W. P. SHOMAKER.

SAFETY SHUTTER.

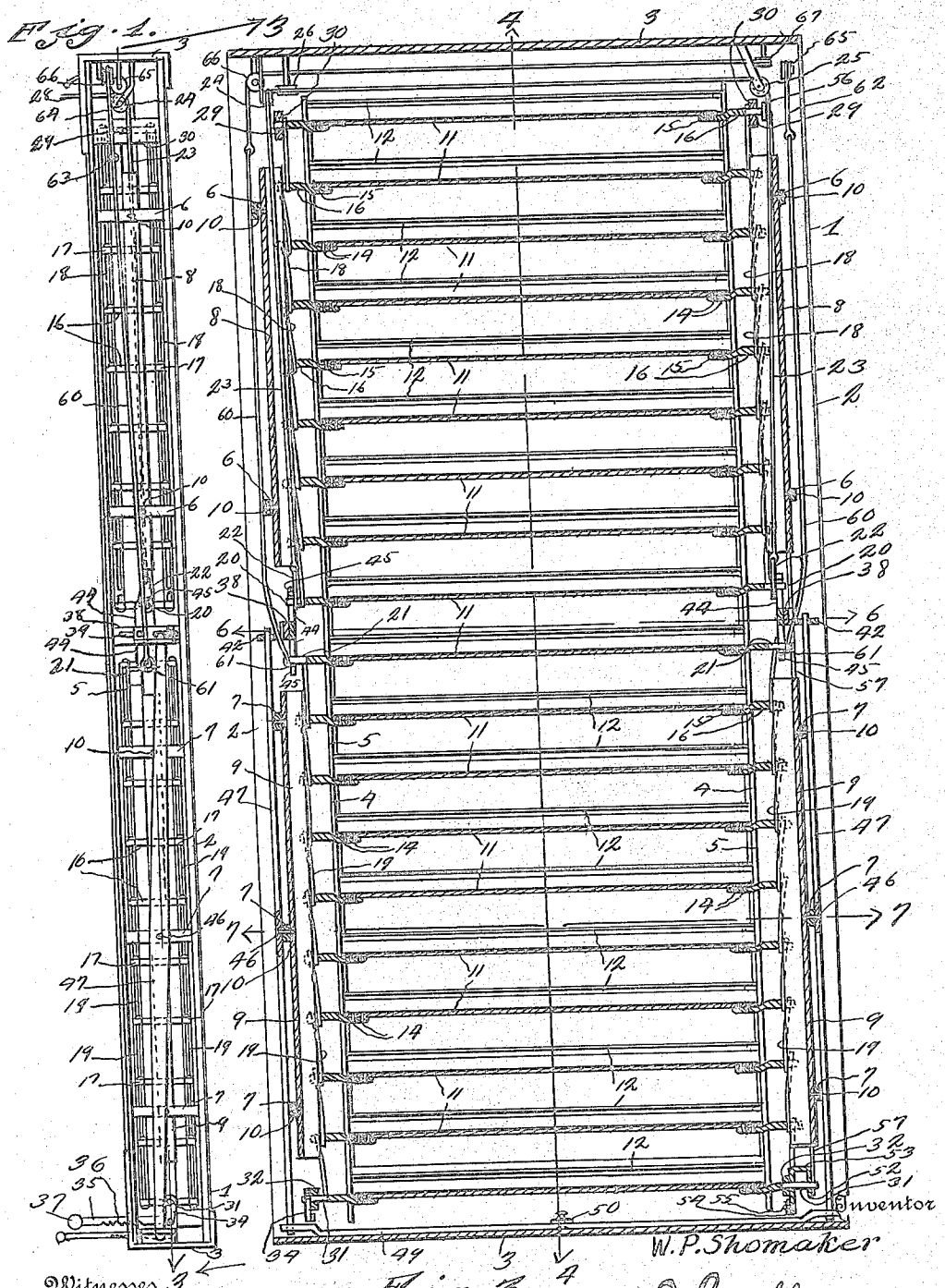
APPLICATION FILED MAY 7, 1918.

1,302,093.

Patented Apr. 29, 1919.

