

No. 772,260.

PATENTED OCT. 11, 1904.

H. C. SMITH,
SELF CLOSING WINDOW.

APPLICATION FILED JUNE 23, 1963.

NO MODEL.

2 SHEETS—SHEET 1.

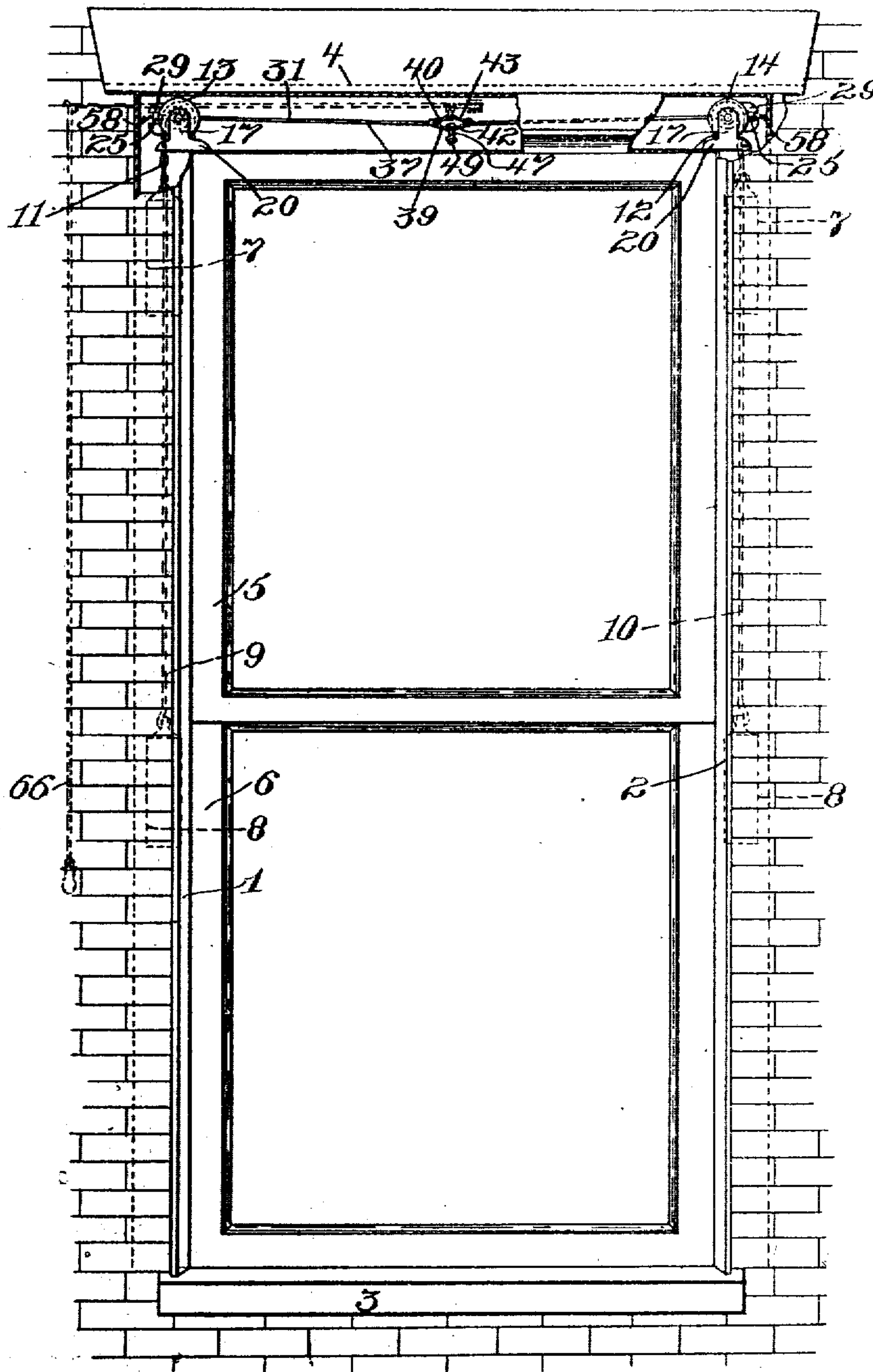


Fig. 1.

Witnesses:

C. C. Foss.

B. C. Stickney.

Inventor.

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By his Attorney,

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2 SHEETS—SHEET 2.

