Oct. 31, 1950 G. L. FULLER 2,527,989

AUTOMATIC SELF-CLOSING WINDOW

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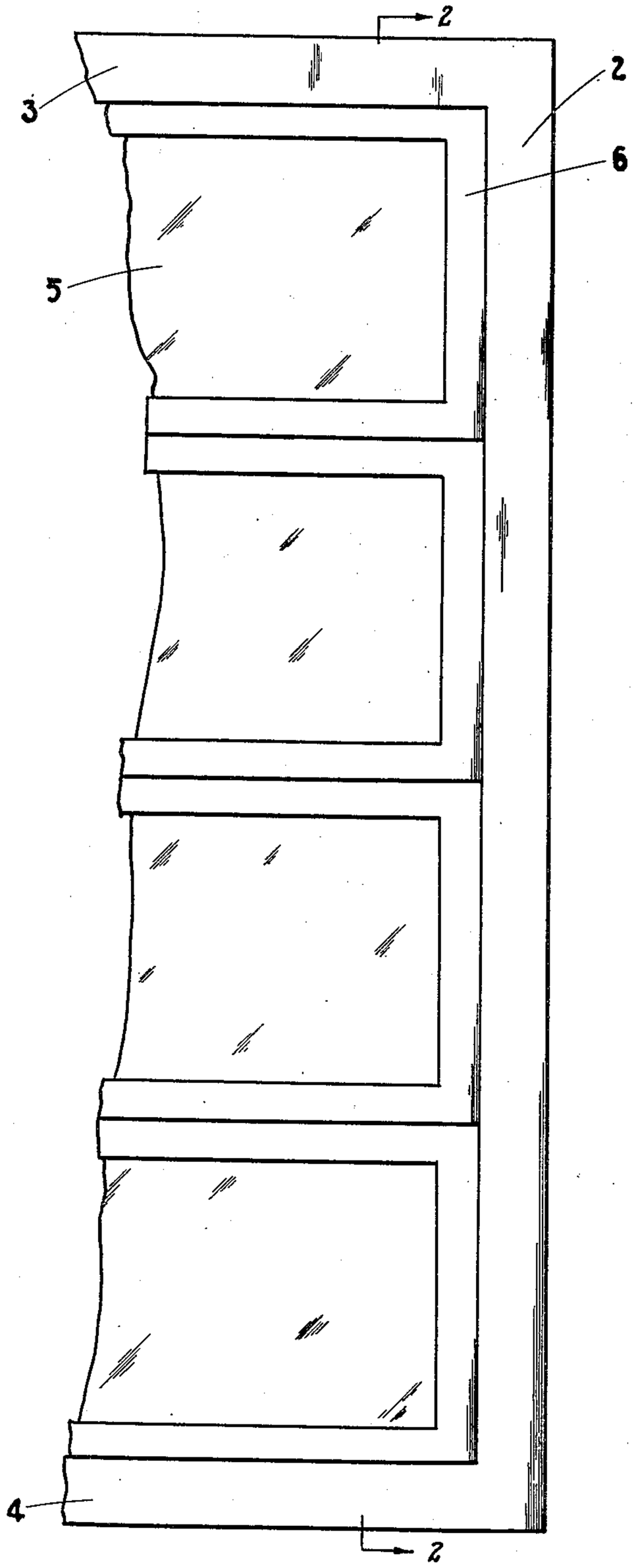

