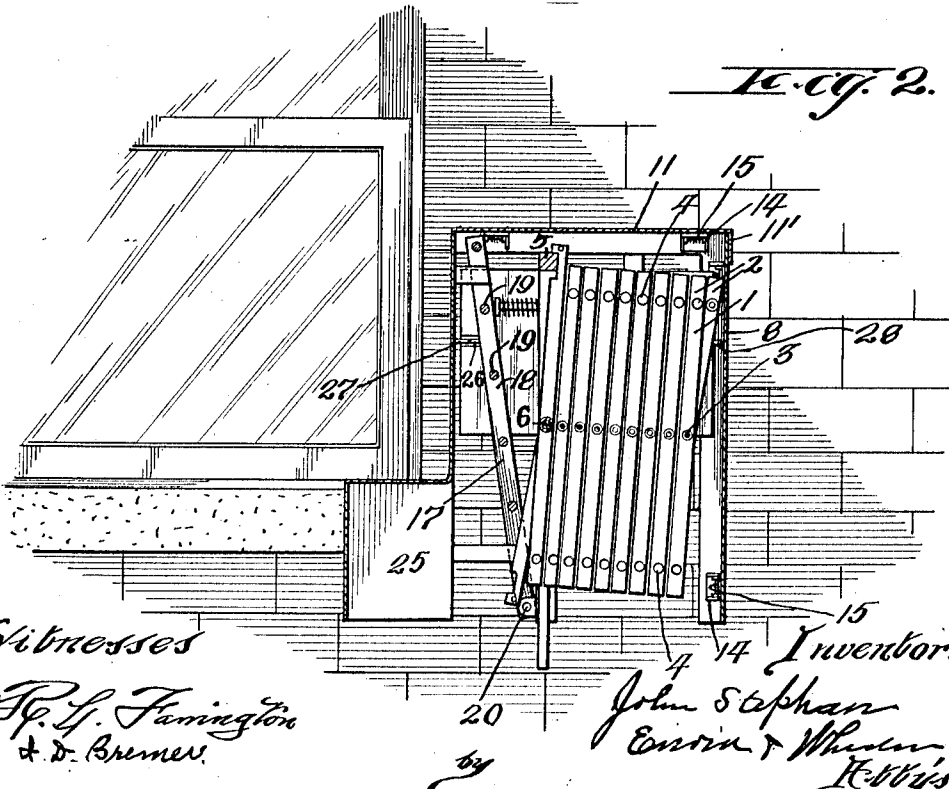
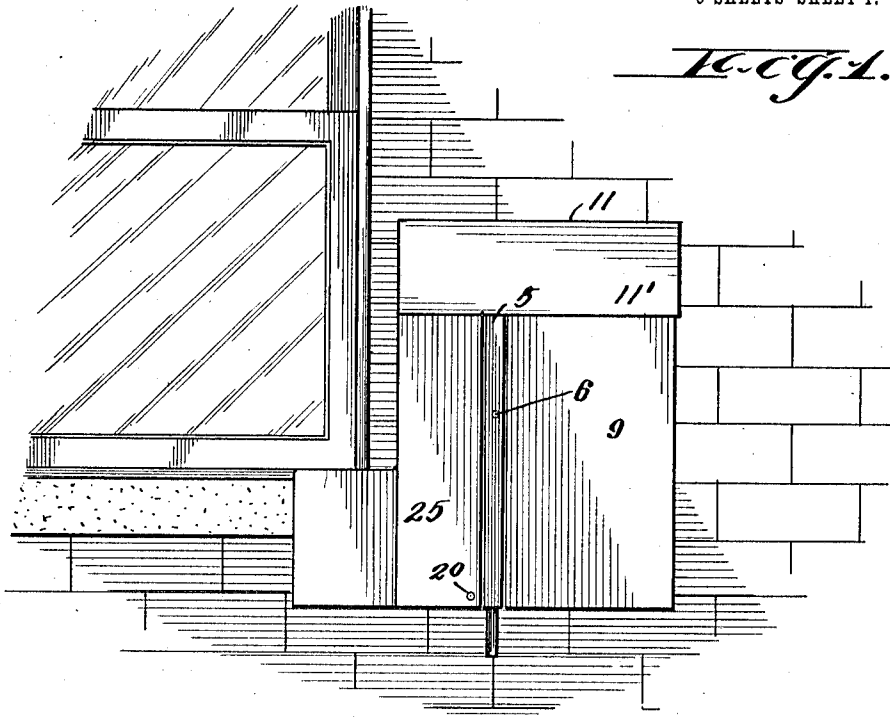


J. STEPHAN.  
FIRE ESCAPE.  
APPLICATION FILED AUG. 23, 1911.

1,026,285.

