Sept. 14, 1943. A. C. ANDERSEN 2,329,379

HANDLE ASSEMBLY

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Fig. 1

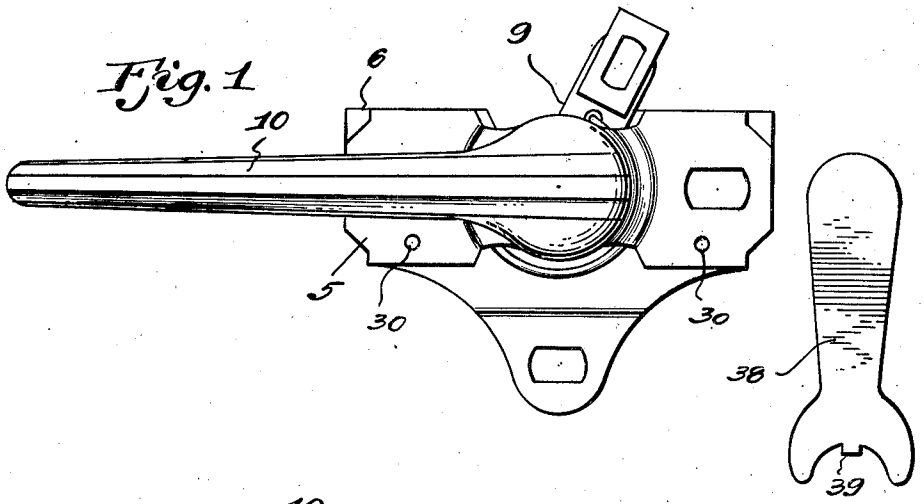


Fig. 11

Fig. 2

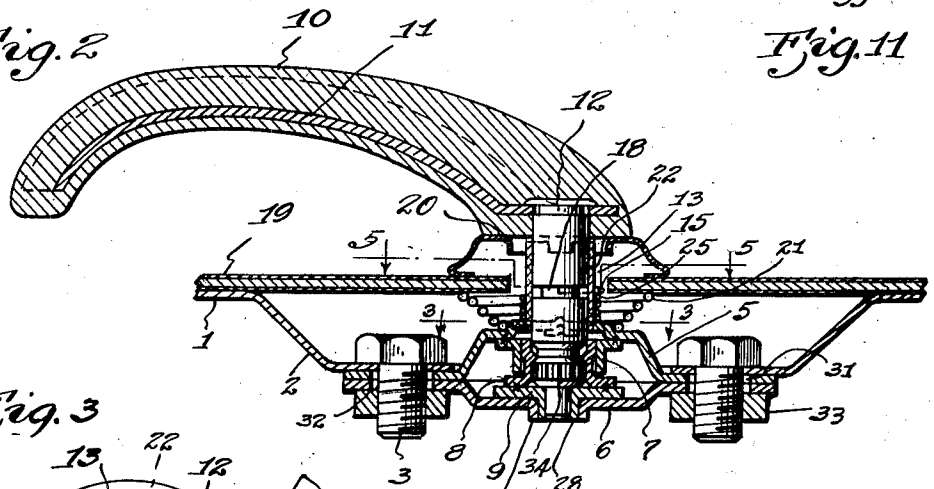
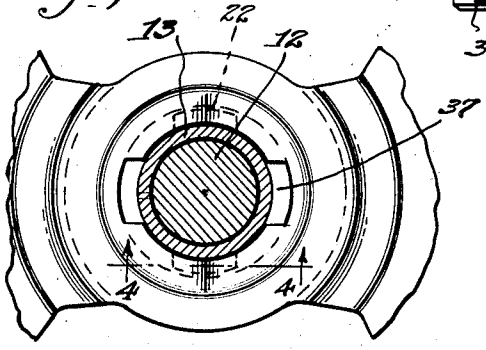


