

Sept. 5, 1933.

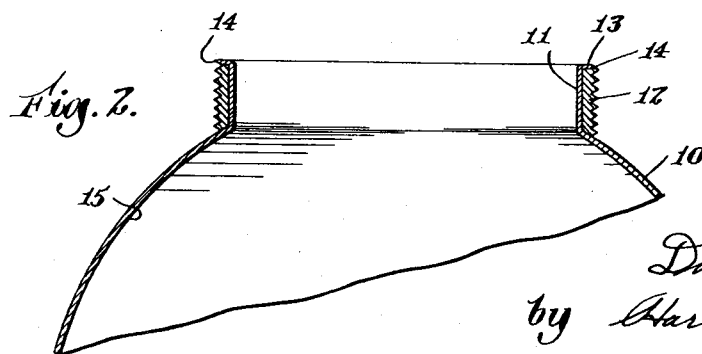
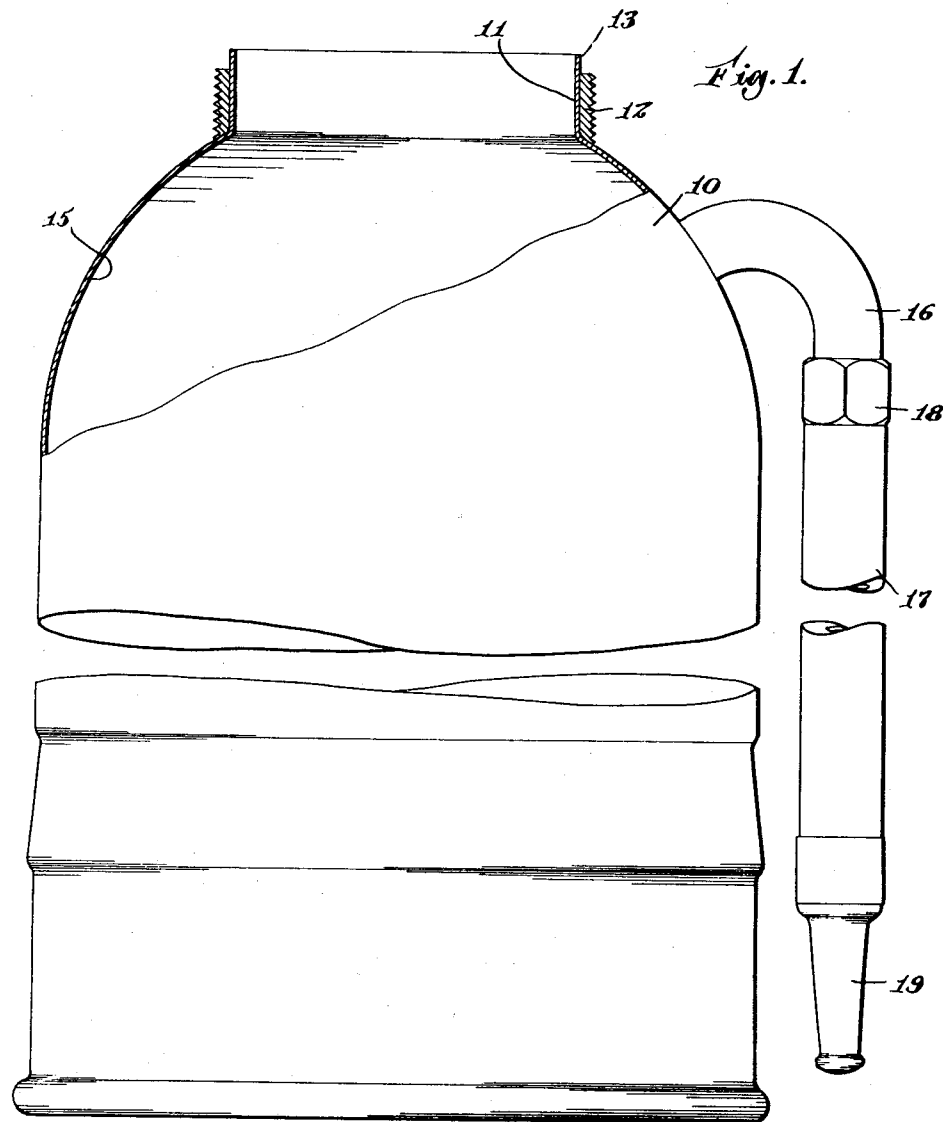
D. ESTES

1,925,313

FIRE EXTINGUISHER

Filed April 16, 1931

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3.

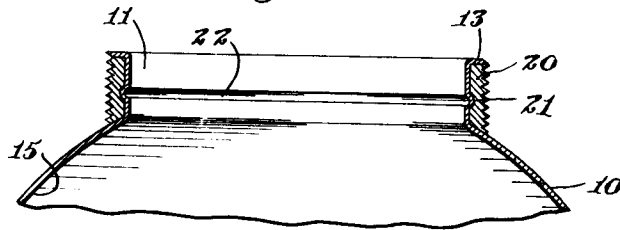


Fig. 4.