Patented May 14, 1912.

5 SHEETS-SHEET 1.



Witnesses

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A. D. Bremer

by

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John Stephan  
Emory & Whelan  
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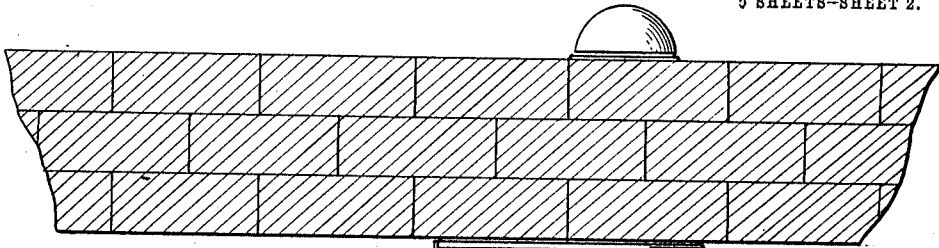
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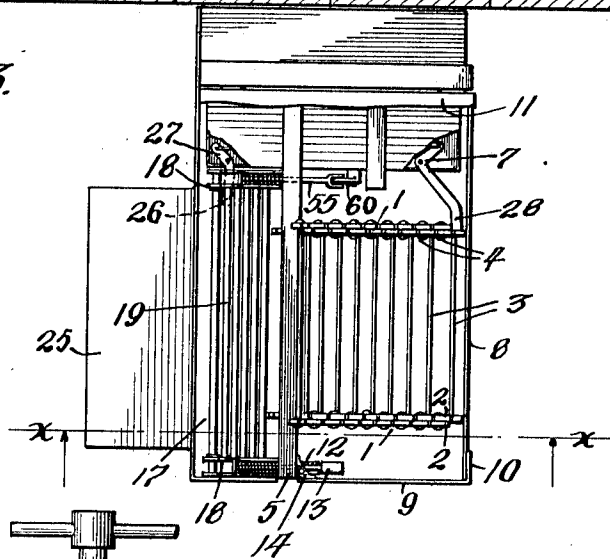
1,026,285.

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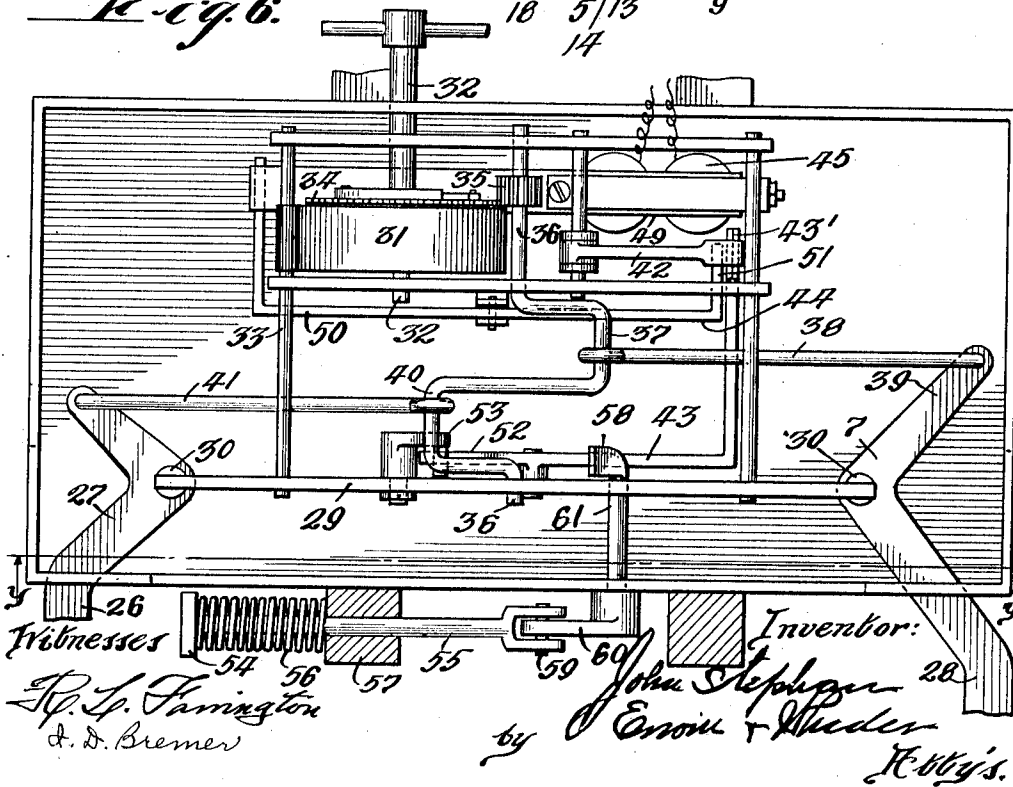
5 SHEETS-SHEET 2.