4 SHEETS—SHEET 1.

Fig. 1.



Witnesses

Fig. 3.

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4 SHEETS—SHEET 2.

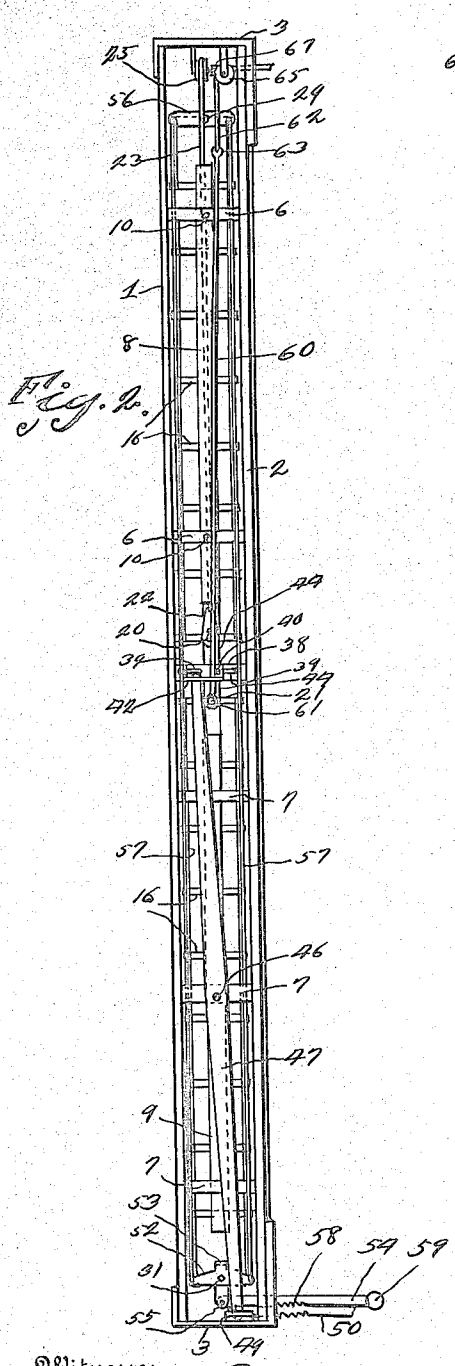


Fig. 2.

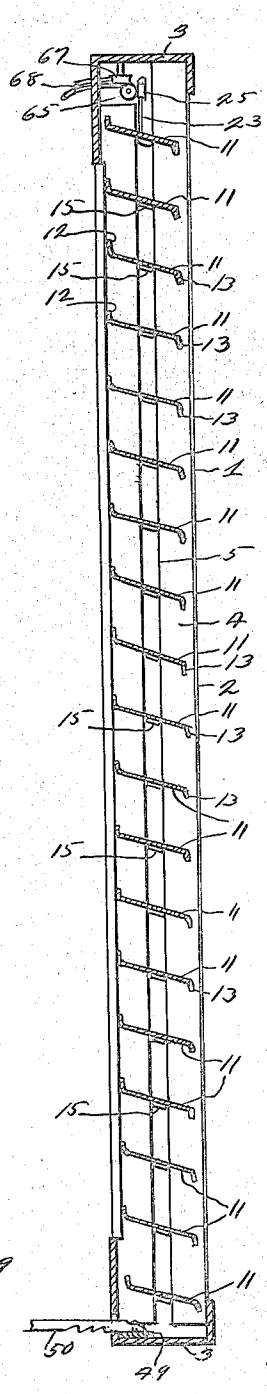


Fig. 4.

