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J. M. CONNER ET AL

2,908,417

CONTAINER STRUCTURE AND CLOSURE THEREFOR

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Fig. 1

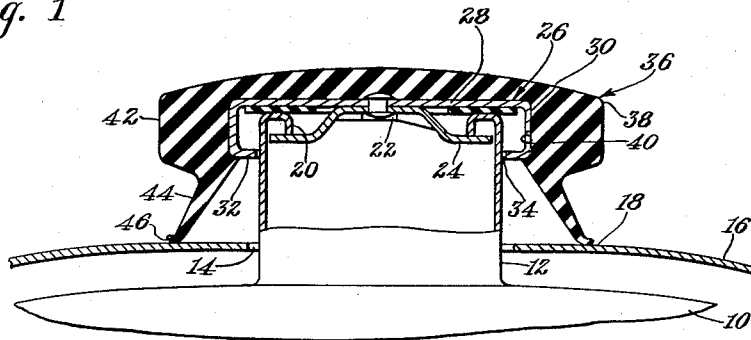


Fig. 2

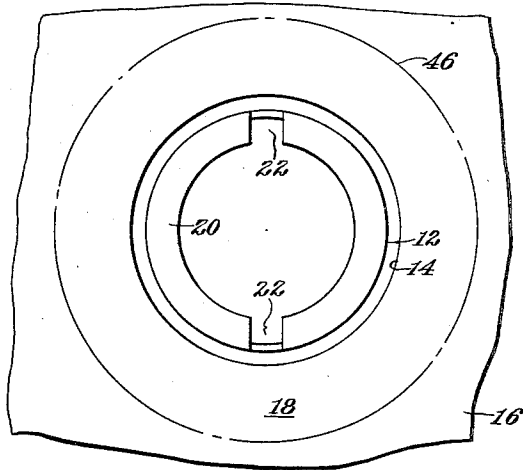


Fig. 3

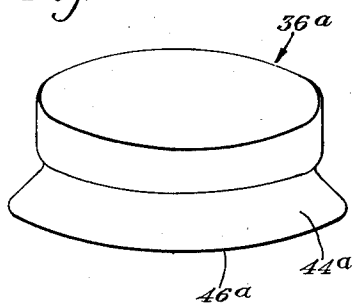


Fig. 4

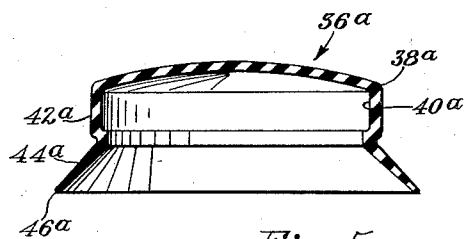
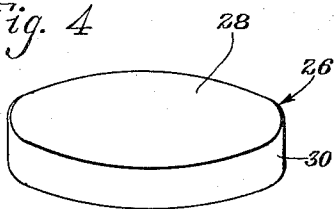


Fig. 5

INVENTORS
J. M. Conner &
W. F. H. Purcell

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CONTAINER STRUCTURE AND CLOSURE THEREFOR

James M. Conner, Glendale, and William F. H. Purcell, Pasadena, Calif., assignors, by mesne assignments, to Deere & Company, a corporation of Delaware

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6 Claims. (Cl. 220-14)

This invention relates to a container structure and closure therefor and more particularly to an improved closure comprising a closure cap and a cover carried thereby and including means for forming an effective substantially dirt-proof seal about the container or allied structure.

The invention finds particular utility in the automotive vehicle art, especially in the agricultural tractor art, in which a typical situation involves a container, such as a radiator or fuel tank, located beneath protective hood structure, the container having a filler neck extending through an opening in the hood structure. The container will normally be rigidly mounted relative to the hood and consequently a certain amount of lost-motion must be allowed between the hood and the container structure, necessitating the provision in the hood of an opening substantially larger than the filler neck. In assembly, it is very often found that the filler neck and opening will not have absolute concentricity. Prior filler neck caps co-operated solely with the filler neck and thus had no effect in sealing the opening between the hood and the filler neck. According to the present invention, the cover carried by the filler neck cap includes a flared annular skirt which accomplishes this purpose.

