

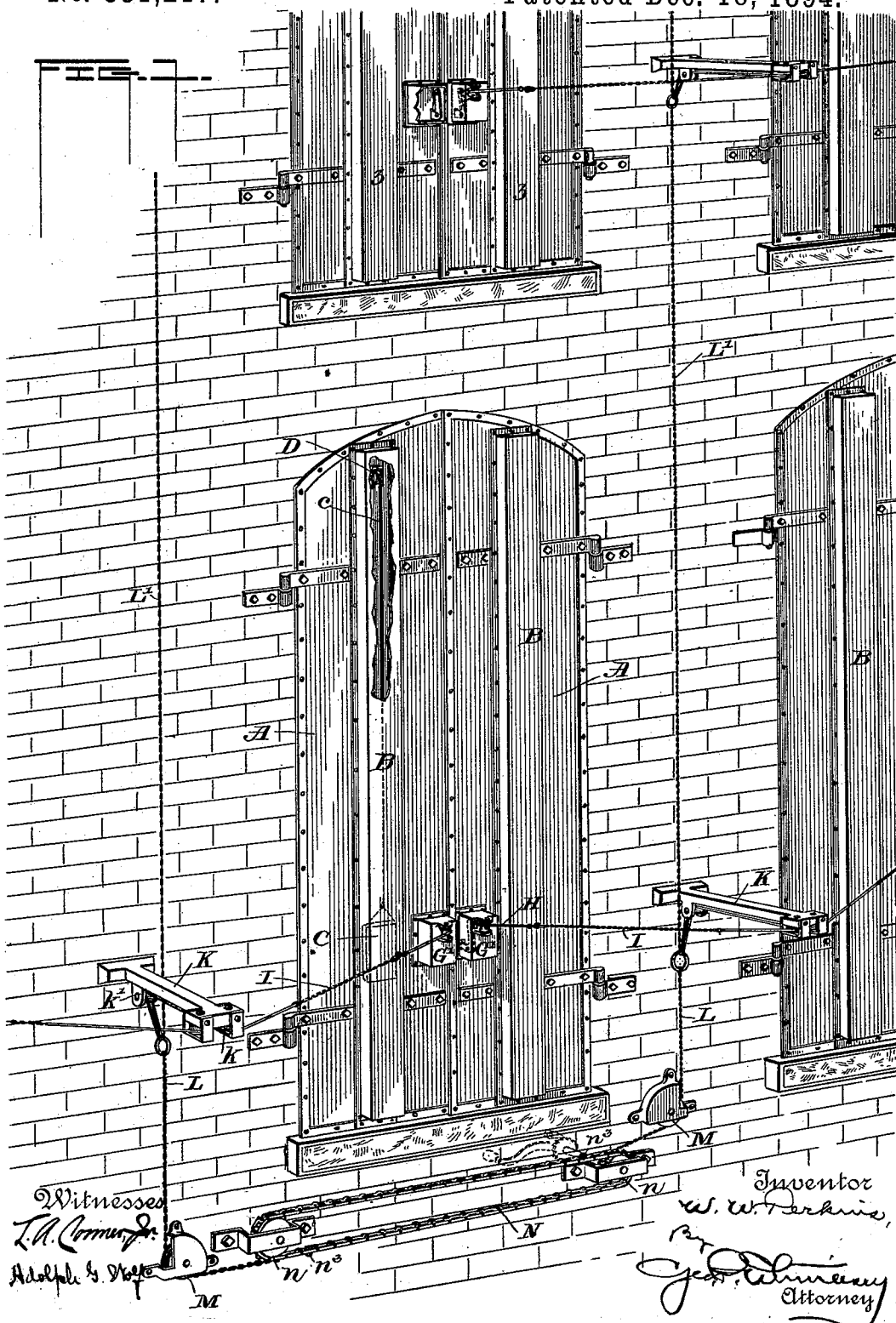
(No Model.)

2 Sheets—Sheet 1.

W. W. PERKINS.  
SELF CLOSING SHUTTER.

No. 531,217.

Patented Dec. 18, 1894.



