

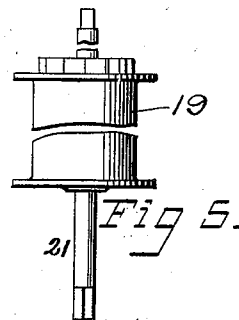
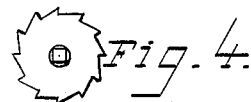
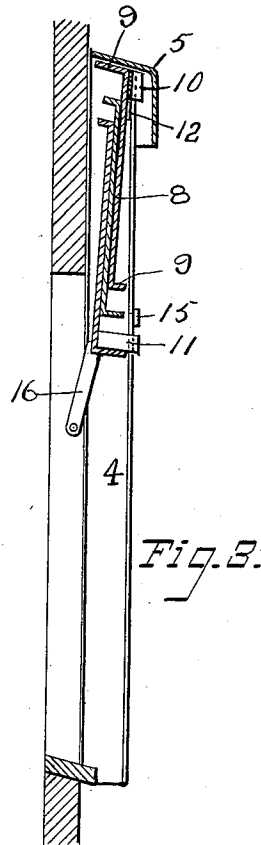
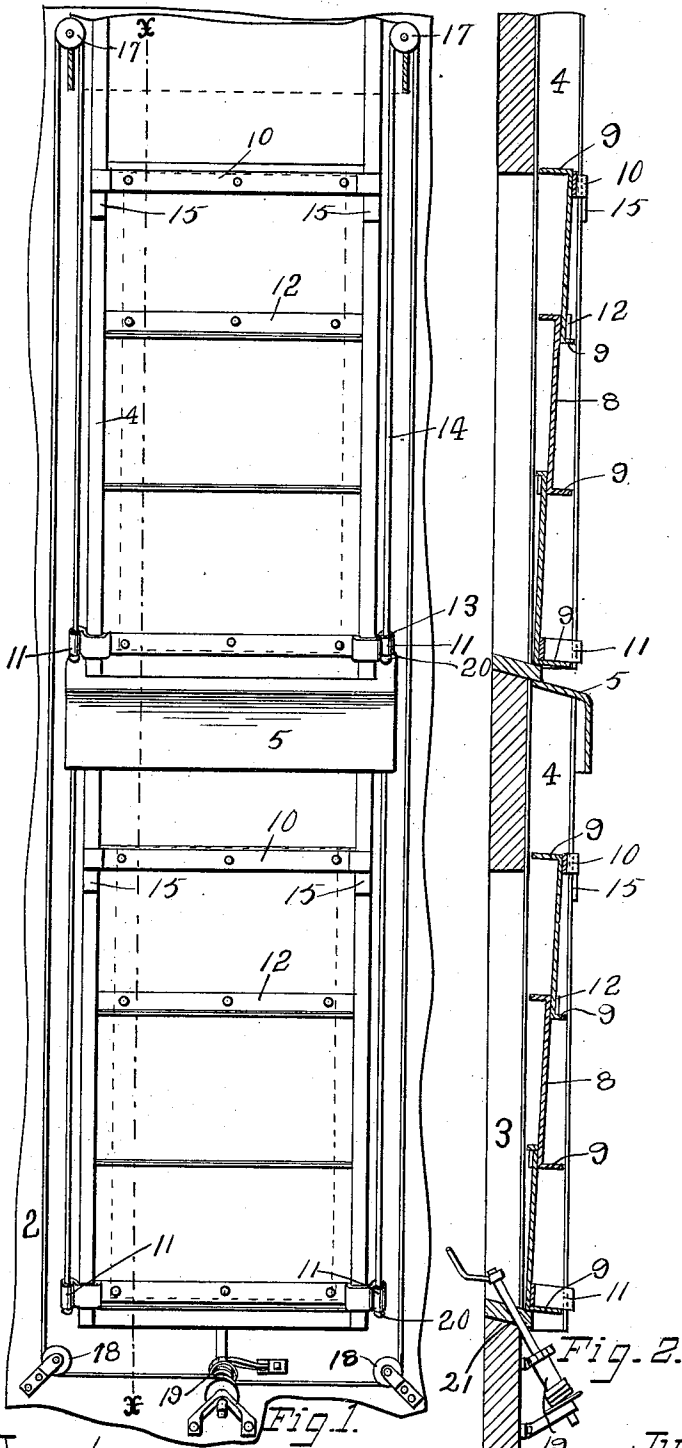
(No Model.)