Another problem encountered in a container arrangement of the character mentioned above is that the conventional filled neck cap relies upon an internal bayonet connection, the cap including an outer annular or substantially annular wall depending below the top terminal edge of the filler neck and having an annular flange necessarily allowing an annular space between said flange and the filler neck, through which space dirt, chaff and other foreign material is apt to enter. It is therefore an object of the improved closure to include a cap in which the flared skirt forms an effective dirt-proof seal between the container or the overlying hood structure so as to eliminate the entrance of dirt as mentioned above. It is a further object of the invention to provide the cap with a cover in either a flexible, resilient stretchable type which may be removably carried by the cap or a molded type in which the cover has an internal cap-receiving pocket in which the cap is initially molded. The invention features a simple and economic construction that accomplishes the functional characteristics mentioned above, besides lending itself to the use of attractive materials and shapes which improve the appearance of the vehicle on which used.

The foregoing and other important objects and desirable features encompassed by and inherent in the invention will become apparent as preferred embodiments thereof are disclosed in detail in the ensuing specification and accompanying sheet of drawings, the several figures of which are described immediately below.

Fig. 1 is a sectional view showing the container structure, an overlying hood or sheet, and the cap and cover therefor.

Fig. 2 is a plan view of the structure shown in Fig. 1, but with the cap removed.

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Fig. 3 is a perspective of a modified form of cover.

Fig. 4 is a perspective view of the filler neck cap.

Fig. 5 is a transverse sectional view of the cover shown in Fig. 3.

As will be appreciated, the container structure illustrated is only typical and for that purpose will be described somewhat generally. The numeral 10 represents a container such as a fuel tank or radiator or any other container, having a filler neck 12 projecting therefrom through an opening 14 in an overlying sheet or hood structure 16 which presents a substantially flat portion or area 18 bordering the opening 14. The use of the term "flat" is one of convenience and not limitation, since typical sheets will have one form or another of configuration based on a relatively large radius. The filler neck 12 is of typical construction having at its top an inwardly turned flange 20 affording diametrically opposed slots 22 for receiving lug means 24 on a closure cap 26. When the cap is installed on the filler neck as seen in Fig. 2, the lugs 24 are received respectively by the slots 22, and then the cap is turned approximately 90° in a clockwise direction. The details of the cap are not material and that shown is of substantially circular shape; although, it is not unknown to provide similar caps with external portions enabling the user to secure a better grip for turning the cap on and off.

Inasmuch as a typical assembly requires that the container 10 be mounted independently of the hood or sheet 16, the opening 14 about the filler neck 12 must be sufficiently large to allow not only a limited amount of lost-motion during operation so as to prevent undue noise and rattles but also to allow possible misalignment during assembly, so that in every case the filler neck 12 and opening 14 are not always perfectly concentric.

Another thing that should be noted from Fig. 1 is that the cap 26 has a substantially circular top 28, a depending integral substantially annular wall 30 and a lower terminal marginal flange 32. This flange as will be seen is spaced considerably above the area 18 and even if the area 18 is not present the flange is spaced a considerable distance above the top of the container 10. In order that the cap may be readily mounted on and removed from the filler neck, the internal diameter of the flange 32 is substantially larger than the outside diameter of the filler neck, at least sufficiently so as to leave at least a slight annular space at 34 through which dirt, chaff, and other foreign particles may find entrance. This material often lodges on the inner lip of the flange and when the cap is removed it is apt to fall into the filler neck. In the conventional automobile, this problem is not present, because the operating conditions do not involve the amount of dirt, chaff, etc. to which a tractor is subject. In this respect it should be noted also that other agricultural machines involve substantially the same considerations as a tractor, such as self-propelled combines, corn pickers etc. and other machines having separate power plants for their operating components even though they are drawn by a draft vehicle.