Witnesses

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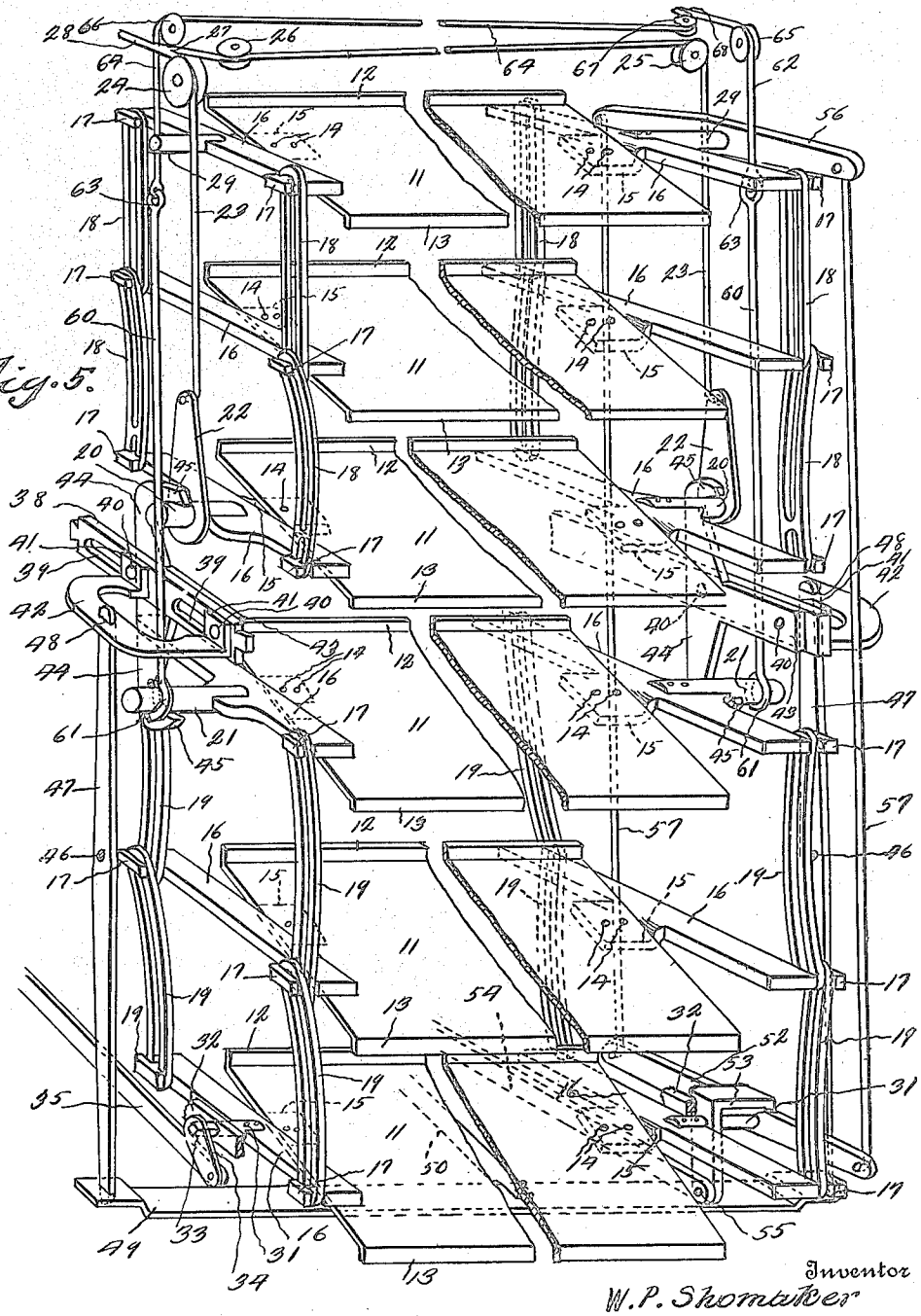
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4 SHEETS—SHEET 3.

Fig. 5.



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4 SHEETS—SHEET 4.

Fig. 6.

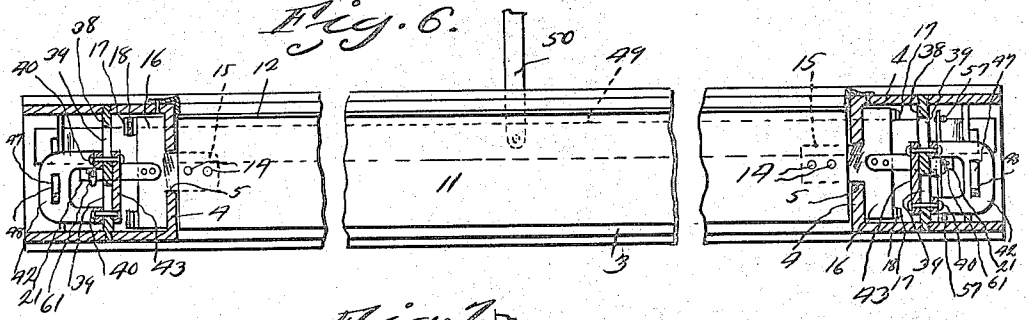


Fig. 7.

