

Nov. 21, 1950

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2,531,116

RAIN OPERATED AUTOMATIC WINDOW CLOSER

Filed Sept. 8, 1945

2 Sheets-Sheet 1

FIG. 1.

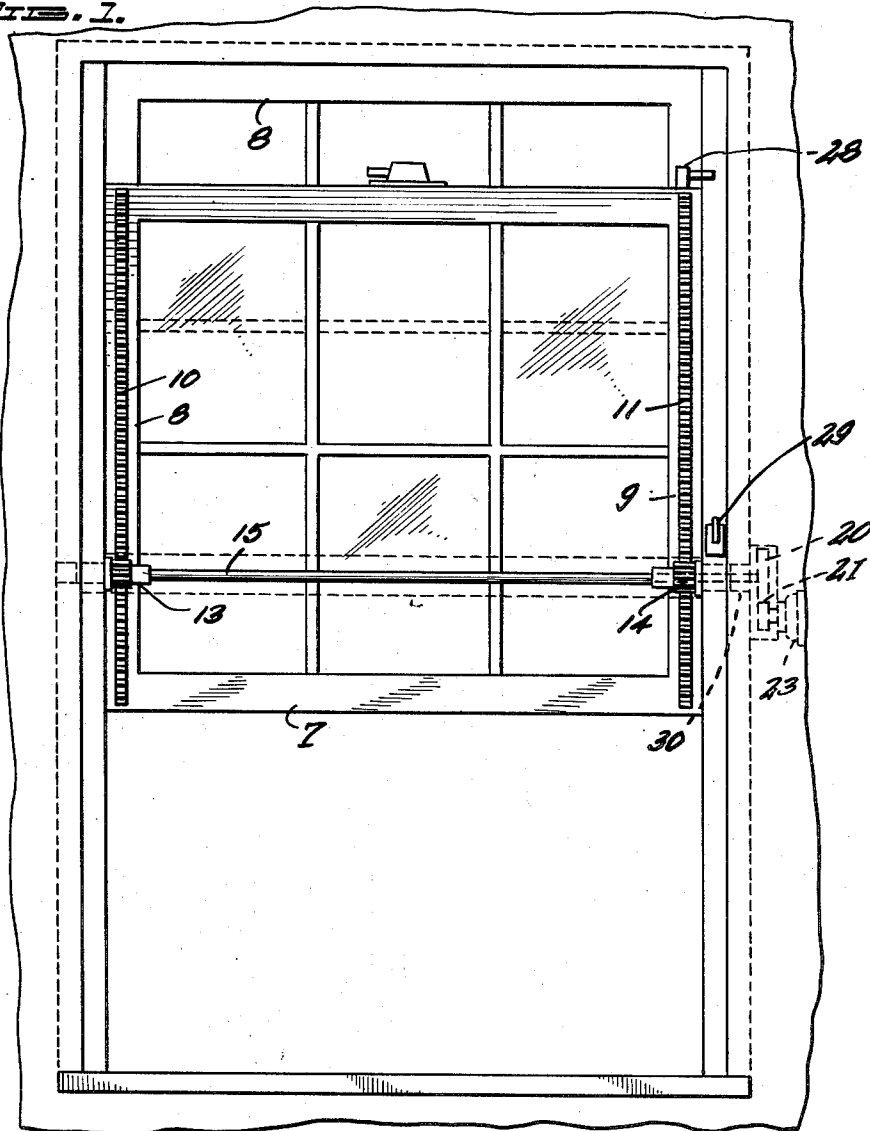


FIG. 4.

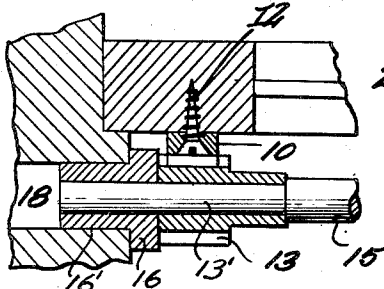
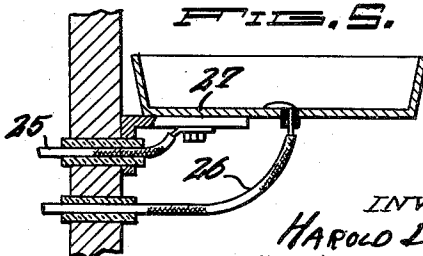


FIG. 5.



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FIG. 2.