Fig. 1

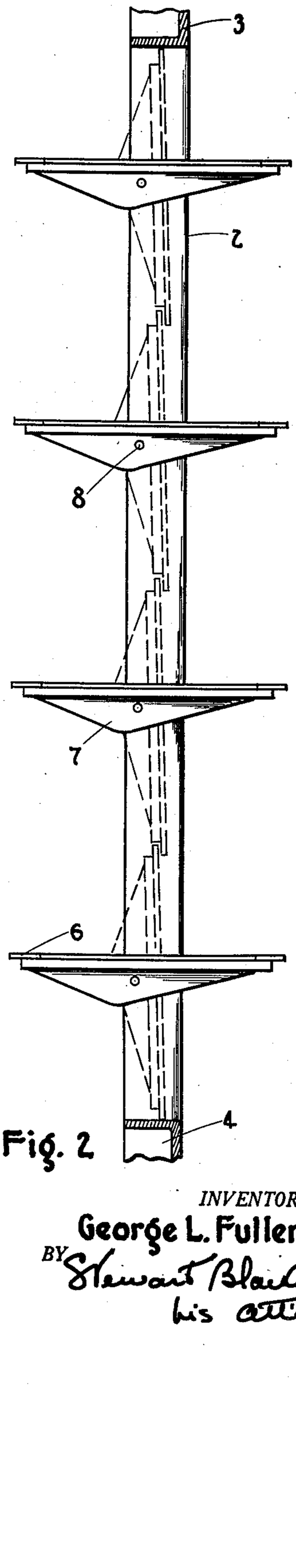

Fig. 2

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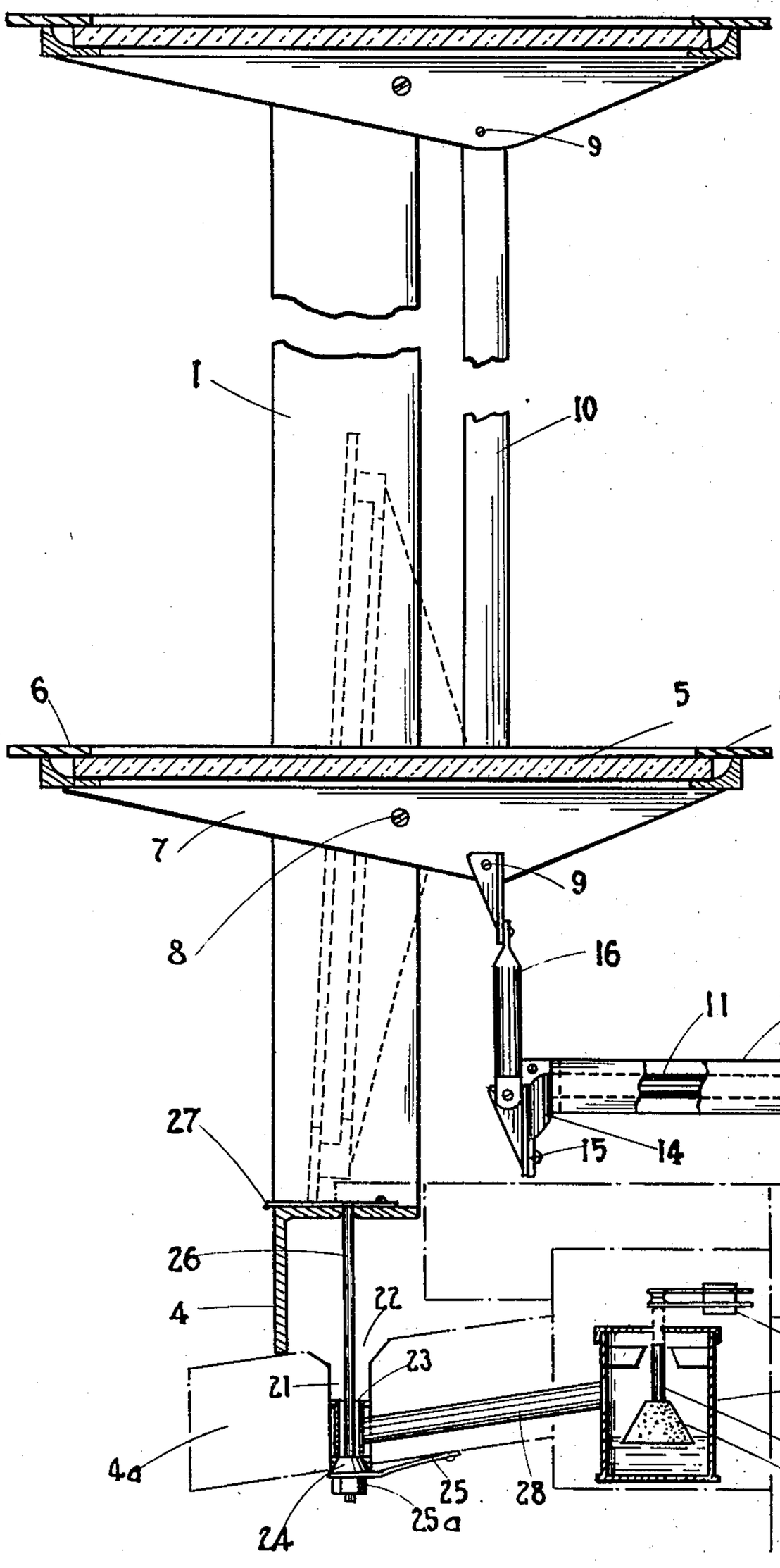

