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PLASTIC BOLT ANCHOR HAVING MEANS TO PERMIT EXPANSION PRIOR TO APPLICATION OF BOLT AND SERRATIONS TO PREVENT RELATIVE ROTATION BETWEEN THE BODY AND THE SLEEVE

Filed June 6, 1958

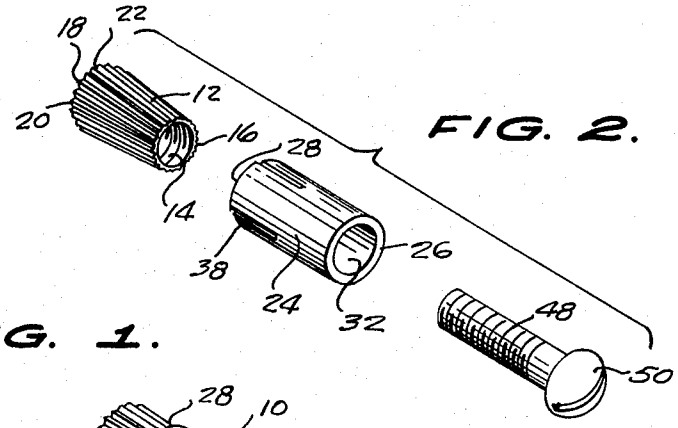

FIG. 2.

FIG. 1.

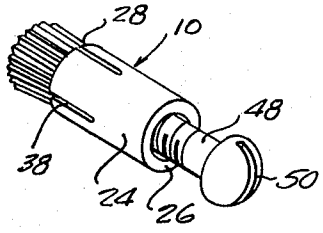

FIG. 3.

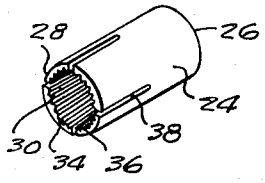

FIG. 4.

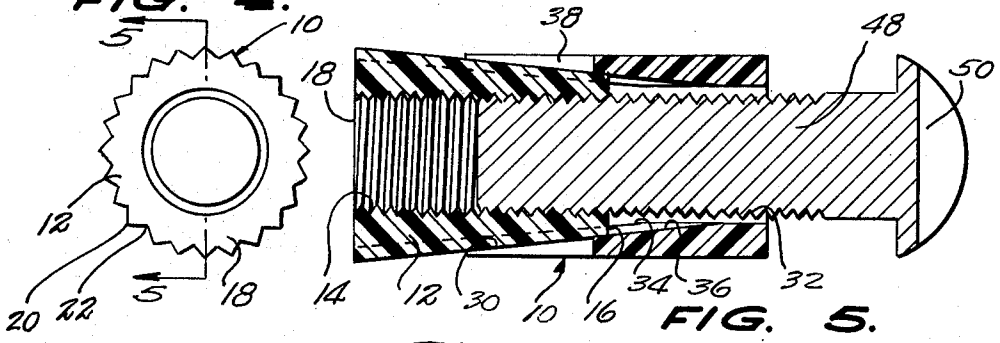

FIG. 5.

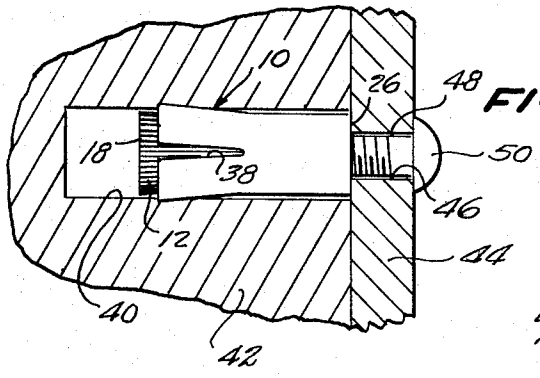

FIG. 6.

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PLASTIC BOLT ANCHOR HAVING MEANS TO PERMIT EXPANSION PRIOR TO APPLICATION OF BOLT AND SERRATIONS TO PREVENT RELATIVE ROTATION BETWEEN THE BODY AND THE SLEEVE

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1 Claim. (Cl. 85—2.4)

This invention pertains to an anchor for bolts.

A primary object of the invention is the provision of anchor means for bolts which anchor means are insertable into sockets formed in building members such as walls, floors, or the like.

The general purpose of anchors of this type is to provide an expandable seat for a bolt placed therein so as to securely connect the bolt to the building member. These anchors are normally utilized where it is desired to secure a panel covering or the like to a building member which, because of the material of which the building member is constructed, does not provide a suitable vehicle for receipt of the bolt.

Another objective of the present invention is to form the bolt anchors constructed and assembled thereunder of a material of the character or type known as, and sold under the trademark "Polypenco" nylon, or an equivalent thereof. This material is a non-oxidizing plastic and therefore will not rust or otherwise discolor walls or the like. Also, the bolts placed therein will not become bound to the anchor assembly by the corrosion thereof.

Forming the anchors of a material of the above mentioned class has been found to result in the following additional advantages: low weight, high strength, and acid and alkali resistent.

Another object is the provision of bolt anchors which may be readily color-coded for visual identification of the various sizes thereof.

Another object is the provision of a bolt anchor wherein no special tools are required in accomplishing the installation thereof.

A further advantage resides in the fact that anchors constructed and assembled in accordance with the teachings of this invention may be removed from the building member in which they have been placed by a simple drilling process.

