

March 22, 1932.

E. J. CAMPBELL

1,850,864

AUTOMOBILE WINDOW SCREEN

Filed Oct. 29, 1930

2 Sheets-Sheet 1

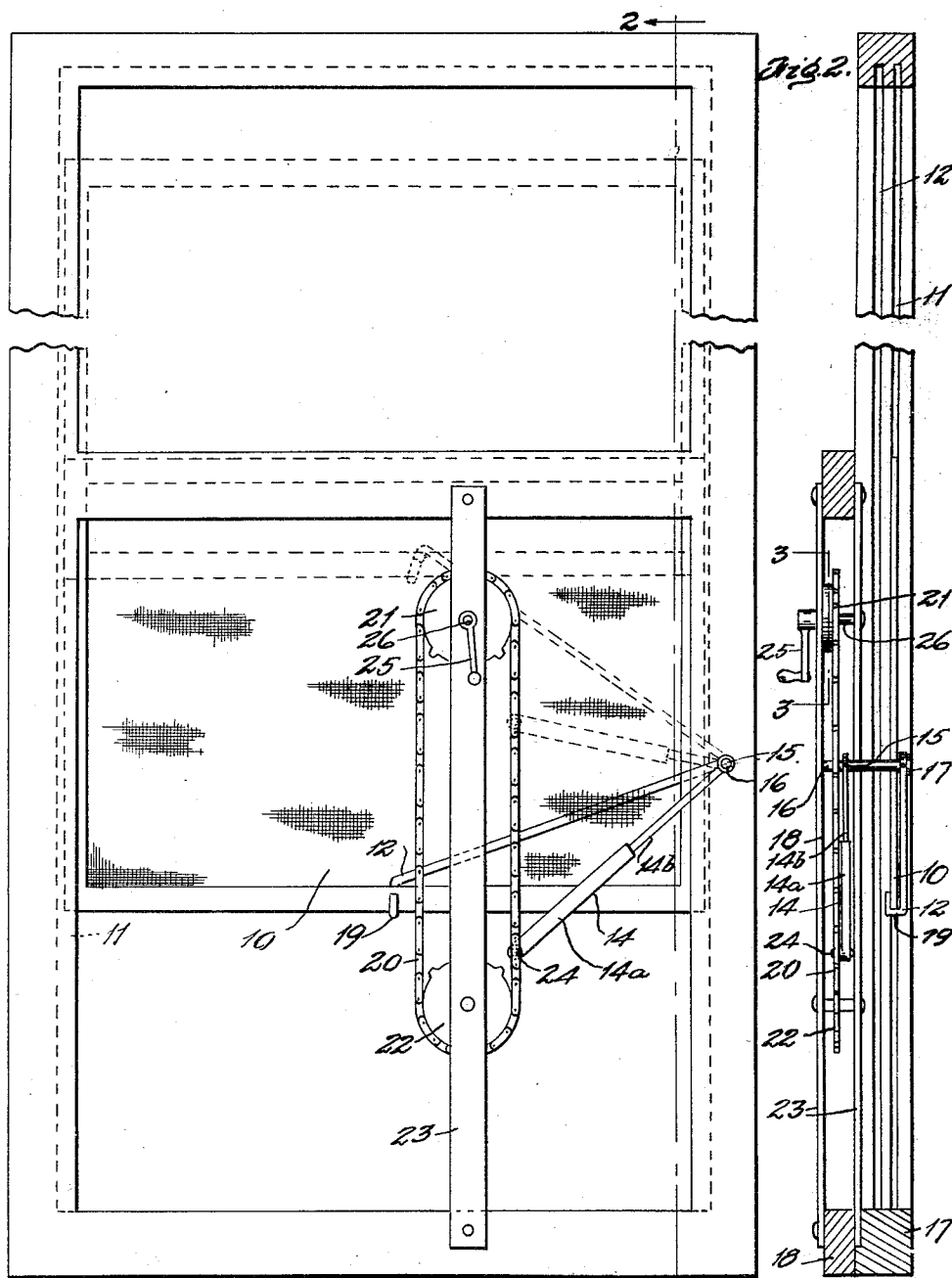


Fig. 1.

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Fig. 3.

