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[21] Appl. No. 809,828
[22] Filed Mar. 24, 1969
[45] Patented Dec. 22, 1970
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[54] PROTECTIVE CAP
2 Claims, 4 Drawing Figs.

[52] U.S. Cl. 85/56,

85/35; 151/29

[51] Int. Cl. F16b 37/14

[50] Field of Search 85/56,

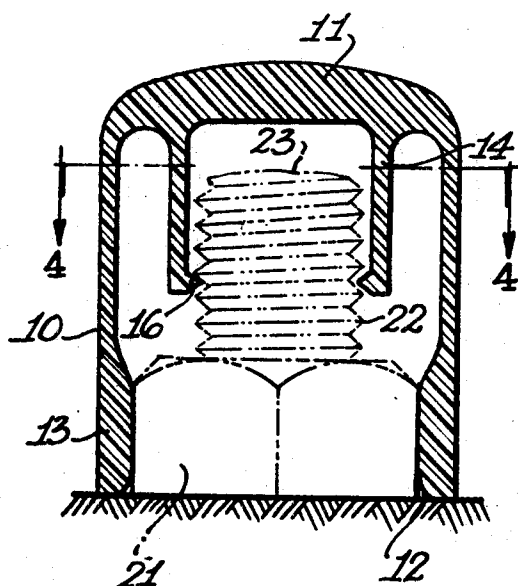
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ABSTRACT: A protective cap for placing over the end of a bolt, or similar threaded member, and its associated nut, to protect from corrosion and damage. An improved appearance is also provided. The cap has a main body portion, tubular in construction, having its inner surface shaped to frictionally engage the circumference of a nut, and also has an inner projection which is adapted to engage with the thread of a bolt. Engagement with the thread prevents dislodging by axial movement and engagement with the nut prevents rotational movement.



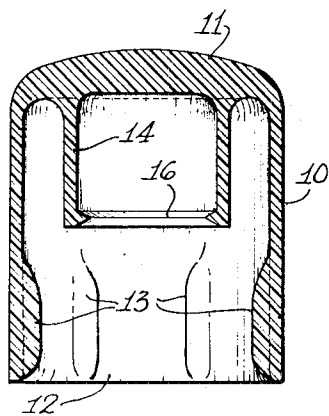


Fig. 1

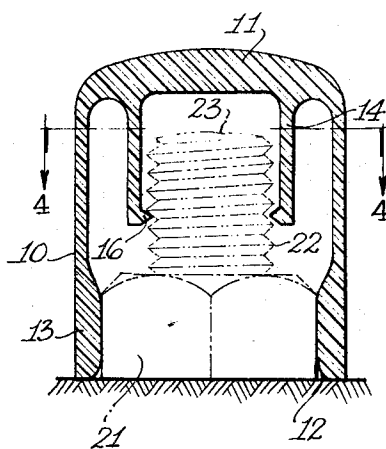


Fig. 3

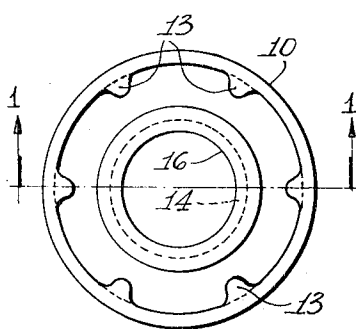


Fig. 2

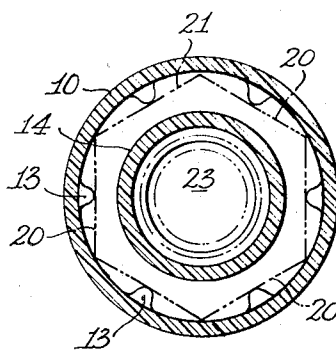


Fig. 4

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PROTECTIVE CAP

This invention relates to protective caps and particularly for protective caps for fitting over projecting ends of bolts to cover, and protect, the bolt ends and associated nuts. There have been many proposals for covering bolt ends and similar items, against corrosion, or damage, for decorative purposes, and other reasons, but generally the devices provided only fit over the end of the bolt, leaving the nut uncovered. Such devices may cooperate with the nut to give the appearance of a cap nut, or may leave a gap between the device and the nut. In either arrangement corrosion of the bolt thread can occur and generally some arrangement may be needed to prevent the removal of the device by widening off the thread. Also, the nut may be liable to corrosion.

It is an object of the present invention to provide a cap which covers both the threaded portion and also the nut, to protect both thread and nut. A further object is to provide a cap with an improved appearance.

The present invention provides a cap which fits over the bolt end and also the associated nut. The cap has frictional engagement with the thread of the bolt for retention of the cap on the bolt, and also has a part which engages with the nut to prevent inadvertent rotation of the cap. Thus the entire bolt end, and its associated nut, are covered. This gives improved corrosion avoidance, better protection and also an improved appearance.