2 Sheets—Sheet 1.

J. HENNING.
FIREPROOF SHUTTER.

No. 568,443.

Patented Sept. 29, 1896.



Witnesses
B. P. Shepherd
W. E. Goolley

Inventor
Julius Henning
By Paul Hawley
his attorneys

(No Model.)

2 Sheets—Sheet 2.

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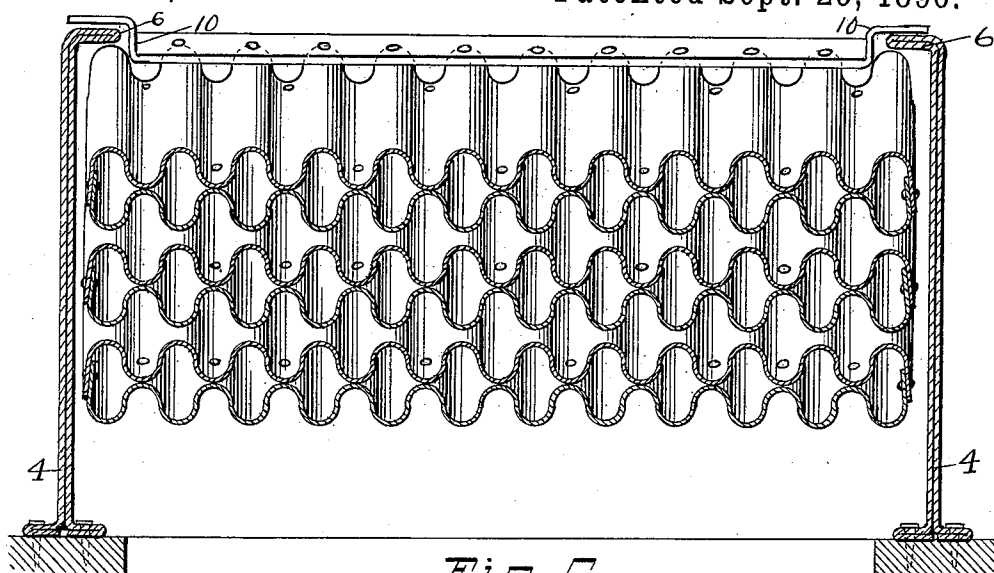


Fig. 6.

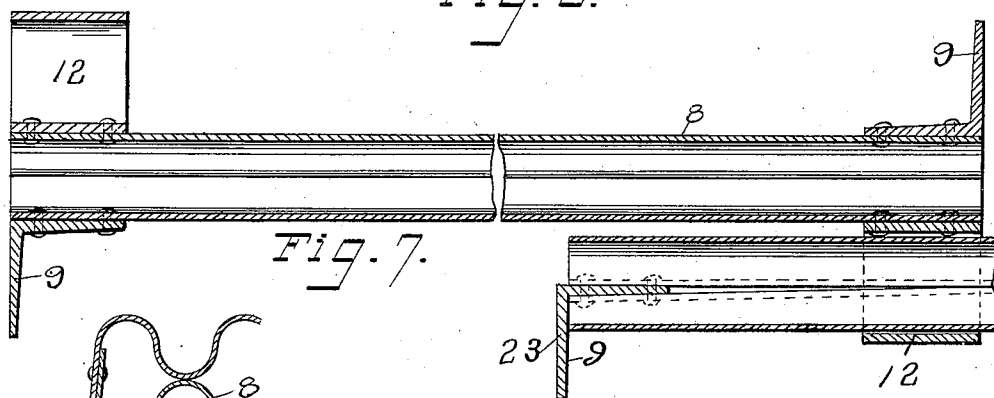


Fig. 7.

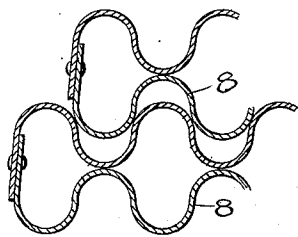


Fig. 9.