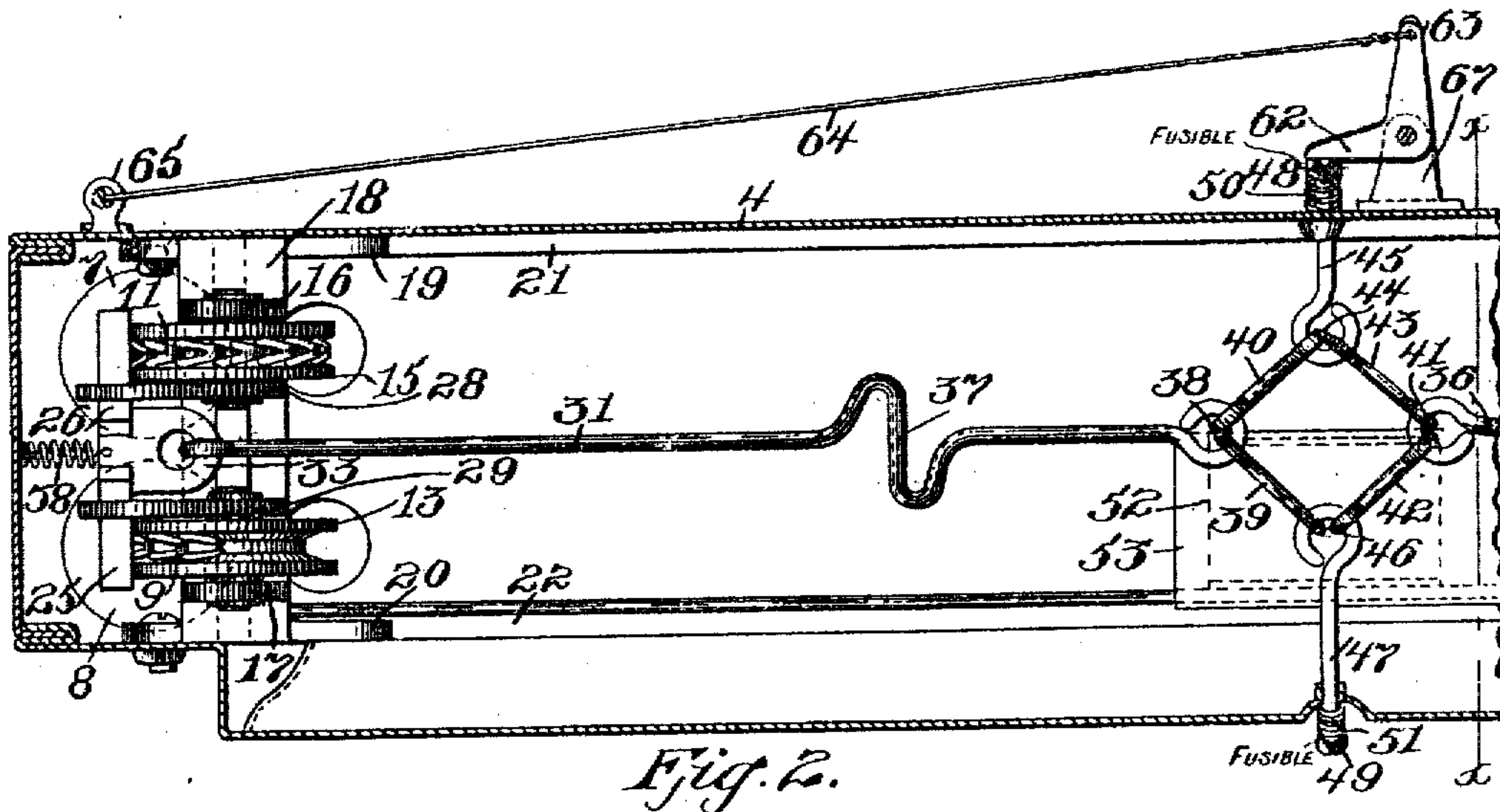


Fig. 2.



Fig. 4.

