PULL FOR CABINET DOORS AND DRAWERS AND MOUNTING MEANS THEREFOR

Don Heyer, El Monte, Calif., assignor to M and H Industries, a corporation of California

Filed Dec. 15, 1958, Ser. No. 780,563

13 Claims. (Cl. 16—121)

This invention relates to pulls for cabinet doors and drawers and more particularly to mounting means therefore.

It is an object of this invention to provide a novel mounting element which when positioned in the hollow stem of a pull such as described, will facilitate the mounting of the pull on a cabinet door or drawer.

It is another object of the invention to provide a mounting element for the purpose described which may be installed in the hollow stem of a pull at the factory or readily mounted in place by the user when installing the pull. The pull and mounting element, in either case, constitute an improvement in this art in point of simplicity of construction, ease of installation, complete concealment of the mounting element and the manner in which the mounting element operates to increase the holding action thereof, assuring that the pull will remain in place upon the tightening of a screw-threaded fastening threadedly engaged with the mounting element after being passed through the door or drawer in the conventional manner for mounting a pull.

It is another object of this invention to provide a mounting element such as described which includes a flexible member constructed and arranged to be frictionally engaged with the interior surface of the hollow stem of a pull in such a manner that the member will flex and become more forcibly engaged with the stem to resist withdrawal, incident to the tightening of a screw-threaded fastening threadedly engaged therewith for the purpose of mounting the pull on a door or drawer.

It is another object to provide a mounting element such as described which is in the form of a disk-like body of resilient metal having means thereon for threadedly engaging a bolt and having stem-engaging portions adapted to contact the interior of the hollow stem of the pull in such a manner as to widen the stem thereby and become more forcibly engaged with the stem to resist withdrawal, incident to the tightening of a screw-threaded fastening threadedly engaged therewith for the purpose of mounting the pull on a door or drawer.

A particular advantage of this construction and arrangement is that upon tightening the bolt, the bowed body will flex in a manner causing the stem-engaging portions thereof to be more forcibly engaged with the stem and thereby securely hold the pull in place.

Another object hereof is to provide a mounting element such as described wherein the stem containing the mounting element is threadedly engaged with the element for mounting the pull on a door or drawer.

Another object is to provide a pull and mounting element thereof such as described wherein formations interiorly of the hollow stem of the pull limit the extension of the mounting element to a predetermined position in the stem and restrain rotative movement of the element in a particularly advantageous manner.

It is a further object hereof to provide a mounting element such as described wherein the stem-engaging portions thereof are provided with sharp teeth adapted to bite into the stem to securely hold the mounting element and the knob in place.

An additional object hereof is the provision of a mounting element such as described which readily lends itself to being stamped in one piece from resilient sheet metal stock.

Another object is to provide a mounting element such as described wherein the projections thereon for engaging the cabinet door or drawer are provided with pointed ends to bite into the door or drawer an extent limited by shoulders on opposite sides of the pointed ends, thereby assuring that the projections will prevent angular movement of the mounting element in the stem as well as prevent withdrawal of the element from the stem during the application to the element of a bolt or the like for mounting the pull.

Other objects and advantages of the invention will hereinafter described or will become apparent to those skilled in the art and the novel features of the invention will be defined in the appended claims.

Referring to the drawings:

Fig. 1 is a sectional view of a pull and mounting means therefor embodying the present invention as installed on a cabinet door or drawer;

Fig. 2 is an enlarged fragmentary exploded sectional view showing the manner in which the mounting element may be positioned for insertion into the hollow stem of the pull;

Fig. 3 is a view corresponding to Fig. 2 showing the mounting element installed in the hollow stem of the pull;

Fig. 4 is an enlarged fragmentary sectional view corresponding to Fig. 1 showing the pull and mounting means as when completely installed on a cabinet door or drawer;

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a perspective view of the mounting element removed from the pull;

Fig. 7 is a sectional view of a modified form of pull and mounting means embodying the present invention;

Fig. 8 is an enlarged perspective view of the modified mounting means shown in Fig. 7;

Fig. 9 is an enlarged fragmentary sectional view showing the manner of positioning the modified pull and the mounting means for insertion of the latter into the hollow stem of the pull;

Fig. 10 is a fragmentary sectional view similar to Fig. 9 showing the modified mounting means installed in the hollow stem of the pull;

Fig. 11 is an enlarged fragmentary sectional view corresponding to Fig. 7 showing the pull completely installed on a door or drawer; and

Fig. 12 is a sectional view taken on the line 12—12 of Fig. 11.