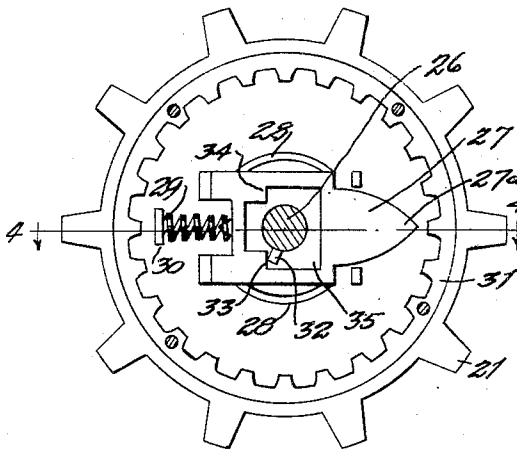


Fig. 4.

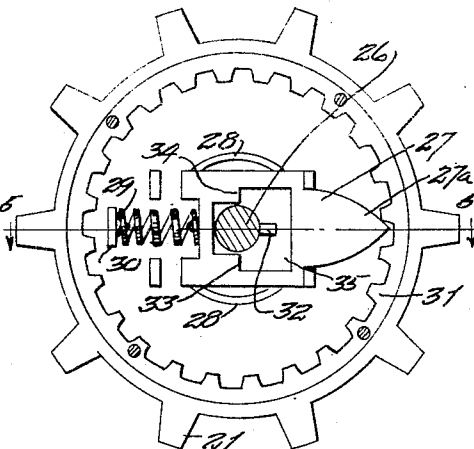


Fig. 5.

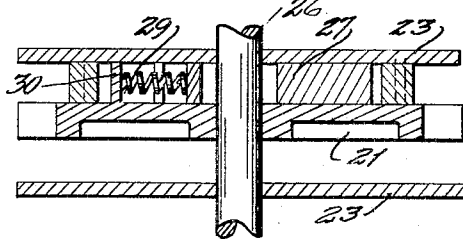


Fig. 6.

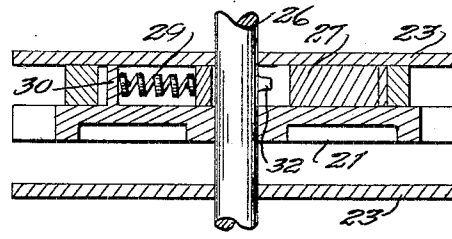
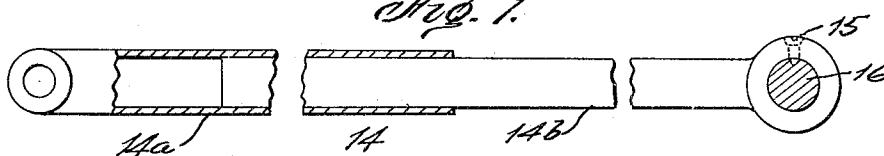


Fig. 7.



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## UNITED STATES PATENT OFFICE

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## AUTOMOBILE WINDOW SCREEN

Application filed October 29, 1930. Serial No. 492,077.

The object of the invention is to provide a screen for incorporation in the frame for the windows of automobiles, so that it may be raised and lowered, just as are the windows and in this way permit the entrance of air for ventilation but exclude insects with their annoyance to the occupants; to provide an actuating means for the screen whereby the latter may be elevated and lowered and latched in either position, the former of which will prevent unauthorized entrance to the car when locked; to provide an actuating mechanism adaptable either to the use of screens or windows, so that any desired degree of opening of the same may be had, with the screen or window positively latched in that position; and to provide an actuating mechanism of the kind indicated which is of simple form, susceptible of cheap manufacture and possible of incorporation in the construction of an auto-vehicle body without material modification thereof.

With this object in view, the invention consists in a construction and combination of parts of which a preferred embodiment is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevational view of an auto-vehicle door with the interior covering removed to expose the invention which is applied in operative position thereon.

Figure 2 is a sectional view on the plane indicated by the line 2—2 of Figure 1.

Figure 3 is a sectional view on the plane indicated by the line 3—3 of Figure 2, the latch being shown in retracted position.

Fig. 4 is a view similar to Fig. 3, showing the latch in engaged position.

Fig. 5 is a section on the line 4—4 of Fig. 3.

Fig. 6 is a section on the line 6—6 of Fig. 4.

Figure 7 is a detailed view partly in section and partly in elevation of the force arm of the screen actuating lever.

