

April 13, 1937.

E. G. SIMPSON

2,076,867

UNIT OPERATING DEVICE FOR A SWINGING AND A SLIDING PANEL

Filed Feb. 14, 1934

2 Sheets-Sheet 1

Fig. 1.

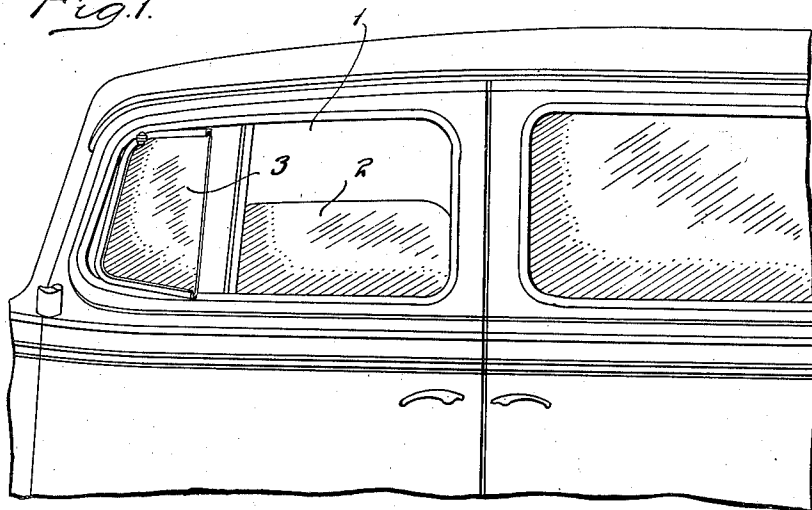
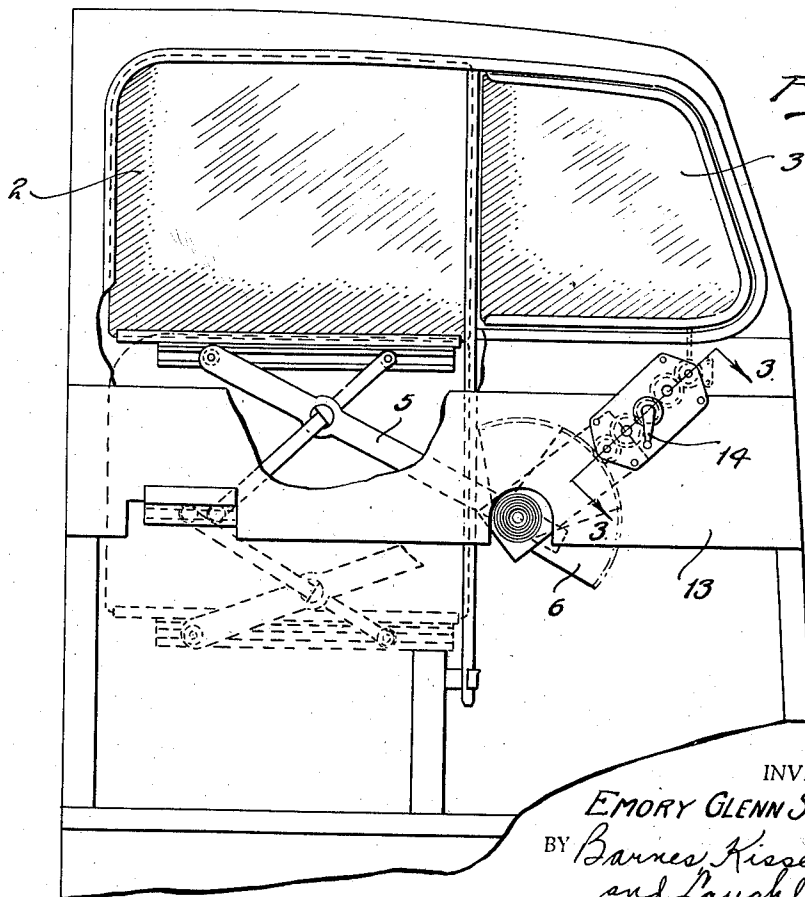


Fig. 2.



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Fig. 5.

Fig. 3.