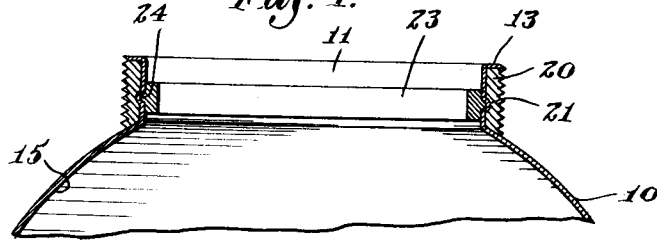


Fig. 5.

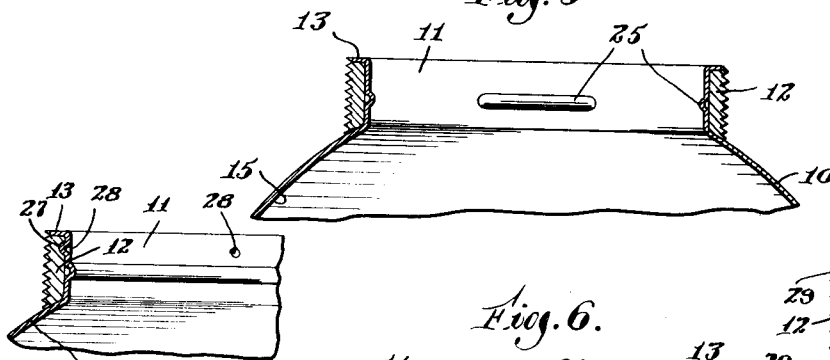


Fig. 7.

Fig. 6.

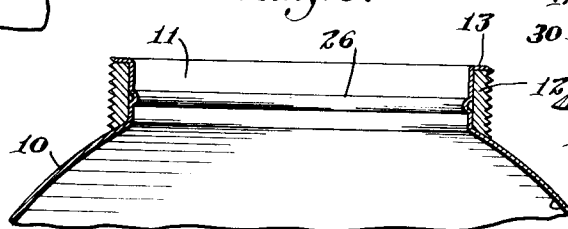


Fig. 8.

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UNITED STATES PATENT OFFICE

1,925,313

FIRE EXTINGUISHER

Dana Estes, Brookline, Mass.

Application April 16, 1931. Serial No. 530,548

8 Claims. (Cl. 169—32)

My present invention relates to fire extinguishers, and includes a novel method of manufacturing the same.

When utilizing fire extinguishers of the hand type with certain fire extinguishing compounds, it is desirable that the interior of the extinguisher be provided with a deposit of nickel plating, for protective purposes. In prior extinguishers wherein the shell is composed of sheet material having its edges overlapped, soldered and riveted, as well as in prior extinguishers wherein the threaded collar is flanged and soldered to the interior of the shell or dome adjacent to the top opening, it has been very difficult to apply a ductile nickel plate to such interiors, because of the bi-metallic surfaces which must be coated.

Furthermore, if the soldering at any of the joints on the interior of the extinguisher has been ground, as is customary, particles of the grinding compound or medium are forced into the solder, on its exposed surface, thus preventing adhesion of the nickel plating thereto.

An important object of the present invention, therefore, resides in the provision of a fire extinguisher wherein the interior of the shell comprises a uni-metallic uninterrupted surface, lending itself with great adaptability to the reception and deposit of a ductile nickel plate.

In the prior types of fire extinguishers wherein the threaded collar was flanged and soldered to the interior of the shell or dome adjacent to the top opening, a point or line of weakness is present, often resulting, when pressure is built up within the extinguisher, in the blowing off of the cap and collar. Many serious and fatal accidents have occurred because of this weakness of construction.

A further important object, therefore, of the present invention resides in the provision of a fire extinguisher wherein the neck or throat portion thereof is possessed of greater strength than the body of the shell. Thus the throat and neck portion of my novel extinguisher is capable of withstanding greater pressure and strain than the body of the shell of which said neck and throat portion is a part.

In carrying out my present invention I preferably draw the shell of my novel extinguisher as an integral unitary member, providing a neck protruding from said shell beyond the required distance. Over this protruding neck I apply a threaded collar which abuts against the shell, to which is threaded the cap or head. The protruding neck is of greater height than the height of said threaded collar, and after the collar has

been positioned, the excess portion of said neck is forced outwardly and downwardly upon the top of said threaded collar, said projecting portion being substantially the same width as the thickness of the collar. Thereupon I preferably re-thread said collar, which simultaneously shapes and adapts the turned edge of the neck to the thread of said collar.