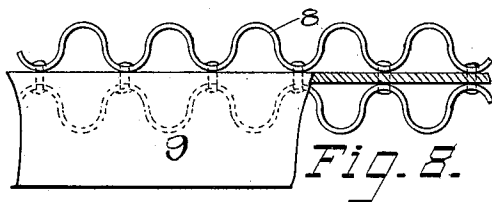


Fig. 8.

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UNITED STATES PATENT OFFICE.

JULIUS HENNING, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF TWO-THIRDS
TO ARTHUR STREMEL AND CHARLES F. STREMEL, OF SAME PLACE.

FIREPROOF SHUTTER.

SPECIFICATION forming part of Letters Patent No. 568,443, dated September 29, 1896.

Application filed April 15, 1895. Serial No. 545,818. (No model.)

To all whom it may concern:

Be it known that I, JULIUS HENNING, of the city of Minneapolis, county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Fireproof Shutters, of which the following is a specification.

My invention relates to fireproof shutters for windows of buildings and means for opening and closing the same. Heretofore fire-shutters have generally been arranged to slide horizontally into or out of the window-space, or instead have been hinged at the sides of the window, and with either of these difficulty has been experienced to fasten the shutters back to prevent their being swung and slammed by the wind, and, further, other windows are often closed or obscured by the shutters of adjoining windows.

It is the object of this invention to overcome these difficulties and some others which ordinarily apply to fireproof shutters, and, further, to provide means whereby the shutters may be operated from the ground to raise all of the shutters at a time, and also means whereby all or either one of the shutters may be raised from the inside of the building.

A particular object of my invention is to provide a shutter which, being in several parts, is capable of being collapsed or closed and raised upward above the line of the window and there held.

To these ends my invention consists in window-shutters and operating means for the construction and combination of parts, all as hereinafter described, and particularly pointed out in the claims.

The invention will be more readily understood by reference to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a side elevation showing two windows and the shutters therefor, and also the means for raising and lowering the shutters. Fig. 2 is a vertical section on the line *xx* of Fig. 1. Fig. 3 is a sectional view showing one of the shutters raised. Figs. 4 and 5 are detail views of the winding-drum. Fig. 6 is an enlarged horizontal section taken through a screen the several parts of which are made up of double-corrugated sheet metal.

Fig. 7 is an enlarged sectional view of one of the shutters and part of another. Fig. 8 is a partial end view of a shutter, showing the means for securing the angle-iron in the edge thereof. Fig. 9 is a detail showing the different arrangements of adjoining shutter-sections.

As shown in the drawings, 2 represents the wall of a building, in which are the window-openings 3. On the wall, outside each window, I provide a casing comprising the sides 4 and the overhanging head or top 5. The casing is preferably formed of sheet metal, as shown in Fig. 6, the sides being of two thicknesses of sheet metal, formed to resemble an I-beam, the outer flange 6 of which serves as a guide for the shutter. The shutter itself is made up of any convenient number of sections 8, provided with flanges 9 at their upper and lower edges, said flanges extending from opposite sides of the plates and preferably downwardly inclined, in order to shed water. The shutters are also preferably inclined, and the upper edge of the upper section is provided with a strap or hooks 10 to engage the guide edges or flanges 6 of the side portions 4, while at the bottom of the lower section of the shutter I provide longer straps 11, having hooked ends which also engage said guide. The outer edge of the lower flange engages the inner side of the flange 6, and the shutter is thus prevented from leaving its place.

Upon the several shutters I provide the strap guides or stops 12, upon which the flanges of the adjoining sections may rest when the sections are dropped and the shutter closed, and on the flanges 6 I provide stops 15, upon which the upper section of the screen may rest, and which may also serve as a stop to prevent the lower section from being lifted beyond a certain height at which it may be conveniently engaged by a dog or hook 16 placed in the window-casing.

The ends of the lower strap 11 are preferably extended outward and bent back toward the wall of the building, there having curls or loops 13, within which the cables 14 are placed. Such a cable 14 is provided on each side of the window or windows and extends up the entire length of the wall to the highest window, there passing over fixed pulleys

or sheaves 17, and thence down over other sheaves 18 near the ground, and from thence to a fastening upon the winding roll or drum 19.