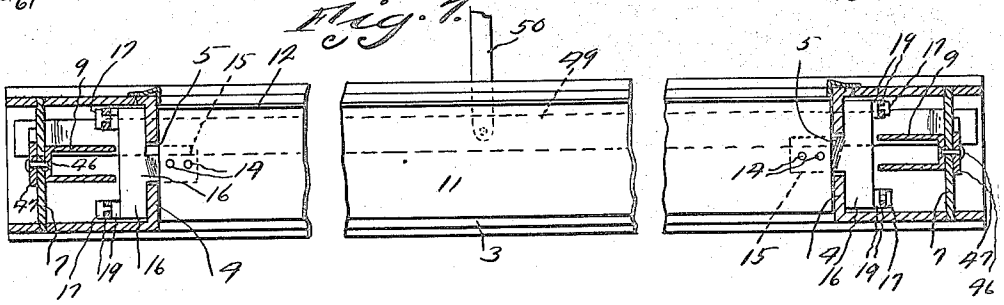
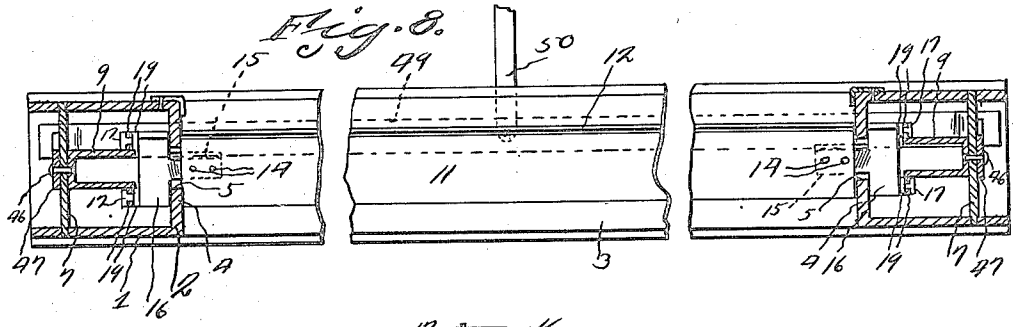


Fig. 8.



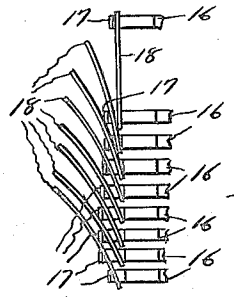


Fig. 9.

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UNITED STATES PATENT OFFICE.

WESLEY PRICE SHOMAKER, OF RICHMOND, VIRGINIA.

SAFETY-SHUTTER.

1,302,093. Specification of Letters Patent. Patented Apr. 29, 1919.

Application filed May 7, 1918. Serial No. 233,150.

To all whom it may concern:

Be it known that I, WESLEY PRICE SHOMAKER, a citizen of the United States, residing at Richmond, in the county of Henrico, State of Virginia, have invented a new and useful Safety-Shutter; and I do hereby 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.

This invention relates to an improved safety shutter.

One of the objects of the invention is to improve, simplify, and render more practical the construction of shutter set forth and claimed in the application filed August 24, 1917, Serial No. 187,990, in the name of Cecil J. Lancaster, and which application has matured into Patent No. 1,268,087, issued May 21, 1918.

A further object of the invention is to provide a strong and durable and fire-proof shutter, particularly designed for use in connection with house, apartments, factories and various other buildings.

A further object of the invention is to provide a shutter constructed entirely of sheet metal, whereby an efficient burglar proof shutter is provided.

A further object of the invention is to provide an improved safety shutter having means for rendering the collapsible slats of the shutter rattle proof.