*Fig. 3.*



*Fig. 6.*



Witnesses

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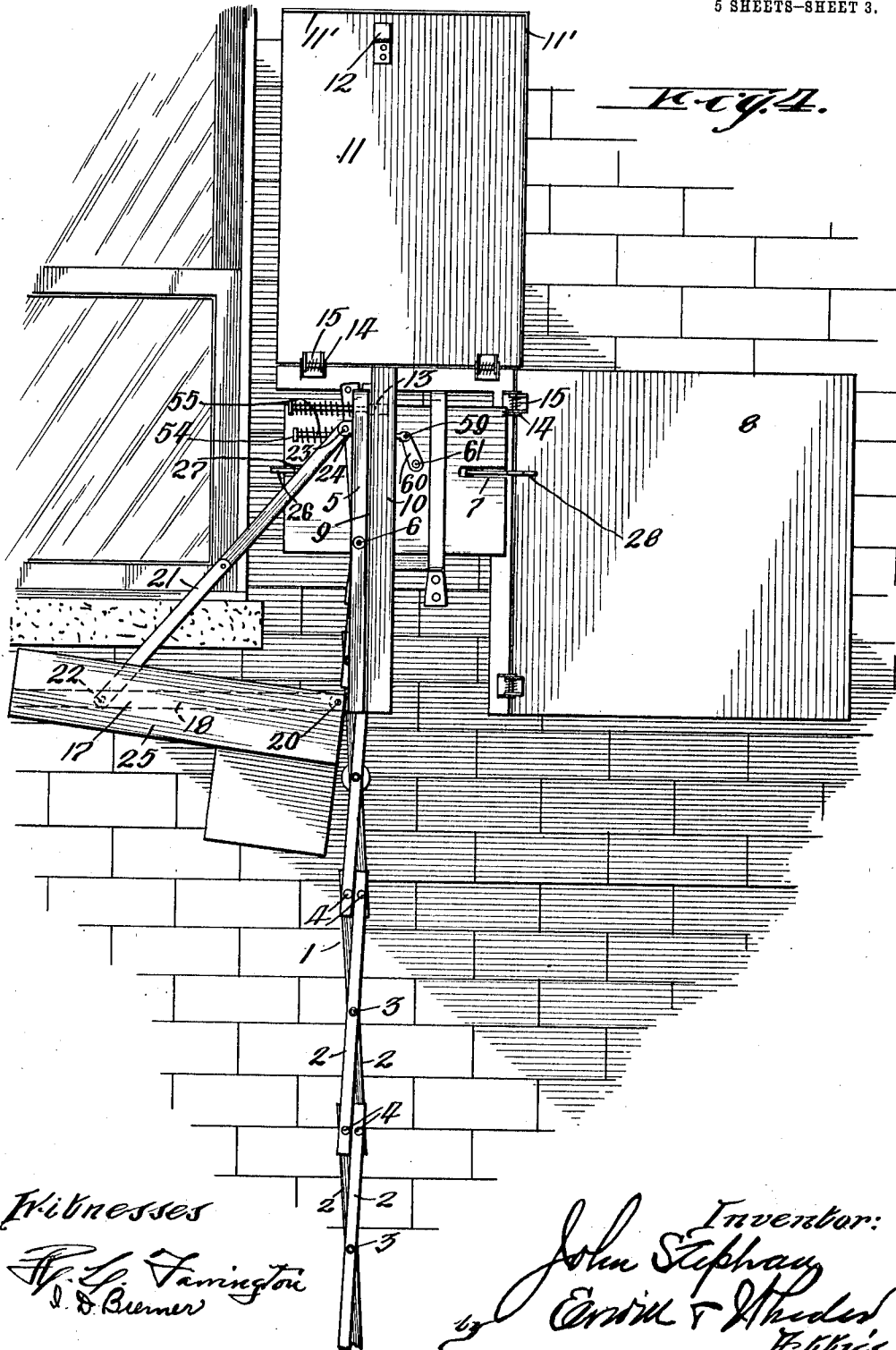