Fig. 3



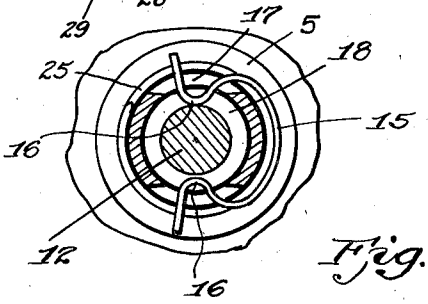


Fig. 5

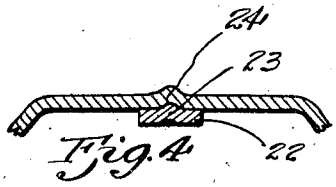


Fig. 4

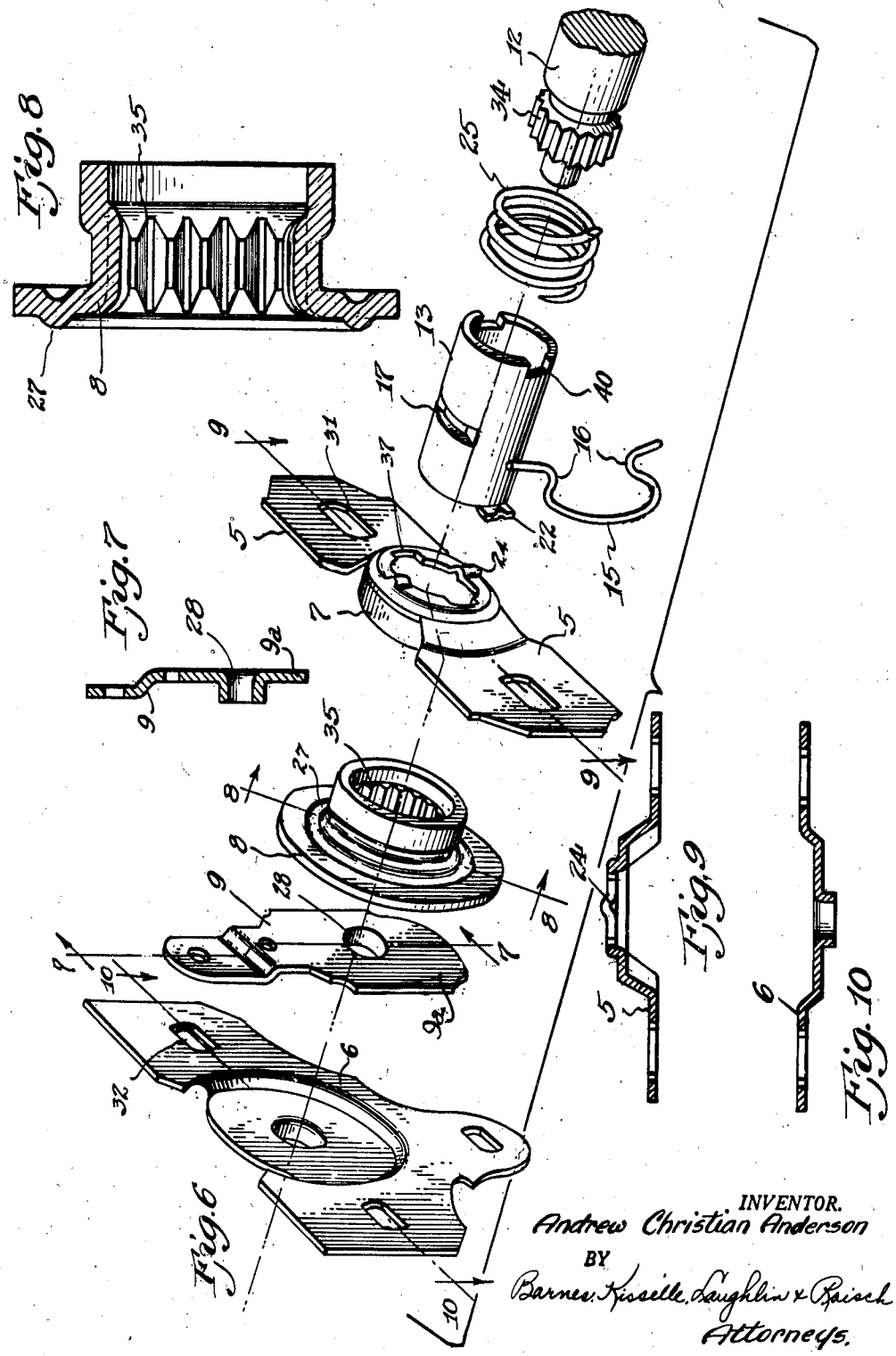
INVENTOR.
Andrew Christian Anderson

BY
Barnes, Kisselle, Laughlin & Raisch
Attorneys.

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HANDLE ASSEMBLY

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INVENTOR.
Andrew Christian Andersen
BY
Barnes, Kisselle, Laughlin & Raisch
Attorneys.

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UNITED STATES PATENT OFFICE

2,329,379

HANDLE ASSEMBLY

Andrew Christian Andersen, Detroit, Mich., assignor to Ternstedt Manufacturing Company, Detroit, Mich., a corporation of Michigan

Application March 25, 1942, Serial No. 436,146

6 Claims. (Cl. 292—348)

This invention relates to handle assemblies, particularly an inside handle for an automobile body.

It is the object of the invention to provide a handle assembly in which the handle unit may be easily installed and easily removed. It is customary with inside handles for automobile bodies, particularly the regulator handle and the lock handle, to use an escutcheon. This escutcheon is held out against the handle by means of either the padding on the door panel or by a coil spring. This invention relates to an assembly of this type in which the escutcheon may be pressed inwardly, exposing a sleeve which may be manipulated by a proper tool to engage or disengage the handle and spindle unit from the housing member in which the handle spindle is supported.

In the mass production of automobile doors and automobile bodies the doors are often manufactured in a plant remote from the plant where the bodies are manufactured. Heretofore, it has been customary to insert the hardware, such as the window regulator, locks, etc., in the doors in the plant where they are manufactured and before they are