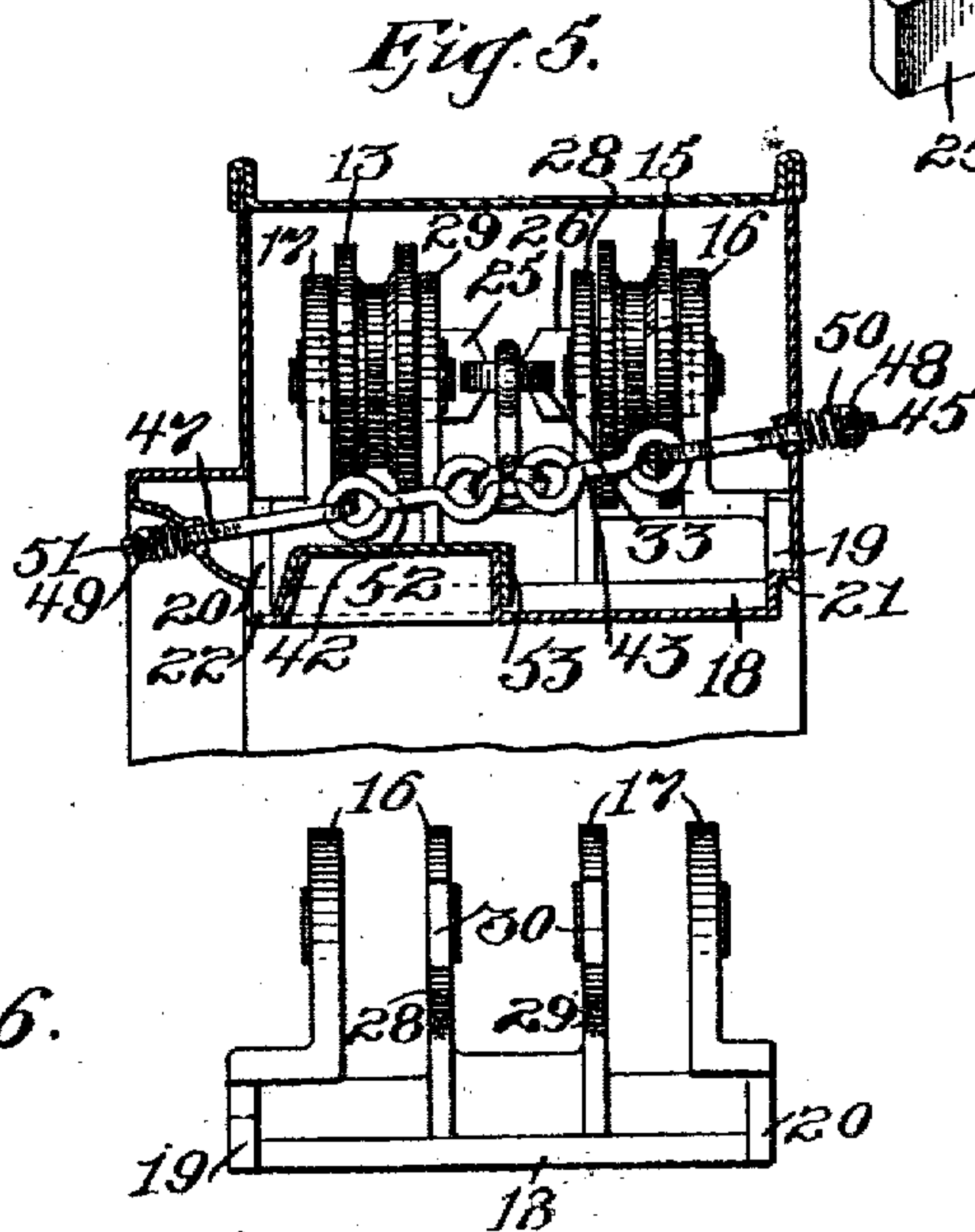


Fig. 5.

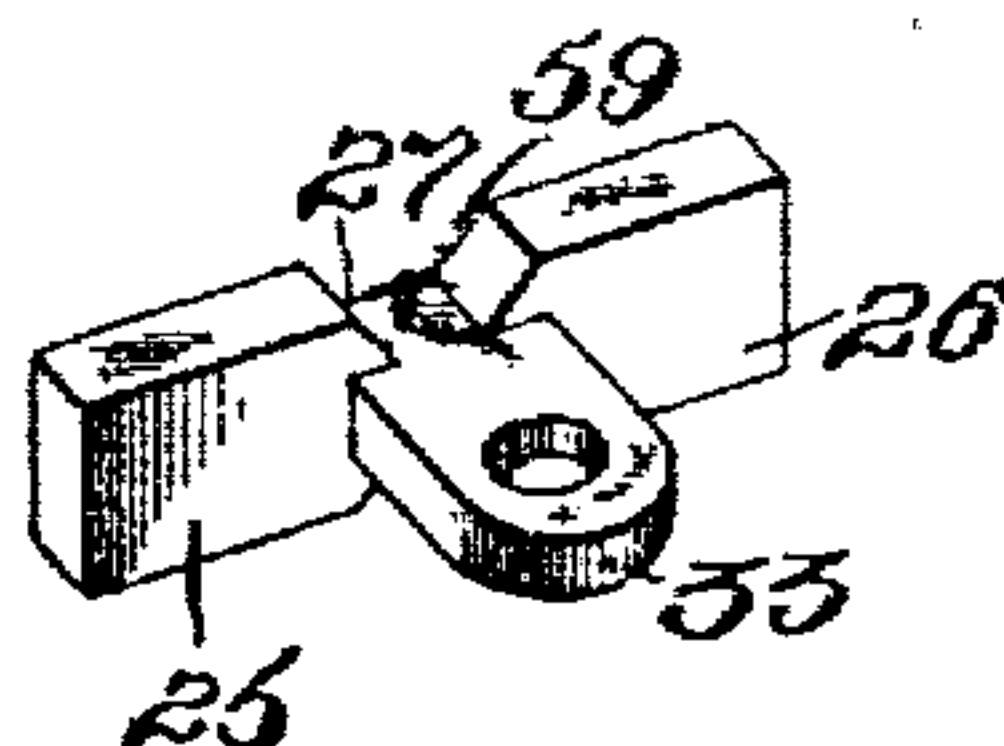


Fig. 3.

Fig. 7.

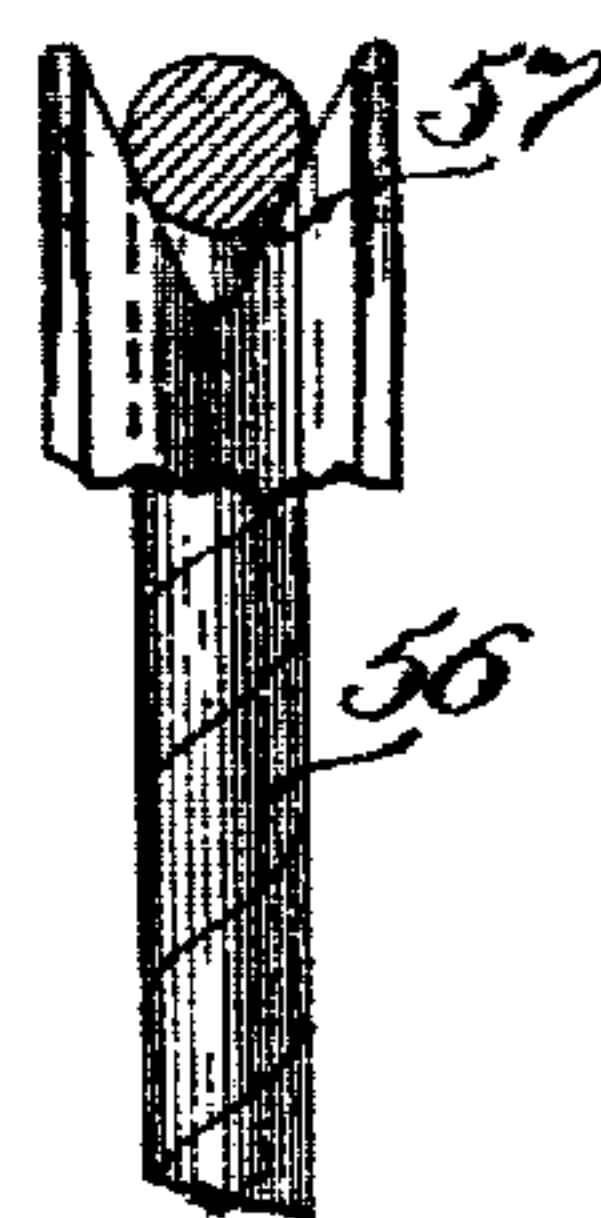


Fig. 6.

