

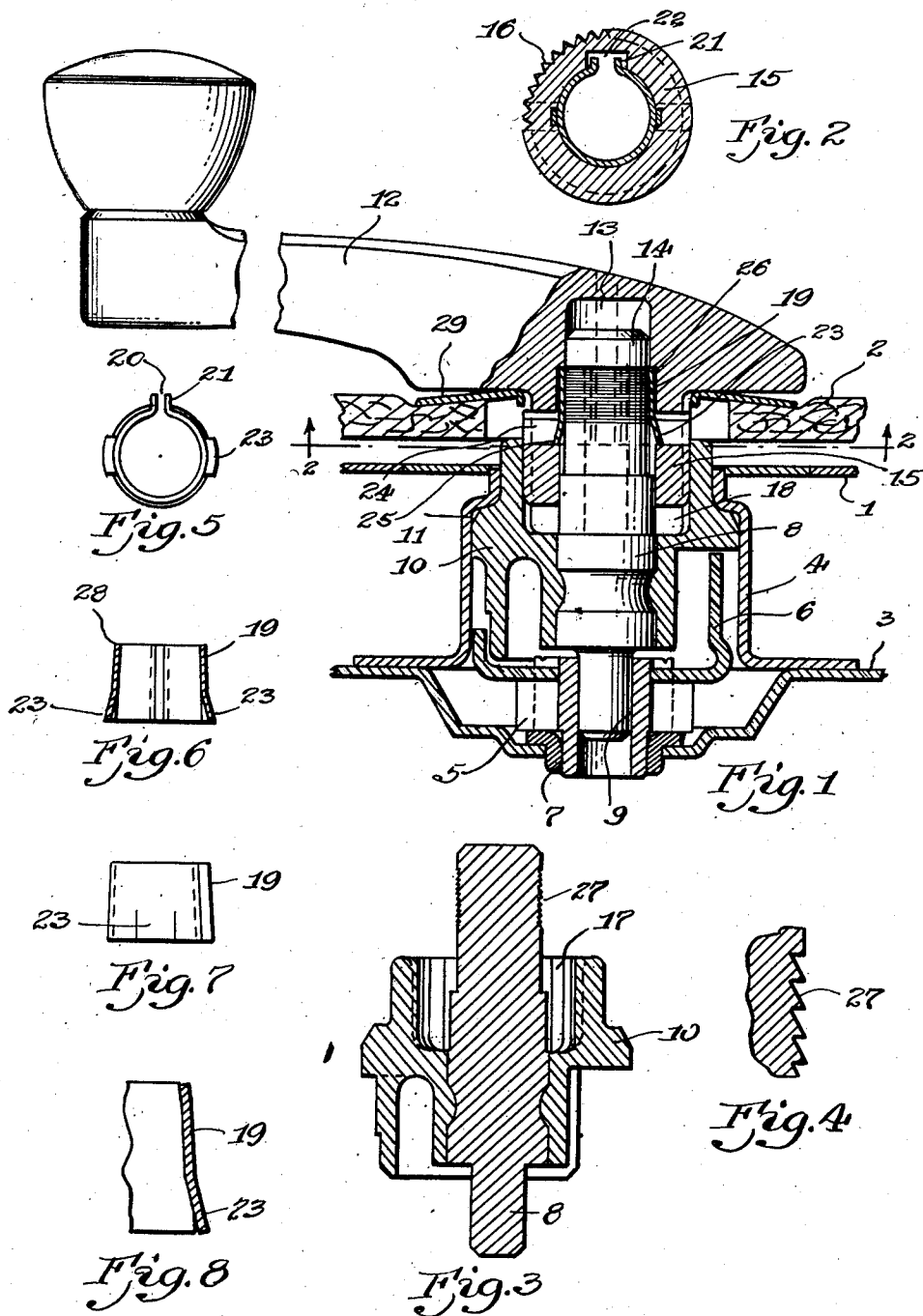
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HANDLE ASSEMBLY

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HANDLE ASSEMBLY

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6 Claims. (Cl. 287—53)

This invention relates to a handle assembly and more particularly to a handle assembly for a window regulator.