shipped. In most, if not all, of the designs heretofore produced, the window regulator and lock spindles are a part of the lock or window regulator mechanism and protrude from the inside panel of the door. Consequently, it is difficult to stack and ship these without the protruding spindles interferring with the stacking and often marring or injuring the panels.

It is the object of the present invention to afford a handle assembly in which the spindle is part of the handle itself so that the spindle may be inserted in the door panel after it is shipped and when the door is about to be assembled or is assembled in the body.

Referring to the drawings:

Fig. 1 is an elevation of a remote control lock handle.

Fig. 2 is a longitudinal section of the same.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a section on the line 4—4 of Fig. 3.

Fig. 5 is a section on the line 5—5 of Fig. 2.

Fig. 6 is an exploded perspective view of the whole assembly.

Fig. 7 is a section on the line 7—7 of Fig. 6.

Fig. 8 is a section on the line 8—8 of Fig. 6, but before the hub has been welded to the crank shown in Fig. 7.

Fig. 9 is a section on the line 9—9 of Fig. 6.

Fig. 10 is a section on the line 10—10 of Fig. 6.

Fig. 11 is an elevation of the tool by which the assembly is made or disengaged.

The inside door panel is designated 1. This is provided with a struck-in or inbent portion 2 in which is secured by bolts 3 the housing made of two stampings 5 and 6. A flanged bearing sleeve 7 is welded to the outer housing stamping 5. A flanged hub 8 is spot welded to the member 9a and this member carries an arm which with the hub forms a crank 9 for operating a link (not shown). This link connects with a lock (not shown). The flanged hub 8 and crank 9 constitute the driven parts of the assembly and with the housing constitute what I term the driven sub-assembly.