Witnesses:

G. G. Fuss.

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UNITED STATES PATENT OFFICE.

HENRY C. SMITH, OF NEW YORK, N. Y.

SELF-CLOSING WINDOW.

SPECIFICATION forming part of Letters Patent No. 772,260, dated October 11, 1904.

Application filed June 23, 1903. Serial No. 162,729. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SMITH, a citizen of the United States, residing in New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Self-Closing Windows, of which the following is a specification.

This invention relates to windows in which provision is made for automatic closing of the sashes in case of fire within the room or in the neighborhood of the window; and its principal object is to improve and simplify the means for securing the closing thereof, particularly with a view to promptness of action.

Other objects will hereinafter appear.

In the drawings forming part of this specification, Figure 1 is a view, partly broken away, of a window provided with one form of my improvements. Fig. 2 is a sectional plan, on a larger scale and partly broken away, of the upper portion of the window-frame, showing the portions of the sash-controlling apparatus which are located at the left of the window and which are duplicates of portions at the right of the window. Fig. 3 is a perspective view of an equalizing-bar having formed thereon brake-shoes for two adjoining pulleys, over which run flexible connections from the sashes to counterbalancing-weights. Fig. 4 is a sectional view of the preferred form of chain-pulley, showing sprockets for preventing slip of the chain thereon. Fig. 5 is a sectional elevation on the line *x x* of Fig. 2. Fig. 6 is an elevation of a bracket for two adjoining pulleys. Fig. 7 is a view of a form of pulley desirable for use where the flexible connection consists of a cord.

In the several views like signs denote like parts.

The window-frame, which is preferably of hollow metallic construction, consists of jambs 1 and 2, a sill 3, and a head 4. In the latter are located many of the parts for controlling the movements of the window-sashes. The upper sash is designated as 5 and the lower as 6, and each slides vertically and is provided with suitable disproportionate counterbalancing means, consisting, preferably, of underbalancing-weights 7 for the lower sash and overbalancing-weights 8 for the upper sash. The

former are connected by flexible connections, preferably chains 9 and 10, to the top of the upper sash and the latter by chains 11 and 12 to the top of the lower sash. The chains 9 and 10 run over a pair of pulleys 13 and 14, and the chains 11 and 12 run over a pair of pulleys 15, one member of each pair of pulleys being at the left of the window and one at the right thereof, as usual. The pulleys 13 and 15, as at Fig. 2, adjoin each other at the left-hand part of the window, while the pulleys 14 and 15 adjoin at the right-hand of the window. Since the structure at the right-hand part of the window is similar to that seen in Fig. 2, a detailed description of the latter is deemed sufficient.

The pulleys 13 and 15 are journaled the former in a pair of standards 16 and the latter in a pair of standards 17, all cast upon a base 18. (Seen best at Fig. 6.) The base is provided with feet 19 and 20 for resting upon ledges 21 and 22, formed in the head of the window-frame. The brackets are secured one at each end of the window-frame by screws and nuts.

For sustaining the sashes I provide in conjunction with the disproportionate counterpoising means therefor brake-shoes 25 and 26, preferably formed integral upon a bar 27 and adapted to bear upon the periphery of adjoining pulleys 13 and 15. The bar is supported and guided in slots 30, formed in line in ears 28 and 29, which project outwardly from the adjoining bracket-uprights 16 and 17. The brake-shoes are held in contact with the pulley-rims by means of a wire connection 31, which hooks into an eyepiece 33, cast upon the brake-bar and located centrally between the pulleys, so that longitudinal draft upon said connection 31 produces uniform pressure of the brake-shoes upon the pulleys, the bar 27 acting as a pressure-equalizer. It is not essential that the shoes be formed integrally with the bar. The braking means at the opposite end of the window-head are similar to those already described, and the rod extending therefrom toward the center of the window-frame head is designated as 36. The connecting-rods 31 and 36 may each be provided with an S-bend, as at 37, extending

transversely to the rods, so as to permit length adjustment, while producing a certain amount of yield in the linkage. At its inner end or near the center of the window-frame head the rod 31 is hooked or pivoted at 38 to the central pivot of toggle-bars 39 and 40, while the rod 36 is similarly hooked at 41 to toggle members 42 and 43. Both toggles at one end are pivoted to an eye 44, formed upon a screw-rod 45, and at the opposite end to an eye 46, formed upon a screw-rod 47, so that by drawing the rods 45 and 47 away from each other the rods 31 and 36 are drawn toward each other, thereby to hold or tighten the brakes against the pulleys.

For adjusting the rods 45 and 47 I thread upon their outer ends nuts 48 and 49. Springs 50 and 51 are preferably coiled around the ends of said rods, which project from the head of the window-frame, and tend to press the rods outwardly. The function of the springs, acting through the described linkage, is to hold the brakes yieldingly against the pulleys, and the nuts 48 and 49 have the effect of increasing the tension of the springs when they are turned for the purpose of drawing out the rods 45 and 47. Either nut may be adjusted independently of the other; but the adjustment of either affects all of the brakes equally. The tension of both springs 50 and 51 is affected by the adjustment of either nut. However, one or both springs may be omitted and the yielding structures at 37 be relied upon.

