July 10, 1928. 1,676,986

G. G. HILFORD

FUNNEL

Filed June 6, 1927 2 Sheets-Sheet 1

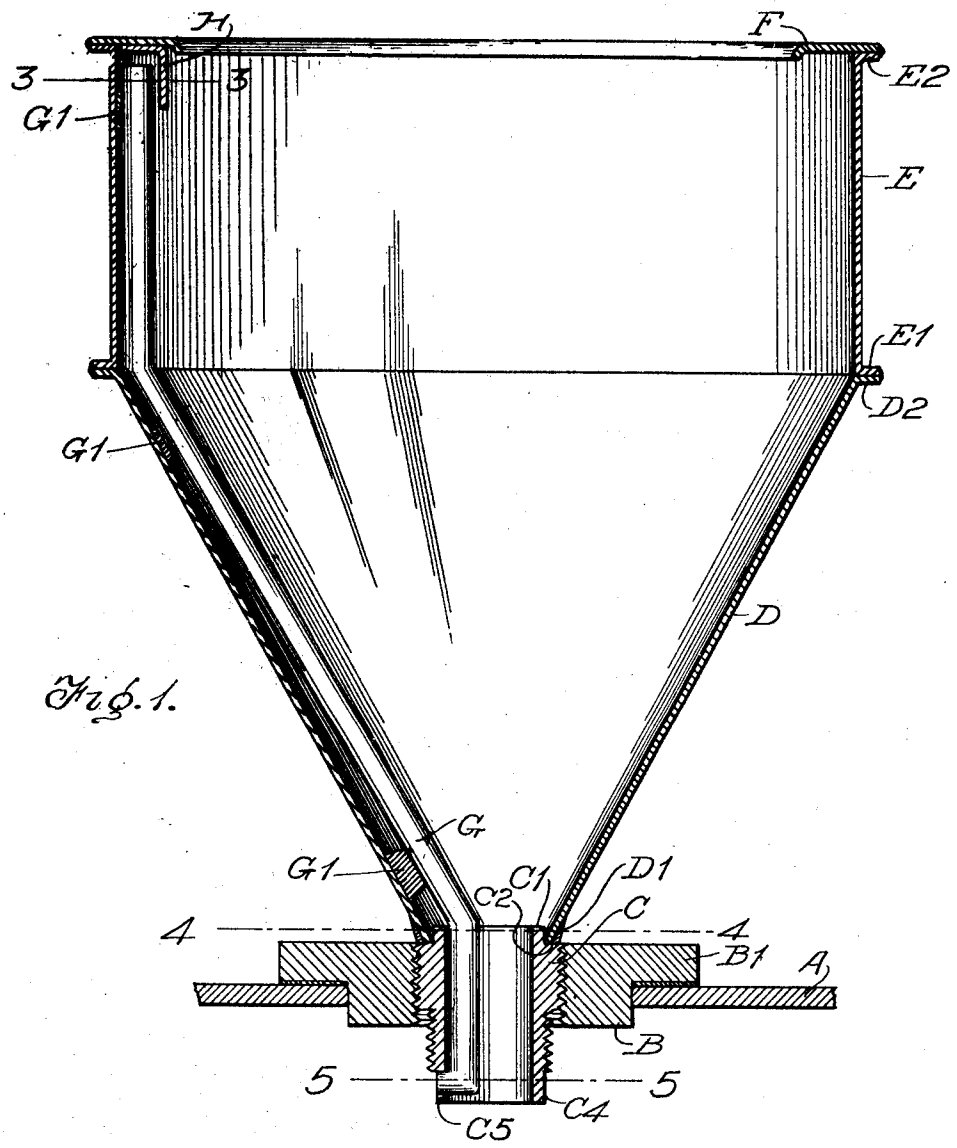


Fig. 1.

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Fig. 2.