Fig. 3

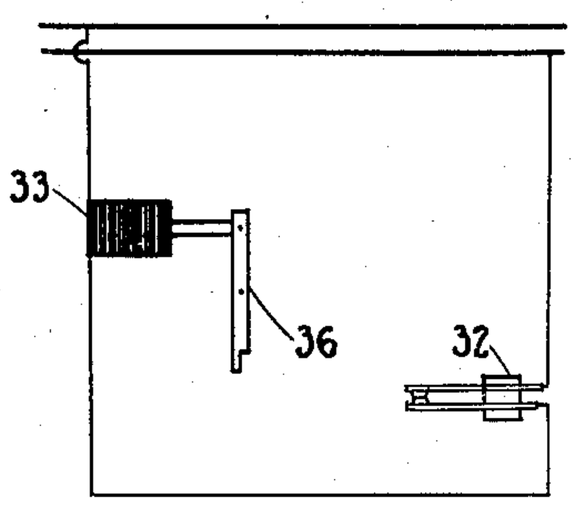

Fig. 4

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Fig. 5

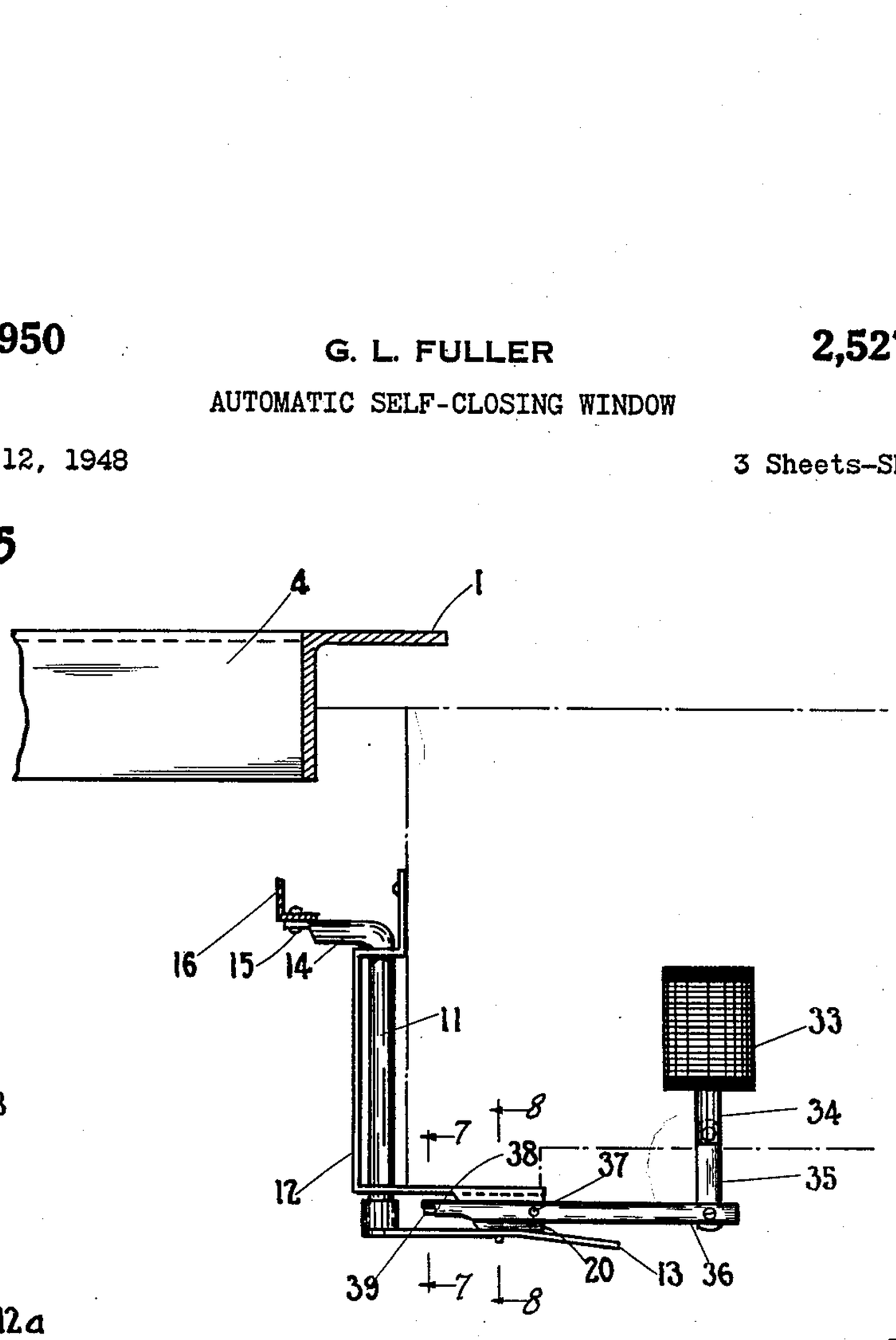

Fig. 7

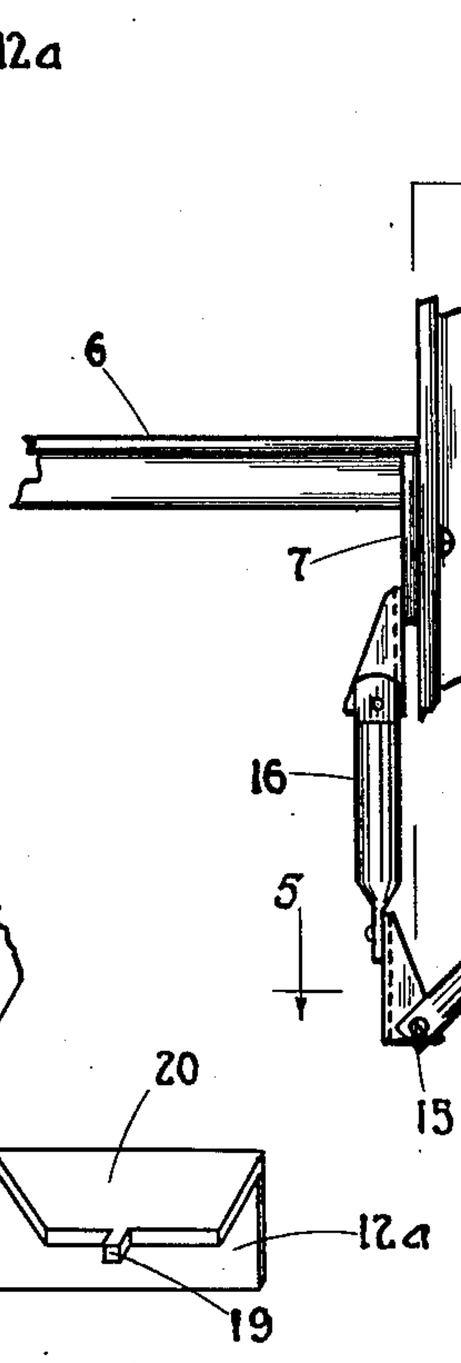

Fig. 6

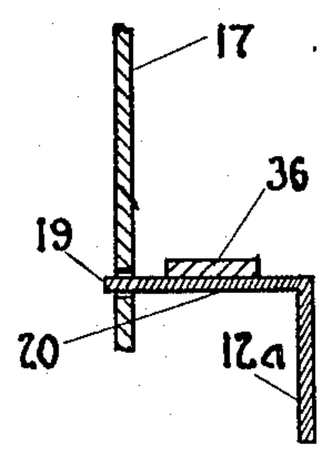

Fig. 8

Fig. 9

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AUTOMATIC SELF-CLOSING WINDOW

George L. Fuller, Miami, Fla.

Application March 12, 1948, Serial No. 14,447

3 Claims. (Cl. 268—123)

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The invention relates to improvements in an automatic self-closing window.

An object of the invention is to provide a window which will be closeable upon the direction of rainfall thereagainst.

Another object is to provide a self-closeable window which will be simple in construction and compact in assembly.

A further object is to provide a device of the character and for the purposes described which will be positive and efficient in operation.

Still another object is to provide a self-closeable window which may be readily and economically manufactured.

Other advantages of the invention will become apparent as the description thereof proceeds.