A handle 10 is formed by means of a channelled stamping 11 being riveted to the spindle 12 and a plastic material being cast thereover. This stamping 11 is riveted to the end of the spindle 12. Referring to Figs. 2 and 3, it will be seen that the spindle 12 is enclosed in a sleeve 13 and comparing Figs. 2 and 5, it will be observed that the spindle is provided with an annular groove 18. The hairpin spring 15 is slipped over the sleeve and the grip portions 16 of this spring pass through the slots 17 of the sleeve (see Fig. 6) and engage in the annular groove 18 of the spindle. This rotatively ties the sleeve to the spindle. The rotative sleeve 13, the spindle 12 and the handle form the driving parts of the assembly.

19 represents the trimming material which is stretched over the space formed by the indented portion 2 of the inner panel 1. A stamped metal escutcheon 20 is pressed outwardly against the shoulder of the grip portion of the handle by means of the coil spring 21. Referring to Fig. 6 it will be seen that the rotatable sleeve 13 has at its lower ends stamped-out lugs 22. Each of these lugs has stamped therein a detent 23 (see Fig. 4) arranged to engage the recess 24 stamped in the outer housing member 5 (see Figs. 2 and 4). The coil spring 25 bears against the hairpin spring 15 (see Fig. 2) and also against the outer housing stamping 5 and tends to keep the sleeve projected outwardly so that when the sleeve is in place the detents 23 remain in the detent recesses 24 and hold the whole assembly in place.

Looking at the exploded view (Fig. 6) the spring 25 is telescoped over the sleeve 13 and this spring 25 bears against the lugs 22. The spindle 12 is then passed into the sleeve 13 and the spring 25 is collapsed slightly and the hairpin spring 15 snapped into the slots 17 in the

sleeve 13. This completes the sub-assembly of the driving parts.

The driven parts and housing are assembled by first projection-welding the flanged hub 8 to the crank 9. See these parts so welded in Fig. 2. The flanged hub, before it is welded, has a boss 27 to permit this projection-welding (see Fig. 8). The flanged bearing sleeve 7 is then spot or projection-welded to the outer housing stamping 5 as shown in both Fig. 2 and the exploded view (Fig. 6). The crank 9 has a sleeve portion 28 which form a hub for the crank and fits into the bearing sleeve 29 stamped out of the inner housing stamping 6. The welded unit comprising the hub 8 and the crank 9 is first set in place in the housing plate 6, the hub 28 being set in the bearing sleeve 29. Thereupon, the outer housing stamping 5, together with the bearing sleeve 7 welded thereto, is telescoped over the hub 8 as shown in Fig. 2. Then the two housing stampings 5 and 6 are riveted together with the rivets 30 shown in Fig. 1. This completes the driven sub-assembly. This sub-assembly is then bolted to the indented portion 2 of the inner panel 1 by means of the bolts 3 which pass through slots 31 and 32 in the housing stampings. Nuts 33 are threaded on the ends of the bolts.

Now to assemble the two sub-assemblies: the trimming material has already been stretched over the space formed by the indented portion 2 of the inner door panel 1 and the spring 21 set in between the housing and the trimming material. The escutcheon 20 is then placed over the trimming material as shown in Fig. 2. Then the handle sub-assembly is passed through the opening in the escutcheon and the lugs 33 are passed through the two recesses 37 of the housing (see Fig. 3). The handle and the sleeve are then pressed down, the teeth 34 of the spindle passing into the teeth 35 of the hub. The spindle 12 is pushed inwardly and the spring 25 is collapsed slightly and then one pushes in the escutcheon and takes a tool, such as shown at 38 in Fig. 11, and inserts the nub 39 of the tool in one of the recesses 40 of the sleeve. The sleeve may then be turned, bringing the lugs from a position of registry with the recesses 37 (Fig. 3) to a right-angular position with respect to said recesses, as shown in the dotted lines of Fig. 3. Spring 25 is now allowed to expand and it causes the lugs to press against the under side of the housing member 5, the detent 23 locking in the detent recess 24, as shown in Fig. 4. This completes the assembly.

The disassembly may be made by simply pressing in the escutcheon, inserting the tool 38 with the nub in the recess 40 and turning the sleeve one quarter of a turn.