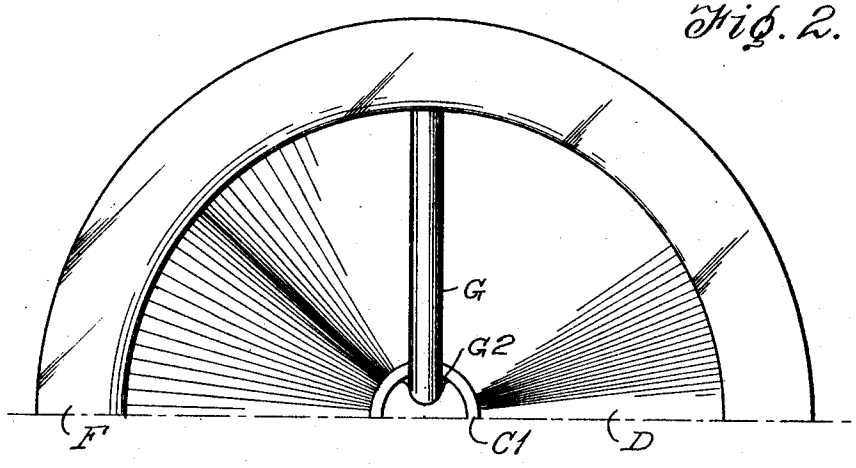


Fig. 4.

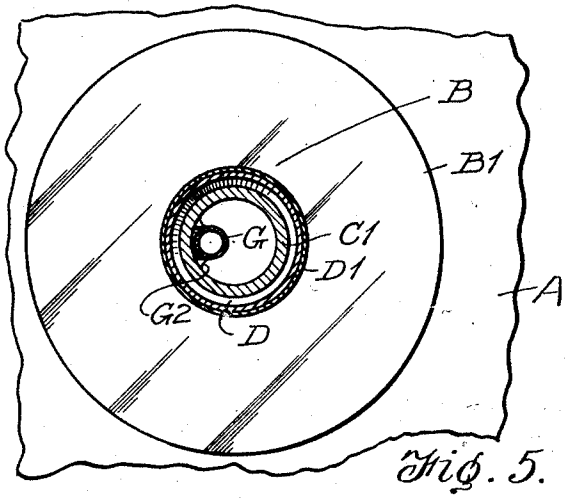


Fig. 3.

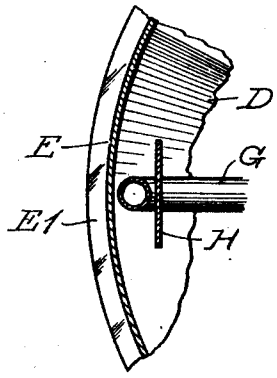
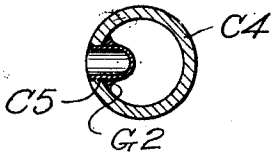


Fig. 5.



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UNITED STATES PATENT OFFICE.

GLEN G. HILFORD, OF TULSA, OKLAHOMA.

FUNNEL.

Application filed June 6, 1927. Serial No. 196,866.

This invention relates particularly to funnels for large service, such as the transferring of gasoline, kerosene and motor oil from tank wagons or other sources to such steel drums as are used at automobile service stations for receiving and dispensing such liquids.

In funnels for such transfer of these liquids in relatively large volume into steel drums and similar receptacles, various conditions must be met to render the operation practical.

Among those conditions are strength of the structure, stability of the funnel when applied to the drum, rapid downward flow through the funnel, avoiding waste by surging, slopping and spraying, and adaptability of the funnel to different sizes of drum connecting members.

The object of this invention is to meet these conditions in a practical way.

In the accompanying drawings,

Fig. 1 is an upright section on the axial line of the funnel;

Fig. 2 is a plan of one half of the same funnel;

Fig. 3 is a horizontal section on the line, 3—3, of Fig. 1;

Fig. 4 is a horizontal section on the line, 4—4, of Fig. 1;

Fig. 5 is a horizontal section on the line, 5—5, of Fig. 1.