According to the invention, the automatic self-closing window comprises a frame having a plurality of pivotable louvers overbalanced therein to pivot toward their closed positions, means to restrain the louvers into their open positions, a well arranged in the sill structure for reception of rain water, a receptacle communicating with the well and elevated in relation thereto, a float arranged in the receptacle and operable by the rainwater collected therein to effect the closure of an electric circuit whereby to energize a solenoid operable to release the restraining means to permit the louvers to pivot to their closed positions.

The invention is embodied in an automatic self-closing window exemplified in the accompanying drawings in which the views are as follows, like reference numerals referring to identical parts throughout the several views:

Fig. 1, an elevation, in part, of the window;

Fig. 2, a section taken on line 2—2, of Fig. 1;

Fig. 3, a vertical transverse section through the operating louver of the louver assembly;

Fig. 4, a diagram of an electrical circuit arrangement suitable for operating the window;

Fig. 5, a horizontal section taken on line 5—5, of Fig. 6;

Fig. 6, an elevation, in part, of the louver restraining means and handle assembly;

Fig. 7, a section on line 7—7, of Fig. 5;

Fig. 8, a section on line 8—8, of Fig. 5;

Fig. 9, an isometric view of the crank bracket.

The automatic self-closing window has a rectangular frame comprising a pair of opposed jamb members 1 and 2, a head member 3, and a sill member 4. The frame, constructed of any suitable material, preferably of aluminum or like ornamental metal, is adapted for installation in the conventional marginal window openings designed therefor in wood or masonry wall structures.

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The frame has arranged therein a plurality of superposed louvers, each having a glass panel 5 carried in a marginal frame 6 which is supported at the ends thereof by a pair of end flanges 7.

The end flanges 7 are pivotably connected to the jamb members, as at fulcrum points 8, in relation to which the louvers are overbalanced so as to be inclined, by gravity, toward their closed positions, illustrated by the dash line position of the louver shown in Figs. 2 and 3.

Rearwardly of the fulcrum points 8, the end flanges have a pivotable connection, as on pivot points 9, with a vertically disposed connection bar 10, whereby when one of the louvers is pivoted between its open and closed positions the whole louver assembly pivots therewith, as will be understood.