In accordance with the present invention, a pull having a hollow stem is constructed and arranged to be mounted on a cabinet door or drawer, such as the door shown, with the aid of a mounting element positioned in the hollow stem and threadedly engaged with
a fastening such as the bolt 5 passed through the door. The mounting element 4 is constructed and arranged so that when forced into the hollow stem 2, portions thereof will be engaged with the stem to hold the element in place. Moreover, the element 4 is formed and disposed in the stem in such a manner that when the bolt 5 is tightened, the element will flex and cause portions thereof to be more forcibly engaged with the stem and door, respectively, thereby securely holding the pull in place.

In one illustrated embodiment of this invention, the mounting element 4 is made of a disk-like body 6 of resilient sheet metal, preferably a suitable steel, and is generally as shown in Figs. 2 and 4.

Extending radially from the body 6 are the stem-engaging projections or tongues 7 having sharp points or teeth 8 on the outer ends thereof to bite into the stem, there being, as here shown, three of these projections equidistantly spaced.

In order that the body 6 may be threadedly engaged with the bolt 5 in the manner of a nut, a pair of tongues 9 are struck out from the body centrally thereof so that the ends of the tongues are opposed. These opposed ends are formed with a radius and are disposed at a helix angle whereby the bolt 5 may be threadedly engaged therewith.

In addition to the tongues or projections 7, there are formed on the body 6 between the projections, door-engaging projections or tongues 10 which extend from the concave face of the body and have sharp, pointed ends 11 adapted to bite into the door. Shoulders 11a on the projections 10 limit the penetration of the pointed ends 11 into the door or drawer.

The interior of the stem is provided with stop means for limiting the extension of the mounting element 4 into the stem. As here shown, this stop also prevents rotational movement of the mounting element in the stem. Accordingly, the stop means, as here shown, comprises recesses or notches 12 which are open at the open end of the stem 2 for reception of offset extensions 14 of the tongues 7. These offset extensions are formed by depressing the metal centrally and longitudinally of the outer ends of the tongues 7 to form indentations 15 with portions of the metal extending outwardly from the indentations and beyond the teeth 8, thereby forming the extensions 14. With this arrangement, the extensions 14 may be positioned in the recesses 12 so that the teeth 8 on the tongues 7 will engage the interior surface of the stem inwardly of the recesses 12 as shown in Figs. 3 and 4.

The mounting element 4 may be positioned in the hollow stem 2 at the factory to provide a unit ready to be installed with the aid of a bolt or like fastening. Instead, the element 4 may be packaged with the bolt and the pull so that it is subject to being readily installed in the hollow stem by the user before mounting the pull on a door or drawer.

It is apparent that the mounting member 4 readily may be forced as indicated in Figs. 2 and 3 into the hollow stem without the aid of any particular tool. In so mounting the mounting element, the extensions 14 are positioned in the recesses 12 and the body 6 is pushed so that as the teeth 8 engage the interior surface of the stem, the body will be further bowed, for example, the extent indicated in Fig. 3. This bowing of the body 6 will cause the teeth 8 on the projection 7 to be forcibly engaged with the stem so as to maintain the element 4 therein.