Referring to said drawings, A is the upper wall of a steel drum or similar receptacle. B is a connecting member forming a port leading into the drum and ordinarily closed with a cap (not shown). The body of this member is tubular and interiorly screw threaded and has a flange, B1, overlapping and welded or brazed to the outer face of the wall, A.

A thick and firm tubular metal neck, C, has an upper exteriorly screw-threaded part formed to inter-fit with the interior threading of the connecting member, B. At the upper end of the neck, C, is an upward extension, C1, of smaller external diameter than the external diameter of the part which is screw-threaded. Thus there is formed an annular shoulder, C2.

On that shoulder is seated the lower end of a truncated, conical, sheet metal section, D, of the body of the funnel, the lower opening in said section being small enough to closely fit against the outer face of the extension, C1, while said section rests on the shoulder, C2. Welding metal, D1, joins the lower edge of the section, D, to the shoulder, C2. The upper edge of the section, D, is flared horizontally outward to form a flange, D2. An upright cylindrical sheet metal section, E, has at its lower edge an outward directed flange, E1, resting all the way around on the flange, D2. The flanges D2 and E1, are joined by welding or otherwise to make a strong union. The upper edge of the section, E, has an outward-directed flange, E2. A flange ring, F, has its outer edge over-lapping and welded or otherwise secured to the flange, E2. Said flange ring extends horizontally inward a distance sufficient for the purposes hereinafter mentioned. The inner edge of said ring is preferably bent downward, as shown by the drawings.

The neck, C, is shown as having a lower exteriorly threaded part of smaller exterior diameter than said upper threaded part. The threading on said lower part is formed to fit the interior threading of a smaller connecting member, B, the steel drums now in general use for receiving such liquids having connecting members of two standard sizes.

Below the second threading, the neck, C, has a downward extension, C4, in plain tubular form. This serves two purposes. The first of these purposes is to receive blows which would, in the absence of this extension, be received by the lower threads when the neck hits against the side of the tank wagon or any similar place when the funnel is not in position for use on the connecting member, B. Hence this extension, C4, is a buffer extension. The second such purpose is to provide suitable connection for the lower end of the vent tube.

The vent tube, G, has its upper end open and near the lower face of the flange ring, F, and it extends downward along the inner face of the wall of the section, E, and along the inner face of the wall of the section, D, and then downward through the neck, C, close to the inner face of the latter, and to the buffer extension, C4. There this tube is turned horizontally into a port, C5, formed in the extension, C4, whereby the lower end of the vent tube is given communication with the interior of the steel drum. The drawings show the vent tube welded or similarly secured to the sections, E and D, at G1. The lower end of said tube is shown

similarly secured to the extension, C4, at G2. A tongue, H, extends downward from the ring, F, and over the side of the vent tube, G.

It is to be observed that the vent tube, G, is entirely within the apparatus; that the upper end of said tube is shielded by the ring, F, and the tongue, H, in such manner as to avoid the pouring of liquid into the upper end of said tube when the liquid is being poured from the tank wagon into the funnel for downward flow through the neck, C.

At the same time the ring, F, and the tongue, H, prevent flow of liquid upward and out of the upper part of the funnel when liquid surges upward through the vent tube. Then the ring, F, and the tongue, H, deflect the upward stream of liquid and compel said stream to spread and then descend into the body of the funnel. In this connection it is to be noted that the steel tanks which are to be served by these funnels are large and hold a great quantity of liquid and when the liquid flows rapidly downward through the funnel from the large tank wagon or similar holder, at times strong surging of the liquid in the large drum or tank is developed. The primary function of this vent tube is to conduct air from the interior of the drum upward through the funnel into the atmosphere during the downward flow of liquid into the drum. The vent tube and the parts associated therewith are so constructed as to permit the upward and outward flow of air and also to permit upward flow of liquid, during surging, without slopping or splashing out of the funnel. It will be seen that usually the liquid will not reach and enter the vent tube until enough liquid has been delivered into the drum to bring it well toward the lower end of the neck, C. Then surging of the liquid will at times cause the liquid to enter and rush upward into and sometimes through the tube. Giving the lower end of the tube the lateral port, as above described, reduces the tendency of the liquid to enter the tube, the liquid tending merely to beat against the lower wall of the tube.