A further object of the invention is to provide a metallic fire-proof and burglar proof shutter having upper and lower series of coupled slats, the guides of which act as abutments, against which members carried by the slats engage, to render the slats rattle proof, when oscillated to closed positions.

A further object of the invention is the provision of means for drawing the upper and lower series of slats together, and oscillatory means to simultaneously lock the adjacent slats of the upper and lower series together.

A further object of the invention is to provide practically a chain of links interconnecting the opposite ends of the slats of each series, whereby as the slats are collapsed, so that the shutter is open, without oscillating the frame of the shutter, whereby the links may collapse in piles.

A further object of the invention is to provide improved linking means for the slats of the shutter, thereby eliminating the lazy-tong links illustrated in the aforesaid application.

A further object of the invention is to provide a shutter having series of oscillatory slats overlapping each other, there being flanges extending in opposite directions on the overlapping parts of the slats, in order to render a closer closing action of the slats, at the time the guide abutments are engaged by the members carried by the ends of the slats, in order to more efficiently render the slats rattle proof.

In practical fields the details of construction may necessitate alterations falling within the scope of what is claimed.

The invention comprises further features and combination of parts as hereinafter set forth shown in the drawings and claimed.

In the drawings:—

Figure 1 is an edge view of the safety shutter showing the same constructed in accordance with the invention.

Fig. 2 is a view in elevation showing the opposite edge thereof.

Fig. 3 is a vertical sectional view on line 3—3 of Fig. 1.

Fig. 4 is a vertical sectional view on line 4—4 of Fig. 3.

Fig. 5 is an enlarged detail perspective view, showing one or more of the slats of the upper and lower series respectively, their link connections and their operating means removed from the frame of the shutter.

Fig. 6 is a transverse sectional view on line 6—6 of Fig. 3.

Fig. 7 is a transverse sectional view on line 7—7 of Fig. 3.

Fig. 8 is a view similar to Fig. 7, showing the slats as having been collapsed, whereby the members of the slats may be collapsed so that the lugs of said members that are connected by the links may engage the outer surfaces of the guides for said members.

Fig. 9 is an enlarged detail view of several slats showing the members carrying the slats as having been collapsed, so that the links will collapse in a pile, one practically upon the other.

Referring more especially to the drawings 1 designates a rectangular shutter frame, preferably constructed of sheet metal, the upper and lower ends of the longitudinal side rails 2 (which are trough or channel shaped) of which, are connected by the