In the under side of the head of the window-frame I provide an opening 52, closed by a trap 53, said opening permitting access to the linkage for the purpose of arranging or adjusting the same. The pulleys, as seen at Fig. 4, are preferably made with sprockets 55 for preventing slipping of the chain thereover, so that the brakes are always effective to control the movements of the sashes and counterbalances. The brakes further prevent undue jumping of the counterbalancing-weights when the sashes are moved or stopped suddenly, thereby reducing the liability of injury to the chain and other parts of the mechanism. For this purpose, as well as for the purpose of controlling the movements of the sashes, it is important to prevent slip of the chain upon the pulley. In case the flexible connections between the sashes and the weights consist of cord 56, as at Fig. 7, the pulleys may be V-grooved, as at 57, to bite the cord, and thereby prevent slip thereof.

The nuts 48 and 49 are made of metal fusible at a relatively low temperature and project outside of the casing of the window, so that in case of fire in the vicinity of the window and either within or without the same the melting or fusing of either nut completely releases all of the brake-shoes, whereupon the upper sash is raised by its overbalancing-weights 7, while the lower sash closes by reason of its weights. Hence the fusion of a

single part, as 48 or 49, causes both sashes to close automatically. I prefer to associate with each brake-bar 27 a spring 58 of any suitable form and mounting, which tends constantly to draw the brake away from the pulleys, so that at the fusion of either nut the pulleys are positively released by the action of the springs 58. The inner end of each spring is preferably caught upon a pin provided in the bar midway of its end and in line with the rod 31, and the outer end is caught upon a staple or other device provided upon the jamb of the window-frame.

It will be seen that considerable advantage is gained by having the fusible sash-controllers entirely outside of the window-frame, since it becomes unnecessary to heat said frame in order to fuse them. The frame being made entirely of metal, it will be seen that if a flame should play upon only one part of the frame the heat therefrom would be rapidly diffused by conduction throughout the frame, so that the entire frame would need to become hot before an ordinary fusible sash-controlling member could be rendered effective. By my present invention either controlling-nut can be fused while the window-frame itself remains comparatively cold, so that more prompt closing of the sashes is secured, as will be understood. This is of great importance in preventing the spread of fire, since by closing the sashes at the beginning of the fire draft is checked, and the flames are prevented from passing through the windows. Moreover, by having the fusible nuts at the upper part of the window, which is the part likely to heat first, they may be fused by the heat in the upper part of the room in which fire occurs without direct contact with flame, which is a great advantage.

It will thus be seen that I have combined with a sash a flexible connection secured thereto, a pulley over which said connection runs, a disproportionate counterbalance to which the other end of said connection is secured, and a brake for said pulley; that a single pressure-regulating device is connected to the brakes or friction devices which oppose the movements of both sashes and includes a friction-relieving member, as 48 or 49, fusible at low temperature; that a spring, as 50 or 51, renders the pressure-regulating devices more effective, its tension being regulable by the nut, and that each spring is connected to all of the brakes to render them effective.

Upon the inner side of the window I pivot at 67 upon the head 4 a bell-crank, one arm, 62, whereof is adapted to bear upon the end of the rod 45, and to the other arm, 63, whereof is attached one end of a cord 64, which is carried to the side of the window and through an eye 65, from which it hangs at 66. By pulling on the cord the rod 45 is thrust in and the toggles operated to relieve all of the pulleys from the pressure of the brakes,

whereupon either one or both sashes, if open, are enabled to close automatically. This is obviously a constant convenience, whether or not means are provided for releasing the sashes, thermically. Moreover, by pulling upon the cord the brakes may be released when opening either sash, thereby rendering the movement thereof freer and requiring less exertion.

Variations in construction, arrangement, and operation of parts may be resorted to within the scope of my invention, and portions of my improvements may be used without others.

Having thus described my invention, I claim—

1. The combination with a sash, of a flexible connection secured thereto, a pulley over which said connection runs, a disproportionate counterbalance to which the other end of said connection is secured, a brake for said pulley, and a thermotic release for said brake.

2. The combination with a sash, of a pair of flexible connections secured thereto, a pair of pulleys over which said connections run, disproportionate counterbalancing means to which the other ends of said connections are secured, spring-pressed brake-shoes for said pulleys, and thermotic releasing means for said shoes.

3. The combination with a disproportionately-counterbalanced sash, of a plurality of spring-pressed devices for frictionally opposing the movements of said sash, and a single pressure-regulating device connected to said friction devices and including a friction-relieving member fusible at low temperature.

4. The combination with a disproportionately-counterbalanced sash, of thermically-releasable sash-controlling mechanism, including a pair of devices for frictionally opposing the movements of said sash, a spring for rendering said pair of devices effective, and an adjustable member for regulating the tension of said spring.

5. The combination with a sash, of a flexible connection secured thereto, a pulley over which said connection runs, a disproportionate counterbalance to which the other end of said connection is secured, a brake for said pulley, a spring for said brake, and pressure-regulating means connected to said spring including a member fusible at a relatively low temperature.

6. The combination with a sash mounted for a sliding movement, of a pair of flexible connections secured thereto, a pair of pulleys over which said connections run, disproportionate counterbalancing means to which said connections are secured, brakes for said pulleys, a spring, means whereby said spring is connected to both of said brakes to render them effective, and means for regulating the tension of said spring; said brakes being

thermically releasable from the tension of said spring.

