

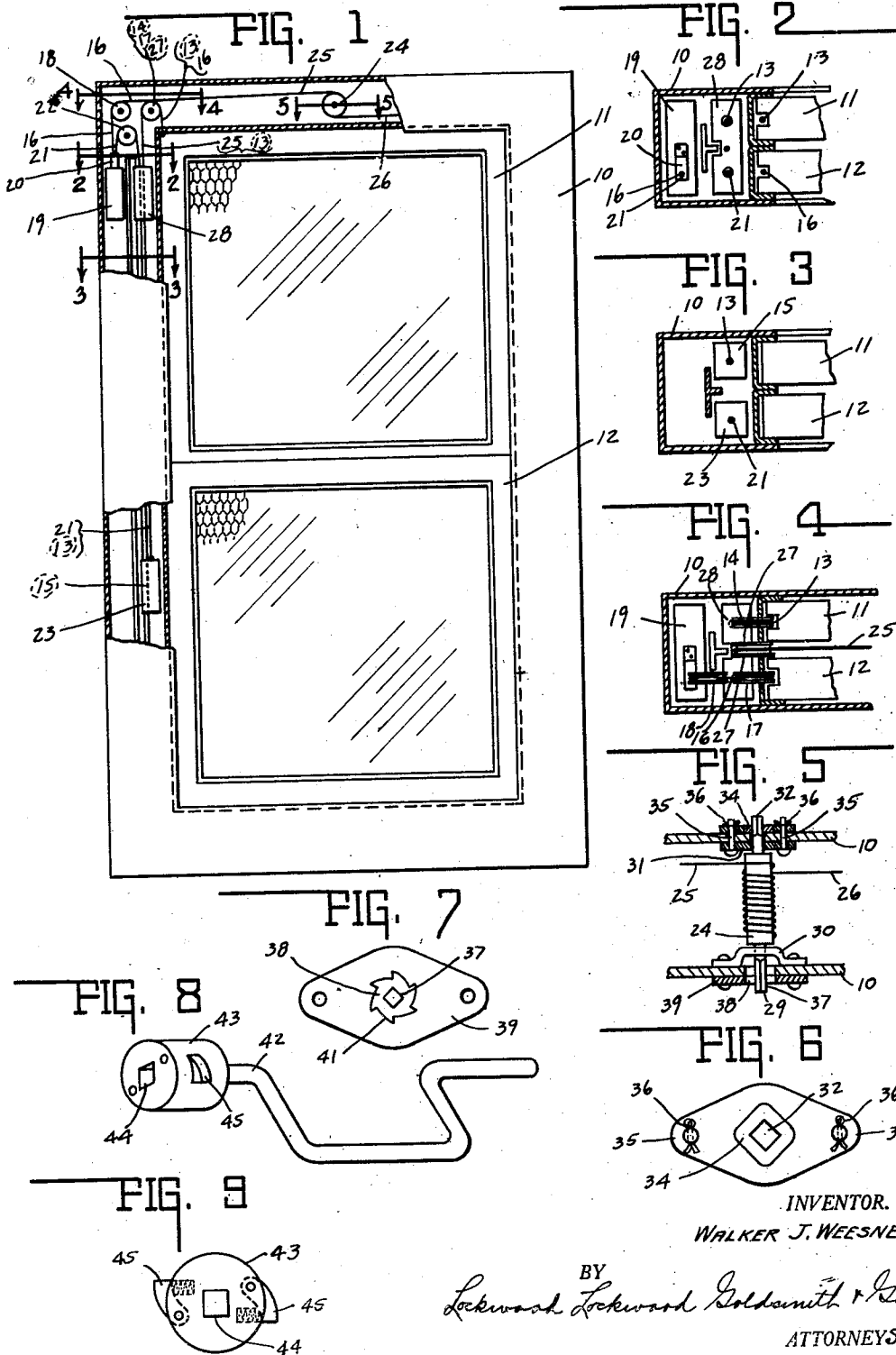
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AUTOMATIC CLOSING DEVICE FOR WINDOWS

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AUTOMATIC CLOSING DEVICE FOR WINDOWS

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This invention relates to an automatic closing device for windows and particularly to a device automatically responsive to the application of heat, such as might be occasioned by a fire in an adjacent building.