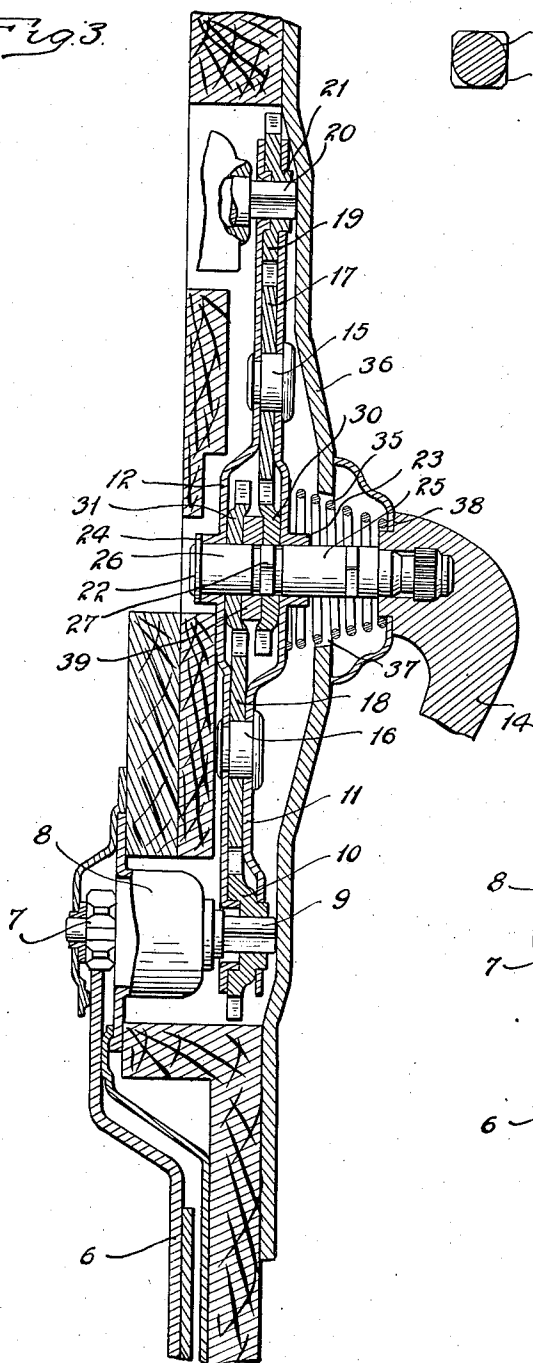
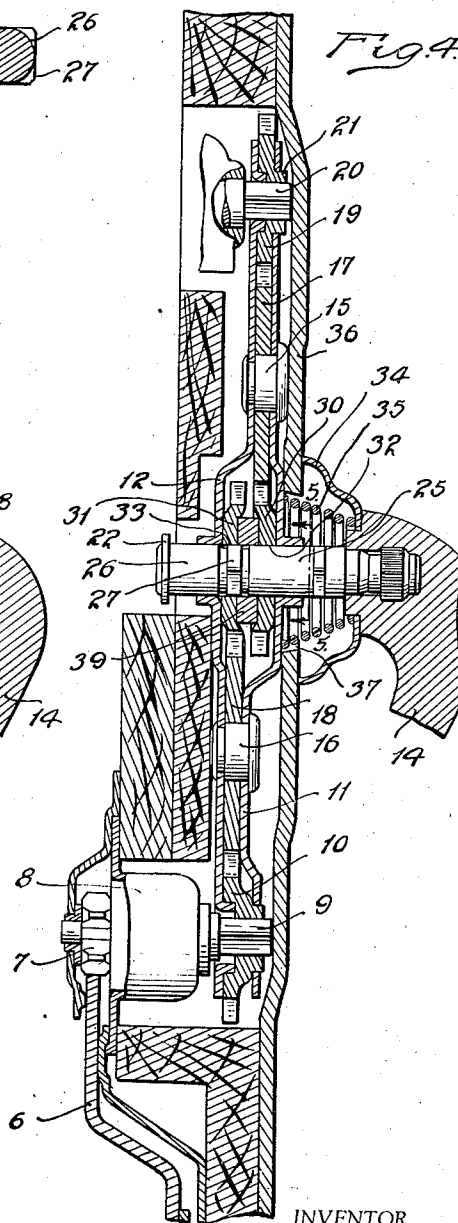


Fig. 4.