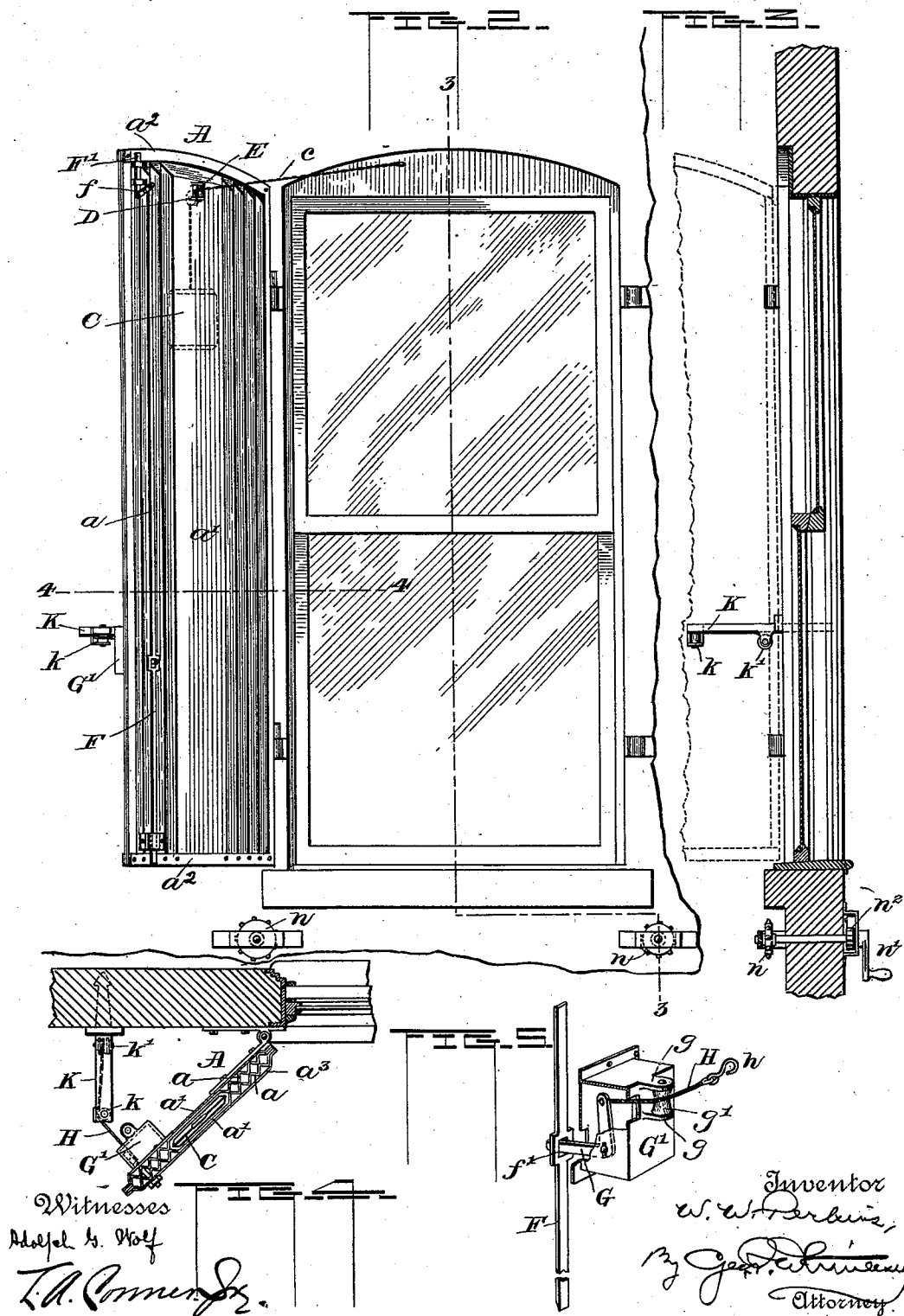
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# UNITED STATES PATENT OFFICE.

WILLIAM WALLACE PERKINS, OF ESCANABA, MICHIGAN.

## SELF-CLOSING SHUTTER.

SPECIFICATION forming part of Letters Patent No. 531,217, dated December 18, 1894.

Application filed June 26, 1894. Serial No. 515,800. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM WALLACE PERKINS, a citizen of the United States, residing at Escanaba, in the county of Delta and State of Michigan, have invented certain new and useful Improvements in Self-Closing Shutters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to fire proof shutters and its object is to render the shutters self closing and to provide for automatically closing them in case of fire. Furthermore to enable them to be simultaneously operated from one point when desired.

To this end the invention consists of certain improvements hereinafter described and claimed and relating to the following points of construction: first, an automatic closing attachment, that causes the shutters to swing closed as soon as released from their fastenings; second, an attachment to open all the swinging shutters connected in a perpendicular row either from the inside or the outside of the building, and at the same time allow each shutter to be opened or closed separately and independently of the rest, while in case any one or all of them when open should be subjected to an abnormal degree of heat, they close automatically; third, an automatic fastening, that fastens the top and bottom of each shutter when closed and unfastens as soon as the windlass moves to open them.

Having briefly described the invention, I will now explain more fully in detail the manner of construction and operation, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a portion of a building equipped with my improved shutters. Fig. 2 is a front elevation of a window showing one shutter open. Fig. 3 is a vertical section of the same on line 3—3. Fig. 4 is a horizontal section on line 4—4, and Fig. 5 is a perspective view of one of the locks partly broken away.

The shutters A may be of the ordinary flat, solid, swinging type as shown in Fig. 1, or corrugated as shown in Fig. 2 or Fig. 4. When flat, I attach to the outside a vertical metallic box B, running preferably from top to bottom, and closed at the top, but open at the bottom.

The box forms a pocket for the weight C, which may be a solid metal block, or a receptacle filled with sand, shot or other heavy, loose material rendering the adjustment of the weight an easy matter.

