United States Patent

Herr

[15] **3,673,912**

[45] **July 4, 1972**

[54] REMOVABLE TAMPERPROOF FASTENING MEANS

[72] Inventor: **George E. Herr**, 2711 West Brown Street, Milwaukee, Wis. 53205

[22] Filed: **Feb. 25, 1971**

[21] Appl. No.: **118,888**

[52] **U.S. Cl.** .....**85/45**, 145/50 A
[51] **Int. Cl.** **F16b 23/00**
[58] **Field of Search** .....85/45, 43, 4; 145/50 A

[56] **References Cited**

UNITED STATES PATENTS

1,572,079	2/1926	Platt	85/45

FOREIGN PATENTS OR APPLICATIONS

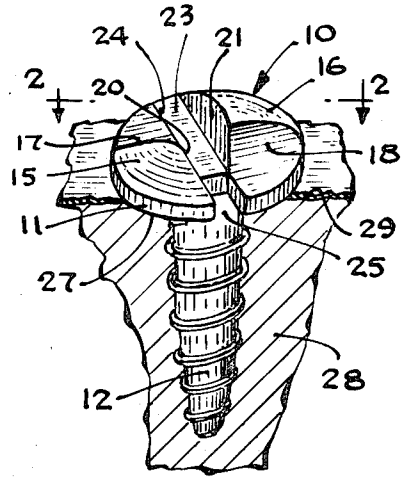
9,681	7/1915	Great Britain	85/43
131,857	9/1919	Great Britain	85/45
654,747	6/1951	Great Britain	85/4
645,711	7/1928	France	85/45
1,039,390	5/1953	France	85/45

Primary Examiner—Marion Parsons, Jr.
Attorney—Neil E. Hamilton and William A. Denny

[57] **ABSTRACT**

A head member is provided for a fastening means such as a screw, nut or bolt which can be turned in a direction to fasten the fastening means yet can be turned in a loosening direction only by a specially adapted tool. The head member has a transverse slot with two oppositely disposed shoulders which permit the turning of the head in a fastening direction. Two upwardly extending curved portions are provided which cause a slipping of a screwdriver when it is attempted to remove the fastening means. Removal is afforded by a notch extending into the head at the end of the slot which permits engagement by a projection on a specially adapted removing means.