When the bolt 5, after being inserted through the door 3, is engaged with the nut formation on the body 6, as provided by the tongues 9, the tightening of the bolt will cause the bowed body 6 to be flexed and straightened somewhat in a manner causing the teeth 8 to bite into the metal of the stem 18 and the pointed ends 11 of the tongues 10 to bite into the door an extent limited by the shoulders 11a. This will securely lock the member 4 against dislodgment and thereby securely hold the knob in place. It should be noted that upon threadedly engaging the bolt 5 with the body 6, the pointed ends 11 and shoulders 11a will engage the door to aid in preventing rotative movement of the element 4. Accordingly, the recesses 12 and the pointed ends 11 cooperatively assure that the element 4 will be held against rotation. The pointed ends 11 and shoulders 11a prevent the element 4 from being pulled out of the stem during the threading of the bolt to the body 6.

As shown in Figs. 7–12, a modified form of this invention comprises a pull 17 having a hollow stem 18 and a separate mounting element 19 positioned in the stem. This pull is of the type such that it is preferable to produce the pull and mounting element as separate units and then install the mounting element 19 in the stem of the pull at the factory so that the mounting element becomes in effect a part of the pull as originally sold to the consumer. This form of the invention is desired for pulls made of comparatively thin metal wherein the thickness of the metal forming the hollow stem makes it impracticable or undesirable to form notches or recesses interiorly of the stem.

The element 19 is of such construction and arrangement that the pull readily may be properly installed on a door or drawer designated 20 by means of a screw head bolt 21 as shown in Figs. 7 and 11, the tightening of the bolt while threaded into the element 19 causing the latter to flex, as shown in Figs. 11 and 12, and become securely locked in the stem against withdrawal.

This modified form of mounting element 19 is preferably made of sheet steel of such gauge that it will be subject to flexure while being mounted in the hollow stem and to further flexure when the bolt 21 is tightened.

Accordingly, the element 19 comprises a body 22 from which radiate locking prongs 23 for forcibly engaging the interior surface of the hollow stem 18. The outer transverse edge of each tongue 23 is somewhat concave to define sharp corners 24 adapted to bite into the metal of the stem 18 as shown in Figs. 10, 11 and 12.

Other means are provided on the element 19 for engaging the drawer or door 20 so as to prevent withdrawal of the member 19 as well as rotative movement thereof to the stem 18. As here shown, this other means includes shouldered prongs 25 struck from the sides of the tongues 23 to extend axially of the element 19. Each of the projecting pointed end 26, the penetration of which into a door or drawer is limited by a shoulder 27 thereon.

The body 22 of the element 19 is provided with means for threadedly engaging the bolt 21. As here shown, this means includes a tubular boss 28 struck out from the center of the body 21 and provided with internal screw threads.

With reference to Figs. 8 and 9 it will be seen that the mounting element 19 is somewhat bowed, that is, is concavo-convex. The prongs 25 extend from the concave side of the element 19, while the tubular screw threaded boss 28 extends from the convex side of the element 19.

The mounting element 19, as shown in Figs. 9 and 10, is installed in the hollow stem 18 with the concave side facing the outer end of the stem. The relative dimensions of the bore in the stem 18 and the mounting element 19 are such that upon inserting the element into the stem, the element will be flexed so as to increase the bow thereof in a manner causing the sharp corners 24 of the tongues 23 to bite into the metal of the stem as shown in Fig. 10. Openings 29 are formed in the tongues 23 to cause the particular flexure thereof as shown in Fig. 11.

As the bore of the hollow stem is smooth throughout, any suitable means, not shown, may be employed at the
5 factory for installing the mounting element 19 in the stem 18 so that the element is securely held therein in a predetermined position, whereby the pointed ends 26 of the prongs 25 will project outwardly beyond the free end of the stem as shown in Fig. 10 for engaging the door or drawer 20. The engagement of the prongs 26 with the door or drawer 20 makes it easier to mount the pull, as the prongs will not only prevent rotation of the pull or the mounting element 19 when threading the bolt 21 to the mounting element, but will also restrain withdrawal of the mounting element from the stem should the mounting element for any reason become loosened somewhat in the stem.

The screw threaded tubular boss 28 is formed so that the body 22 is depressed to form a flared mouth 30 for guiding the screw or bolt 21 into the boss when mounting the pull in place.