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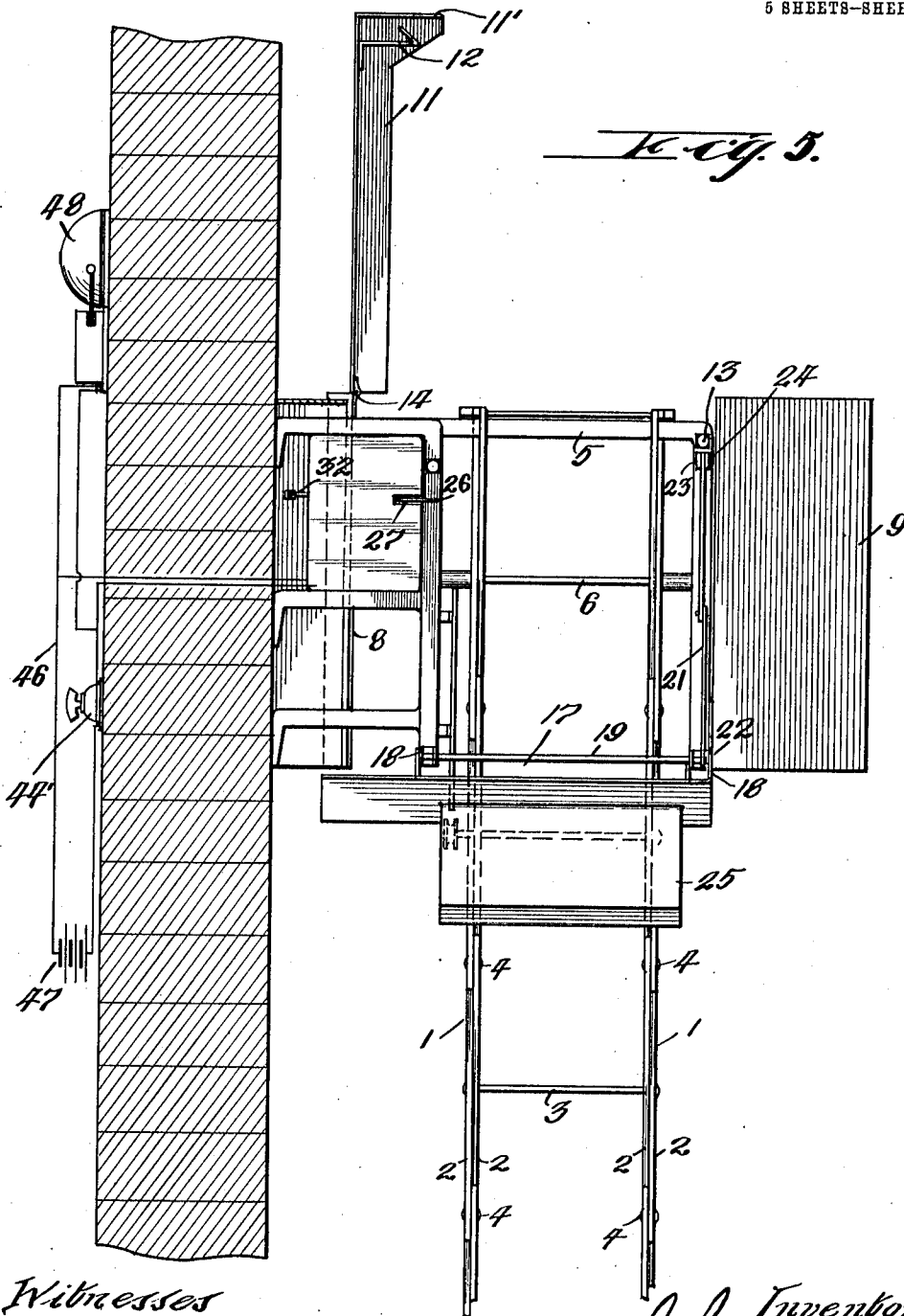


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5 SHEETS-SHEET 4.