The principal object of the invention is to provide a device which will automatically close the windows of a building when the immediately adjacent building is on fire, thereby giving a measure of fire protection to the building wherein the device is installed by retarding the spread of fire from within or without. The device is particularly adapted for use with so-called "double hung" windows.

The principal feature of the invention consists in the provision of weights held in place by a fusible member and adapted to drop when the said member is fused by heat. In the dropping of the weights, both sashes are moved simultaneously to the closed position irrespective of the initial position of the sashes.

Another feature of the invention resides in the provision of an effective and convenient means for returning the said weights to their initial position after being operated to close the windows.

Another feature of the invention resides in the provision of a special tool adapted to return the weights to initial position and to maintain the weights in that position pending the application of a new fuse member.

Other objects and features of the invention will be understood from the accompanying drawings and the following description and claims:

Fig. 1 is an elevational view of a window and window frame with parts removed to show the operating mechanism for closing the window in detail. The said figure represents the elevation of the window inside of the building. Figs. 2, 3, 4 and 5 are horizontal sectional views taken on the lines 2—2, 3—3, 4—4 and 5—5 of Fig. 1 respectively. Fig. 6 is an elevational view of a preferred form of fusible member. Fig. 7 is an elevational view of a member attached to the inner side of the window frame for use with the special tool heretofore mentioned. Fig.

8 is a perspective view of said tool. Fig. 9 is an end view thereof.

In the drawings, a window frame 10, preferably of metallic construction, carries an upper sash 11 and a lower sash 12. At the upper corner of the sash 11 is attached a metallic cord or chain 13 passing over a pulley 14 and carrying at its lower end a sash weight 15. A similar cord or chain 16 is attached to the upper corner of the lower sash 12. The cord 16 passes over a pulley 17 and a pulley 18 and carries at its lower end a sash weight 19. The said cord is preferably fastened to the weight 19 by means of an offset bracket 20. A similar cord 21 is also fastened to the bracket 20 and passes upwardly over a pulley 22 and then downwardly. The lower end of said cord carries a weight 23. The said cords, pulleys and weights are contained in a suitable cavity in the left hand weight pocket of the window frame 10 and an exactly similar construction is preferably placed within the right hand weight pocket of said frame. A T-shaped member 40 is suitably supported within the frame and acts as a guide to prevent interference of the weights with each other.

It will be noticed that the weights 19 and 23 act upon the cord 21 in opposite direction so that the raising of one lowers the other. The weight 23 is chosen to be just heavy enough to remove any slack from the cord 21. The weights 19 are made sufficiently heavy to counterbalance the weight of the lower sash and that of the weights 23 as well. By means of this arrangement, when the lower sash is in its normally lowered position, the weights 23 will be in their lowermost position. When the lower sash 12 is raised, the weights 23 are likewise raised. Therefore, if the weights 23 are downwardly pulled by any means, the lower sash 12 will be lowered to its normal position.

In the upper panel or header box of the window frame 10, there is located a drum 24 having attached thereto a metallic cord or chain 25 extending to the left in Fig. 1 and a similar cord or chain 26 extending to the right. The cord 25 passes over a pulley 27 and carries at its downward end an aux-

iliary weight 28. The said weight is positioned directly above the weights 15 and 23 and is provided with openings for the passage therethrough of the cords 13 and 21. A similar weight is similarly placed within the right hand weight pocket of the frame 10 and is supported by the cord 26. The weights 28 are made sufficiently heavy so that, when dropped on the weights 15 and 23, the added weight thereof will cause the upper sash 11 to be raised and the lower sash 12 to be lowered to their normal closed position from any position in which they may happen to be.

The drum 24 is carried upon a shaft 29 supported upon suitable bearings 30 and 31 carried by the inner and outer members respectively of the window frame 10. One end 32 of the said shaft projects through the outer side of the frame 10 and is squared as illustrated in Figs. 5 and 6. A member 33 is provided with a fusible central portion 34 having a squared opening adapted to engage the squared end 32 of the shaft. The member 33 also engages pins 35 which are carried by the said window frame 10. Cotter pins 36 may be used for maintaining the said member in position. By this construction, the weight of the weights 28 continually tends to rotate the drum 24. Such rotation is prevented by the engagement of the squared end of the shaft 29 with the fusible portion 34. If a predetermined degree of heat is applied to the said fusible portion by the burning of an adjacent building, the melting of said portion allows the shaft 29 to rotate and consequently drops the weights 28 upon weights 15 and 23 to close the window.

