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(12) # EUROPEAN PATENT SPECIFICATION

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(54) **Improved liquid-tight fastener, especially for cans.**

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Description

This invention relates to an improved liquid-tight plastics fastener for cans, which comprises a cap inserted into a filling port and provided in its upper part with an annular projection, an o-ring inserted between the end of the filling port and the annular projection of the cap, and a retaining ring nut screwed onto the filling port. A can fastener of the type indicated above is known from DE—A—2056246. A liquid-tight seal must be able to be attained even with cans produced by economical moulding means, i.e. starting from a plastics tube which is hot-deformed with compressed air in a suitable mould, until it takes the form of the mould. The resultant filling ports have fairly thin walls, an irregular thread and a high tendency to liquid loss through the fastener, when relatively low pressures are exceeded. This drawback becomes worse if it is necessary to make a threaded connection through the cap of a can produced as described, even if the cap is made thicker.

In fact in prior art caps, for instance the cap described in DE—A—2056246, it is extremely difficult to fit threaded connection through the cap without compromising the liquid-tight seal. I have now found that the aforesaid drawbacks can be completely overcome by using a liquid-tight plastics can fastener of the type indicated in the prior art portion of claim 1 and having the features stated in its characterising portion. The can fastener illustrated in figure 1, comprises a can filling port 1, a cap 3 inserted into the filling port 1 and provided in its upper part with an annular projection, an o-ring 4 inserted between the end of the filling port 1 and the annular projection of the cap, and a retaining ring nut 2 screwed onto the filling port 1. The cap 3 consists of a solid cylindrical piece of plastic material.

The portion of the cap 3 which is inserted into the filling port has a height which is substantially the same as the height of the filling port 1 and a diameter which is substantially the same as the internal diameter of said filling port 1, one or more liquid tight threaded connectors 5, 6 being connected to the cap. The o-ring is preferably of Nylon. I have also found that by adopting a circular line of contact between the upper parts of the cap 3 and the ring nut 2, the seal is improved even if vibration is present.

I have also found that a perfect seal is obtained if, in particular, the lower part of the cap 3 instead of being cylindrical is slightly conical with a vertex angle of less than 10° in the direction of the can interior.

The ring nut 2 and cap 3 can be made of suitable thermoplastic material, for example nylon, or metal.

The filling port 1 has been designed for the simultaneous patent application in the name of the present applicant entitled: "Containers for distributors of liquids for spraying on to hay and other agricultural products", and for this reason two male threaded connectors (5,6) are shown for the compressed air and for the pressurised liquid.

Claims

1. A liquid-tight plastics can fastener, comprising a cap (3) inserted into a filling port (1) and provided in its upper part with an annular projection, an o-ring (4) inserted between the end of the filling port (1) and the annular projection of the cap, and a retaining ring nut (2) screwed onto the filling port (1), characterised in that the cap (3) consists of a solid cylindrical piece of plastic material, the portion of the cap (3) which is inserted into the filling port having a height which is substantially the same as the height of the filling port (1) and a diameter which is substantially the same as the internal diameter of said filling port (1), one or more liquid tight threaded connectors (5, 6) being connected to the cap (3).

2. A fastener as claimed in claim 1, wherein a circular contact is provided between the cap (3) and ring nut (2).

3. A fastener as claimed in claim 1 or 2, wherein the lower part of the cap (3) is slightly conical, with the angle at the vertex in the direction of the can interior being less than 10°.

4. A fastener as claimed in one of the preceding claims, wherein one or more liquid-tight threaded connectors (5) and (6) are connected to the cap (3).

Patentansprüche

1. Flüssigkeitsdichter Kunststoff-Kannenverschluß, der einen Deckel (3), welcher in einen Füllstutzen (1) eingesetzt und in seinem oberen Teil mit einem ringförmigen Fortsatz versehen ist, einen O-Ring (4), der zwischen das Ende des Füllstutzens und den ringförmigen Fortsatz des Deckels eingesetzt ist, und eine auf den Füllstutzen (1) aufgeschraubte Halteringmutter (2) aufweist, dadurch gekennzeichnet, daß der Deckel (3) aus einem vollen zylindrischen Stück aus Kunststoffmaterial besteht, wobei der in den Füllstutzen eingesetzte Abschnitt des Deckels (3) eine Höhe hat, welche im wesentlichen gleich groß wie die Höhe des Füllstutzens (1) ist, und einen Durchmesser hat, der im wesentlichen gleich groß wie der Innendurchmesser des erwähnten Füllstutzens (1) ist, und daßder Deckel mit einem oder mehreren flüssigkeitsdicht verschraubten Verbindern (5, 6), welche mit dem Deckel (3) verbunden sind, bersehen ist.

2. Verschluß nach Anspruch 1, dadurch gekennzeichnet, daß eine kreisförmige Berührung zwischen dem Deckel (3) und der Ringmutter (2) vorgesehen ist.

3. Verschluß nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der untere Teil des Deckels (3) leicht konisch ist, mit einem Scheitelwinkel in Richtung des Kanneninneren, der kleiner als 10° ist.

4. Verschluß nach eine der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß ein oder mehrere flüssigkeitsdicht verschraubte Verbinder (5) und (6) mit dem Deckel (3) verbunden sind.

Revendications

1. Fermeture de matière plastique étanche aux liquides pour bidons, comprenant au bouchon (3) inséré dans un orifice de remplissage (1) et muni, à sa partie supérieure, d'une saillie annulaire, une bague torique (4) insérée entre l'extrémité de l'orifice de remplissage (1) et la saillie annulaire du bouchon, et un écrou annulaire de blocage (2) vissé sur l'orifice de remplissage (1), caractérisée en ce que le bouchon (3) est constitué par une pièce cylindrique massive de matière plastique, la partie du bouchon (3) qui est insérée dans l'orifice de remplissage ayant une hauteur qui est sensiblement la même que la hauteur de l'orifice de remplissage (1) et un diamètre qui est sensiblement le même que le diamètre intérieur de l'orifice de remplissage (1), un ou plusieurs raccords filetés étanches aux liquides (5, 6) étant fixés au bouchon (3).

2. Fermeture selon la revendication 1, dans laquelle un contact circulaire est prévu entre le bouchon (3) et l'écrou annulaire (2).

3. Fermeture selon la revendication 1 ou 2, dans laquelle la partie inférieure du bouchon (3) est légèrement conique, l'angle au sommet dans la direction de l'intérieur du bidon étant inférieur à 10°.

4. Fermeture selon l'une quelconque des revendications 1 à 3, dans laquelle un ou plusieurs raccords filetés étanches aux liquides (5) et (6) sont fixés au bouchon (3).

fig 1