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UNITED STATES PATENT OFFICE

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UNIT OPERATING DEVICE FOR A SWINGING
AND A SLIDING PANELEmory Glenn Simpson, Detroit, Mich., assignor
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Mich., a corporation of Michigan

Application February 14, 1934, Serial No. 711,142

7 Claims. (Cl. 296-44)

This invention relates to a unit operating device for a swinging and a sliding panel. It is desirable to have a unit operating device for operating both the sliding and the swinging panels of the window assembly of the Fisher no draft ventilation system. This system is shown, described and claimed in application Serial No. 644,622.

It is an object of this invention to produce a unit operating device for both the swinging and sliding panels in such an automotive vehicle body window assembly.

It is also an object of this invention to produce a unit operating device for a sliding panel and a swinging panel that is simple in operation as well as in structure.

In the drawings:

Fig. 1 is a fragmentary side elevation of a portion of a vehicle body showing the sliding panel partially lowered and the swinging panel swung to a ventilating position.

Fig. 2 is an inside elevation partly broken away showing the unit operating device with the window panels closed.

Fig. 3 is a section along the line 3-3 of Fig. 2 showing the regulator handle operably connected with the swinging panel and disconnected from the sliding panel.

Fig. 4 is a view similar to Fig. 3 showing the handle connected with the sliding window regulator and disconnected from the swinging panel regulator.

Fig. 5 is a section along the line 5-5 of Fig. 4.

Referring more particularly to the drawings, there is shown a window opening 1, one portion of which is arranged to be closed by the sliding panel 2 and the other portion of which is arranged to be closed by the swinging panel 3 in a manner described in the above mentioned application Serial No. 644,622. As herein used the term "window opening" means the entire opening which is stamped out of the metal body panel and specifically the opening 1 includes both the portion of the opening stamped in the outside metal body panel closed by swinging panel 3 as well as that portion closed by the sliding panel 2. The sliding panel 2 is raised and lowered by any suitable type of regulator of the gear sector type. As shown the regulator may be generally designated 4 and is of the crossed arm type shown, described and claimed in copending application Serial No. 693,280. The swinging panel 3 may likewise be adjusted by any suitable regulator but preferably by a regulator of the type

shown in copending application Serial No. 670,248.

The double arm regulator 4 for the sliding panel 2 has a power arm 5 fixed to the gear sector 6. Power is applied to the gear sector 6 through the pinion 7, clutch 8 and the driving spindle 9. The driving spindle 9 is square in cross section and has mounted thereon the gear 10. The gear 10 is journaled in the support plate 11 of the unit operating device. The support plate 11, in conjunction with the support plate 12, may be secured by screws or in any other suitable manner to the lock board 13. The support plates 11 and 12 are arranged to carry two trains of gears, one train of gears transmitting power from the crank handle 14 to the window regulator for the sliding panel and the other train of gears transmitting power from the crank handle 14 to the window regulator for the swinging panel.

The plates 11 and 12 are riveted together by the pins 15 and 16. The pin 15 has rotatably mounted thereon between the plates 11 and 12 the gear 17. The pin 16 has rotatably mounted thereon between the plates 11 and 12 the gear 18. The gear 18 is always in mesh with the gear 10 and in a similar fashion the gear 17 is always in mesh with the gear 19 fixed on the square end of the spindle 20 and journaled in the plate 11 as at 21. The spindle 20 is a part of a regulator of the worm gear and pinion type as shown in the above application Serial No. 670,248 for regulating the swinging panel 3.

The plates 11 and 12 have journaled therein the spindle 22, as at 23 and 24. The spindle 22 is also axially movable, that is, from right to left or left to right as viewed in Figures 3 and 4. The spindle 22 has the spaced cylindrical portions 25, 26 which are circular in cross section and a section 27 which is square in cross section positioned between, and spaced from, the cylindrical portions 25 and 26.

The spindle 22 also carries the gears 30 and 31. The gears 30 and 31 are each provided with square openings 32 and 33, respectively, through which the spindle 22 passes. The square openings 32 and 33 are substantially the same size as the square portion 27 of the spindle.