While the actuating mechanism comprised in the invention is adaptable to the use of either elevating and lowering a window or a screen, it is shown in the illustrated embodiment as the actuating means for a screen 10 slidably mounted in guides 11, paralleling the conventional window guides 12' but on

the outside of the latter. The screen drops normally by gravity into the window pocket but is raised or elevated by a lever structure of the nature of a bell crank lever, whose resistance arm 12 and force arm 14 are connected, as at 15, to the remote ends of a shaft 16 having its terminals journaled respectively in the main frame 17 of the door and supplemental frame 18 which is applied on the inner face of the window and screen pocket thereof. The fulcrum stud 16 is positioned to one side of the screen 10 so that there may be no interference with the latter as it is raised and lowered, the lowering depending on the degree of movement of the resistance arm 12.

Connection is made between the resistance arm 12 of the lever and the screen by means of a hooked terminal 19 on the former which embraces the lower edge of the screen at the transverse center.

Rocking movement is communicated to the actuating lever by means of a chain 20 trained over the upper sprocket 21 and lower sprocket 22 whose axes of rotation are in the same vertical plane by reason of the sprockets being carried in the spaced mounting bars 23 which span and are secured to the supplemental frame 18. One terminal of the force arm 14 is anchored to this chain by means of a pivotal connection 24 and since this anchored terminal will move in a vertical plane in the actuation of the force arm thus constantly changing the distance between it and the fulcrum stud 16, the force arm must be extensible and contractible in length and to this end it is composed of the tubular section 14<sup>a</sup> into which the solid section 14<sup>b</sup> telescopes.

The sprocket 21 and, therefore, the chain 20 are actuated by the crank 25 on whose spindle 26 the sprocket 21 is loosely mounted, so that there may be relative angular or turning movement between the crank and sprocket to first disengage the latch 27 before turning movement is imparted to the sprocket.

The latch 27 is in the form of a block slidably mounted between guides 28 on the rear face of the sprocket and impelled in one direction by a compression spring 29 compressed between the rear end of the block and an

abutment 30 on the rear face of the sprocket. The spring tends to force the block in a direction to engage its nose 27<sup>a</sup> between any pair of teeth of a keeper ring 31 which is in the  
5 form of an internal gear mounted on the inner face of one of the mounting bars 23. The keeper ring 31 being mounted on the fixed mounting bar and the latch being carried by the sprocket 21, turning movement of the latter  
10 and therefore actuation of the elevating lever is precluded if the latch be engaged with the keeper ring.

The crank 25, aside from constituting the means for actuating the sprocket 21, also constitutes the means for retracting the latch  
15 and to this end the spindle 26 is provided with a radial pin 32 engageable with either of the oppositely disposed abutment shoulders 33 or 34 disposed within the spindle clearance opening 35 formed in the latch block. Thus  
20 if the crank be turned in one direction, the pin 32 will engage the shoulder 33 and retract the latch after which continued movement of the crank in that direction will impart  
25 turning movement to the sprocket 21 since the latch is precluded from angular or turning movement relative to the sprocket by reason of its mounting between the guides 28. If the crank be turned in the opposite direction, the  
30 shoulder 34 will be engaged and the latch retracted as before after which turning movement of the sprocket 21 will take place in the then direction of movement of the crank.

By reason of the toothed form of keeper  
35 ring 31, the sprocket 21 may be latched in any position to which the actuating lever for the screen is moved and the latter may be raised or lowered by turning the crank in the proper direction to carry the anchor point 24  
40 of the force arm 14 either up or down.

The invention having been described, what is claimed as new and useful is:

An operator for vertically acting screens of automobiles and the like, including a driving  
45 gear, an annular keeper concentric with the gear and held against rotation, said keeper being formed with internal teeth arranged wholly within the periphery of the gear, guides formed on the rear face of the gear,  
50 a latch slidable in said guides and movable diametrically of the gear, said latch having a nose to engage the teeth of the keeper and an internal opening formed to provide opposing shoulders, a spring carried by the gear to  
55 hold the latch nose normally in engagement with the keeper, and a gear-operating shaft loosely arranged axially of the gear and keeper and formed with a projection operating in the latch opening under shaft movement to  
60 engage one of the shoulders of the latch and disengage the latch and keeper and relatively fix the latch and gear to operate the latter.

In testimony whereof I affix my signature.