The inner end 37 of the shaft 29 is likewise squared and passes through an opening in the inner member of the frame 10 and also through a toothed opening 38 in a member 39 suitably fastened to the window frame 10. For returning the weights 28 to their normal position after the same have been operated to close the window, a tool 42 is provided. The said tool is in the form of a crank having at one end a cylindrical portion 43 containing a rectangular opening 44 adapted to engage the squared end 37 of shaft 29. The cylindrical portion 43 is of the proper size to enter the opening 38 and carries spring-pressed projections 45 adapted to engage the teeth 41 formed upon the edge of said opening. To return the weights 28 to their normal position, the member 33 containing the fusible portion 34, which has been destroyed, is first removed. The tool 42 is then engaged with the end 37 of the shaft 29 and is rotated to lift the weights 28. During this operation, the engagement of the projections 45 and the teeth 41 prevent reverse rotation of the drum 44 and consequent dropping of the weights. When the weights have been elevated to the desired position, the tool 42 is left in place to prevent dropping thereof

until a new fusible member has been placed in position on the opposite end of the shaft 29. The tool 42 may then be withdrawn and the device is ready for another operation.

It is to be appreciated that numerous departures from the details of the apparatus herein described may be made without departing from the broader aspects of the invention as defined by the following claims.

The invention claimed is:

1. The combination of a window sash, a weight connected to said sash in such manner as to close said sash when said weight is lowered, a second weight positioned above said first-mentioned weight, a support for said second weight, and heat responsive means for releasing said support to allow dropping of said second weight upon said first weight whereby said window sash will be closed.

2. The combination of a window sash, a weight connected to said window sash so that said sash is closed when said weight is lowered, a second weight positioned above said first-mentioned weight, and a fusible member supporting said second weight whereby fusion of said member allows said second weight to fall upon said first weight to close said window sash.

3. The combination of a window, a weight, a support for said weight, means for releasing said support to allow dropping of said weight, connecting means between said weight and said window whereby dropping of said weight closes said window, means for returning said weight to its initial position after said closing, and mechanical means for maintaining said weight in the initial position during readjustment of said support and said releasing means.

4. The combination of a window, a weight, a support for said weight, means for releasing said support to allow dropping of said weight, connecting means between said weight and said window whereby dropping of said weight closes said window, a cord attached to said weight, a winding drum upon which the said cord may be wound to return said weight to normal position, a toothed member, and a tool adapted to engage said winding drum for rotation thereof in the direction to raise said weight and to engage said toothed member to prevent rotation in the opposite direction.

5. In combination with a window having an upper and lower sash, a weight connected with said upper sash in such manner as to raise the same when said weight is lowered, a second weight connected with said lower sash in such manner as to lower the same when said weight is lowered, a third weight positioned above said first and second weights, and heat-responsive means for releasing said support to allow dropping of said third weight upon said first and second weights to close said window.

6. In combination with a window having an upper and lower sash, a weight connected with said upper sash in such manner as to raise the same when said weight is lowered, a second weight connected with said lower sash in such manner as to lower the same when said weight is lowered, a third weight, and a fusible member supporting said third weight whereby fusion of said member allows said third weight to fall upon said first and second weights to close said window.

7. The combination of a window, a weight, a support for said weight, means for releasing said support to allow dropping of said weight, connecting means between said weight and said window whereby dropping of said weight closes said window, a cord attached to said weight, a winding drum upon which the said cord may be wound to return said weight to normal position, a removable ratchet tool for rotating said drum in the direction to raise said weight, and a toothed member fixedly supported in position to engage said ratchet tool to prevent dropping of said weight until said tool has been removed.

8. The combination of a window frame, a window carried thereby, a weight, connecting means between said weight and said window whereby dropping of said weight closes said window, a cord attached to said weight, a winding drum upon which said cord may be wound to return said weight to normal position, a shaft for said winding drum having flattened sides at one end, a fusible member having an opening closely fitting the said end of the shaft for preventing rotation of said drum and dropping of said weight until said member is fused, and a holder for said fusible member detachably mounted on said window frame.

In witness whereof, I have hereunto affixed my signature.

WALKER J. WEESNER.