8 Claims, 6 Drawing Figures



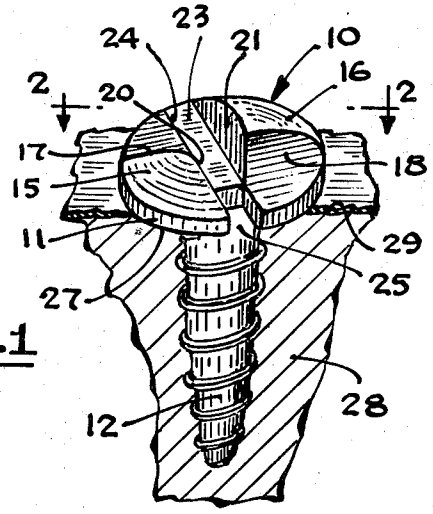


Fig.1

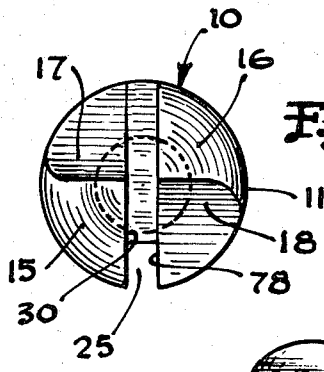


Fig.2

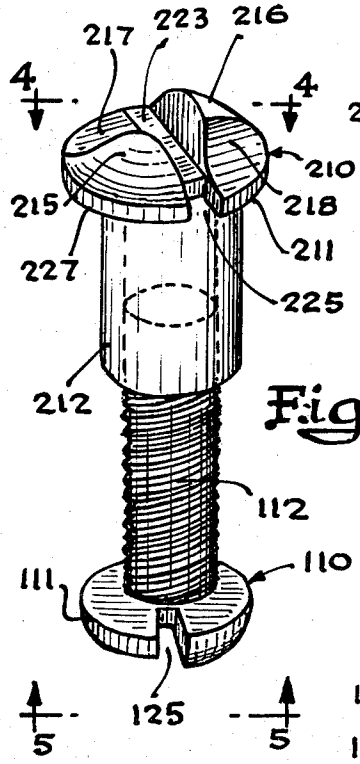


Fig.3

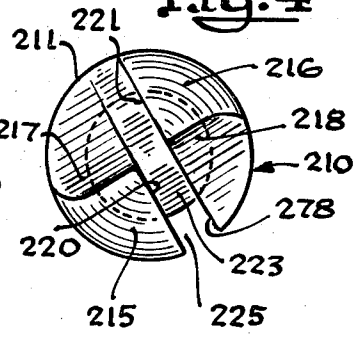


Fig.4

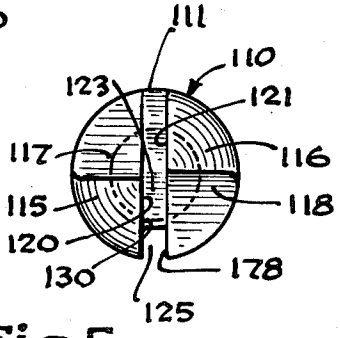


Fig.5

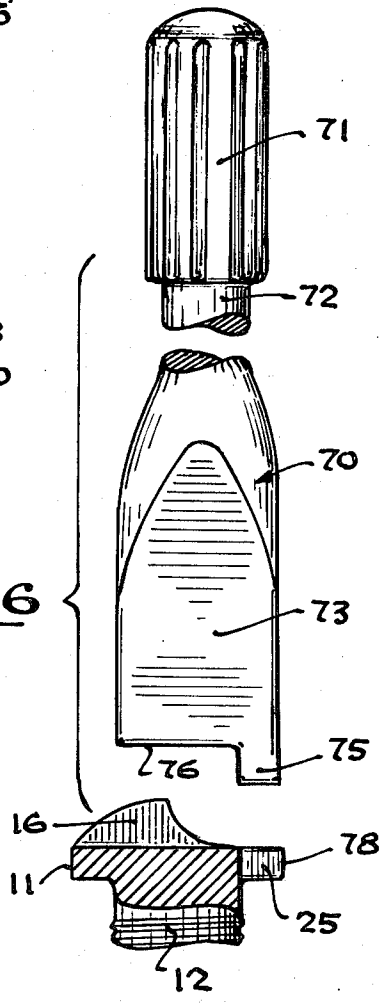


Fig.6

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REMOVABLE TAMPERPROOF FASTENING MEANS

BACKGROUND OF THE INVENTION

This invention relates to a tamperproof fastening means which can be removed by an especially adapted tool and more particularly, to a tamperproof head for a screw, nut or bolt which can be fastened by a normal screwdriver head and is easily removed by the provision of a small notch in the head of the screw at the end of the slot.

Screw type fastening means of the type concerned with in this invention are described in U.S. Pat. Nos. 3,174,383; 1,956,963; 1,797,390 and 1,300,275 and 610,423. U.S. Pat. No. 1,956,963 illustrates a one-way screw which is tamperproof and is fastened by an especially adapted screwdriver head. U.S. Pat. No. 3,174,383 describes a tamperproof sealing device for vending machines wherein a first screw head member is employed to fasten a second screw. A double vertically slotted screw is described in U.S. Pat. No. 610,423 and a screw threaded fastening means with a hole in the head is shown in U.S. Pat. No. 1,300,275. In U.S. Pat. No. 1,797,390 a screwdriver is described which is employed to be keyed on a screw with a hole in the center of a slot. There is available commercially a screw head having two oppositely disposed camming sections with a slot in between for turning the screw in one direction for fastening. The prior art nowhere teaches a removable tamperproof head for a screw, bolt or nut which can be fastened by means of an ordinary screwdriver yet can be removed by a simplified tool which can fit numerous sizes of such heads. Neither is there available a tamperproof screw head which is readily fastened and also removed wherein the means of removal are not easily discernable.

It is an object of the present invention to provide a novel head for a threaded fastening means which can be fastened by an ordinary screwdriver yet can be removed only by a specially designed tool. It is another object of this invention to provide a tamperproof threaded head member wherein the means for removing or unfastening the head member is not readily detected. It is still another object of the present invention to provide a threaded fastening means which is tamperproof wherein several sizes of such head members can be unfastened by a single tool. It is yet another object of this invention to provide a removable tamperproof fastening means which can be fabricated inexpensively and removed easily, and without requiring expensively designed tools.

SUMMARY OF THE INVENTION

The foregoing objects are accomplished and the shortcomings of the prior art are overcome by the present removable tamperproof fastening means which is comprised of a novel head portion and a threaded portion. Two oppositely disposed raised sections extend outwardly from the head portion and each raised section is provided with opposing outwardly curved portions and shoulder abutment portions. The shoulder abutment portions are spaced oppositely from each other and apart to form a slot across the surface of the head portion and there is at least one notch extending into the head portion from the periphery of the head at the end of the slot and adjacent to one of the shoulders. A tool having a projection and an elongated blade, such as at the end of the screwdriver, fits across the slot with the projections in the notch for removing the fastening means. An ordinary screwdriver is employed for fastening purposes.