upper and lower bars, 3. The inner adjacent walls 4 of the side rails are provided with vertical slots 5. Extending across the side rails of the shutter frame and fixed thereto are upper and lower bars 6 and 7, to which the upper and lower trough shaped guides 8 and 9 are secured by the bolts or rivets or the like 10. The shutter slats 11 are constructed of elongated sheet metal strips. The opposite longitudinal edges of the slats 11 terminate in oppositely extending elongated flanges 12 and 13, and when the slats are oscillated to overlap each other, the flanges 12 and 13 will engage the adjacent faces of the slats respectively, thereby insuring a tight closing effect or action of the slats. The ends of the slats are secured by rivets or the like 14 to flat lugs 15, that extend from the inner longitudinal edges of the transverse oscillatory slat carrying bars 16. The flat lugs 15 are disposed on angles relative to the bars 16, whereby the slats are held at angles to the bars 16, as shown clearly in Fig. 5. However, the end edges of the slats are spaced from the inner edges of the bars 16, thereby permitting portions of the lugs 15 to engage the slots 5 of the channel or trough shaped sides of the shutter frame. By means of this construction the slats of the upper and lower series may be raised or lowered. The outer edges of the bars 16 are provided with T-shaped lugs 17. When the shutter slats are disposed as shown in Fig. 4, or as shown in Fig. 3 or Fig. 5, the bars 16 are arranged horizontally. By means of elongated slotted links 18 and 19 engaging the T-shaped lugs 17, the end portion of the bars 16 are inter-connected or linked together, as shown clearly in the drawings, particularly Fig. 5. The T-shaped lugs are first passed through the slots of the links when the links are arranged parallel with the outer edges of the bars, then the links are disposed at right angles to the bars 16 as shown in Fig. 5. The lowermost bars 16 of the upper series of slats, and the uppermost bars 16 of the lower series of slats are provided with laterally extending pintles or lugs 20, and 21 and secured to the pintles 20 are the links 22, to which the cables, cords or ropes 23 are connected, as shown clearly in Fig. 5. These cables or ropes pass over the pulleys, one over the pulley 24, and the other over the pulleys 25 and 26. The two cords or ropes 23 after passing over the adjacent pulleys 24 and 26 are spliced as shown at 27, and merge into a single rope or cord 28. It is to be noted that by imparting a pull to the cord or rope 28, the upper series of slats may be collapsed against each other in a raised position. The uppermost bars 16 of the upper series of slats are provided with pintles 29, which are mounted in bearings of the transverse bars 30 at the upper portions of the side rails of the shutter frame, whereby the upper series of slats is suspended. The lowermost bars 16 of the lower series of slats are provided with pintles 31, which are mounted in bearings of the transverse bars 32 at the lower ends of the side rails of the shutter frame. The end portion of one of these pintles 31 is rectangular in cross section, as shown at 33. An arm 34 is secured to the rectangular portion 33, and pivoted to the arm 34 is a pull bar 35 which is provided with notches 36 and a head 37. It is to be noted that by imparting a pulling action on the bar 35, the bar 16 of the lower series of slats may be operated, which will close the slats, so as to overlap each other. In so operating the slats, the T-shaped lugs, and the links 19 will contact with the outer faces of the trough shaped guides 9, which will act as abutments, and prevent the slats from rattling. The bar 35 passes through an opening of the inner wall of the lower part of the shutter frame, and by permitting any one of the notches 36 to engage an edge of the opening the bar 35 may be held in different adjusted positions, and the slats held in different open overlapping positions. Adjacent where the lowermost bar of the upper series of slats and the uppermost bar of the upper series of slats adjoin and at opposite sides of the shutter frame transverse bars 38 are fixed. These bars 38 are provided with slots 39, acting as guides for the pins or bolts 40, which pass through the ears or lugs 41 of the lateral bracket plates 42, and through the plates 43. The plates 43 are adjacent the inner faces of the bars 38 and the ears 41 are adjacent the outer faces of the bars 38. The upper and lower edges of the plates 43 are provided with upstanding projections 44 provided with hooks 45, adapted to engage the pintles 20 and 21, when the plates 43 are reciprocated, so as to lock the lowermost slat of the upper series and the uppermost slat of the lower series together, as shown clearly in Fig. 5. Pivoted to certain of the transverse bars 7 by the pins 46 are levers 47, the upper ends of which engage loosely in the openings or slots 48 of the lateral extending U-shaped bracket plates 42. The lower ends of the levers are connected by a transverse bar 49, to which is connected a push rod 50. By imparting a pushing action on the rod 50 actuating the bar 49 and oscillating the levers 47, the plates 43 may be reciprocated, so as to disengage the hooks 45 from the pintles 20 and 21, thereby releasing the slats so that they may be free to be collapsed upwardly. However, just so soon as the hooks 45 are actuated, the lower slats will immediately collapse or drop downwardly. The lower series of slats may then be raised by imparting a pulling action on the cord or cable 28. Pivotally mounted upon one of

the pintles 31, that is opposite the arm 34 is a lever 52, the angular arm 53 of which also receives the pintle 31. A bar 54 is pivoted at 55 to the arm 53, so that the lever 52 may be oscillated. Fixed to one of the pintles 29 of the uppermost slat of the upper series is a lever 56. The ends of the levers 52 and 56 are connected by the link rods 57. By imparting a pulling action upon the bar 54, oscillating the lever 52 and in turn the lever 56, the slats of the upper series may be oscillated to overlap each other when it is desired that they be closed. The bar 54 has notches 58, so as to engage the lower edge of the opening of the inner wall of the lower part of the shutter frame through which the bar 54 extends, so as to hold the bar 54 in different adjusted positions. The bar 54 has a knob 59. When the upper series of slats are operated to overlap, their links 18 abut the outer faces of the trough shaped guides 8. Link rods 60 are connected at 61 to the pintles 21. Cables 62 and 64 are connected to the eyes 63 of the rods 60. The cable 62 passes over the pulley 65, and the cable 64 passes over the pulleys 66 and 67. The two cables 62 and 64 after passing over the pulleys 65 and 67 are spliced at 68, so that the single cord or cable beyond the splice may be given a pull, to restore the lower series of slats to their raised position. The links 18 and 19 are curved as shown, thereby permitting the links to easily collapse in piles as shown in Fig. 9.