7. The combination with a sash mounted for a sliding movement, of a pair of flexible connections secured thereto, a pair of pulleys over which said connections run, disproportionate counterbalancing means to which said connections are secured, brakes for said pulleys, a spring, means whereby said spring is connected to both of said brakes, and a member for regulating the tension of said spring; said regulating member being fusible at a relatively low temperature.

8. The combination with a sash, of a disproportionate counterbalance therefor, means for connecting said sash to said counterbalance, said connecting means including a revoluble member operatively connected to the sash, a brake for said revoluble member, and thermotic releasing means for said brake.

9. In a window, the combination with a window-frame, of a window-sash movable up and down therein at will; means tending constantly to close said sash; said closing means including a disproportionate counterbalance for the sash and a flexible connection from said sash to said counterbalance; means within the window-frame and operative through said connection for opposing the movement of the sash and counterbalance and holding said sash in any position to which it may be adjusted up or down; and thermotic means for relieving such opposing action.

10. The combination with a sash, of a disproportionate counterbalance therefor, a flexible connection between the sash and the counterbalance, a pulley over which said connection runs, a brake-shoe for said pulley, and means for holding the brake-shoe against said pulley; said holding means including a member fusible at relatively low heat.

11. The combination with a frame and a pair of sashes therein, of disproportionate counterbalancing means for said sashes, flexible connections between said sashes and said counterbalancing means, pulleys over which said connections run, brake-shoes for said pulleys, and means for holding said brake-shoes against said pulleys; said holding means including a part fusible at relatively low temperature, and a connection from said fusible part to both of said shoes.

12. The combination with a frame, of a pair of sashes therein, disproportionate means for counterbalancing said sashes, braking devices for opposing the movements of the sashes, and means, including a member fusible at relatively low temperature and connections from said fusible member to said braking devices, for releasing said sashes from the control of said braking devices.

13. The combination with a window-frame and a pair of sashes therein, of two parts each fusible at relatively low temperature, and both

extending to points outside of said frame, one upon the inner side the other upon the outer side of the window, and means releasable by the fusing of either of said parts, for enabling both of said sashes to close automatically.

14. The combination with a window-frame and a pair of sashes therein, of disproportionate counterbalancing means for said sashes, including a pair of flexible connections secured to each sash, two pairs of pulleys over which said connections run, one pair of pulleys for each sash, brake-shoes for all of said pulleys, and thermally-releasable connections between said brake-shoes.

15. The combination with a window-frame and a pair of sashes therein, of disproportionate counterbalancing means for said sashes, including a pair of flexible connections secured to each sash, and two pairs of pulleys over which said connections run, one pair of pulleys for each sash, brake-shoes for all of said pulleys, and means for holding all of said brake-shoes against the pulleys, said holding means including a member fusible at relatively low temperature, and the fusing of which operates to release all of said shoes.

16. The combination of a window-frame and a pair of sashes therein, disproportionate counterbalancing means for said sashes, including a pair of flexible connections secured to each sash and two pairs of pulleys over which said connections run, one pair of pulleys for each sash, brake-shoes for all of said pulleys, thermally-releasable connections between said brake-shoes, and means for holding all of said brake-shoes against the pulleys, said holding means including two members fusible at low temperature, and both extending to points outside of said frame, one upon the inner and one upon the outer side of the window, the fusing of either of which fusible members operates to release all of said shoes.

17. The combination with a window-frame and a pair of sashes therein, of disproportionate counterbalancing means for said sashes, a thermally-releasable sash-controlling mechanism, including two pairs of devices for frictionally opposing the movements of the sashes, one pair of such devices for each sash, a spring for rendering both of said pairs of devices effective, and an adjustable member for regulating the tension of said spring.

18. The combination with a window-frame and a pair of sashes therein, of two pairs of flexible connections, one pair secured to each of said sashes, two pairs of pulleys over which said connections run, disproportionate counterbalancing means to which said connections are secured, brakes for all of said pulleys, a spring, and means whereby said spring is connected to all of said brakes to render them effective, and means for regulating the tension of said spring; said brakes being thermally releasable from the tension of said spring.

19. The combination with a window-frame

and a pair of sashes therein, of two pairs of flexible connections, one pair secured to each of said sashes, two pairs of pulleys over which said connections run, disproportionate counterbalancing means to which said connections are secured, brakes for all of said pulleys, a spring, means whereby said spring is connected to all of said brakes to render them effective, and means for regulating the tension of said spring, said regulating member being fusible at relatively low temperature.

20. The combination with a window-frame and a pair of sashes therein, of two pairs of flexible connections, one pair secured to each of said sashes, two pairs of pulleys over which said connections run, disproportionate counterbalancing means to which said connections are secured, brakes for all of said pulleys, a pair of springs, means whereby said springs are connected to said brakes to render them effective, and means for regulating the tension of each spring; said regulating means including a member fusible at relatively low temperature.

21. The combination with a window-frame and a pair of sashes therein, of two pairs of flexible connections, one pair secured to each of said sashes, two pairs of pulleys over which said connections run, disproportionate counterbalancing means to which said connections are secured, brakes for all of said pulleys, a pair of springs, means whereby said springs are connected to each other and to said brakes to render said springs effective to set said brakes, and means for regulating the tension of each spring; said regulating means including a nut fusible at low temperature.

22. The combination with a metallic window-frame and a sash therein, of a flexible connection secured to said sash, a disproportionate counterbalance to which said connection is also connected, a pulley over which said connection runs, a brake for said pulley, a brake-controlling device extending from said brake to a point upon said frame, and means fusible at low temperature for connecting said controlling device to said frame.

