Dec. 5, 1939. R. J. SWANSON 2,182,040

WATERPROOF CONTAINER

Filed Dec. 4, 1936

Fig. 1

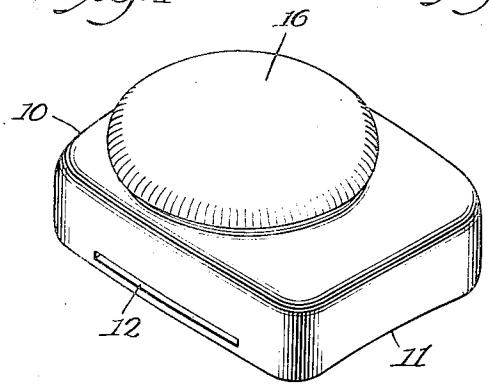


Fig. 2

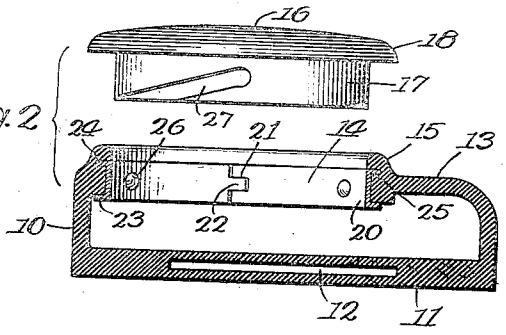


Fig. 3

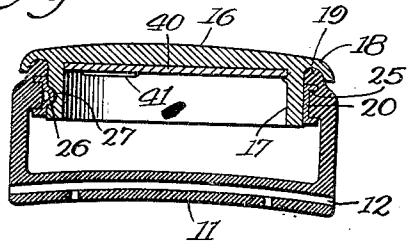
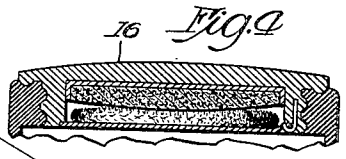


Fig. 4



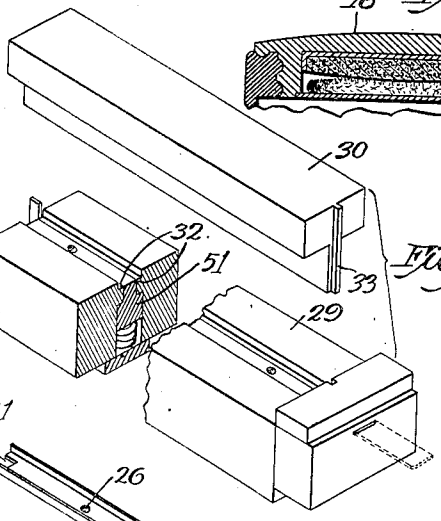


Fig. 5

Fig. 7

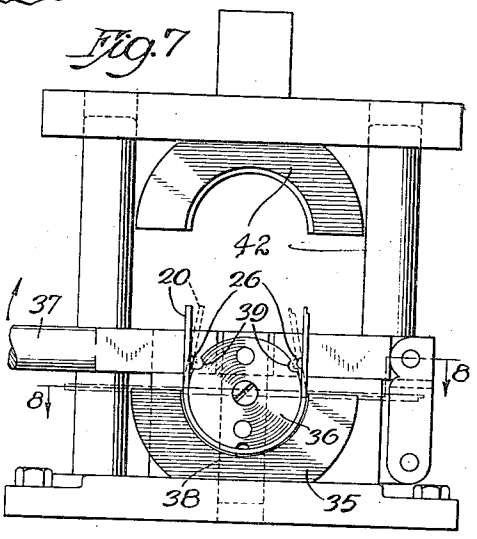
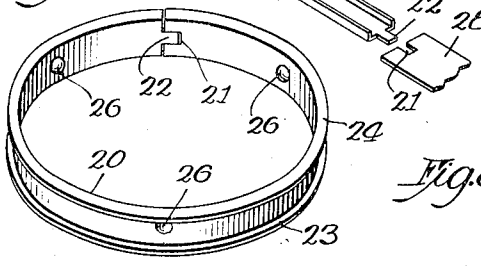


