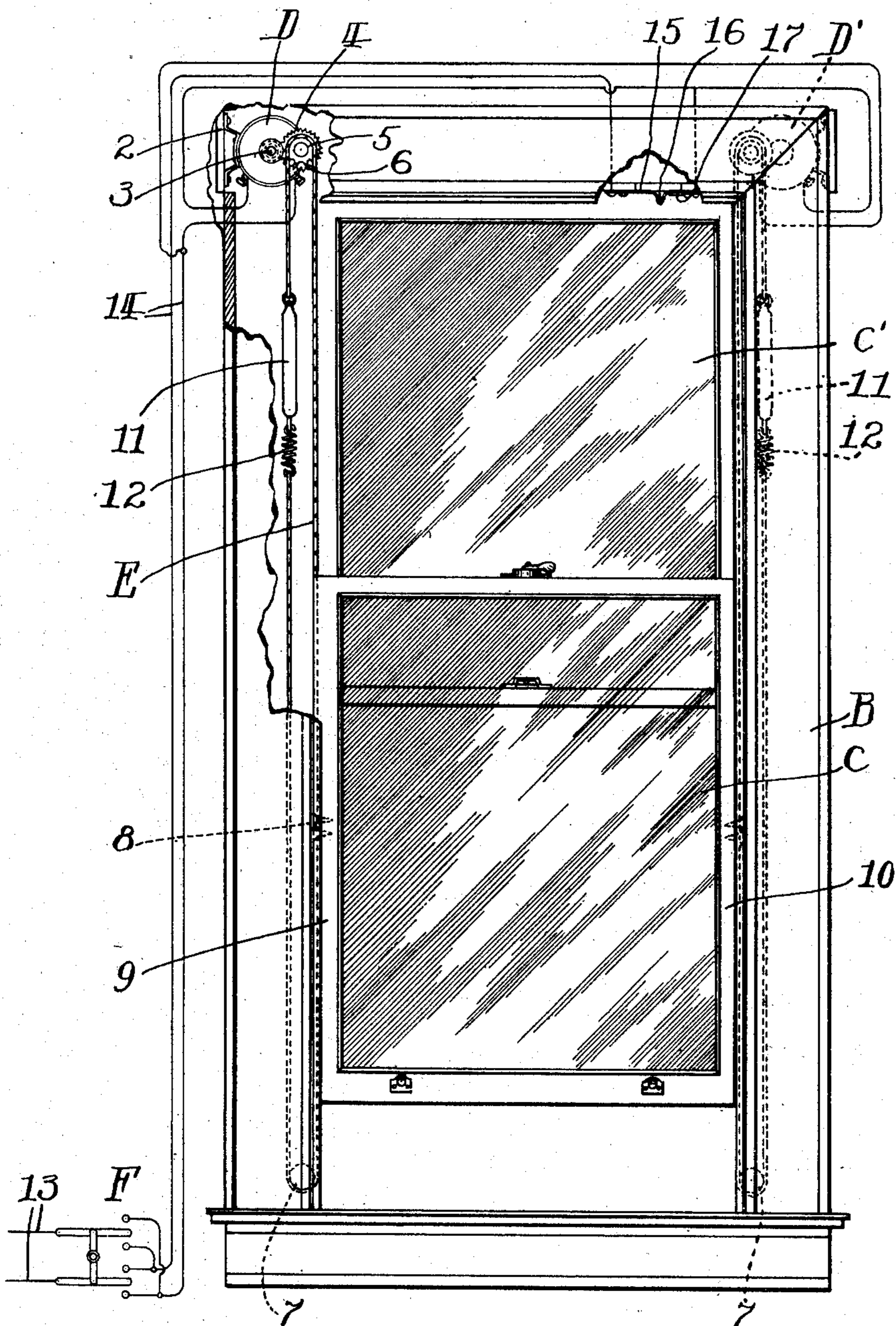


A. A. MONSON.
 AUTOMATIC WINDOW OPENER.
 APPLICATION FILED OCT. 3, 1908.

970,380.

Patented Sept. 13, 1910.



Witnesses:
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UNITED STATES PATENT OFFICE.

AUGUST A. MONSON, OF NORTH ST. PAUL, MINNESOTA, ASSIGNOR TO EMILY GRACE KAY, OF ST. PAUL, MINNESOTA.

AUTOMATIC WINDOW-OPENER.

970,380.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed October 3, 1908. Serial No. 456,015.

To all whom it may concern:

Be it known that I, AUGUST A. MONSON, a citizen of the United States, residing at North St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Improvement in Automatic Window-Openers, of which the following is a specification.

This invention has reference to a novel construction in devices for opening and closing windows and the like.

More particularly this invention has to do with a motor device which is applied to raise and lower the window sash from a point distant therefrom without the operator touching the window.

