Oct. 23, 1923. 1,471,952

C. T. FORD

METHOD OF MAKING CONTAINERS

Filed Jan. 16, 1922

Fig. 1.

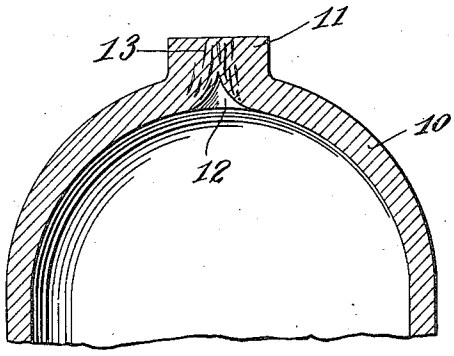


Fig. 2.

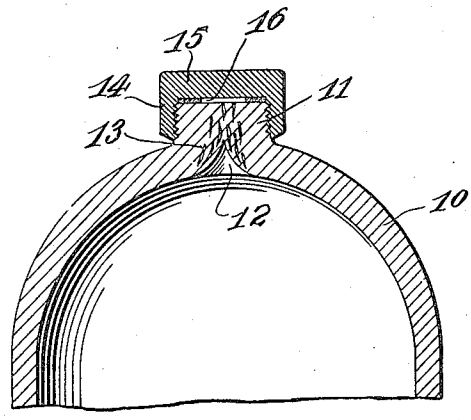


Fig. 3.

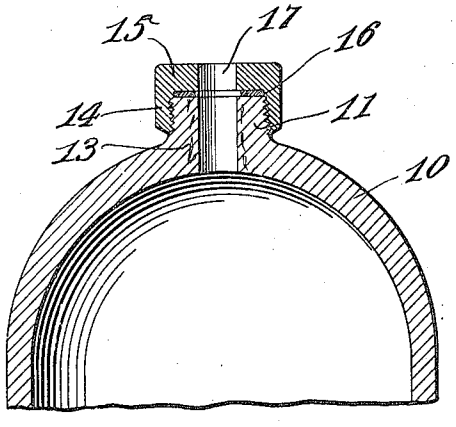
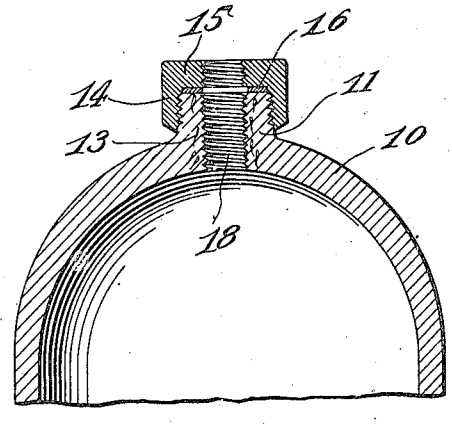


Fig. 4.



Inventor

Charles T. Ford

By Lenhouder, Bryant & Darby

Attorneys.

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UNITED STATES PATENT OFFICE.

CHARLES T. FORD, OF WASHINGTON, DISTRICT OF COLUMBIA.

METHOD OF MAKING CONTAINERS.

Application filed January 16, 1922. Serial No. 529,700.

To all whom it may concern:

Be it known that CHARLES T. FORD, a citizen of the United States, residing at Washington, D. C., has invented new and useful Improvements in Methods of Making Containers, of which the following is a specification.

The present invention relates to containers and method of making same, and in its present embodiment is shown applied to containers for gas, but it will be understood that the container and the method of making that container are not to be limited in their use to the specific adaptation herein shown and described, and they are capable of use with fluids other than gas.

Containers as made today for shipment of gases are ordinarily what are known as "seamless drawn," that is, they are made of seamless cylindrical sections having an integral bottom, and the neck of the container is formed by drawing the end of the cylinder into a dome-shape with a protruding neck, which neck is formed by collapsing the metal of the cylinder into a cylindrical solid projection at the apex of the dome. The neck thus formed is then tapped to receive the standard plug gauge or valve.

In the operation of drawing up and collapsing the end of the cylinder to form the neck, it has been found that as the metal collapses, it does not form a solid homogeneous neck, but contains pipes and valleys, particularly at its center so that in tapping the hole through the neck for the sealing plug or valve, these imperfections in the metal not infrequently permit leakage of the gas into and about the screw threads formed therein. This escape of the gas past the valve or plug is, in the case of rare gases a very considerable loss, and in the case of lethal or explosive gases a constant and serious danger.

It is with the object of overcoming this difficulty that I have developed the container and method of making the same hereinafter described and illustrated in the drawings herewith, which show one physical embodiment of my invention, but it will be understood that the drawings are illustrative and in no sense restrictive of the invention, as equivalent mechanical expedients other than those herein shown may be adopted and still be within the range of my invention.

In the drawings:

Fig. 1 is a vertical sectional view showing conventionally the top of a container drawn to a dome-shape with a neck portion formed by bringing together and collapsing the metal of the cylinder.

Fig. 2 is a view similar to Fig. 1 with the neck threaded and a sealing cap thereon.

Fig. 3 is a view similar to Figs. 1 and 2, showing the drilled opening in the cap and neck.