The outer end of the spindle 22 has removably secured thereon in any suitable fashion or in any of the well-known ways, the crank handle 14. The crank handle 14 is provided with an escutcheon 34 which is backed up by the spiral coil spring 35 mounted between the support plate 11 and the escutcheon 34. The interior trimming material 36 is provided with an opening 37

through which the spiral coil spring 35 passes. The opening 37 is of such a size that the spiral coil spring 35 has a snug fit therein. The spiral spring 35 thus at all times maintains the trimming 36 snugly against the escutcheon 34 and at the same time yieldably holds the escutcheon 34 against the circumferential shoulder 38 on the crank handle 14.

The gears 30 and 31 are maintained in spaced relation by a suitable spacer in the form of a washer 39 through which the spindle 22 passes.

In operation there are two trains of gears which may be optionally connected with the crank 14, the one train of gears 31, 18 and 10 connects the crank handle 14 with the regulator for the sliding window 2. The other train of gears 30, 17 and 19 connect the crank handle 14 with the regulator for the swinging panel 3. As shown in Figure 3 the spindle 22 and crank 14 is in its normal position, that is, the spiral spring 35 yieldably holds the spindle 22 in its extreme right or "out" position so that the square portion 27 of the spindle 22 is engaged in the square opening 32 of the gear 30, thus connecting the spindle 22 and crank 14 through the train of gears 30, 17 and 19 with the regulator for the swinging panel. Since the cylindrical portion 26 at this time passes through the square opening 33 of the gear 31, the spindle 22 is in idling or disconnected relation for the sliding panel upon being turned will adjust the swinging panel 3 at any position desired.

If it is desired to adjust the sliding panel 2 upwardly or downwardly to any position desired, the handle 14 is pushed toward the left or to its "in" position. This axial shifting of the spindle 22 places the spindle in the position shown in Figure 4 with the square portion 27 engaged in the square opening 33 of the gear 31 and the cylindrical portion 25 of the spindle 22 in idling or disconnected relation with the gear 30. The spiral spring 35 is compressed. At this time turning of the crank 14 through the train of gears 31, 18, 10 actuates the regulator for the sliding panel 2. By turning the crank 14 the panel 2 may be adjusted to any position desired. As soon as the operator releases the leftward or inward pressure on the crank 14, the spiral spring 35 acting against the shoulder 38 automatically shifts the spindle 22 and crank toward the right or toward its "out" position, thus again connecting the crank 14 with the regulator for the swinging panel and disconnecting it from the regulator for the sliding panel.

From the above description it will be seen that the spiral spring 35 yieldably retains the escutcheon 34 against the shoulder 38 of the handle 14, the trimming 36 in snug engagement with the escutcheon 34 and shifts the spindle 22 from the "in" position to the "out" position when the operator releases the inward or leftward pressure on the crank 14 and spindle 22. In other words, the spring 35 serves also as a clutch throw-out spring insofar as gear 31 is concerned and a clutch engaging spring relative to gear 30.

I claim:

1. In a window assembly for an automotive vehicle, a window opening, a window well associated therewith, a pair of panels for closing the window opening, one of said panels closing a portion of the window opening and being swingable about an up and down axis, the other of said panels closing the remaining portion of the window opening and being movable into and out of the window well, a regulator for adjusting the

swingable panel, a regulator for adjusting the movable panel, a train of gears continuously operatively connected with one of said regulators, and a second train of gears operatively connected with the other of said regulators, an axially shiftable spindle, a crank non-rotatably mounted on the said spindle, each train of gears having a gear mounted on the said spindle, the said spindle in one position being in clutched relation with one of said gears and unclutched with the other of said gears whereby one of said trains of gears at a time are operable by the turning of the crank.

2. In a window assembly for an automotive vehicle, a window opening, a window well associated therewith, a pair of panels for closing the window opening, one of said panels closing a portion of the window opening and being swingable about an up and down axis, the other of said panels closing the remaining portion of the window opening and being movable into and out of the window well, a regulator for adjusting the swingable panel, a regulator for adjusting the movable panel, a train of gears continuously operatively connected with one of said regulators, a second train of gears operatively connected with the other of said regulators, an axially shiftable spindle, a crank mounted on the said spindle, each train of gears including a gear mounted on the said spindle, the said spindle in one position being in clutched relation with one of said gears and unclutched with the other of said gears whereby one of said trains of gears at a time are operable by the turning of the crank, and a spring for yieldably holding the spindle in one of the said positions.

