecting in the gutter are continuously returned to the interior of the vessel by capillarity, said second member having in it an opening, whereby liquid is also returned directly into the vessel from said gutter by gravity.

2. A pouring device for vessels containing liquids comprising a tubular member mounted on the vessel, a tubular pouring member proper mounted with annular clearance within said first member, said first member having a flare at its outer end to form a gutter between said two members, said annular clearance being such as to form a passage whereby drips of liquid collecting in the gut-

ter are continuously returned to the interior of the vessel by capillarity, said second member having in it an opening whereby liquid is also returned directly into the vessel from said gutter by gravity, a flange on the inner end of one of said members whereby liquid which is being poured out of the vessel is prevented from entering said annular passage.

3. A pouring device for vessels containing liquids, comprising a tubular member mounted on the vessel, a tubular pouring member proper mounted with annular clearance within said first member, said first member having a flare at its outer end to form a gutter between said two members, said annular clearance being such as to form a passage whereby drips of liquid collecting in the gutter are continuously returned to the interior of the vessel by capillarity, said second member having in it an opening whereby liquid is also returned directly into the vessel from said gutter by gravity, a flange on the inner end of said outer tubular member, whereby liquid which is being poured out of the vessel is prevented from entering said annular passage, means whereby the device is covered when not in use.

4. A pouring device for vessels containing liquids, comprising a tubular member removably mounted on the vessel, a tubular pouring member proper removably mounted with annular clearance within said first member, said first member having a flare at its outer end to form a gutter between said two members, said annular clearance being such as to form a passage whereby drips of liquid collecting in the gutter are continuously returned to the interior of the vessel by capillarity, said second member having in it an opening whereby liquid is also returned directly into the vessel from said gutter by gravity, a flange on the inner end of one of said members whereby liquid which is being poured out of the vessel is prevented from entering said annular passage, means whereby the device is covered when not in use.

5. A pouring device for vessels containing liquids, comprising a tubular member removably mounted on the vessel and projecting outside said vessel, a tubular pouring member proper removably mounted with annular clearance within said outer member and projecting outwards beyond the outer end of said member, said first member having a flare at its outer end to form a gutter between said two members, said annular clearance being such as to form a passage whereby drips of liquid collecting in the gutter are continuously returned to the interior of the vessel by capillarity, said inner member having in it a longitudinal opening forming a channel whereby liquid is also returned directly into the vessel from said gutter by gravity, a

flange extending inwards on the inner end of
said outer member, whereby liquid which is
being poured out of the vessel is prevented
from entering said annular passage, a re-
siliant ring upon the projecting part of said
5 outer member, a bell shaped cap engaging re-
movably upon said resilient ring and a plug
in said cap engaging in said pouring mem-
ber proper, whereby the device is closed when
10 not in use.

In testimony whereof I have signed my
name to this specificaton.

LÉO LÉVY.

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