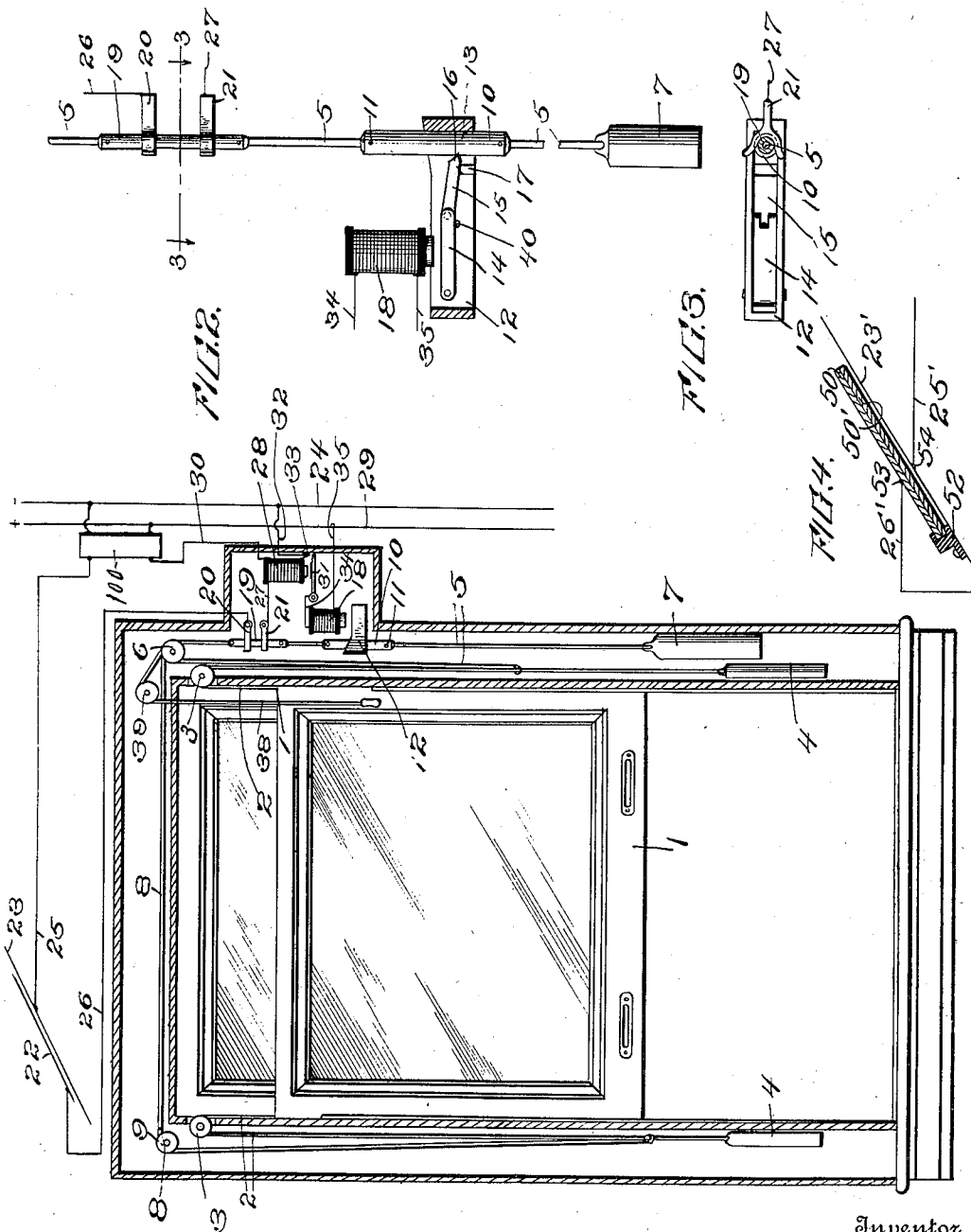


J. A. STOCKWELL.
 DEVICE FOR CLOSING WINDOWS.
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1,124,969.

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UNITED STATES PATENT OFFICE.

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DEVICE FOR CLOSING WINDOWS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN A. STOCKWELL, a citizen of the United States of America, residing at Lake Charles, in the parish of Calcasieu and State of Louisiana, have invented certain new and useful Improvements in Devices for Closing Windows, of which the following is a specification.

This invention relates to devices for closing windows under certain conditions of weather, and an object of the invention is to provide an electric circuit adapted to be closed by said conditions of weather, and suitable apparatus contained in the circuit for closing a window.