It will now be apparent that the pull, when prepared for use, appears as shown in Fig. 10 with the element 19 securely held therein by reason of the pointed ends 24 biting into the metal of the stem.

When the pull is applied to the door or drawer 20 through which the bolt 21 has been inserted, the bolt readily may be new threaded to thread into the internally threaded boss 28 while the pointed ends 26 of the prongs 25 engage the door or drawer 20. Upon tightening the bolt 21, the tongues 23 of the element 19 will be flexed as shown in Figs. 11 and 12 to cause the pointed ends 24 to bite into the metal of the stem 18. At the same time, the pointed ends 26 of the prongs 25 will penetrate the door or drawer an extent limited by the shoulders 27. Thus, it will be seen that the element 19 becomes securely locked against withdrawal and rotative movement relative to the stem during the tightening of the bolt 21. In being locked in this manner, the element 19 also prevents the pull 17 from being pulled free of the element 19 and the bolt 21 and is thereby securely held in place.

While specific structural details have been shown and described, it should be understood that changes and alterations may be resorted to without departing from the spirit of the invention as defined in the appended claims.

I claim:

1. A mounting element adapted to be positioned in the hollow stem of a pull for a door or drawer wherein said stem is provided interiorly thereof with stop means for engaging said element; said mounting element comprising: a body having engaging portions for engaging the interior of said stem; said body having projections thereon operable to forcibly engage said stem and the door or drawer opposite said stem from said door or drawer; a plurality of tongues projecting radially from said body and having pointed ends

2. A mounting element for a pull for a cabinet door or drawer wherein the stem is hollow and provided interiorly with stop means for limiting insertion of said element to a predetermined position in said stem comprising: a disk-like body of flexible metal having portions engageable with said stop means and other portions axially spaced from the first named portions for engaging the interior of said stem to cause the body to bow upon forcing the body into said stem; and means on said body adapted to be forcibly engaged with a screw-threaded fastening extending into said stem from said door or drawer; said bowed body straightening and causing said portions to more forcibly engage said stop means and the interior of said stem upon the tightening of said screw-threaded fastening.

3. A mounting element for insertion into the hollow stem of a pull for cabinet doors and drawers comprising: a body having engagement portions for engaging the interior of said stem; means on said body for screw-threaded engagement with a screw-threaded fastening inserted through a door or drawer to secure the pull thereto; and means projecting from said body for engaging said door or drawer; said body bowing toward said door or drawer and causing said portions and said projecting means to forcibly engage the interior of said stem and said door or drawer respectively, upon the tightening of said screw-threaded fastening; said projecting means having stop means thereon engageable with said door or drawer to limit said bowing of said body toward said door or drawer.

4. A mounting element for insertion into the hollow stem of a pull for cabinet doors and drawers comprising: a body having portions for engaging the interior surface of said stem; means on said body for screw-threaded engagement with a screw-threaded fastening inserted through a door or drawer to secure the pull thereto and means projecting from said body for engaging said door or drawer; said body moving toward the outer end of said stem and causing said portions and said projecting means to forcibly engage the interior of said stem and said door or drawer, respectively, upon the tightening of said screw-threaded fastening; said projecting means being pointed so as to bite into the material forming said stem and said door or drawer; said projecting means having shoulders thereon for engaging said door or drawer to limit penetration thereof.

5. A mounting element for insertion into the hollow stem of a pull for a door or drawer comprising: a disk-like body of flexible metal; said body being concavo-convex; projections on said body for engaging the interior surface of said stem when said body is positioned in said stem; other projections on said body engaging said door or drawer on which the pull is mounted; and means on said body providing for screw-threaded engagement of said body while in said stem with a screw-threaded fastening engaged to mount said pull; said other projections having stop shoulders thereon adjacent the outer ends thereof.

6. A pull for a door or drawer wherein said pull is provided with a hollow stem; a concavo-convex metal member within said stem with its concavo side facing the open end of the stem; means on said body for screw-threaded engagement of said body with a screw-threaded fastening extending into said stem from the door or drawer; projections on the body in engagement with the interior surface of said stem; and an extension on the outer end of each projection in axially off-set relation thereto and engaging a portion of the interior surface of said stem spaced from the portion of said interior surface engaged by said projections.