It is the object of this invention to produce a handle assembly wherein the handle can be easily attached and detached from the spindle which supports the handle.

The invention also contemplates an attachment for a handle to a spindle which securely and efficiently attaches the handle to the spindle and which is simple and cheap to manufacture.

In the drawing:

Fig. 1 is a sectional view through a portion of an automobile body and the handle assembly.

Fig. 2 is a section along the line 2—2 of Fig. 1.

Fig. 3 is a detail sectional view showing the spindle and the driving member of the window regulator clutch.

Fig. 4 is an enlarged detail of the serrated portion of the spindle.

Figs. 5, 6, 7 and 8 are detail views of the spring sleeve for retaining the handle on the spindle.

Referring more particularly to the drawing, there is shown a portion of an automobile body comprising an inner panel 1 which is covered by trim material 2. The regulator support plate is designated 3 and carries a housing 4 for the regulator clutch mechanism.

The regulator clutch mechanism comprises a pinion 5 which has fixed thereto the driven member 6 of the clutch. Pinion 5 is journaled in the regulator plate 3 as at 7. The handle spindle 8 has a reduced end which is journaled in the pinion as at 9. The driving member of the clutch is designated 10 and is fixed upon the spindle 8. The driving member 10 is journaled in the housing 4 as at 11. Since the clutch forms no part of this invention, a further description of the clutch is not necessary.

The regulator handle 12 is provided with an opening 13 which is adapted to receive the end 14 of the spindle 8. The hub portion 15 of the handle 12 is provided with a plurality of longitudinal serrations 16 about its circumference. These serrations 16 interengage serrations 17 on the walls of the recess 18 of the driving member 10 when the hub 15 of the handle is forced into the recess 18 to effect a tight driving connection or fit between the hub 15 and the driving member 10. The spindle 8 has a rigid connection with, and fits in the driving member 10. As shown, the driving member 10 is a die-casting which is cast about the spindle 8.

For retaining the handle 12 on the spindle 14, it is proposed to use a sleeve 19 of spring steel.

The sleeve 19 is split as at 20 and the edges are turned outwardly as at 21 so that they project into the axial opening 22 in handle 12 and thereby prevent relative rotation between the sleeve 19 and the hub 15. Sleeve 19 is also provided with two out-turned ears 23 which, when the sleeve is slid into opening 13 of the handle, snap into diametrical opening 24 in hub 15. The outer edges of the lugs 21 abut the wall of opening 24 as at 25 to lock the spring sleeve 19 in the hub. Opening 13 is enlarged as at 26 to provide a circumferential clearance about the ring 19. The outer end of the spindle is provided with circumferential serrations 27 which are arranged to interengage the outer end 28 of the sleeve 19 when assembled on the spindle. An escutcheon 29 is mounted over the hub 15 and between the handle 12 and the trimming 2.

The handle is assembled on the spindle as follows: The spring sleeve 19 is first compressed somewhat and slid into the opening 13 until ears 23 reach opening 24 whereupon the sleeve 19 expands causing ears 23 to interengage opening 24 at 25. This releasably locks sleeve 19 in the handle. The handle, with the sleeve assembled therein, is then slipped over the spindle 8 and pushed on to the spindle 8 until the outer edge 28 of the sleeve interengages one of the circumferential serrations 27 on the spindle 8. This locks the handle on the spindle. The handle will be pushed on to the spindle far enough to effect a neat fit between the handle and the trimming 2 but will not be pushed on to the spindle sufficiently far to completely compress the trimming 2.

To remove the handle from the spindle 8, the escutcheon 29 and trimming 2 are moved downwardly, as viewed in Fig. 1, or toward the inner panel 1 so that the escutcheon and trimming clear the ends of the opening 24. With the ends of the opening 24 thus clear, it is possible to pass a suitable instrument into the ends of opening 24 and thereby move or spring the ears 23 radially inwardly into opening 13 so that they clear the sides of the opening 24 and thus permit the handle 12 to be slipped off the spindle 8. In such case the sleeve 19 will remain on the spindle but can be removed as soon as the handle is removed from the spindle.