Witnesses

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FIRE ESCAPE.

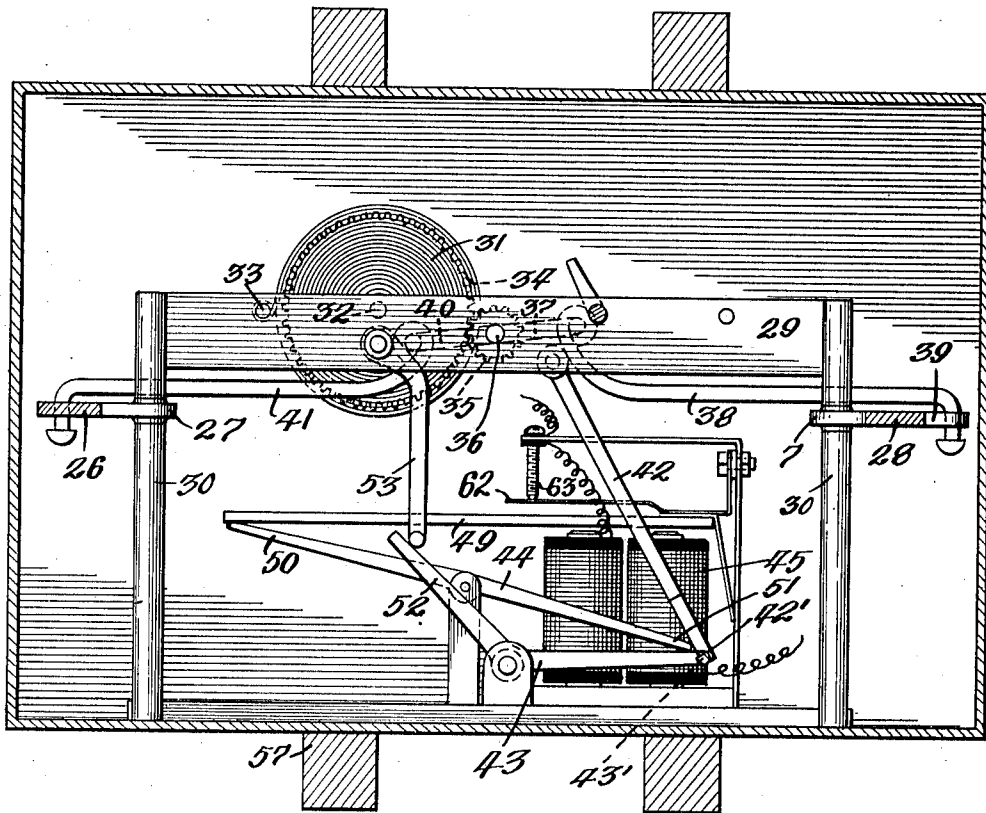
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5 SHEETS-SHEET 5.

*Fig. 7.*



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# UNITED STATES PATENT OFFICE.

JOHN STEPHAN, OF MILWAUKEE, WISCONSIN.

## FIRE-ESCAPE.

1,026,285.

Specification of Letters Patent.

Patented May 14, 1912.

Application filed August 23, 1911. Serial No. 645,602.

*To all whom it may concern:*

Be it known that I, JOHN STEPHAN, a citizen of Greece, residing at Milwaukee, county of Milwaukee, and State of Wisconsin, have invented new and useful Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to improvements in fire escapes, and it pertains to that class which comprises a plurality of separate foldable sections located in a vertical series, one above another, each section above the first being connected with a platform, which platform is connected with the exterior walls of a building near the door or window on the same plane with the floors of the story with which it is connected, said sections being adapted, when not in use, to be folded together and surrounded by a removable inclosure.