3. In a window assembly for an automotive vehicle, a window opening, a window well associated therewith, a pair of panels for closing the window opening, one of said panels closing a portion of the window opening and being swingable about an up and down axis, the other of said panels closing the remaining portion of the window opening and being movable into and out of the window well, a regulator for adjusting the swingable panel, a regulator for adjusting the movable panel, a train of gears continuously operatively connected with one of said regulators, a second train of gears operatively connected with the other of said regulators, a support for said train of gears, an axially shiftable spindle rotatably mounted on said support, a crank mounted on said spindle, an escutcheon having an opening through which the spindle passes mounted between the support and the crank handle, a spring positioned between the support and the escutcheon for yieldably holding the escutcheon against the crank handle and for yieldably holding the spindle in clutched relation with one of said train of gears whereby the spindle may be shifted axially against the tension of said spring to disengage it from clutched relation with the last mentioned train of gears and placed in clutched relation with the other train of gears.

4. In combination with a window regulator assembly for an automotive vehicle, an operating device therefor comprising a support plate an axially shiftable spindle rotatably mounted on said support plate, a crank handle for the said spindle, a driving member carried by the said spindle, the said spindle being arranged so that in one position the driving member rotates with the spindle and in the other position idles on the said spindle, an escutcheon mounted over the said spindle between the support and the handle,

and a spring positioned between the support and the handle for yieldably holding the escutcheon against the handle and yieldably maintaining the spindle in one of the aforementioned positions.

5 5. In combination with a window regulator assembly for an automotive vehicle having its interior upholstered with trimming material, an operating device for the said window regulator comprising a support plate, an axially shiftable
10 spindle rotatably mounted on said support plate, a crank handle carried by the spindle, a driving member carried by the spindle, the said spindle being arranged so that in one position the driving member is in clutched relation with the spindle
15 and in the other position is in unclutched relation with the spindle, an opening in said trimming through which the spindle projects, an escutcheon mounted over the spindle for concealing the opening in the said trimming, and a spring
20 for yieldably holding the trimming against the escutcheon and for yieldably holding the spindle in one of its aforementioned positions.

6. In combination with a window regulator assembly for an automotive vehicle having its interior upholstered with trimming material, an
25 operating device for the window regulator comprising a support plate, an axially shiftable spindle rotatably mounted on said support plate, a crank handle for the said spindle, a driving member carried by the said spindle arranged to transmit
30 the driving torque from the spindle to the window regulator, the said driving member having a polygonal opening through which the spindle passes, the said spindle having a portion of
35 its surface polygonal in cross-section to correspond with the polygonal opening in the said driving member whereby when the spindle is

shifted to one position the polygonal portion of the spindle engages the polygonal opening in the driving member to transmit the driving torque to the window regulator and when the spindle is shifted to another position the driving member
5 idles on the spindle, an opening in the trimming material through which the spindle passes, an escutcheon mounted over the spindle between the crank handle and the trimming for concealing the opening in the trimming, a spiral spring
10 mounted between the escutcheon and the support plate and passing through the opening in the trimming for holding the trimming against the escutcheon and for yieldably holding the spindle in one of its aforementioned positions.

7. In combination with a window regulator assembly for an automotive vehicle having its interior upholstered with trimming material, an operating device for the regulator comprising a
20 support plate, an axially shiftable spindle rotatably mounted on the support plate, a crank handle for the said spindle, a driving member carried by the said spindle, the said spindle being arranged so that in one position the driving member
25 rotates with the spindle and in the other position idles on the spindle, an opening in the trimming through which the spindle projects, an escutcheon mounted over the spindle between the crank handle and the trimming for concealing the opening in the trimming and shiftable with
30 the spindle, a coil spring mounted between the escutcheon and the support plate for holding the trimming material against the escutcheon and for yieldably holding the spindle in one of its
35 aforementioned positions.

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