What I claim is:

1. In a handle assembly, the combination of a driven sub-assembly, and a driving sub-assembly, including a spindle and a rotatable sleeve on the spindle detachably locked to said spindle, the assembly being made by passing the driving assembly partially into the driven sub-assembly and then turning the sleeve with a tool through a part of a turn on the said spindle.

2. In a handle assembly, the combination of a driven sub-assembly, and a driving sub-assembly, the latter including a spindle and a spring-stressed sleeve rotatable on the spindle but held against longitudinal movement and having on its end a lug, the driven sub-assembly having a housing and movable parts mounted in the housing, the said housing having a central opening provided with a recess, the said spindle and sleeve being insertable in the opening in the housing, the said spindle removably engaging with the movable parts, the lug on the end of the sleeve passing through the recess and the sleeve being capable of being turned a portion of a turn to lock the two sub-assemblies together by engaging the lug behind the inside of the wall of the housing by reason of said spring stress upon the sleeve.

3. In a handle assembly, the combination of a driven sub-assembly, and a driving sub-assembly, the latter including a spindle and a spring-stressed rotatable slotted sleeve having an annular groove and on its end a lug, the said sleeve being mounted on the spindle by means of a hairpin spring passing through the slots in the sleeve and engaging in the said annular groove, the driven sub-assembly having a housing and movable parts mounted in the housing, the said housing provided with a central opening with a recess, the said spindle and sleeve being insertable in said opening, the said spindle engaging in driving relation with the movable parts and the lug on the end of the sleeve passing through the said recess and the sleeve being capable of being turned a portion of a turn to lock the two sub-assemblies together by engaging the lug engaging behind the wall of the housing, the said spring stress serving to retain it there.

4. In a handle assembly, the combination of a driving sub-assembly comprising a spindle and a sleeve rotatably supported thereon and spring pressed outwardly but limited in its outward movement, said sleeve having a lug on its inner end, and a driven sub-assembly comprising a housing with a central opening with an offset recess to receive said spindle and sleeve with said lug, the said sleeve and spindle being capable of being forced inwardly and the sleeve given a part turn to bring the lug out of registry with said recess to lock behind the wall of said housing by said spring pressure, the said driven sub-assembly comprising also a crank and hub, the spindle being provided with a non-circular end portion adapted to fit into a similar crank hub part to engage the same together in driving relation when the lug of the sleeve is locked behind the housing wall.

5. In a handle assembly, the combination of a driving sub-assembly comprising a spindle and a sleeve rotatably supported thereon and spring stressed outwardly but limited in its outward movement, said sleeve having a lug on its inner end, and a driven sub-assembly comprising a housing with a central opening with an offset recess to receive said spindle and sleeve with said lug, the said sleeve and spindle being capable of being forced inwardly and the sleeve given a part turn to bring the lug out of registry with said recess to lock behind the wall of said housing by said spring pressure, the said driven sub-assembly comprising also a crank and hub, the spindle being provided with a non-circular end portion adapted to fit into a similar crank hub part to engage the same together in driving relation when the lug of the sleeve is locked behind the housing wall, the lug having a detent and the housing wall a detent recess to locate the lug in the locked position.

6. In a handle assembly, the combination of a driving sub-assembly comprising a spindle with an annular groove and a slotted sleeve rotatably supported thereon by a hairpin spring passing through the slots in the sleeve and engaging in the annular groove in the spindle and spring

pressed outwardly but limited in its outward movement, said sleeve having a lug on its inner end, and a driven sub-assembly comprising a housing with a central opening with an offset recess to receive said spindle and sleeve with said lug, the said sleeve and spindle being capable of being forced inwardly and the sleeve given a part turn to bring the lug out of registry with said recess to lock behind the wall of said housing by said spring pressure, the said driven sub-assembly comprising also a crank and hub, the spindle being provided with a non-circular end portion adapted to fit into a similar crank hub part to engage the same together in driving relation when the lug of the sleeve is locked behind the housing wall.

ANDREW CHRISTIAN ANDERSEN.