BRIEF DESCRIPTION OF DRAWINGS

A better understanding of the present removable tamperproof fastening means will be accomplished by reference to the drawing wherein:

FIG. **1** is a perspective view of a screw with a head member having the unique tamperproof-removable feature and a screw portion engaging a section of wood with a strip of metal at the top.

FIG. **2** is a top view of the head member shown in FIG. **1** taken along line **2—2**.

FIG. **3** is a perspective view of a nut and bolt arrangement with both the nut and bolt employing the removable tamperproof feature shown in FIG. **1**.

FIG. **4** is a top view taken along line **4—4** of FIG. **3**.

FIG. **5** is a bottom end view taken along line **5—5** of FIG. **3**.

FIG. **6** is a view in side elevation of a tool for removing the fastening means shown in the previous figures and positioned over a head member with the removable tamperproof feature.

DESCRIPTION OF ONE EMBODIMENT

Proceeding to a detailed description of the present invention, the removable tamperproof member generally **10** is illustrated for a screw and is comprised of a head portion **11** and a threaded stem portion **12** with the threaded stem portion being of the typical tapering type. Extending upwardly and outwardly from the head portion **11** are two oppositely disposed and rounded and raised sections **15** and **16** each having oppositely and outwardly curved portions **17** and **18**, respectively, which is best seen in FIG. **2**. It will be noted that these two sections **15** and **16** each comprise approximately one-half of the surface area of the head portion **11** and that two abutment, coterminous, shoulder portions **20** and **21** are spaced oppositely from each other and apart to provide a slot **23** between the shoulder portions which taper from the center of the head to the periphery. A slightly raised shoulder **24** is also disposed along upwardly and outwardly curved portion **17** to form a portion of slot **23**. At the end of the slot **23** formed by the half sections of the spaced apart shoulder abutment portions **20** and **21** is a U-shaped notch **25** which is formed entirely through the head member **11** and at the end of the slot **23** and adjacent a shoulder **20**. In FIG. **1**, the removable fastening means **10** is shown as engaged in a section of wood **28** with the underside of the head **11** holding a thin layer of metal **29** against the upper surface of the wood.

DESCRIPTION OF ANOTHER EMBODIMENT

Referring to FIGS. **3**, **4** and **5**, two removable tamperproof fastening means generally **110** and **210** are illustrated for a bolt and a nut, respectively. In FIGS. **3**, **4** and **5** common or similar parts as described in FIG. **1** are indicated by the same basic numbers except they are in the **100** and **200** series for the nut and bolt members, respectively. It will be recognized that the threaded shank portion **212** of the nut **210** is internally threaded and in effect is of the cap screw type. However, the head members **111** and **211** for bolt type fastening means **110** and nut type fastening means **210** are exactly the same as for screw type fastening means **10**.

DESCRIPTION OF REMOVING TOOL

Described in FIG. **6** is a tool generally **70** for loosening or unthreading either the screw fastening means **10**, the bolt fastening means **110** or the nut fastening means **210**. It is similar to common screw driver with a gripping handle **71**, a shank portion **72** and a flat blade section **73**. One difference exists between the ordinary screwdriver and tool **70** in that a projection **75** extends outwardly on one side of the tool **70** and in the same plane as the end engaging portion **76** of the blade section **73**.

OPERATION OF THE FIRST EMBODIMENT

A better understanding of the advantages of the removable tamperproof fastening type means **10** will be had by a description of its operation. Assuming it is desired to secure a strip of metal **29** which could represent the flashing of a screen to the underlying wood frame **28**, a pilot hole would first be made through metal **29** into wood **28** and the threaded stem portion **12** inserted therein. A normal screwdriver (not shown) would then be employed with the end of the blade inserted in slot **23** between shoulder abutment portions **20** and **21**. As will best be seen in FIG. **1**, when the screwdriver and consequently the head member **11** is turned in a fastening clockwise manner,

opposing portions of the blade section on the screwdriver will engage the shoulder portions **20** and **21**. Such turning will continue until the threaded portion **12** is completely embedded in the wood **28** with the underside of the head **11** firmly engaging the upper surface of the metal strip **29**. It will be noted that any attempt to turn the head member in a counter-clockwise manner with the normal bladed screwdriver having a single planed end will result in the opposing end portions of the blade riding up the oppositely disposed raised sections **17** and **18** which in effect form cams. Thus, the removable tamperproof fastening means **10** cannot be removed with a normal screwdriver and if it is designed properly with a rather thin edge and the raised sections **15** and **16** are properly rounded, they are not easily engaged with a pliers or gripping implement. When it is desired to remove fastening means **10**, tool **70** will be employed with projection **75** inserted into notch **25** and the end of **76** of blade **73** aligned across slot **23**. Fastening means **10** can now be turned in a counter-clockwise manner and unfastened as one side of projection **75** will engage the counter-clockwise side **78** of notch **25** and the opposite side of blade **73** will engage a portion of the shoulder section **20** immediately adjacent to the notch **25** as shown at **30**. This is best shown in FIGS. **6** and **2**. Of course, if desired, the tool **70** could be employed to secure the removable tamperproof fastening means **10**. However, for security reasons it is best to limit the number of persons who know the operation for removal and for ease of application it is more expeditious to have the removable tamperproof fastening means **10** fastened by a screwdriver.