The corners of the weight may be beveled or rounded off to insure its running easily. A suspending chain *c* is attached to the weight and passes over a pulley D near the top of the box B, out through a hole in the shutter and around a vertical guide pulley E, to a staple or other fixed point of attachment supported on or by the lintel of the window.

It will be seen that when the shutter is opened the weight is raised in its pocket, and exerts a constant tendency to close the shutter.

In the modified form of shutter shown in Figs. 2 and 4, the shutter consists of two plates *a* corrugated vertically for a portion of their width near each edge, leaving a flat portion *a'* at the middle. The two flat portions coincide, inclosing between them a space in which is housed the sliding weight. The plates are preferably held in a frame *a*<sup>2</sup>.

When closed, the shutter is locked by means of vertical bolts *F F'* connected by a short lever *f* so as to move simultaneously, and adapted to enter suitable sockets in the sill and lintel of the window. The ends of the bolts are beveled so as to ride over the usual striking plates and enter the sockets, when the shutters are closed. The weight of the bolt *F* is sufficient to cause it to drop in its socket, and in so doing to force up the bolt *F'* by means of the lever *f*.

The shutters can be opened from the inside by hand, or in case one or more pairs are to be opened simultaneously, suitable mechanism can be used, preferably as follows: One of the bolts as *F* has a slot *f'*, which is engaged by one end of a lever, preferably an elbow lever *G*, pivoted in a casing *G'* fastened to the outside of the shutter and having two lugs *g* in which is journaled a pulley *g'*. A

cord or chain H is attached to the other arm of the lever and passes around the pulley  $g'$  to an operating device. When the chain is pulled, it moves the lever G, and thereby withdraws the bolts F F' from their sockets, leaving the shutter free to be opened by the continued strain on the chain, which has a hook  $h$  by which it is attached to a chain I which passes around a pulley  $k$  at the outer end of a bracket K projecting from the wall of the building at about the point where the edge of the shutter comes when it is open. The chain then runs over a second pulley  $k'$  at the inner end of the bracket, and is connected with a chain L which is carried at its lower end around a pulley M, and is attached to an endless belt or chain N carried on suitable sprocket wheels  $n$ . The shaft of one of these sprockets is provided at each end with a squared portion to receive a crank handle  $n'$ , preferably arranged inside the building. A ratchet wheel and pawl  $n^2$  hold the shaft at any point. By turning the crank, the endless belt is moved, putting a tension on the chains L, I, and H, and opening all the shutters simultaneously. When the shutters are open the movement of the belt may be checked by stops  $n^3$  coming in contact with the frames in which the sprockets  $n$  are journaled.

It is obvious that shutters of adjacent windows can be attached to the same chain L, as shown in Fig. 1, and that as many chains L as desired can be attached to and actuated by the endless belt N.

If it is desired to keep any shutter closed, it can be disconnected by unhooking the chain H from the chain I.

The chains I of upper rows of windows can be connected by vertical chains L' with the chains L, so that all the shutters on the building can be opened and closed from one point, and by one person.

The crank is removable and can be applied to the shaft of the sprocket, either inside or outside the building, as may be most convenient.

It will be noted that the shutters are held open by the chains against the tension of the weights C, so that in order to cause the shutters to close automatically in case of fire, it is only necessary to make the chains H or I of fusible or combustible material, in whole or in part, whereby they will give way under unusual heat and permit the weights to close the shutters. If it is necessary to have any of the shutters remain open, the cord connecting them to the chain L can be dispensed with, and the shutters simply fastened back

to the brackets with a combustible cord or a chain with fusible links.

Having thus described my invention, what I claim is—

1. A self closing shutter, composed of two corrugated plates having flat middle portions inclosing a vertical space between them, and a frame to which said plates are secured, substantially as described.

2. The combination with a shutter composed of two corrugated plates having flat middle portions inclosing a vertical space, of pulleys at the upper end of the shutter, a weight sliding in said space, and a chain attached to the weight and passing over the pulleys to a fixed support, substantially as described.

3. The combination with a window provided with self closing shutters, of brackets adjacent to the window, pulleys mounted on the brackets, fastening bolts on the shutters, and chains connected with said bolts and passing around the pulleys to a common operating point, substantially as described.

4. The combination with a window provided with self closing shutters, of fastening bolts on said shutters, levers for operating said bolts, brackets adjacent to the windows, pulleys on said brackets, and chains attached to the levers and passing around the pulleys to a common operating point, substantially as described.

5. The combination with one or more pairs of self closing shutters, of chains for opening said shutters, an endless belt to which said chains are connected, and means for actuating said belt, substantially as described.

6. The combination with one or more pairs of self closing shutters, of chains for opening said shutters, an endless belt to which said chains are connected, means for operating said belt, and stops on the belt to limit the movement, substantially as described.

7. The combination with one or more pairs of self closing shutters, of chains for opening them, an endless belt to which said chains are attached, a sprocket wheel for actuating said belt, and a shaft for said sprocket wheel extending through the wall of the building and having at each end a squared portion for a crank, substantially as described.

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

WM. WALLACE PERKINS.

Witnesses:

A. R. MOORE,  
H. A. BARR.