A still further object is the provision of a bolt anchor having a self-locking action inherent in the construction thereof. Also, the construction employed allows the provision of a reduced outer diameter of the assembly which, in turn, results in a lessened expense in the construction and installation thereof.

Another object resides in the provision of an anchor for bolts comprising a substantially hollow, frusto-conical main body portion, a substantially hollow cylindrical sleeve having a pair of opposed open ends, the truncated end of the main body portion being inserted into one of the open ends of the sleeve, a bolt threadedly connected within the main body portion, and means for preventing the rotational movement of the main body portion relative to the sleeve.

Among the further objects and advantages of the instant invention is the provision of an anchor for bolts of the class described supra, the anchor assembly being non-complex in construction and assembly, inexpensive to manufacture, and durable in use.

Other and further objects and advantages will become more readily apparent from a consideration of the following specification when read in conjunction with the annexed drawing, in which:

Figure 1 is a perspective view of the expandible anchor assembly of this invention, and the bolt for effecting the expansion of the anchor as inserted therein;

Figure 2 is an exploded perspective view of the anchor assembly and bolt;

Figure 3 is a perspective view of the sleeve portion of the anchor assembly;

Figure 4 is an enlarged end elevational view of the anchor assembly and bolt;

Figure 5 is a detail cross-sectional view of the assembled device taken substantially along the vertical plane of the line 5—5 of Figure 4, looking in the direction of the arrows; and

Figure 6 is a side elevational view of the device in place in a socket formed in a building member, and showing a panel or the like being held flush against the building member.

Referring to the drawing, general reference numeral **10** connotes the anchor assembly which is formed of a plastic material, such as, for example, that known as "Polypenco" nylon. The assembly **10** is seen to include a frusto-conical main body portion **12** having an inwardly threaded, cylindrical bore **14** extending longitudinally therethrough, the bore **14** being coaxial with the longitudinal axis of the main body portion. As best seen in Figures 2 and 5, the main body portion **12** has a pair of opposed open ends **16**, **18** providing ingress and egress to the bore **14**. The main body portion also is provided with a plurality of longitudinally extending, alternate lands **20** and grooves **22**, for a purpose to be described more fully below.

The second major portion of the anchor assembly **10** is a substantially cylindrical hollow sleeve **24** having a pair of opposed open ends **26**, **28**. The sleeve **24** has a frusto-conical opening **30** formed therein and extending longitudinally and convergingly from the open end **28** to a juncture thereof with a coaxial bore **32** extending inwardly from the opposed open end **26**, the aforementioned juncture being adjacent the open end **26**. The sleeve **24** also is provided with a plurality of alternate lands **34** and grooves **36** extending longitudinally the length of the opening **30**. The sleeve **24** has longitudinal slots **38** formed therein which extend inwardly from the end **28** in order that the sleeve **24** may be flared in a manner to be explained below.

In operation, a cylindrical socket **40** is former in a building member **42** to which it is desired to mount a panel **44** or the like, and the assembly **10** is placed therein. An opening **46** is formed in the panel **44** which is positioned over the socket **40** and a cylindrical bolt **48**, having a head **50**, is passed therethrough and threadedly connected to the threaded bore **14** of the main body portion **12**.

With special reference to Figure 5, it is seen that when the end **16** of the main body portion **12** is inserted into the opening **30** of the sleeve **24**, the alternate lands **20** engage in the grooves **36** and the other alternate lands **34** engage the groove **22**, thus effectively eliminating any rotational movement of the main body portion **12** relative to the sleeve **24**.

When the head **50** of the bolt **48** is pressed against one side of the panel **44** and the end **26** of the sleeve **24** is against the opposed side of the panel **44**, further rotation of the bolt **48** causes the main body portion **12** to be drawn into the sleeve **24**, and to flare the slotted end thereof in wedge fashion. Thus, the slotted end of the sleeve presses and frictionally engages against the sides

of the socket **40** and effects a secure connection of the panel **44** flush to the building member **42.**

Having described and illustrated a single embodiment of this invention, it will be understood that the same is offered merely by way of example and that this invention is to be limited only by the scope of the appended claim.

What is claimed is:

A bolt anchor for insertion in a bolt hole having a given diameter, said bolt anchor comprising a substantially frusto-conical body portion formed of nylon, plastic, resilient material and having a threaded bore formed therein and extending the full length thereof, said body portion including an enlarged base end and an opposing diminished end, said body portion tapering from the base end to the diminished end thereof, said body portion including a plurality of longitudinally extending, substantially triangular, exterior serrations thereon; an elongated, substantially cylindrical, hollow sleeve formed of said material, said sleeve including a pair of opposing open ends, said sleeve having normally a given uniform diameter less than said given diameter of said bolt hole, said sleeve including an inner end portion having a plurality of circumferentially spaced, longitudinally extending slots formed therein, said inner end

portion including a plurality of longitudinally extending, substantially triangular, interior serrations therein; the diminished end of the body portion being adapted for insertion into the inner end portion of the sleeve, the serrations of the body portion inter-engaging with the serrations of the inner end portion of the sleeve to prevent relative rotation therebetween, the insertion of the body portion into the sleeve serving to flare the inner end portion outwardly to at least the diameter of the hole thereby to frictionally engage the same therein; and an elongated, threaded bolt adapted for insertion through the sleeve for engagement with the threaded bore of the body portion thereby to draw the body portion into the sleeve to further flare the inner end portion thereof.

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