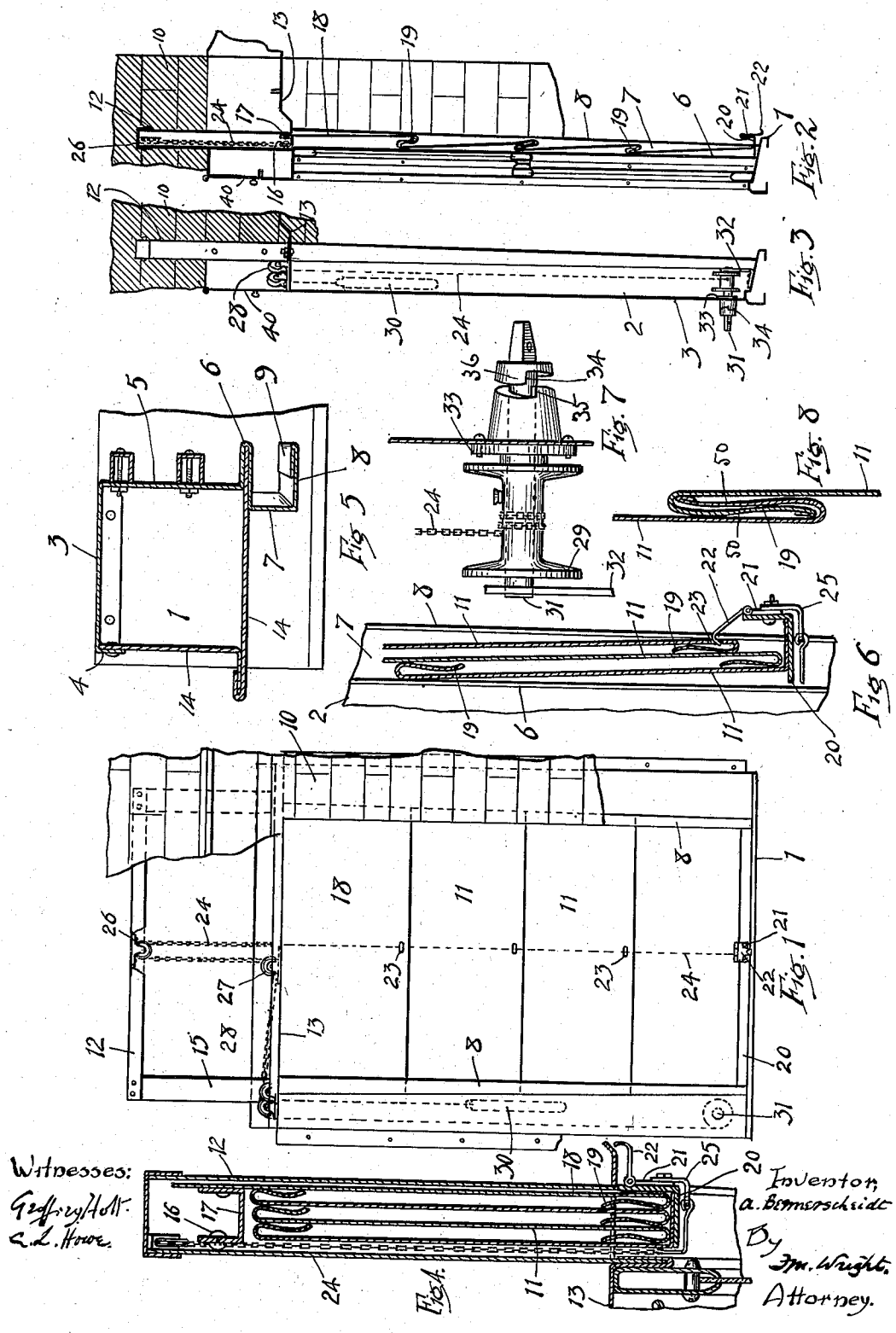
No. 881,455. PATENTED MAR. 10, 1908.

A. BENNERSCHEIDT.

PROTECTIVE SHIELD FOR WINDOWS.

APPLICATION FILED MAR. 28, 1907.



Witnesses:
Geoffrey Holt.
C. L. Howe.

Inventor,
A. Bennerscheidt
By
Jm. Wright.
Attorney.

UNITED STATES PATENT OFFICE.

AUGUST BENNERSCHEIDT, OF SAN FRANCISCO, CALIFORNIA.

PROTECTIVE SHIELD FOR WINDOWS.

No. 881,455. Specification of Letters Patent. Patented March 10, 1908.

Application filed March 28, 1907. Serial No. 365,191.

To all whom it may concern:

Be it known that I, AUGUST BENNERSCHEIDT, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Protective Shields for Windows, of which the following is a specification.