- 5 On the lower end of each cable I provide a knob or stop 20, and such a knob or stop is also provided on the cable beneath each bottom bar or strap of each shutter, so that as the lower ends of the cables are drawn down the
10 shutters will be raised until they are at the limit of their upward movement, when their upper ends will be concealed beneath the overhanging hoods.

- One shutter cannot be lowered without
15 lowering all, as the shaft 21 of the winding-drum passes upward into the window-space. The raising and lowering of all of the shutters may be done from the outside or from the inside of the building. When all of the shutters have been dropped, any one of them may
20 be raised from the inside, as the shutters simply lift off the knobs or buttons 20 on the cables. At such a time it is necessary to lock the shutters up with the dog or latch 16.
25 When all the shutters, one above the other, are raised by means of the cables, the shutter which is locked up by the dog or hook 16 will be raised enough to release the dog, which will fall out of the way so that the shutter
30 may be lowered with the others.

- In place of single sheets or thicknesses of sheet metal to form the several sections of the shutter, I may and preferably employ two
35 sheets for each section, and corrugate each section, as shown plainly in Figs. 7 to 9. The two sheets are fastened together at intervals and the flanges upon the upper and lower ends are formed by simple angle-irons
40 23, the flanges of which are riveted between the two parts of the section. I prefer this construction, as by this means an air-space is provided between the outer and inner parts of the section, which adds greatly to the protection. To economize space, the corrugations
45 of the several sections may be looped, as shown in Fig. 9.

- The advantages of my shutter are that it covers only the window-space, whether raised or lowered; that when raised the several narrow sections close together and occupy but a
50 small space directly above the window; further, that the raising of the shutters is a simple and easy operation, and, further, that any one shutter may be raised without respect to
55 those of windows below or above it.

A further advantage is derived from the simplicity, cheapness, and durability of the device.

- Having thus described my invention, I
60 claim as new and desire to secure by Letters Patent—

1. The combination, in a window-shutter, of a suitable casing or vertical guides, the shutter proper vertically movable therein,
65 said shutter composed of corrugated sheets

and angle-irons having their flanges secured between said sheets at the upper and lower edges of the shutter proper, substantially as described.

2. The combination, in a fireproof shutter, of the casing or guide-frame 4 having the flanges 6, with the shutter proper composed of two or more vertically-movable sections, provided with the flanges 9, the stops 12 upon which said flanges rest when the sections are
7 dropped, the long straps 11 secured to the lower section of the shutter and having their ends curved inwardly, the windlass secured to the wall of the building, and cables having one end connected to the curved end of
8 said straps 11 and their opposite end secured to said windlass, substantially as described and for the purpose set forth.

3. The combination, in a fireproof shutter, of the casing or guide-frame having the inwardly-turned flanges, with the shutter proper composed of two or more vertically-movable sections provided at their upper and lower edges with the flanges 9, the stops 12 provided upon the side of the sections opposite said
9 flanges and upon which the flange of the adjoining section rests when the sections are dropped, the strap 10 secured to the upper section of the series, and having hooked ends to engage the flange provided on the casing
9 or guide-frame, a long strap 11 secured to the lower section of the series and provided with hooked ends, cables connected to the ends of said strap 11 and means for winding up said cable and closing said shutters, for
10 the purpose set forth.

4. The combination, in a fireproof shutter, of the casing or guide-frame provided with the flanges 6, with the shutter composed of two or more vertically-movable sections having the flanges 9, the stops 12 upon which
10 said flanges rest when the shutter is closed, the strap 10 secured to one of the sections of the shutter and having ends to engage said flanges 6, the strap 11 secured to the lower section of the series and to which the cable for elevating said sections is connected, the
11 hood 5 at the top of the guide-frame, and the dog or hook 16 secured to the window-frame, for the purpose set forth.

5. The combination, in a fireproof shutter, of the upright guide-frame, the hood at the upper end thereof, the shutter composed of overlapping sections adapted to be drawn up within said hood, the flanges provided on
12 said sections, stops for engaging the same, and means for raising said sections to the top of said guide-frame, and beneath said hood, for the purpose set forth.

In testimony whereof I have hereunto set
my hand this 7th day of April, A. D. 1895.

JULIUS HENNING.

In presence of—

C. G. HAWLEY,
F. S. LYON.