The extinguisher thus briefly described is simple and economical to manufacture, and is possessed of the further advantages of an uninterrupted uni-metallic interior surface, eliminating all soldered joints, and eliminating also the flanged collar heretofore utilized, as well as presenting a strong, rugged and durable neck and throat portion.

If desired, I may provide on the interior surface of the threaded collar an annular groove, and after the projecting neck has been flanged over said collar, I may spin the metal of the neck into said groove, thereupon inserting an expansible metal ring into the neck, said ring being provided with a peripheral rib corresponding to the recess or groove above mentioned, and expand said ring so that its peripheral rib is forced into the groove formed in the neck. This expanded ring constitutes a support for the cage suspension for the internal mechanism of the extinguisher.

In place of the ring support above described, I may provide the neck of the extinguisher with a single inwardly projecting lip or lug, or with a plurality of inwardly projecting lugs, these lugs being formed in the neck before application of the threaded collar thereover. Either the single annular lug or rib, or the plurality of lugs, will provide ample support for the aforementioned cage.

I believe that the fire extinguishers above briefly described, are novel, and I have therefore claimed the same broadly in the present application.

I also believe that the method of manufacturing the same, utilizing the steps above briefly described, is novel, and have therefore included claims to this method broadly in this application. Other features and objects of the invention, details of construction, combinations of parts, and advantages, will be hereinafter more fully pointed out, described and claimed.

Referring to the drawings, illustrating preferred embodiments of the present invention,

Fig. 1 is a side elevation, partly broken away, illustrating my novel extinguisher during the method of manufacture;

Fig. 2 is a fragmentary vertical sectional view

illustrating the projecting neck headed over on to the threaded collar;

Fig. 3 is a fragmentary vertical sectional view illustrating the use of the grooved threaded collar into which the material of the neck has been spun;

Fig. 4 is a fragmentary vertical sectional view illustrating the expanded cage supporting ring;

Fig. 5 is a fragmentary vertical sectional view illustrating the formation of a plurality of cage supporting lugs directly in the neck of the shell;

Fig. 6 is a fragmentary vertical sectional view illustrating the formation of a single inwardly projecting annular cage supporting rib.

Fig. 7 is a fragmentary vertical sectional view illustrating the provision of means to prevent rotation of the threaded collar; and

Fig. 8 is a fragmentary vertical sectional view illustrating an alternative means to prevent rotation of said collar.

Referring now to the drawings, for a particular description of the invention, 10 designates the shell of my novel extinguisher which is drawn as a seamless unitary member, including a neck 11 projecting vertically at the top open end of the shell. While I have illustrated, and referred to the member 10 as a shell, it will be appreciated and understood by those skilled in this art that my invention may be practiced with equal facility on fire extinguishers wherein a dome is utilized together with a shell, and that the word shell as used throughout the description and claims refers to either a complete shell, or the dome portion, which is itself of shell formation.

Over the projecting neck 11 is positioned a threaded collar 12, preferably having a snug fit around said neck and against the outer edge of the shell adjacent to the throat thereof.

The collar 12 is of less height than the neck 11, and after the collar 12 has been positioned, the projecting portion 13 of said neck is turned down upon the top of the collar 12, as clearly illustrated in Fig. 2. After the projecting portion 13 is turned down, I may, if desired, re-thread the collar 12, which will simultaneously shape the outer edge of the projecting portion 13 to the shape of the teeth of the collar 12, as clearly illustrated at 14.

It will thus be appreciated, from an inspection of Fig. 2, that the interior 15 of my novel fire extinguisher, as thus far completed, comprises a seamless uninterrupted uni-metallic surface, ideally adapted for the reception of a ductile nickel plate, preferably applied by the usual electro-plating methods.

Thereupon the usual elbow 16 is affixed to the shell 10, and the usual hose 17 united thereto by a coupling 18, said hose being provided with the customary discharge nozzle 19.

From an inspection of Fig. 2, also, it will be apparent that the neck and throat portion of a fire extinguisher constructed according to my invention will be possessed of tremendous strength and pressure resisting qualities, which will be instantly apparent to those skilled in this art.

The extinguisher illustrated in Fig. 2 is now complete, at the throat portion, for those types of extinguishers wherein the internal mechanism is suspended from the cap or top, but as many extinguishers utilize a cage suspension for said internal mechanism, I may provide my extinguisher with supporting means for this cage.

In Figs. 3 and 4, I have illustrated one method of carrying out this feature of the invention, wherein the threaded collar 20 is provided with

an annular groove 21 on its inner surface. After the collar 20 is positioned, I then spin the metal of the neck 11 into the groove 21, as clearly illustrated at 22. Thereupon a ring 23 is inserted into the neck 11, this ring 23 being provided with an annular rib 24 on its outer surface. The ring 23 is positioned in the neck 11 so that the rib 24 is in alinement with the groove 22 formed in the neck 11. Thereupon said ring is expanded outwardly, until the rib 24 is seated in the groove 22 and the ring firmly held in said neck. The ring 23, located on the interior of the neck 11, thus constitutes a strong support for the aforementioned cage.