This invention relates to an improved protecting shield for windows, the object of the invention being to provide a shield which will afford protection against fire, and can also be used as a snow or storm shield when desired; which will be simple in construction and permit of being operated by hand rapidly and as often as desired, and will also act automatically in case of great heat produced by an adjacent conflagration; and which will permit of any portion thereof being raised and maintained in such elevated position to permit a fireman to inspect the interior of the building or for other purposes.

In the accompanying drawing, Figure 1 is a broken outside view of the window, showing the shield lowered; Fig. 2 is a vertical transverse section; Fig. 3 is a side view part being in section; Fig. 4 is an enlarged detail vertical section of the shield box showing the shield sections therein; Fig. 5 is a horizontal section of a side of the window frame, equipped with my improvement; Fig. 6 is an enlarged vertical section showing two of the shield sections held in their raised position; Fig. 7 is an enlarged side view of the winding drum and the clutch mechanism thereof, certain parts being shown in section; Fig. 8 is an enlarged detail sectional view showing the engaged portions of two of the shields.

Referring to the drawing, 1 indicates the window sill which is made of sheet metal, and is of the usual form, and secured to said sill are the inner sides 2 of the window frame, each side being formed of a piece of sheet metal, the rear portion 3 of which faces the interior of the building, having a short flange 4 at its outer edge, and at the inner side being bent substantially at right angles to form the side guide 5 for the upper sash, and being bent at right angles and then doubled back upon itself, to form the inner wall 6 of the shield guideway, then bent at right angles to form the side 7 of said guideway, and then in again at right angles to form the outer wall 8 of said guideway, the edge thereof being then doubled back inward upon itself to form a smooth edge 9 for said outer wall. The sheet metal guideways are set in the masonry 10 of the building, thus preventing their being bent out of shape by any passing object. 14 indicates the other wall of the frame. Each side guideway for the shield sections, hereinafter described, tapers in two directions, downward, both from front to rear, and in a direction at right angles thereto, or parallel with the window. In said guideway slide the ends of the shield sections 11, of which there may be any suitable number, according to the size of the window. Each shield section tapers downward in width, and, moreover, the sections successively decrease in width downward, so that, when extended, as in the position shown in Fig. 1, they form a shield continuously diminishing in width downward, corresponding to the lateral taper downward of the guideways.

The object of forming the guideways with a taper from front to rear is to insure that the shield sections assume their proper positions relative to each other as they drop. Said sections are normally contained in a rectangular box 12, attached to the top member 13 of the window frame, the inner side of said box being cut out to form flanges 15 upon which travel rollers 16, mounted in the inner wall of a channel iron 17, secured to the top of the uppermost shield section 18. Said uppermost shield section 18 is bent back at the bottom edge upon itself to form a lip 19 spaced from the main body of the shield to form a groove, and each of the intermediate sections is in like manner bent back on itself at the upper and lower edges to form similar lips, said lips being bent away from the section on opposite sides at the top and bottom. The upper lip of each section is adapted to enter the groove formed at the bottom of the section above it, and the lower lip of each section to enter the groove at the top of the section below it Each of these lips 19 is formed in cross section in a ogee curve, that is from the part where it leaves the shield section 11 it is bent outwards, then inwards again toward said shield section 11 as shown at 50, and then outwards again to its edge, so that the edge of each lip flares outward so as to lie in close proximity with the surface of the next adjacent section 11. The effect of this construction is that as the shield sections are moved past each other, it is impossible for any lip to escape engagement with the lip of the adjacent shield sec-

tion as it passes it, since the edge of each lip lies in close proximity to the adjacent shield section. At the same time, on account of the lip not being in a plane surface, but in an ogee surface, said lips, when they engage each other, fit snugly against one another and also against the adjacent shield sections, making a tight fit of the edges of the two sections, as clearly shown in Fig. 8. This construction, therefore, serves two purposes; it absolutely prevents said sections failing to engage each other as they pass, and when the sections are in their extended position it prevents lateral movement of one section relatively to the other, and consequent rattling. The lowermost section is formed with such lip and groove only at the upper edge, and to the lower edge is attached a right-angled bottom piece 20. To the front vertical side of said bottom piece is secured a small plate 21, to which is hinged a hook 22, and this hook is adapted to engage any one of a series of holes 23, each formed in one of the sections, adjacent to the lower edge thereof at the center. By raising the lowermost section and causing the hook to engage any desired hole 23, any number of the shield sections can be maintained in an elevated position to permit a fireman or other person to inspect the interior of the building, and then by removing the hook, the shield sections will immediately drop again to the position in which they protect the window opening.