A more particular object of the invention is to provide a system of weights and counter weights so assembled as to facilitate the raising and lowering of the window and in providing novel means for closing an electric circuit as the weights move.

With these and other objects in view the invention comprises certain novel constructions, combinations, and arrangements of parts as will be hereinafter more fully described and claimed.

In the drawings: Figure 1 is a view partly diagrammatic showing the invention as applied to a window partly open. Fig. 2 is an enlarged view of part of the releasing mechanism, certain parts being shown in section. Fig. 3 is a horizontal section taken on line 3—3 of Fig. 2. Fig. 4 is a diagrammatic view showing means for closing the air gap by means of a thermostat.

In some parts of the country weather conditions change very quickly, and frequently these changes occur when windows or other closures are open when the occupants of the house are away. These changes may be the sudden rising of a rain storm or a sudden fall in the temperature and under either of these conditions it is desirable to have means for automatically closing the window or other closure. The present invention accomplishes this result by providing means comprising generally an electric circuit having an air gap adapted to be closed by drops of rain, or by the effect of temperature change upon a thermostat, as the case may be, and weights normally holding the window open but adapted to be released when the circuit is closed so as to allow the window to fall by its own weight.

Referring more particularly to the draw-

ings 1 designates a sash, sliding within a suitable casing and having connected thereto a cord 2 adapted to pass over a pulley 3, the cord having its free end connected to a weight 4, the cord and pulley and weight being on both sides of the window as is common in ordinary window construction. On one side of the casing there is provided another cord 5, one end of which is connected to the cord 2 carrying the weight 4, and the other end of which is trained over a pulley 6 and connected to a counter weight 7. A cord 8 is connected to the cord 5 at any suitable point and is trained over pulley 6 and over pulley 9 journaled upon the opposite side of the casing, the lower end of the cord 8 being connected to the cord 2 on this side of the casing as shown for the purpose of raising the weight 4. The weight 7 weighs less than the aggregate of the weights 4 so that as the window is raised and the weights 4 descend, the latter will be sufficient to overbalance the weight 7 and cause the latter to be raised until the contacts to be described hereinafter are closed.

A sleeve 10 is connected to the cord 5 by means of a pin or other suitable connection 11, which serves to secure the sleeve to the cord, so that both move in unison. Secured to the side wall or casing is a locking device indicated generally at 12 formed of a hollow rectangular body portion having one end rounded to receive the sleeve 10. Pivoted to the other end of the locking device is a lever arm 14 made of any magnetic material, such as iron, and of sufficient weight so that when the same is unacted upon by a magnetic field but allowed to fall by gravity, it will force a link 15 having a pointed end 16 against the sleeve 10 with sufficient pressure to prevent the descent of the weight 7. If desired a guide 17 may be provided on the body of the locking device for the purpose of forcing the point 16 against the sleeve 10.

Mounted just above the locking device is an electro-magnet 18, the core of which is placed close enough to the lever arm 14 to attract the same when the electro-magnet is energized. When the said arm 14 is raised the link 15 will be drawn from the guide 17 and sleeve 10 so that the weight 7 may descend freely. While I have shown one specific means for locking the weight 7 in any predetermined position, it is to be understood, of course, that other means could be

used to accomplish the same results, this means being liberated by electro-magnet 18 as in the present instance.

Referring to Figs. 2 and 3 it is seen that there is provided a contact sleeve 19 held in any suitable manner to the cord 5, this contact sleeve being designed to engage fork shaped contact arms 20 and 21 secured in any way to the casing or wall. The sleeve 10 has its ends beveled so as to be guided into the cylindrical portion formed in locking member 12, while the ends of sleeve 19 may also be beveled in order to make the passing of said sleeve through the contacts 20 and 21 smoother.