The louvers are operable manually through a crank mechanism having a shaft 11, journaled in a bracket 12 secured in any convenient manner to the jamb structure of the window opening. The shaft is fitted with a handle 13, at one end, and at the other end terminates in a crank arm 14 formed at right angle thereto. The crank arm has a pivotable connection, as at 15, with an upwardly extending linkage 16, of the universal type, which terminates at its upper end in a pivotable connection, as by the pivot point 9, with the end flange 7. Thus, when the handle is turned to rotate the shaft 11, the louvers are thereby rocked in unison, through the intervening linkage 16 and bar 10 (Fig. 3).

The handle has formed thereon an adjusting segment 17 which is perforated to provide a plurality of arcuately alined orifices 18, disposed about the axis of the shaft 11. These orifices are adapted to be engaged by a pin 19 projecting from the outer edge of a shelf 20, formed by bending outwardly the angular extension 12*a* of the bracket 12 (Figs. 5, 6, 8 and 9). Thus, the louvers may be rocked into predetermined positions to govern the degree of closure of the window by adjustment of the segment 17 in relation to the projecting pin 19.

Arranged within the wall structure underlying the sill member 4, as for example, the sill 4*a* (Fig. 3), is a receptacle 21. The bore of the receptacle is enlarged at the top thereof to provide an inlet 22 for the reception of rain water delivered thereto by suitable channels or troughs (not shown) which may be formed in the exterior trim structure of the window in a manner con-

ventional in the art for the entrapment of rainfall directed thereagainst.

Seated in the bore at the bottom thereof is a T fitting **23** the bottom opening of which is normally sealed by a valve **24**, held thereagainst by a leaf spring **25** fastened to the bottom surface of the sill **4***a*. The valve carries an upright valve stem **26** extending upwardly through the bore of the well and normally projecting above the sill member **4** through an orifice provided in the top flange thereof. The valve stem is urged upwardly by the spring **25** to which it is secured by a nut **25***a* so as to engage a contact or spring member **27**, fastened to the top surface of the sill member **4**. When the bottommost louver of the window assembly is pivoted to closed position, the frame thereof is adapted to engage the contact member **27** so as to, in turn, depress the valve stem **26** to open the valve **24** for the discharge of rain water through the bottom opening of the T fitting.

The receptacle communicates, through a rearwardly directed and upwardly inclined branch **28**, connected to the T fitting, with a well **29**, adapted to receive water delivered thereto from the receptacle **21** when the valve thereto is closed.

The well has arranged therein a buoyant float **30** which carries an upstanding contactor or stem **31**, adapted for slideable movement through the cover portion of the well, under the influence of rising or falling water levels therein.

Arranged in overlying relation with the contactor **31**, is an electric circuit maker which may take the form of a leaf switch **32**, normally open, but engageable by the contactor to close a circuit governed thereby. Thus, when water collected in the well effects the upward movement of the float **30**, the switch **32** is thereby closed to energize an electric circuit for the purpose to be hereinafter described.

Adjacent the jamb member **1**, the wall structure has installed therein a solenoid coil **33** which is electrically connected in circuit with the switch **32**, as illustrated by a wiring diagram shown in Fig. 4. The solenoid plunger **34** is linked through a toggle **35** with a trigger lever or arm **36**, fulcrumed to the shelf **20**, which it overlies, at the fulcrum point **37**. The trigger arm terminates in a finger **38** which is spaced from the adjacent segment **17** (Figs. 5 to 8) under the influence of a leaf spring **39**, fastened to the bracket member **12***a* and bearing against the finger **38**.

It will be seen that when the solenoid coil is energized, the trigger arm **36** will be pivoted by the intervening plunger and toggle so as to bring the finger **38** into engagement with the segment **17** to effect the dislodgment thereof from the projecting pin **19**. Thus, the handle will pivot from its position in relation to the bracket **12** and the louvers will be free, in consequence, to move to their closed position, shown by dash lines in Fig. 3.