7. In a pull for a door or drawer wherein said pull is provided with a hollow stem; a concavo-convex metal member within said stem with its concavo side facing the open end of the stem; means on said member for screw-threaded engagement with a screw-threaded fastening extending into said stem from said door or drawer; said member having portions in engagement with the interior surface of said stem; said member having outer portions for engaging the door or drawer on which the pull is mounted; and said member flexing toward said open end of said stem and causing said portions thereof to more forcibly engage said stem and said door or drawer upon the tightening of said fastening; said other portions having shoulders thereon adjacent the outer end of said stem; and a plurality of tongues projecting radially from said body and having pointed ends
adapted to bite into the metal of the stem; and pointed prongs on said body projecting axially from said body and adapted to bite into the door or drawer on which the pull is mounted.

9. A mounting element adapted to be positioned in the hollow stem of a pull for a door or drawer comprising: a concavo-convex body; means on said body providing for threaded engagement of the body with a screw fastening extending into said stem from the door or drawer; a plurality of resilient tongues projecting from the body and having pointed ends adapted to bite into the stem; and pointed prongs on said body adapted to bite into the door or drawer on which the pull is mounted; said body moving axially of the stem upon the tightening of said screw fastening and causing said pointed ends and said prongs to bite into said stem and door or drawer, respectively; each of said prongs having a shoulder thereon to limit penetration thereof into the door or drawer.

10. A mounting element adapted to be positioned in the hollow stem of a pull for a door or drawer comprising: a concavo-convex body of flexible metal; means on said body providing for threaded engagement of the body with a screw fastening extending into said stem from the door or drawer; a plurality of tongues projecting from the body and having pointed ends adapted to bite into the metal of the stem; and a prong projecting from each tongue and axially of said body for engagement with the door or drawer.

11. A mounting element adapted to be positioned in a hollow stem of a pull for a door or drawer comprising: a disk-like body having means thereon for screw threaded engagement with a screw fastening extending into said stem from said door or drawer; projections on said body having ends for engaging the inner surface of the stem; said body and said projections having a bowed formation causing flexing thereof in response to the tightening of said fastening while said ends engage said stem whereby said body, said means thereon and said projections will move outwardly toward said door or drawer relative to said ends to cause said ends to bite into said stem; and other projections on said body for engaging the door or drawer operable to bite into said door or drawer upon said outward movement of said body, said means and said last-named projections.

12. A mounting element adapted to be positioned in the hollow stem of a pull for a door or drawer comprising: a flexible body having means thereon for threaded engagement with a screw fastening extending into said stem from the door or drawer; projections extending radially from said body for engaging the inner surface of said stem; other projections extending from said body axially of said stem; said projections having sharp ends adapted to bite into the material forming the stem and the door or drawer, respectively; and said body and radially extending projections having a bowed formation causing flexing thereof in response to the tightening of said fastening while the sharp ends of the projections engage the inner surface of the stem whereby said body, said means thereon and said radially extending and axially extending projections will move axially of said stem and cause said sharp ends to bite into the stem and door or drawer, respectively.

13. A mounting element for insertion into the hollow stem of a pull for cabinet doors or drawers comprising: a disk-like body of resilient metal; said body having radially extending portions provided with pointed ends for engaging the inner surface of said stem and causing the body to bow upon forcing of the body into the stem; means on said body for screw threaded engagement with a screw threaded fastening extending into said stem from the door or drawer; and said radially extending portions having openings therein rendering them flexible in response to the tightening of said fastening while said pointed ends engage said stem whereby said body, said means thereon and said radially extended portions will move axially of said stem relative to said pointed ends to cause said pointed ends to bite into said stem.

References Cited in the file of this patent
UNITED STATES PATENTS

399,476 Berbecker ................ Mar. 12, 1889
2,234,097 Tinnerman ................ Mar. 4, 1941
2,654,620 Tinnerman ................ Oct. 6, 1953