OPERATION OF THE SECOND EMBODIMENT

The manner of fastening either bolt type fastening means **110** or nut type fastening means **210** is exactly the same as that described for screw type fastening means **10**. The bolt and nut type fastening means **110** and **210** would be employed as would any ordinary nut and bolt with the items to be secured between the head members **111** and **211**. The fastening and unfastening operation is as previously described for screw type fastening means **10** and all of the advantages apply.

It should be noted in the foregoing description of the operation that when a head member such as shown at **11**, **111** or **211** is employed over a surface which has the same color as the head member that the notch **25**, **125** or **225** would be virtually indiscernable by the ordinary observer. This, of course, is a great advantage in that if the notch is not seen one would not pause to try to figure out how the head member might be engaged. Even if the notch is seen, it would take someone not having a tool similar to that shown at **70** a goodly amount of effort to make one or procure one. It has definitely been proven that a large notch such as **25**, **125** or **225** is not necessary to turn a screw or bolt with a long threaded stem portion. Thus, sufficient torque can be placed on the head and through the stem portions in order to turn the fastening member in a removable manner.

As will be seen from the operation previously described, any of the head members are engaged by the ordinary single blade end of a screwdriver. This is an advantage in that one does not have to employ an especially adapted tool in order to fasten the screw, bolt or nut, employing the novel tamperproof means. When it is desired to remove the members, authorized people can be supplied with the especially adapted tool **70** which aids in additional security measures.

The removable tamperproof members can be provided on screws, nuts and bolts of varying sizes without limitation and the same is true of the threaded stem portions. They can be composed of varying types of materials such as hardened steel, aluminum, or rigid plastic materials.

It will thus be seen that through the present invention there is now provided a removable tamperproof fastening means which can be easily fastened by the usual screwdriver yet can be removed only by means of an especially adapted tool. The tamperproof means is adaptable to varying sizes of normal screws, nuts or bolts and can be removed by slight adaptations to a normal screwdriver. No expensive molding is required to design the screw, nut or bolt heads and readily available head members with tamperproof features can be easily adapted for use with the novel notch feature.

The foregoing invention can now be practiced by those skilled in the art. Such skilled persons will know that the invention is not necessarily restricted to the particular embodiments presented herein. The scope of the invention is to be defined by the terms of the following claims as given meaning by the preceding description.

I claim:

1. A removable tamperproof fastening means comprising a head portion and a threaded stem portion, two oppositely disposed raised sections extending outwardly from said head portion, each said raised section provided with opposing outwardly curved portions and shoulder abutment portions, said shoulder abutment portions and said curved portions spaced diametrically opposite from each other and apart to provide a slot across the surface of said head portions, said curved portions extending outwardly from said slot and constructed and arranged to form cam surfaces to prevent engagement by a standard screwdriver when turning in an unfastening direction and a single notch extending into said head portion from the periphery of said head portion at the end of said slot and adjacent one said shoulder abutment portion whereby said notch and said adjacent shoulder abutment portion provide opposing engagement portions for turning said head in an unfastening direction.

2. The removable tamperproof fastening means as defined in claim **1** wherein said threaded stem portion is of the pointed screw type.

3. The removable tamperproof fastening means as defined in claim **1** wherein said threaded stem portion is of the bolt type.

4. The removable tamperproof fastening means as defined in claim **1** wherein said threaded stem portion is of the extended, internally threaded type.

5. The removable tamperproof fastening means as defined in claim **1** wherein said notch extends completely through the head portion.

6. The removable tamperproof fastening means as defined in claim **1** wherein each said raised portion comprises approximately quarter of the upper area of said head portion.

7. The removable tamperproof fastening means as defined in claim **7** wherein said abutment portions are substantially coterminous.

8. The removable tamperproof fastening means as defined in claim **1** wherein said head portions and said threaded stem portion is composed of hardened steel.

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UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,673,912 Dated July 4, 1972

Inventor(s) George E. Herr

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the title page under "References Cited", "Foreign Patents or Applications", for the last-listed French patent delete "1,039,390" and substitute -- 1,039,399 --.

In column 4, line 55, in claim 6 before "quarter" insert -- one --.

Signed and sealed this 2nd day of January 1973.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

FORM PO-1050 (10-69)

USCOMM-DC 60376-P69
* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334