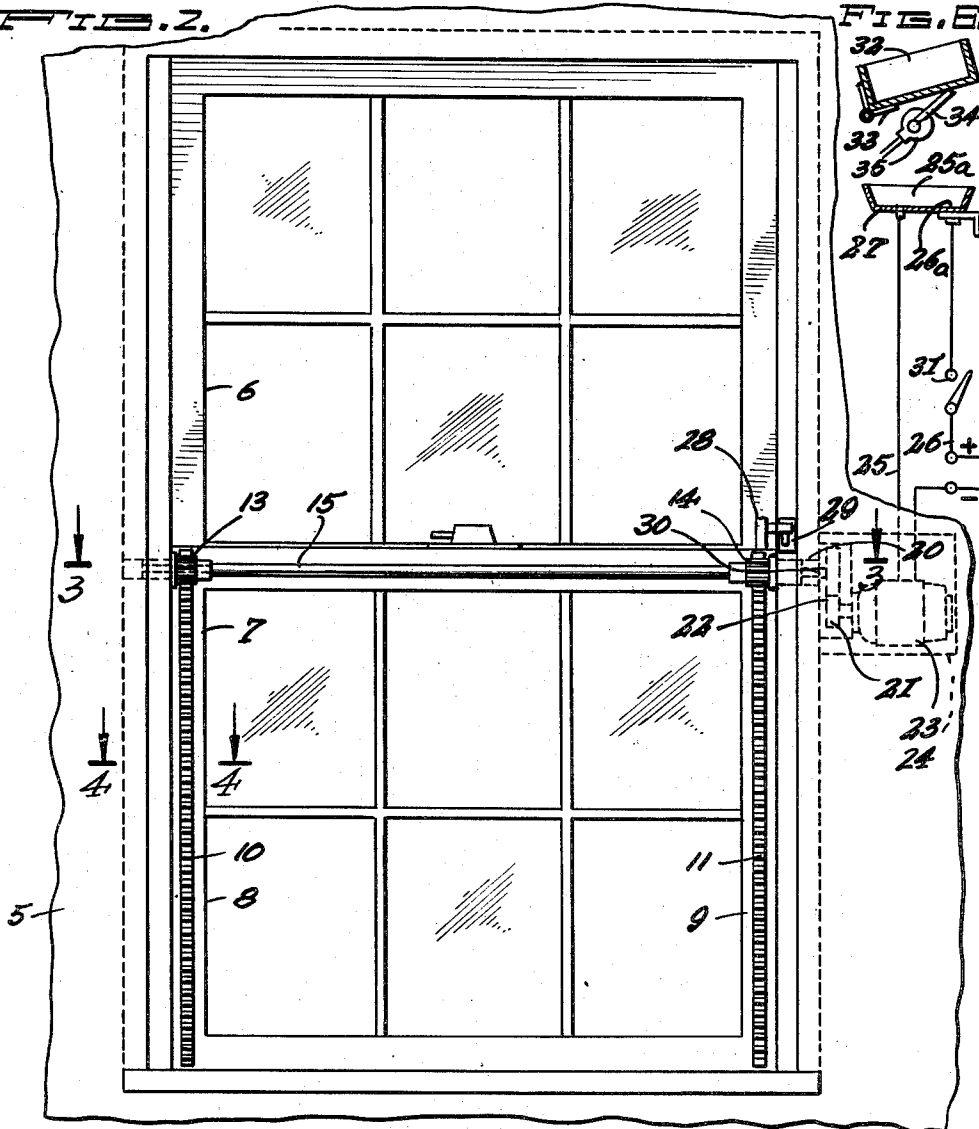


FIG. 6.

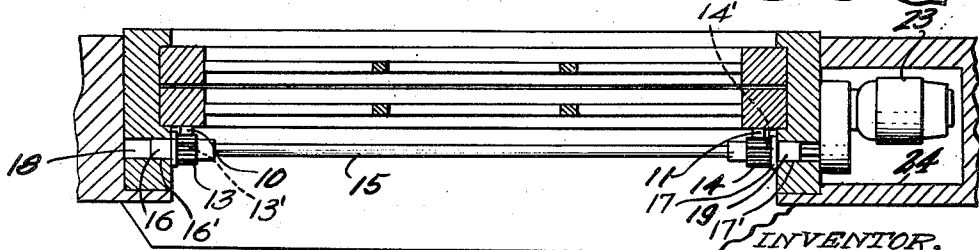
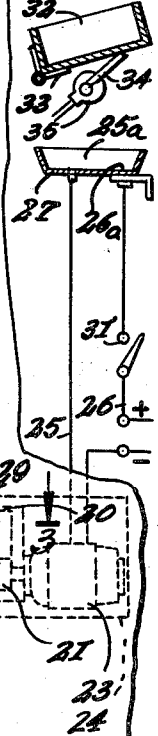


FIG. 3.