In Fig. 5, I have illustrated a modification of cage suspension means, wherein a plurality of inwardly projecting lugs 25 are formed in the neck 11 before the threaded collar 12 is applied. These lugs 25 are of a sufficient number and so spaced as to provide ample support for said cage, as will be understood.

In Fig. 6, I have illustrated, in place of the plurality of lugs 25, a single inwardly projecting rib 26 extending completely around the interior of the neck 11, this rib being formed in the neck 11 prior to application of the collar 12.

All of the modifications illustrated in Figs. 3 to 6 inclusive are possessed of the same advantages of strength and seamless internal plating surfaces as the form illustrated in Figs. 1 and 2.

In Fig. 7, I have illustrated the collar 12 as provided with a plurality of indentations 27. After the neck 11 is flanged over as at 13, I then press the metal of the neck 11 into the indentations 27, as illustrated at 28. This may be performed at any desired number of points around the inner periphery of the neck 11, and will effectually prevent any tendency on the part of the collar 12 to rotate, should the cap become corroded, or otherwise stuck thereon, and will permit the use of considerable force to effect a turning and removal of the cap or cover.

In Fig. 8, I have illustrated the top and bottom edges 29 and 30 of the collar 12 as provided with a coarse knurling. Thus when the neck is flanged over, as at 13, the pressure will force the material of the flange 13 into this knurling, and will also force the bottom knurled edge 30 into the material of the shell 10 as illustrated at 31.

The two forms of means to prevent rotation of the collar 12 illustrated in Figs. 7 and 8 are for illustrative purposes, as will be readily understood.

The bottom of the extinguisher may be applied and secured to the shell 10 in any desired manner.

It will thus be appreciated by those skilled in this art that I have devised a novel fire extinguisher, and method of making same, having the advantages of strength, uninterrupted interior, economy, ease of manufacture, and simplicity.

While I have necessarily described my present invention somewhat in detail, it will be appreciated that I may vary the size, shape, and arrangement of parts, within reasonably wide limits, without departing from the spirit of the invention.

My invention is further described and defined in the form of claims as follows:

1. A fire extinguisher, comprising a shell, a tubular integral neck projecting therefrom, a threaded collar of less height than said neck surrounding said neck, the open end of said neck being flanged over said collar throughout the entire periphery of said open end to lock said collar

in position, and cage supporting means integral with and pressed inwardly from said neck.

2. A fire extinguisher, comprising a shell, a tubular integral neck projecting therefrom, a threaded collar of less height than said neck surrounding said neck, the open end of said neck being flanged over said collar throughout the entire periphery of said open end to lock said collar in position, and a plurality of cage supporting lugs pressed inwardly intermediate the ends of said neck.

3. A fire extinguisher, comprising a shell, a tubular integral neck projecting therefrom, a threaded collar of less height than said neck surrounding said neck, the open end of said neck being flanged over said collar throughout the entire periphery of said open end to lock said collar in position, and an annular cage supporting rib pressed inwardly intermediate the ends of said neck.

4. A fire extinguisher, comprising a seamless shell, a tubular integral neck projecting therefrom, a threaded collar surrounding said neck, the open end of said neck being flanged over said collar to lock said collar in position, said collar having an annular groove on its inner surface, a portion of the material of said neck being forced into said groove, whereby said neck also has an annular groove on its interior surface, a cage supporting ring on the interior of said neck, and an annular rib on the interior surface of said ring

seated in the groove on the interior surface of said neck.

5. A fire extinguisher comprising a relatively thin sheet metal shell, a tubular integral neck projecting therefrom, a threaded collar surrounding said neck and fastened thereto, and a cage supporting formation constituting an integral part of the neck pressed inwardly intermediate the ends of said neck.

6. A fire extinguisher comprising a sheet metal shell inclusive of a neck, a collar surrounding said neck and fastened thereto, and a cage supporting formation integral with said neck and pressed laterally therefrom between the ends of the collar.

7. A fire extinguisher comprising a sheet metal shell inclusive of a neck, an interiorly grooved collar surrounding said neck, the metal of the neck being pressed into the groove of the collar to fasten the latter to the neck and to provide an inwardly opening groove in the neck to accommodate a cage supporting element, and a cage supporting element within the neck having a retaining formation disposed in said groove.

8. A fire extinguisher comprising a sheet metal shell inclusive of a neck, a collar surrounding said neck and fastened thereto, a laterally extending formation pressed from the neck between the ends thereof, and a cage supporting ring within the neck having a formation interfitting with the formation of the neck.

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