It is to be observed that the lower end of the vent tube is well secured and protected in the neck, C, the mouth of the tube being lateral and confined within the wall of the buffer extension, C4. When the funnel is detached from the drum, it may be set with the extension, C4, resting on any surface without tendency to admit dirt or other foreign matter into the lower end of the tube

I claim as my invention,

1. In a funnel, the combination of an exteriorly threaded tubular neck formed to fit the interior threading of a tank connecting member and said neck having an upward extension of smaller external diameter whereby a shoulder is formed, and a tapering body having its lower end surrounding said extension and seated on said shoulder and secured to said neck.

2. In a funnel, the combination of a tubular neck having an upper exteriorly threaded part formed to fit the interior of a tank connecting member and having a lower exteriorly threaded part formed to fit the interior threading of a smaller tank connecting member, and said neck having an upward extension of smaller external diameter than the exterior diameter of said threaded part whereby a shoulder is formed, and a tapering body having its lower end surrounding said extension and seated on said shoulder and secured to said neck.

3. In a funnel, the combination of an exteriorly threaded tubular neck formed to fit the interior threading of a tank connecting member and said neck having an upward extension of smaller external diameter whereby a shoulder is formed and said neck having at its lower end a buffer extension, and a tapering body having its lower end surrounding said extension and seated on said shoulder and secured to said neck.

4. In a funnel, the combination of a tubular neck having an upper exteriorly threaded part formed to fit the interior of a tank connecting member and having a lower exteriorly threaded part formed to fit the interior threading of a smaller tank connecting member, said neck having an upward extension of smaller external diameter than the exterior diameter of said threaded part whereby a shoulder is formed and said neck having at its lower end a buffer extension, and a tapering body having its lower end surrounding said extension and seated on said shoulder and secured to said neck.

5. In a funnel, the combination of an exteriorly threaded tubular neck formed to fit the interior threading of a tank connecting member and said neck having an upward extension of smaller external diameter whereby a shoulder is formed and said neck having at its lower end a buffer extension, a tapering body having its lower end surrounding said extension and seated on said shoulder and secured to said neck, and a vent tube extending downward through the body and said neck and opening laterally through the buffer extension.

6. In a funnel, the combination of a tubular neck having an upper exteriorly threaded part formed to fit the interior of a tank connecting member and having a lower exteriorly threaded part formed to fit the interior threading of a smaller tank connecting member, said neck having an upward extension of smaller external diameter than the exterior diameter of said threaded part whereby a shoulder is formed and said

neck having at its lower end a buffer extension, a tapering body having its lower end surrounding said extension and seated on said shoulder and secured to said neck, and a vent tube extending downward through the body and said neck and opening laterally through the buffer extension.

7. In a funnel, the combination of an exteriorly threaded neck, a body, a flange ring on the upper part of the body, a downward-directed tongue at said ring, and a vent tube extending upward through said neck and the body and nearly to said ring and between said tongue and the wall of the body.

8. In a funnel, the combination of an exteriorly threaded neck, a body, a flange ring on the upper part of the body, and a vent tube opening laterally through said neck and extending upward through said neck and said body and nearly to and opening under said flange ring.

9. In a funnel, the combination of a tubular neck which is thick and firm relative to the below-mentioned body and is exteriorly threaded to fit the interior threading of a tank connecting member and which neck has at its upper end an annular shoulder, and a sheet metal tapering body having its lower end seated and secured on said shoulder.

In testimony whereof I have signed my name, this 2nd day of June, in the year one thousand nine hundred and twenty-seven.

GLEN G. HILFORD.