It will be understood that the switch **32** may take the form of a conventional type mercoid tube, which may be arranged in suitable supports overlying the contactor stem **31**, such that when the contactor is moved upwardly the mercoid tube will tilt to close a pair of contact points therein so as to effect the energization of the circuit which governs the solenoid coil **33**. The structural arrangement of this form of switch and its operative association with the contactor stem **31** will be apparent.

In practice, with the louvers in open position, when rain water impinging on the surrounding trim structure of the window is delivered to the receptacle **21**, the water rises therein to overflow into the well **29**, causing the float **30** to rise and close the switch thereabove. The solenoid coil is thereupon energized to effect the dislodgment of the handle mechanism in the manner hereinbefore described, the louvers moving to their closed positions, in consequence. The bottommost louver of the window assembly, in moving to its closed position, engages the contact member **27**, thereby depressing the valve stem **26** and opening the valve **24**, against the influence of the spring **25**, whereby to keep the valve open so as to evacuate water from the receptacle during the pendency of the rainfall. The water level in the well **29**, having receded by virtue of the opening of the valve **24** to diminish the supply of rain water to the well, the float **30** is thereby caused to lower and to permit the switch **32** to open, in a manner which will be apparent from the above description of its assembly.

It is to be understood that various modifications in the arrangement of the essential parts of the invention herein described, changes in size, depths of the well and receptacle, and adjustments to the float, switch, and like minor changes, may be made without departing from the scope of the invention as hereinafter claimed.

The invention thus provides an automatic self-closing window which is simple and efficient in operation and requiring a minimum of piping, mechanisms, and parts to effect the purpose thereof.

Having thus described the invention, I claim:

1. In an automatic self-closing window, the combination with a frame having a closeable panel, means restraining said panel in normally open position and electrically operated means, including a magnet and an electric operating circuit therefor, to release said restraining means, of a receptacle formed in the sill of said frame for collecting rain water, a well having lateral communication with said receptacle for the passage of said water therebetween, a float arranged in said well, circuit making means electrically connected to said circuit and operable by said float to actuate said releasing means upon the elevation of said float to a pre-determined level by rising water in said well, said receptacle having a drain outlet and a normally seated valve for the closure thereof, a reciprocable stem connected to said valve and operable by said panel upon the closing thereof to unseat said valve whereby to effect drainage of said receptacle and the lowering of said pre-determined water level in said well.

2. In an automatic self-closing window, the combination with a frame having a closeable panel, means restraining said panel in normally open position and electrically operated means, including a magnet and an electric operating circuit therefor, to release said restraining means, of a receptacle formed in the sill of said frame for collecting rain water, a well having lateral communication with said receptacle for the passage of said water therebetween, a float arranged in said well and a contact stem extending upwardly therefrom, a circuit closer electrically connected in said circuit and operable by said contact stem to actuate said releasing means upon the elevation to a pre-determined level of said float by rising water in said well, said receptacle having a bottom drain outlet and a normally seated valve for the closure thereof, a reciprocable stem connected to said

valve and projecting upwardly through said receptacle for operative contact by said panel upon the closing thereof whereby to drain said receptacle and lower the water level in said well.

3. In an automatic self-closing window, the combination with a frame having a closeable panel, means restraining said panel in normally open position and electrically operated means, including a magnet and an electric operating circuit therefor, to release said restraining means, of a receptacle formed in the sill of said frame for collecting rain water, a well positioned rearwardly of said receptacle and having lateral communication therewith for the passage of said water therebetween, a float arranged in said well and a contact stem extending upwardly therefrom, a circuit closer positioned above said contact stem and electrically connected in said circuit for operation by said contact stem to actuate said releasing means upon the elevation of said float to a pre-determined level by water rising in

said well, said receptacle having a bottom drain outlet and a normally seated valve for the closure thereof, a reciprocable valve stem connected to said valve and projecting upwardly through said receptacle, a contactor overlying said valve stem and engageable by said panel upon the closure thereof whereby to depress said valve stem to unseat said valve for the drainage of said receptacle and the lowering of the water level in said well.

GEORGE L. FULLER.

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