The cap of the present invention will accept a variation in the length of the threaded portion extending beyond the nut, without difficulty and without requiring any modification.

A cap, of the present invention, comprises; a tubular body having a closed end and an open end for passage over the bolt end and nut; the open end of the body shaped to frictionally engage the circumference of the nut; and an inner projection extending from the closed end of the body towards the open end and adapted to engage the thread of the bolt end.

Conveniently, the body is cylindrical with spaced ribs formed on the inner surface at the open end, the ribs engaging with at least some of the flats of the nut. The inner projection may also be tubular and having its end, remote from the closed end of the body, shaped to engage the bolt thread.

The invention will be readily understood by the following description of one embodiment, by way of example, and modifications thereof, in conjunction with the accompanying drawings, in which:

FIG. 1 is a cross section through a cap on the line 1-1 of FIG. 2;

FIG. 2 is an end view of the cap illustrated in FIG. 1, viewed on the open end;

FIG. 3 is a cross section, similar to that of FIG. 1, illustrating the cap of FIGS. 1 and 2 in position on a nut and bolt end; and

FIG. 4 is a cross section on the line 4-4 of FIG. 3.

As seen in FIGS. 1 and 2, the cap comprises a tubular main body 10 closed at one end by an end part 11, and having an open end 12. Formed on the inner surface of the body 10, adjacent the open end 12, are ribs 13, the ribs extending axially. Extending from the inner surface of end part 11 is a tubular projection 14. Projection 14 extends towards the open end 12, part way of the distance between end part 11 and open end 12 and has an open end 15. At the open end 15 of the projection 14 is an inwardly projecting rib 16.

The cap is conveniently made of a flexible plastic. The end part 11, in the example shown, is slightly domed.

Application of the cap is illustrated in FIGS. 3 and 4. As seen in FIGS. 3 and 4, the ribs 13 engage with the flats 20 of a nut 21. The rib 16 engages with the thread 22 of bolt end 23. The flexibility of the material enables the rib to pass over the thread crests as the cap is pushed on and also permits slight distortion of the rib 16 to permit the rib to fit into the thread groove.

Instead of being a complete tube, projection 14 can be in the form of separate fingers, allowing improved flexibility. Another alternative is for the projection 14 to be slit at several places, the slits extending axially for a short distance.

While conveniently of a plastic material, and made in one piece as by molding, a cap can be of other materials, and formed of, for example, two parts joined together. For decorative, or other reasons, a cap may be stainless steel or anodised aluminum for example. In such cases, the projection 14 is likely to be a separate part attached to the end part 11. The projection 14 could then be of a material dissimilar to that of the body 10. If the body 10 is of plastic material, the projection can be made as a separate part.

While the body 10 is shown as cylindrical, in the drawings, it is possible to make the body with other cross-sectional forms, particularly at the open end. Thus the part of the body at the open end 12 can be made hexagonal in cross section to suit the shape of the nut. Or, this part can be formed with, for example, two opposed flat surfaces which cooperate with flats on the nut. However, the provision of ribs, or similar projections, as at 13, facilitates positioning of the cap on the nut as it is not necessary to accurately align the cap with the flats as would be the case with flats or similar formations on the cap.

It will be appreciated that a cap of the present invention is also usable with nuts having other than hexagonal shapes. By suitably shaping at least the interior of the open end, caps can be applied to square nuts and nuts of other forms.

The cap can readily be positioned by pushing on over the bolt end and over the nut. Similarly the cap is readily removed by pulling off axially. The whole of the thread beyond the nut is protected, as is also the nut. The cap will accommodate considerable variation in length of thread extending beyond the nut.

I claim:

1. In combination with a nut and bolt assembly including a bolt having a thread thereon, and a nut engaging said thread and having a plurality of flat side faces with meeting corner areas, said bolt having a threaded end portion extending beyond said nut, a cap therefor comprising a tubular body having a sidewall, a closed end and an open end, and a tubular member coaxially positioned within said body and having a sidewall fixed at one end to said closed end of said body, said sidewall of said tubular member being radially spaced from sidewall of said tubular body and terminating in an open end lying in a plane spaced axially inwardly from the plane of said open end of said tubular body, said tubular member having a radially inwardly projecting annular rib adjoining said open end thereof, said rib having a cross section complementary to that of said thread and projecting into a root of said thread, said sidewall of said tubular body having on the inside surface thereof a plurality of ribs extending axially between said planes and each of said axial ribs engaging one of said nut faces in spaced relation to said corner areas.

2. A nut and bolt assembly as defined in claim 1, said cap being a unitary member of plastic composition.