23. The combination with a window-frame, of a pair of sashes therein, counterbalancing means for said sashes, flexible connections between said sashes and said counterbalancing means, pulleys over which said connections run, an equalizing-bar provided with brake-shoes, and means connected to said bar for holding said shoes against the pulleys.

24. The combination with a window-frame, of a pair of sashes therein, counterbalancing means for said sashes, flexible connections between said sashes and said counterbalancing means, pulleys over which said connections run, an equalizing-bar provided with brake-shoes, and means connected to said bar for holding said shoes against the pulleys, said holding means including a member fusible at relatively low temperature.

25. The combination with a window-frame, of a pair of sashes therein, counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, a pair of equalizing-bars, each provided with brake-shoes, and means connected to said bars for holding said shoes against said pulleys.

26. The combination with a window-frame, of a pair of sashes therein, counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, a pair of equalizing-bars, each provided with brake-shoes, and means connected to said bars for holding said shoes against said pulleys, said holding means including a member fusible at relatively low temperature, and the fusing of which releases all of said brake-shoes.

27. The combination with a window-frame, of a pair of sashes therein, counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, a pair of equalizing-bars, each provided with brake-shoes, and means connected to said bars for holding said shoes against said pulleys, said holding means including a spring and a member fusible at relatively low temperature.

28. The combination with a window-frame, of a pair of sashes therein, counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, a pair of equalizing-bars, each provided with brake-shoes, and means connected to said bars for holding said shoes against said pulleys, said holding means including a spring and a member fusible at relatively low temperature, means being provided for enabling the tension of said spring to be adjusted.

29. The combination with a window-frame, of a pair of sashes therein, counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, a pair of equalizing-bars, each provided with brake-shoes, and means connected to said bars for holding said shoes against said pulleys; said holding means including two members fusible at low temperature, and the fusing of either of which releases all of said brake-shoes; said members extending to points outside of said frame, one thereof protruding from the inner side and the other thereof from the outer side of said frame.

30. The combination with a window-frame

of a pair of sashes therein, counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, a pair of equalizing-bars, each provided with brake-shoes, and means connected to said bars for holding said shoes against said pulleys, said holding means including a spring, means being provided for enabling the tension of said spring to be adjusted, and said tension-adjusting means including nuts fusible at low temperature; one of said nuts protruding from the inner side of the window and the other from the outer side thereof, and said nuts operating coöperatively, so that the fusing of either thereof releases all of said brake-shoes.

31. The combination with a window-frame, of a pair of sashes therein, disproportionately-counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, one pair for each sash, said pulleys being mounted upon said frame at opposite sides thereof, a pair of equalizing-bars mounted at opposite sides of said frame, shoes upon said equalizing-bars, one for each pulley, and linkage connecting said equalizing-bars; said linkage comprising a pair of toggles pivotally connected at their ends, and links connecting the middle joints of the toggles to the equalizing-bars, and means for connecting the ends of said toggles to said window-frame, said means including parts fusible at relatively low temperature, the fusion of either of which releases said brake-shoes, one of said fusible members being provided at each of the toggle ends.

32. The combination with a window-frame, of a pair of sashes therein, disproportionately-counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, one pair for each sash, said pulleys being mounted upon said frame at opposite sides thereof, a pair of equalizing-bars mounted on opposite sides of said frame, shoes upon said equalizing-bars, one for each pulley, and linkage connecting said equalizing-bars, said linkage comprising a pair of toggles pivotally connected at their ends, and links connecting the middle joints of the toggles to the equalizing-bars, and means for connecting the ends of said toggles to said window-frame, said means including a pair of springs and members fusible at relatively low temperature, the fusion of either of which releases said brake-shoes, one of said fusible members being provided at each of the toggle ends.

33. The combination with a window frame, of a pair of sashes therein, disproportionately-

counterbalancing means for said sashes, two pairs of flexible connections between said sashes and said counterbalancing means, one pair for each sash, two pairs of pulleys over which said connections run, one pair for each sash, said pulleys being mounted upon said frame at opposite sides thereof, a pair of equalizing-bars mounted on opposite sides of said frame, shoes upon said equalizing-bars, one for each pulley, a linkage connecting said equalizing-bars, said linkage comprising a pair of toggles pivotally connected at their ends, and links connecting the middle joints of the toggles to the equalizing-bars, springs for connecting the ends of said toggles to said window-frame, and means for enabling the independent adjustment of said springs, said adjusting means including rods connected to the ends of said toggles and projecting from the frame, one upon the inner side and one upon the outer side of said frame, and fusible nuts threaded upon said rods.

34. The combination with a frame, of two sliding sashes therein, disproportionate counterbalancing means for said sashes, flexible connections from said sashes to said counterbalancing means, pulleys over which said connections run, said pulleys being mounted two at each side of the frame, braking means at each side of the frame for coöperation with said pulleys, and means linking one braking means to the other across the frame, said linking means including a member fusible at low temperature, the fusion of which releases all of the pulleys from the control of the braking means.

35. The combination with a frame, of two sliding sashes therein, disproportionate counterbalancing means for said sashes, flexible connections from said sashes to said counterbalancing means, pulleys over which said connections run, said pulleys being mounted two at each side of the frame, braking means at each side of the frame for coöperation with said pulleys, means linking one braking means to the other across the frame, and devices connecting said linking means to the window-frame, including fusible nuts protruding from the window-frame at the outer and inner sides of the window.