Fig. 9

Fig. 6



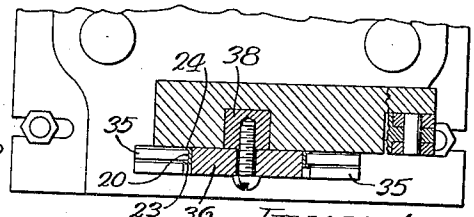


Fig. 8

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Patented Dec. 5, 1939 2,182,040

UNITED STATES PATENT OFFICE

2,182,040

WATERPROOF CONTAINER

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Application December 4, 1936, Serial No. 114,179

4 Claims. (Cl. 150—8)

The invention relates to waterproof containers for carrying such articles as cigarettes, matches, jewelry, money, etc., and to a structural element thereof and to the method of forming such part; the principal object of the invention being to provide a container that is waterproof and shaped so that it may be carried in a suitable pocket in a bathing suit or strapped to a portion of the user's body; and which may be provided with a compact or vanity case formed in the closure for the container. It relates, further, to the metallic liner for the wall of the opening of the container.

The other objects of the invention are to obtain cheapness of construction, durability, tight sealing of the closure, and to provide a metallic liner for the opening which shall be readily insertable and cooperate with the closing cap to form a perfect seal without requiring the use of a gasket.

The invention is fully hereinafter described, and is illustrated in the accompany drawing, in which—

Fig. 1 is a view in perspective of the container;

Fig. 2 is a longitudinal section of the container through its aperture—the closure therefor being shown detached and in elevation;

Fig. 3 is a transverse sectional view through the opening, the closure being shown as applied;

Fig. 4 is a detail transverse section on the same plane as Fig. 3, showing a modified form of construction;

Figs. 5 to 8 represent the blank of a metallic element of the device and forming dies therefor; and

Fig. 9 is a view in perspective of such element.

This application is in part a continuation of my application for improvements in Waterproof containers filed September 30, 1933, Serial No. 691,611.

In the embodiment of the invention as illustrated in the accompanying drawing the container, generally designated by the numeral 10, takes the form of an oblong box, one of the faces 11 of which may be slightly concave to adapt it to fit snugly against the portion of the user's body to which it may be secured, and the concave wall may be provided with a transverse channel 12 to accommodate an attaching strap (not shown). The front or outer wall 13 of the container is provided with a circular aperture, generally designated by the numeral 14, preferably located adjacent one end of the device and being of sufficient diameter to give convenient access to the interior for entering or removing the articles to be carried.

The container is preferably seamless, and is formed of soft rubber, the rubber, however, being of sufficient hardness to enable the container to maintain its shape in normal usage. The outer wall of the container, in the vicinity of the aperture 14, is thickened to form an annular flange 15 which may, and preferably does, extend both outwardly and inwardly beyond the surfaces of the wall in which it is formed. The cap 16 for this aperture has an annular flange 17 for interfitting the aperture, and a lateral annular flange 18 for engaging the outstanding portion 19 of the flange 15.

Some form of threaded engagement of the flange 17 with the wall of the aperture 14 is provided. In the construction of Fig. 4 continuous threads are formed directly in the wall of the aperture, corresponding threads being formed on the closure flange 17. Preferably, however, a metallic liner 20, for the wall of the aperture, is provided. This liner is formed from a strip of metal of sufficient length to completely encircle the aperture, and having its ends provided, respectively, with a mortise 21 and a tenon 22. The side margins of the strip are flanged outwardly, as shown at 23, 24, one flange, as 23, being adapted to fit against the inner face of the wall 15 of the container aperture, and the other, 24, to enter an annular channel 25 in the circumferential face of this opening.