The significant improvement afforded by the present invention, in the form of a cover 36 (Fig. 1), presents several aspects. As noted, the cover has an upper main body portion 38 of relatively substantial thickness, affording an internal cap-receiving pocket 40 surrounded by a relatively thick substantially annular wall 42 from which depends a flared annular skirt 44 having a lower annular marginal edge portion 46. The cover 36 is of molded elastomer material, such as rubber, and, of course, is of one-piece construction. In a typical manufacturing process the cover is molded directly on the cap 26, so that the cover wall 42 surrounds the cap wall 30 and the skirt 44 of the cover depends below the marginal edge 32 of the cap. The cross-sectional dimension of the skirt

44 is considerably less than that of the cover body 38, whereby the skirt is relatively flexible and resilient and is therefore capable of distortion so as to conform to any irregularities in the area 18 of the hood or sheet 16 when the assembled cap and cover is in place. The general area of contact of the edge 46 with the area 18 is indicated by a dot-dash line identified at 46 in Fig. 2. The diameter of the marginal edge 46 of the skirt is substantially larger than that of the opening 14 and therefore the skirt has not only the function of affording a dirt seal at 46—18 but is also large enough to conceal any eccentricity between the filler neck 12 and the opening 14, thus enhancing the appearance of the assembly.

The modified form of cover shown at 36a in Figs. 3 and 5 involves many of the characteristics of the cover 36, and to that end includes an upper body portion 38a within which is a cap-receiving pocket 40a bordered by an annular wall 42a from which a flared skirt 44a depends to a lower circular terminal edge 46a. The cap 36a, like the cap 36, is of one-piece construction, but in this case, being formed of elastomer or plastic material, is of substantially uniform cross-section, although the skirt is of reduced cross-section adjacent to its lower terminal edge 46a. The material is relatively stretchable and may be installed on a conventional cap. Consequently, the cover 36a is mountable on and removable from a cap, as distinguished from being molded directly onto such cap. Apart from that, the sealing characteristic and the appearance-improving characteristic are present, just as in the cover 36.

Features of the invention not categorically enumerated will readily occur to those versed in the art, as will many modifications and alterations in the preferred embodiments disclosed, all of which may be achieved without departure from the spirit and scope of the invention.

What is claimed is:

1. In combination with a container structure having a relatively flat portion and a filler neck projecting generally normally from said portion to a free outer end spaced above said portion, a cap removably mounted on the free end of said neck and having an under surface spaced upwardly from said flat portion, and a cover of inverted cup shape fitting over and carried by the cap and having an annular flexible skirt loosely surrounding said neck and depending below said under surface of the cap and engaging said flat portion in the area thereof bordering said neck for effecting a substantially dirt-tight seal with said flat portion.

2. The invention defined in claim 1, in which: the en-

tire cover is composed of flexible resilient material stretched over and gripping the cap so as to be removably carried by the cap.

3. The invention defined in claim 1, in which: the cover is of molded elastomer material having a cover-engaging portion of relatively heavy cross-section and said skirt being of relatively lighter cross-section.

4. In combination with a container structure having a projecting filler neck and an adjacent sheet-like member having an opening therein through which the filler neck loosely extends to a free end outwardly of said sheet, a cap removably mounted on said neck and having an under surface normally spaced outwardly from said sheet; and a cover of inverted cup shape fitting over and carried by the cap and having an annular flexible skirt depending below said under surface of the cap and loosely surrounding said neck and engaging the sheet-like member about said opening for effecting a substantially dirt-tight seal with said member in the area thereof bordering said opening in the member, said skirt having sufficient transverse dimension to conceal said opening.

5. In combination with a container structure having a relatively flat portion and a filler neck projecting generally normally from said portion to a free outer end spaced above said portion, a cap removably mounted on the free end of said neck and having an under surface spaced upwardly from said flat portion, and means carried by the cap and having an annular flexible skirt loosely surrounding said neck and depending below said under surface of the cap and engaging said flat portion in the area thereof bordering said neck for effecting a substantially dirt-tight seal with said flat portion.

6. In combination with a container structure having a projecting filler neck and an adjacent sheet-like member having an opening therein through which the filler neck loosely extends to a free end outwardly of said sheet, a cap removably mounted on said neck and having an under surface normally spaced outwardly from said sheet; and means carried by the cap and having an annular flexible skirt depending below said under surface of the cap and loosely surrounding said neck and engaging the sheet-like member about said opening for effecting a substantially dirt-tight seal with said member, said skirt having sufficient transverse dimension to conceal said opening.

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