A device of this kind is particularly, although not exclusively adapted for use in the bed-room and where it is desired to raise and lower the window by a simple operation with practically no noise from a point distant therefrom without applying human aid directly to the window other than such as throwing a switch.

In the accompanying drawing forming part of this specification is illustrated an elevation of my invention showing portions of the window frame broken away to expose the interior construction to view.

In the drawing B represents a window frame and C and C' respectively the lower and upper window sash. These parts are of ordinary construction the window sash sliding vertically in the window frame in the usual manner. As illustrated the upper sash is stationary and my improvement is applied to the lower movable sash.

Secured in the upper portion at each side of the window frame are small electric motors D—D' a bracket 2 being employed on each motor by which it is secured to the frame. Each motor has connected to its power shaft 3 reduction gearing 4 which drives a counter shaft 5. This counter shaft referred to has mounted thereon a drive sprocket wheel 6 which is placed in vertical alinement with an idle sprocket wheel 7 freely journaled in each side of the lower end of the frame. The drive sprocket wheel 6 and idle sprocket wheel 7 on each side of the frame carries an endless chain E, it being understood that there is a chain on each side of the window frame traveling vertically upon each pair of sprocket wheels

6 and 7. The chains are attached by screws 8 or other suitable means to the opposite sides 9 and 10 of the lower sash C substantially midway between its upper and lower ends and each chain carries a counter weight 11 and a helical contracting spring 12, the latter being connected by its ends to the lower end of the weight and the chain. The weights 11 counteract the weight of the sash C so that it can be raised and lowered by means of a small amount of power. The contracting springs 12 tend to take the strain off of the motors when the sash C closes against the lower end of the window frame before the current is cut off from the motors.

The motors are operated by a supply of electrical current which as shown is adapted to be conducted thereto by any suitable means, such as the line conductors 13 passing through a reversing switch F of ordinary construction and the pair of connecting wires 14 with which said motors are connected in multiple. A safety switch 15 is interposed in one of the supply conductors 14 and has its spring switch arm formed with a depending offset 16 in the vertical path of the sash C so that when the sash is fully raised by the motors it strikes against the offset on the switch arm and throws the latter out of contact with the switch terminal 17 thus breaking the circuit leading to the motors and automatically checking the operation thereof. In order to lower the window after the safety switch has been opened automatically as has been explained, the window sash must of necessity, be started by hand. The safety switch is only shown to illustrate one manner in which the motors can be automatically stopped when the window is fully raised, it being obvious that the motors can be stopped by hand by manipulating the switch F or by other expedients commonly employed in the electrical art. The sash when in intermediate position is lowered by reversing the switch F. By not using the safety switch the sash can also be lowered when in fully raised position by reversing the switch F.

The switch F may be located at a distant place from the window and it is obvious that a single switch can be employed to open and close a number of windows at the same time by connecting a number of

such devices as above described, with a common source of current supply having a single switch F interposed therein.

5 The motors shown may be of any form desired the term "motor" as used meaning to include all forms of electrical devices used for applying power and transmitting motion to the sash or its equivalent.

10 In accordance with the patent statutes I have described the principles of operation of my invention together with apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the construction shown
15 is only illustrative and that the invention can be carried out by other means and applied to uses other than those above set forth within the scope of the following claims.

20 Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. Apparatus of the class set forth, comprising, in combination, a window frame, a window sash movable in said frame, an electric motor having reduction gearing and a power shaft, a sprocket wheel upon said shaft, a chain passing over said sprocket wheel and connected to said sash to raise and lower it, a counter-weight upon said chain
25 for said sash, a reversing switch electrically connected with said motor to cause the motion of the motor and sash in said frame to be reversed and means for relieving the strain on the motor when the sash closes and
30 before the current is fully cut off.

2. Apparatus of the class set forth, comprising, in combination, a window frame, a window sash movable in said frame, a pair

of electric motors in the upper portion of said frame, sprocket wheels driven by said motors, chains passing over said sprocket wheels one being connected with each side of said sash to raise and lower the same, a counter-weight carried by each chain for the sash, an electric switch connected with said motor to start and stop the same and means for taking the strain off of the motors before the current is fully cut off; whereby the window sash can be moved to open and close, and to modify the opening in said frame from a distant place. 40 45 50

3. Apparatus of the class set forth, comprising, in combination, a window frame, a window sash sliding in said frame, a pair of electric motors associated with said frame having reduction gearing and drive sprocket wheels, chains running over said sprocket wheels having connection with opposite sides of said sash, a counter-weight carried by each chain for said sash, a relief spring carried by each chain, a reversing switch electrically connected with said motors to start and stop the same and an automatic switch connected to make and break the circuit in which said motors are included, located in the upper end of said frame in the path of said sash, whereby the motor circuit is opened when the sash reaches closed position. 55 60 65

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses. 70

AUGUST A. MONSON.

Witnesses:

H. L. FISCHER,
J. G. BRADBURY.