The liner 20 is further provided with an annular series of instanding studs, as 26, for engaging in a series of short helically disposed channels 27, formed in the outer face of the flange 17 of the cap 16 and extending from its inner margin, and at their inner ends being inclined to a common radial plane of the flange. These cooperating studs and channels providing a screw-threaded action for drawing the cap tightly against the outstanding flange of the aperture to provide a watertight seal, the straightened ends of the channels serving as a lock to prevent accidental loosening of the cap.

The cap 16 is preferably formed of a hard material, synthetic resin having thus far been used for this purpose.

The liner 20 is preferably wrought to proper form in three stamping operations, the various steps being illustrated in Figs. 5, 6, and 7, 8. A flat metal strip 28 is first fed into the matrix element 29 of a forming die. When the stamping die or punch 30 descends the central portion 31 of the floor of the matrix recedes against spring pressure, and the flanges 23, 24, are formed by the shoulders 32. At the same time

the rib 33 at the end of the punch, traveling in the slot 34, forms a tenon 22 on the blank being stamped, and a mortise 21 on the following blank. When the punch has forced the floor 31 of the matrix against a stop (not shown), the studs 26 are formed by suitable means provided on the die faces. The finished blank, as it comes from the dies shown in Fig. 5, has a form such as shown in Fig. 6.

The channel shaped blank of Fig. 6 is then placed in a device, such as shown in Fig. 7, which has a semi-circular matrix 35 and a complementary punch 36. The punch is forced into the matrix by a hand lever 37, being guided in its vertical movement by a cross-head 38. In this operation the blank takes the form shown in full lines in Fig. 7.

The upstanding ends of the blank are then manually bent inwardly, as shown in dotted lines in Fig. 7, and another matrix, 42, descends by power to form the blank into the annular form of Fig. 9, which is its completed form.

The die 36 is provided with recesses 39 to receive the studs 26.

The cap 16 may be provided with a compact housed within its aperture, as indicated in Fig. 4; this aperture being inclosed by a suitable lid attached to the inner margin of the flange 17, here shown as externally threaded. This lid is preferably given the form of a mirror. When the compact is not present a mirror 40 may be secured against the inner face of the cap 16 by snapping it past the lugs 41.

The disclosed embodiments of the invention are typical, but may be varied from in practice, and the seal of this invention may obviously be used for other waterproof containers, such as ice packs, hot water bottles, etc.

I claim as my invention:

1. In combination, a receptacle of the class described formed of soft rubber and having a circular opening surrounded by an axially thickened integral rim having an annular channel in its inner face, a transversely split metallic liner for the rim having outstanding marginal flanges for engaging the channel and inner face of the rim and an annular series of instanding studs, a rigid cap for and being of greater diameter than the opening and having an annular instanding flange for interfitting the liner, and a series of helically disposed grooves for engaging the studs.

2. In combination, a receptacle of the class described formed of soft rubber and having a circular opening surrounded by an axially thickened integral rim having an annular channel in its inner face, a transversely split metallic liner for the rim having interlocking ends and an outstanding flange at its outer margin for engaging the channel and an annular series of instanding studs, a rigid cap for and being of greater diameter than the opening and having an annular instanding flange for interfitting the liner, and a series of helically disposed grooves for engaging the studs, such grooves entering from the inner end of the flange and at their inner ends being deflected to a common radial plane of the flange.

3. In combination, a receptacle of the class described formed of soft rubber and having a circular opening surrounded by an outstanding internally channeled flange, a split metallic liner for the opening having an outstanding flange at its outer margin for engaging the channel and an annular series of instanding studs, a rigid cap for and being of greater diameter than the opening and having an annular instanding flange for interfitting the liner, and a series of helically disposed grooves for engaging the studs.

4. In combination, a receptacle of the class described having an opening the wall of which is solid and is formed of soft rubber, a metallic split ring liner for such wall having radially projecting marginal flanges and a plurality of instanding studs, and a closure cap for the opening having helically disposed grooves for engaging the studs and a marginal flange overlapping and directly engageable with the margin of the opening.

REINHOLD J. SWANSON.