I claim:

1. A handle assembly comprising a spindle, a handle having an opening adapted to receive one end of the spindle, a shoulder on the spindle, a shoulder on the handle offset from said opening in the handle and spaced longitudinally from the

shoulder on the spindle, said shoulder on the handle being positioned between the shoulder on the spindle and the mouth of the opening in the handle, and a spring sleeve mounted in the opening in the handle and over the said spindle, one end of the spring sleeve having an internal diameter normally less than the outer diameter of the shoulder on said spindle whereby said end of the sleeve interengages the shoulder on the spindle and a projection on the other end of said sleeve which interengages the shoulder on the handle whereby the sleeve locks the handle on the spindle.

2. A handle assembly comprising a spindle, a handle having an opening adapted to receive one end of the spindle, a shoulder on the spindle, a shoulder on the handle spaced from the shoulder on the spindle, and a spring sleeve mounted in the opening in the handle and over the said spindle, one end of the spring interengaging the shoulder on the spindle and the other end interengaging the shoulder on the handle whereby the sleeve locks the handle on the spindle, the said handle being provided with an opening through which access to the sleeve can be had to compress the same and disengage the sleeve from the handle to permit removal of the handle from the spindle.

3. A handle assembly comprising a spindle having a plurality of circumferential serrations around one end, a handle having an opening adapted to receive the serrated end of the spindle, a notch in the wall of said opening in the handle, said notch being located between the mouth of said opening and the serrated end of the spindle, a split spring sleeve adapted to be positioned in the opening in said handle, the internal diameter of one end of the sleeve being less than the outer diameter of the serrated end of said spindle whereby said end of the sleeve interengages one of the serrations on the spindle, the other end of the sleeve having at least one out-turned ear which interengages the handle in said notch whereby the spring sleeve locks the handle on the spindle.

4. A handle assembly comprising a spindle having a circumferential shoulder adjacent one end, a handle having an opening adapted to receive the shouldered end of the spindle, said handle having a second opening joining the first mentioned opening and extending at right angles thereto, a spring sleeve positioned about the spindle having one end interengaging the shoulder on the spindle, an ear on the other end of the

sleeve interengaging the handle in the second mentioned opening for retaining the handle on the spindle, said ear being accessible from without the handle through said second opening to disengage the ear from the handle and permit removal of the handle from the spindle.

5. A handle assembly comprising a spindle having a plurality of circumferentially extending serrations adjacent one end, a handle having an opening adapted to receive the serrated end of the spindle, a second opening through said handle at right angles to the first opening and communicating therewith, a split spring sleeve having an inside diameter which is normally smaller than the outside diameter of the spindle and a pair of outwardly turned ears adjacent one end, the serrated end of the spindle being positioned in the opening in the handle, the said sleeve being positioned in the opening in the handle and surrounding the end of the spindle with one end of the sleeve interengaging a serration on the spindle, and the ears interengaging the handle in the second mentioned opening whereby the ears are accessible through the second mentioned opening and can be disengaged to permit removal of the handle from the spindle.

6. A handle assembly comprising a spindle having a plurality of circumferential serrations around one end, a handle having an opening adapted to receive the serrated end of the spindle, a shoulder in the wall of said opening in the handle positioned between the mouth of said opening and the serrated end of the spindle, a split spring sleeve positioned in the opening in said handle and over said spindle, one end of the sleeve interengaging the serrated part of said spindle and the other end of the sleeve having an expanded portion which interengages the shoulder in said handle whereby the spring sleeve locks the handle on the spindle, the expanded end of the spring sleeve having a normally larger diameter than the internal diameter of the opening in said handle whereby the spring sleeve is adapted to be contracted and positioned in the opening in the handle and then released so that the expanded end interengages the shoulder in the handle, the other end of the sleeve having a normal internal diameter less than the external diameter of the serrated end of the spindle whereby when the serrated end of the spindle is passed through the split sleeve in the handle the sleeve is expanded and yieldably interengages the serrated end of the spindle.

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