Exposed on the roof of the house or at any other suitable point is a pair of contact strips 22 and 23 placed a short distance apart and affording an air gap which can be closed by drops of rain. When the air gap is closed current will flow from wire 24, of a suitable source of current such as a transformer 100 connected to the main as indicated, over wire 25, which is connected to one side of the transformer, contact plate 23, contact plate 22, wire 26, contact 20, contacting sleeve 19, contact 21, wire 27, relay magnet 28, and back to the other side of the transformer 100 by means of wire 30. Current flowing in this circuit will energize the relay magnet 28 which in turn will attract its armature 31, when the following circuit will be closed: Current will flow from wire 24, over wire 32, contact 33, armature 31, wire 34, electro-magnet 18, back to the other side of the line 29 by means of wire 35. Current flowing in this circuit will energize electro-magnet 18, which will result in the release of the sleeve 10 by the link 15, as previously described. These circuits will be maintained so long as contact 20 is in contact with contact sleeve 19, provided of course that the air gap between plates 22 and 23 is still closed. As soon as contact between the members 19 and 20 is broken the relay 28 will be de-energized, which will result in the de-energization of electro-magnet 18, so that the lever 14 and link 15 will drop, but it is designed to have the sleeve 10 of such length that it will have passed below the point 16 before the circuit is open, and further the sleeve 19 is made considerably smaller than sleeve 10 so that the former may slip freely past point 16 and not be engaged thereby to arrest the downward movement of weight 7. In order to limit the downward movement of the weighted armature lever 14, there may be provided within the casing 12 any suitable means, a pin 40 being shown for the purpose as illustrated in Fig. 2.

In certain instances it may not be necessary to make use of the relay 28, in which event the electro-magnet may be thrown in series with the air gap across the source

of current, but by the use of the electro-magnet 28, it will be seen that a fluctuating current due to the water drops across the air gap will result in the making of a positive contact between contact point 33 and armature 31, which will result in the energization of electro-magnet 18. If desired the source of current may not be the ordinary power circuits used for lighting, under which condition there is provided a potential reducer 37, which may be the transformer in the case of a source of alternating current, or may be a suitable resistance in the case of a source of direct current, but I do not wish to be limited to the use of such a potential reducing means. In order to enable the weight 7 to be positively reset there is connected to the cord 5 at any suitable point a cord 38 trained over a pulley 39 having the free end thereof extending to an exposed position so that by pulling downwardly upon said free end the weight 7 may be raised until the sleeve 10 is locked by the point 16.

It is understood, of course, that the cord 38 is attached to the cord 5 at such a point that the point of connection will always be intermediate the pulley 6, and the contact 19.

While the device herein disclosed is dependent upon the closing of the air gap by means of drops of rain making contact across plates 22 and 23, yet I may use a device acted upon by change in temperature for making contact to close the actuating circuit. Such a device is shown in Fig. 4 where the plate 22 as seen in Fig. 1 has been replaced by a thermostatic couple having an upper plate 50 and a lower plate 50' which plates are supported by an insulating bracket 52. The lower plate 50' is in close proximity to plate 23' which is shown in Fig. 4 is at an angle so that rain water may run between plates 23' and 50' to close contact between wires 25' and 26' respectively. Should the temperature fall the thermostatic couple is so arranged that the plate 50 will contract less than the plate 50' whereupon contact will be made between plate 50' and plate 23'. Wire 25' is connected as at 54 to plate 23' while wire 26' is connected as at 53 to the thermostatic couple particularly plate 50 so that as the temperature falls as described the contact will be closed between wires 25' or cord 26'. This unequal expansion may be made use of to make contact between two plates in a manner well known in the art of thermostats, as shown in Fig. 4. Of course it will be entirely possible to make this thermostatic contact take place between strips or sheets 22 and 23 in an exposed position so that plates will serve to make contact when the temperature falls or when they are short circuited by water. While strips of metal

have been shown for the purpose of making contact when water is in contact with the same, yet it is to be understood, of course, that I may use any other suitable means which would be capable of collecting water sufficient to close the air gap. When the window is raised, it will be seen that the weights 4 will descend and raise the weight 7 to its normal locking position, this being accomplished for the reason that the counter weight 7 is not so heavy as the aggregate weight of the two weights 4, but by reason of the cord 38 it will be possible at any time to reset counter weight 7 without depending entirely upon the raising of the window 1.

I claim:—

The combination with a window sash and counterweights, of a weighted flexible member adapted to counterbalance the counterweights of the sash, an electric contact member carried by said flexible member, means to hold the flexible weighted member in raised position, a pair of fixed contacts adapted to engage the contact carried by the

flexible member when the latter is held in raised position by said means, the sash being held in raised position by the counterweights when the stationary contacts engage the contact member on the flexible member, electro-magnetic means to release said weighted flexible member, a circuit including said pair of stationary contacts, and said contact on the flexible member, a circuit closer adapted to be closed by changes in atmospheric conditions, means for energizing the electro-magnetic means for releasing the flexible member simultaneous with the closing of said circuit, said weighted flexible member, when released, adapted to counter-balance the counterweights to allow the sash to descend.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. STOCKWELL.

Witnesses:

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L. F. JOHNSON.