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UNITED STATES PATENT OFFICE

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RAIN OPERATED AUTOMATIC WINDOW CLOSER

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1 Claim. (Cl. 268—123)

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This invention relates to an automatic device for closing a window, which is operated by means of a circuit closure which is responsive to the accumulation of a small amount of rain in a receptacle, and one of the objects of the invention is to provide a device which will positively operate to close a window, when rain falls outside of the window, so that the house or building owner will not suffer any loss from the admission of rain into the home or building.

Another object of the invention is to provide a device of this character with means for breaking the circuit, when the window is closed, so that the operating motor will be cut out.

With the above and other objects in view the invention relates to certain new and useful constructions, combinations and arrangements of parts, clearly described in the following specification, and fully illustrated in the accompanying drawings, in which:

Fig. 1 is a front elevation of a window, showing the lower sash in raised position.

Fig. 2 is a similar view, showing the lower sash in closed position.

Fig. 3 is a cross sectional view thereof, taken on line 3—3 of Fig. 2, looking in the direction of the arrows.

Fig. 4 is a detail sectional view, taken on line 4—4 of Fig. 2, looking in the direction of the arrows.

Fig. 5 is an enlarged vertical sectional view through the rain collecting circuit closer.

Fig. 6 is a detail side elevation of a modified form of a rain closure.

Referring to the accompanying drawings, which illustrate a practical application of the invention, 5 designates a window frame in which the upper sash 6 and the lower sash 7 is mounted to vertically slide, in the usual manner.

The side frame bars 8 and 9 of the lower sash is shown to be provided with vertical gear racks 10 and 11, secured thereto by means of screws 12 or the like, as shown in Fig. 4. These racks are disposed in parallel relation to each other and are engaged by the pinion gears 13 and 14 fastened to reduced ends 13' and 14' of the cross shaft 15, which ends turn in tubular bearings 16 and 17, in laterally extending openings 16' and 17' of the window frame side bars 18 and 19.

The outer end of the shaft 15 is equipped with a gear 20, which is engaged by a reduction gear 21, of the motor shaft 22. The motor 23 is enclosed by the housing 24, and the circuit wires 25 and 26 thereof extend outwardly to establish

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connection with the rain collecting pan or receptacle 27, which is located outside of the window, so as to be exposed to any rainfall.

The terminals of the circuit wires 25 and 26 are extended through the rain pan or receptacle 27, which is constructed of insulating material, and the circuit through the electrical motor is normally inactive. When rain falls it bridges the terminals 25a and 26a and the circuit through the motor is closed, thus starting the motor, which causes the shaft 15 to turn, thus forcing the lower sash downwardly from its raised position.

When the upper end of the lower sash reaches a point near the level of the cross shaft, the lateral pin 28, carried by the right side bar of the lower sash, will engage the safety switch 29, mounted on the right side bar of the window frame, and the circuit through the motor will be broken, so that the cross shaft will cease to turn. The coupling 30 which connects the cross shaft 15 and the driven pinion 20 is a friction type of coupling, which permits of slippage under heavy or unusual resistance.

A manual switch 31 is provided for the circuit wires, so that the motor may be entirely cut out from operation, when it is desired to freely operate the lower sash, regardless of weather conditions.

Instead of the type of circuit closure shown in Fig. 2, I may employ a hinged receptacle 32, which is normally elevated by a spring 33. When this receptacle is filled with rain water it drops to an approximately horizontal position, thus depressing the switch arm 34, and closing the switch 35, which controls the circuit of the electrical motor. The switch 35 is entirely enclosed and therefore protected against grounding of the circuit or house short circuits.

It is understood that various changes in the details of construction, their combination and arrangement, within the scope of the invention, as defined herein by the claim.

Having described the invention, I claim as new:

The combination with a window having vertical side bars, a sash sliding on said side bars and having parallel gear racks secured to a face of said sash, each of said side bars having a laterally extending opening therein in opposed relationship to each other, a tubular bearing in each of said openings, a cross shaft having reduced ends mounted in said bearings, said shaft rotatable on said side bars substantially centrally thereof and having pinions fastened to said reduced ends and engaging said racks, an

electrical motor having a gear reduction drive, a friction clutch and pinion connecting said drive to said cross shaft, a circuit controlling the electrical motor, a circuit closer for said circuit comprising a pivotally mounted rain receptacle, a switch contacting said receptacle and operable upon pivotal movement thereof to close the circuit of the motor to start the same, said motor circuit further having a manually controlled switch for opening and closing the circuit to the motor and an additional safety switch operable by the sash for opening the circuit to the motor as said sash approaches its fully closed position.

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