36. The combination with a frame, of two sliding sashes therein, disproportionate counterbalancing means for said sashes, flexible connections from said sashes to said counterbalancing means, pulleys over which said connections run, said pulleys being mounted two at each side of the frame, braking means at each side of the frame for coöperation with said pulleys, and means linking one braking means to the other across the frame, and adjustable means for connecting said linking means to said window-frame at each of the inner and outer sides of the window, said adjustable means being coöperative in such a manner that the adjustment of either of them

produces a uniform braking effect upon all of said pulleys.

37. The combination with a frame, of two sliding sashes therein, disproportionate counterbalancing means for said sashes, flexible connections from said sashes to said counterbalancing means, pulleys over which said connections run, said pulleys mounted two at each side of the frame, braking means at each side of the frame for coöperation with said pulleys, means linking one braking means to the other across the frame, and adjustable means for connecting said linking means to said window-frame at each of the inner and outer sides of the window, said adjustable means being coöperative in such a manner that the adjustment of either of them produces a uniform braking effect upon all of said pulleys, a plurality of fusible members being provided in the mechanism between the braking means and the window-frame, and so connected that the fusion of either thereof releases all of the braking means.

38. The combination with a window-frame and two sashes mounted therein, of disproportionate counterbalancing means connected to said sashes, four rotating members between said sashes and said counterbalancing means, two of said members at each of the sides of the frame, brake-shoes for said rotating members, and means for regulating the pressure of all of said brake-shoes simultaneously and uniformly.

39. The combination with a window-frame and two sashes mounted therein, of disproportionate counterbalancing means connected to said sashes, flexible connections between said sashes and said counterbalancing means, four pulleys over which said connections run, four brakes for said pulleys, and a brake-adjusting device connected to all of said brakes so that the pressure produced by the adjustment of said adjusting devices is evenly distributed among said four brakes.

40. The combination with a window-frame and two sashes mounted therein, of disproportionate counterbalancing means connected to said sashes, flexible connections between said sashes and said counterbalancing means, four pulleys over which said connections run, four brakes for said pulleys, and a brake-adjusting device connected to all of said brakes so that the pressure produced by the adjustment of said adjusting devices is evenly distributed among said four brakes, said brake-adjusting device including a member fusible at low temperature for releasing the brakes.

41. The combination with a sash, of disproportionate counterbalancing means therefor, flexible connections between said sash and said counterbalancing means, a pulley over which said connection runs; said pulley being formed with means for preventing slip of the connection thereupon; and a thermally-releasable brake for said pulley.

42. The combination with a sash, of disproportionate counterbalancing means therefor, a pair of chains connecting said sash to said counterbalancing means, sprocket - pulleys
5 over which said chains run, brakes for said pulleys, and means for rendering said brakes effective; said means including a part fusible at relatively low temperature.

43. The combination with a window-frame
10 and a window-sash mounted therein and movable up and down at will, of disproportionate counterbalancing means tending constantly to close said sash, and releasable means within the window-frame for retaining the sash at
15 different positions to which it may be raised or lowered in said frame; said releasable means including a member fusible at relatively low temperature and extending to an exposed position wholly outside of the window-frame.

20 44. The combination with a window-frame and a pair of sashes therein, of disproportionate counterbalancing means for said sashes, a thermally-releasable sash-controlling mechanism, including two pairs of devices for frictionally opposing the movements of the sashes,
25 one pair of such devices for each sash, a spring for rendering both of said pairs of devices effective, an adjustable member for regulating the tension of said spring, and springs
30 tending constantly to release said brakes.

45. The combination of a pair of sashes each adjustable independently of the other to any desired position, disproportionate counterbalancing means for said sashes, braking means
35 for said sashes, said braking means being capable of retaining each sash in any position to which it may be adjusted, and a single manual release controlling all of said braking means and effective to cause the sashes to close
40 simultaneously from any positions to which they may have been opened.

46. The combination of a sash, disproportionate counterbalancing means therefor, a brake, and means operable either thermally
45 or manually for releasing said brake.

47. The combination of a pair of sashes, disproportionate counterbalancing means therefor, braking means, and a device connected to said braking means for releasing same and

including means operable either thermally 50 or manually.

48. The combination with a sash, of a flexible connection secured thereto, a pulley over which said connection runs, a disproportionate counterbalance to which the other end of
55 said connections is secured, a brake for said pulley, a thermotic release for said brake, and a cord connected to said release for operating the same manually.

49. The combination with a frame and a
60 pair of sashes therein, of disproportionate counterbalancing means for said sashes, flexible connections between said sashes and said counterbalancing means, pulleys over which
65 said connections run, brake-shoes for said pulleys, means for holding said brake-shoes against said pulleys; said holding means including a part fusible at relatively low temperature; a connection from said fusible part to both of said shoes, and a manually-operable
70 part for releasing said brake-shoes.

50. The combination with a frame and a pair of sliding sashes therein, of a part fusible at relatively low temperature, means releasable by the fusing of said part, for closing
75 both said sashes, and a manually-operable releasing device; each of said sashes being adjustable independently of the other, and both said closing means and said releasing device being effective to close said sashes from
80 any positions to which they may be opened.

51. The combination with a sash, of disproportionate counterbalancing means therefor, braking means, and a device connected to said braking means for releasing said sash and including both thermally and manually operable means, said releasing device including a part that projects from the window-frame, a lever having an arm to bear upon said part, and a cord connected to the other arm of said
90 lever.

Signed this 16th day of June, 1903, at Nos. 9 to 15 Murray street, New York, N. Y.

HENRY C. SMITH.

Witnesses:

B. C. STICKNEY,

FRED. J. DOLE.