The shield sections are maintained in their collapsed or raised position in the shield box by means of a chain 24, which is attached at its lower end, by means of a small piece of fusible metal 25, to the plate 21 on the lowermost section, said chain passing first over a pulley 26 secured in the top of the shield box, then under a pulley 27 secured on the top of the window frame, adjacent to said shield box, then over a pulley 28 similarly secured, and then down through the hollow side of the window frame and around a drum 29 attached to a shaft 31. The chain for raising the shield sections is arranged to extend sufficiently far away from the inner wall of the window frame to prevent interference with the movement of a sash weight 30 for balancing one of the window sashes. The shaft 31 is slidably mounted at one end in a post 32, and at the other end in a bearing 33, secured upon the interior face of the window frame, said bearing having a ratchet tooth 35, adapted to engage a similar tooth 34 on a collar 36 formed or secured on the shaft 31. When it is desired to drop the fire shield, this can be done from the interior of the room by applying a knife blade, or other sharp instrument, between the inclined surfaces of the bearing and collar thereby forcing said collar from said bearing, moving said shaft longitudinally in its bearing, and releasing the teeth 34, 35, from engagement with each other. Thereupon said shield sections immediately fall by their own weight. Thus in case of fire, any person in the interior of the building can immediately drop the protecting shield without waiting for the fusible metal to melt. The shield sections can again be raised by turning the shaft 31, and, when they have been fully raised into the shield box, by continuing to turn said shaft, the slack in the chain is taken up until the teeth on the disk and bearing pass and engage each other.

The importance of the taper in the shield guideways in a lateral direction relative to the window will now be seen, for it is by reason of this taper that it is possible to raise the shield sections by means of a single chain attached at the center to the lowermost section without any danger of said sections binding in the vertical guideways. If the guideways did not have such taper, then any slight deviation from a central vertical line, of the pull on the lowermost section, or of the impulse given to an upper section by a lower section when lifted thereby, might cause the sides of said sections to bind on the guideways, which would prevent the raising of the shield, but by making these guideways laterally tapering this possibility is avoided. Also by reason of the fact that the guideways taper laterally the result is obtained that, as each section drops, it is arrested in its proper position by reason of its converging edges coming into contact with the laterally converging walls of the guideways. It will also be seen why said guideways are made tapering from front to rear, for, as the shield sections drop into their positions, one below the other, they are in turn moved forward, or outward by the rear walls of the guideways; so that it is insured that the lip and groove at the upper edge of each section engage the groove and lip at the lower edge of the section immediately above it, and it is not possible for two such adjacent sections to pass each other without such engagement.

In order to obtain access to the shield sections and to the operative mechanism thereof, there is provided a door 40 over the inside of the window.

I claim:—

1. In a protective shield for windows, the combination, with shield sections, slidable one past the other, of guide ways for said sections, tapering downward from front to rear and also laterally or parallel with the window, substantially as described.

2. In a protective shield for windows, the combination of a series of shield sections, a chain for raising and lowering said sections, and a piece of fusible metal on the lowermost section to which the end of said chain is attached, substantially as described.

3. In a protective shield for windows, the

combination of a series of shield sections, a hook carried at the lower edge of the lowermost section, an upper section having a part near the lower edge thereof adapted to be engaged by said hook to hold said sections in a partly collapsed position, substantially as described.

4. In a protective shield for windows, the combination of a series of shield sections, each having its upper and lower edges bent in opposite directions, away from the main body of the sections, to form a lip and groove, each lip being of an ogee form, and extending inwardly and towards the shield section and then outwardly from said section to its outer edge, substantially as described.

5. In a protective shield for windows, the combination of a series of shield sections, each having its upper and lower edges bent in opposite directions, away from the main body of the sections, to form a lip and groove, and guide-ways in which the vertical edges of said sections move, said guideways tapering downward from front to rear to cause the lips and grooves of the different sections to engage each other, substantially as described.

6. In a protective shield for windows, the combination of a series of shield sections continuously tapering in width downward and guideways for said sections, the outer walls of said guide ways converging downward in correspondence with the downward taper of the shield sections to successively arrest said shield sections in their proper positions as they drop, substantially as described.

7. In a protective shield for windows, the combination of a series of shield sections continuously tapering in width downward and guideways for said sections, the outer walls of said guideways converging downward in correspondence with the downward taper of the shield sections to successively arrest said shield sections in their proper positions as they drop, and a chain attached to the middle of the narrowest section, said latter section having a part adapted to engage the lower edges of all of the sections to successively raise them into its upward movement, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

AUGUST BENNERSCHEIDT.

Witnesses:
FRANCIS M. WRIGHT,
D. B. RICHARDS.