The invention having been set forth what is claimed as new and useful is:—

1. In a safety shutter, a frame, vertical channel guides mounted in said frame, upper and lower series of coupled shutter slats in said guides, means for tilting the outer faces of the opposing walls of said slats, said guides constituting abutment means against which the coupling means abut, when the slats are collapsed, thereby rendering the slats rattle-proof.

2. In a safety shutter, upper and lower series of slats, means for coupling said slats, means for tilting the slats whereby they will overlap each other, vertical channel guides mounted in said frame and in which the slats are guided, said channel guides having opposing abutment walls with which the coupling means abut, whereby the slats are rendered rattle-proof.

3. In a safety shutter, a frame, a series of slats therein, the ends of the slats having T-shaped lugs, slotted links loosely engaging the lugs thereby coupling the slats, channel guides mounted in vertical fixed relations in the sides of the frame and in which said slats are guided, said channel guides having opposing abutment walls, and means for tilting the slats, whereby the coupling links may abut said walls, thereby rendering the slats rattle-proof.

4. In a safety shutter, a frame, a series of shutter slats, means for tilting the slats, coupling means comprising slotted links for coupling the slats, and trough shaped perpendicular guides mounted in said frame, and in said guides certain of the slats are guided, said guides having opposing abutment walls, with which the coupling links abut, thereby rendering the slats rattle-proof.

5. In a safety shutter, a frame, a series of shutter slats, oscillatory members carrying the opposite ends of said slats, holding the slats at acute angles to the members, guides for said members mounted vertically in the sides of said frame, slotted coupling links coupling said members, means for tilting the members, said guides having opposing abutment walls against which said coupling links abut, thereby rendering the slats rattle-proof, the longitudinal edge portions of the slats having oppositely extending flanges adapted to abut the slats when they overlap, thereby additionally rendering the slats rattle-proof.

6. In a safety shutter, a frame, a series of shutter slats mounted in guides of said frame, means for coupling the slats, means for extending the slats upwardly, means for holding the slats extended upwardly and adapted to be operated to release the slats whereby they may collapse super-imposed in a piled condition at the bottom of the frame, said coupling means comprising elongated slotted links, and T-shaped lugs connected to the slats to be engaged by the ends of said links, whereby the links will collapse in a piled condition, super-imposed at the bottom of the frame.

7. Coupling means for a series of super-imposed members, said means comprising T-shaped lugs carried by the members, and elongated links partially curved or bowed and provided with elongated slots from end to end of the links receiving said T-shaped lugs, whereby the links may pile in a complemental condition.

8. In a safety shutter, a frame, upper and lower series of coupled shutter slats in guides of said frame, means for drawing upper and lower series toward each other, the meeting slats of the upper and lower series having pintles, a slotted guide plate transversely of the frame, a plate having means guided in the slots of said slotted plate and adapted to be reciprocated, said last named plate having hooks to engage the pintles to hold the series of slats drawn together, and means for reciprocating said last named plates.

9. In a safety shutter, a frame, upper and lower series of coupled shutter slats in guides of said frame and adapted to be drawn toward each other, the meeting slats of the upper and lower series having pintles

a bar transversely of the frame provided with slots, a plate having means engaging said slots and provided with upstanding and depending hooks to engage the pintles, a U-shaped plate connected to the first plate, oscillatory levers having their upper ends loosely engaging openings of the U-shaped plates, and a bar connecting the lower ends of said levers, whereby the plates having the hooks may be reciprocated to release the pintles.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WESLEY PRICE SHOMAKER.

Witnesses:

H. G. DREW,

R. M. ANDERSON.