Fig. 4 shows the completed article with the opening in the cap and neck tapped for the reception of a sealing plug or valve.

Referring to the drawings by numbers, like numbers indicating like parts in the several views, 10 indicates the upper part of any container of suitable size and dimensions, this upper part 10 being here shown as drawn to a dome-shape with the end of the cylinder drawn and collapsed into a neck 11 at the apex of the dome.

In Fig. 1 is illustrated conventionally the condition of the metal of the neck which results from drawing up the cylinder to form that neck. At the base of the neck will be the recess or pipe 12, and throughout the body of the neck will be found the pipes 13 which, as stated, have not infrequently caused defective and leaky threaded seats when this neck has been threaded in the final operation for the reception of the standard gauge plug or valve, the plug, it being understood, being used for transportation, and the valve being inserted upon removal of the plug, both for filling and for release of the gas in the container.

The neck 11 of the container shown in Fig. 1, is, following my invention, exteriorly threaded as shown in Fig. 2, and upon this threaded neck is mounted a cap 14 made of high grade homogeneous metal, the top 15 of the cap being of sufficient thickness to give a very appreciable vertical dimension or area. Between the cap 14 and the neck 11 may be arranged, if desired, a washer 16 of any suitable material which will serve to seal and make a tight joint.

With the cap 15 mounted upon the neck 11 as shown in Fig. 2, the container is then subjected to a drilling operation, as illustrated in Fig. 3, a hole 17 of the proper dimensions being drilled directly through the top 15 of the cap and the neck 11.

The last step in the operation is shown in

Fig. 4, and consists in threading the drilled hole 17 as shown at 18 in Fig. 4.

It will be seen from Fig. 4 that the tapped opening for the sealing plug or the valve passes, not only through the neck 11 of the cylinder, which threaded opening, as has been stated, is likely to develop faults due to the pipes and imperfections in the drawn up neck 11, but also passes through the homogeneous virgin metal of the cap 15 in which a perfect screw thread, free from any imperfections, is formed, and the area of which is sufficient to effectually guard against the escape of gas past the cap in the event of imperfections developing in the threaded area of the container neck 11. The packing 16 effectually prevents the escape of gas leaking past the neck by way of the threaded connection between the exterior of the neck and the flange of the cap.

Obviously, the thickness of the top 15 of the cap may be increased or diminished so as to provide a threaded area of the requisite dimensions to insure a tight joint with the plug or valve.

If desired, the nut 14 may be exteriorly threaded, or otherwise formed to receive the valve guard cap which is ordinarily used where the containers are shipped with the valve in place in order to prevent breakage of the valve in transportation.

I have described the method and article in connection with the making of new containers, but the invention is useful, and I contemplate this use in connection with the repair of containers in which the threads of the neck have become worn or mutilated so that they no longer afford a proper seat for the valve or sealing plug.

It will be apparent from Fig. 4 that if the container 10, having the screw threaded orifice 18, is, by reason of use, unfit for further service, that it can be repaired and its use continued by applying the cap 14 to it, and then drilling and threading the cap as heretofore described. The cap would, of course, be made of sufficient thickness to give a long threaded seat which would effectually prevent leakage of gas, and thus the life of the container, which, it is to be assumed, is not impaired, except as to its threaded seat 18, can be prolonged.

From the foregoing, it will be seen that an absolutely tight seat for the plug or valve will be formed, and danger of leakage because of faults in the metal of the neck is eliminated. Additionally, the cap 14 positioned, as shown, materially strengthens the neck against lateral pressures from screwing the plug or valve into the threaded opening.

As stated, the present disclosure is merely illustrative, and such departures from the present disclosures as are within the range of mechanical skill may be made and still be within the purview of my invention.

I claim:

1. The method of forming container necks which consists in shaping the neck, applying a cap to the shaped neck, and providing said cap and neck with a threaded orifice.

2. The method of forming container necks which consists in collapsing and drawing together a cylinder to form a neck, applying a cap to the exterior of said neck, and providing said cap and neck with an orifice.

3. The method of forming container necks which consists in collapsing and drawing together a cylinder to form a neck, applying a flanged cap to the exterior of said neck, and providing said cap and neck with an orifice.

4. The method of forming container necks which consists in collapsing and drawing together an open-ended cylinder to form a neck, applying a cap to said neck, drilling said cap and neck, and threading said drilled orifice.

5. The method of forming container necks which consists in collapsing and drawing together an open-ended cylinder to form a neck, threading said neck exteriorly, applying a threaded and flanged cap to said neck, and forming an orifice in said cap and neck.

6. The method of forming container necks which consists in applying a cap to a preformed neck, drilling an orifice through said cap and neck, and threading said orifice.

7. The method of forming container necks which consists in applying a flanged cap to a preformed neck, drilling an orifice through said cap and neck, and threading said orifice.

8. The method of forming container necks which consists in applying a flanged and threaded cap to a substantially solid preformed and exteriorly threaded neck, and drilling an orifice through said cap and neck.

9. The method of forming container necks which consists in applying a flanged and threaded cap to a substantially solid preformed and exteriorly threaded neck, drilling an orifice through said cap and neck, and threading said orifice.

In testimony whereof I have hereunto set my hand.

CHARLES T. FORD.