My invention pertains more especially, among other things, to the construction of the foldable ladder and the means employed for automatically removing the inclosures of the several sections and extending such sections, whereby when a fire occurs, a person may pass from the upper section of the series to the next and each succeeding section below, until he reaches the ground, the initial action for releasing and extending said sections of the fire escape being produced by an electric switch, which is connected with the foldable members of the escape.

My invention is further explained by reference to the accompanying drawings, in which—

Figure 1 represents a front view of the inclosure in which the folded fire escape is located, the same being connected with the exterior wall of a building. Fig. 2 represents a similar view to that shown in Fig. 1, in which the front wall of the inclosure is removed, showing the ladder in its folded position. Fig. 3 is a plan view with the cover of the inclosure removed. Fig. 4 is a front view, showing the inclosure thrown open and the ladder extended preparatory for use. Fig. 5 is a side view of the device shown in Fig. 4. Fig. 6 is an enlarged plan view of the mechanism for releasing the ladder and doors of the inclosure; and Fig. 7 is a side view of the device shown in Fig. 6.

Like parts are identified by the same reference numerals throughout the several views.

The ladder proper comprises two series of so called lazy-tongs 1, 1, each series comprising a plurality of sets of bars 2, 2, which are pivotally connected together at their centers by the rods 3, which rods 3 form the rungs of the ladder and serve to connect the two sets of lazy-tongs 1 with each other, while the bars 2, 2, of each set, are connected together at their ends by the pivotal bolts 4, 4, and the ladder thus formed, is centrally suspended at its upper end from the stationary frame 5, by the stationary rod 6, which forms the upper rung of the ladder. When the ladder is thus suspended, as shown in Fig. 5, a person is free to ascend or descend the same in the ordinary manner. When, however, the ladder is not in use, it is folded from the position shown in Figs. 4 and 5, to that shown in Figs. 2 and 3, when it is retained in such position by the arm 28 of the bell crank lever 7, as shown in Fig. 3. When the ladder has been thus folded, as shown in Figs. 2 and 3, the side member 8 of the inclosure is first folded in place against the ladder. When this is done, the end member 9 is brought into place when the angular flange 10 of said end member engages the exterior surface of the side member 8, whereby the side member 8 is prevented from being thrown open. When this is done, the top member 11 is folded down, when the flange 11' engages the end member 9 and the top member 11 is retained in place by the spring hook 12, which is adapted to engage the catch 13, whereby all of said folding members are retained in place.

It will be understood that each of the foldable members 8, 9, and 11, are secured to the supporting frame by the hinges 14, and are also each provided with springs 15, which are adapted by their resiliency, to throw said doors outwardly and away from said ladder the instant the spring hook 12 is disengaged from the catch 13.

17 represents a platform. This platform comprises the side bars 18 and a plurality of transversely arranged rods 19. The side bars 18 are pivotally supported at their lower ends from the main frame by the bolts 20, and the same is supported at its outer side by the folding brace member 21, which brace member 21 is pivotally connected at its lower end with said platform by the bolt 22, and at its upper end to the main frame by the pivotal bolt 23 and lug 24. 25 is a

folding door, which is connected with said platform and is adapted, as said platform is raised, to close the rear side of the ladder and said platform and door are retained in their folded position by the arm 26 of the bell crank lever 27, while the folded ladder is retained in its folded position by the arm 28 of the bell crank lever 7. Thus it will be understood that the platform and ladder of each section are normally retained in their folded position by said bell crank levers; that said bell crank levers are retained in place by the spring actuated mechanism; and that said mechanism is retained in place by electrically controlled means, the initial action of which is produced by a switch.

When desirous to descend from any one of the upper stories of a building, the switch is closed, when the ladders of the several sections will be automatically and simultaneously released from their inclosures, and will be extended forming a continuous series of ladders, upon which a person may descend from the upper to the lower story of a building. The bell crank levers 7 and 27 are supported from a rectangular frame 29 on the pivotal bolts 30, 30, and the arms 26 and 28 of said levers are normally retained in contact with the folded members of the ladder through the action of said spring actuated mechanism.

31 represents a coiled spring, the inner end of which is permanently connected with the supporting winding shaft 32, while its outer end is rigidly affixed to the stationary rod 33 of its supporting frame, whereby as said shaft 32 is revolved in one direction, said spring 31 is coiled around said shaft 32 and put under tension. The winding shaft 32 is connected with the toothed gear 34 through a pawl and ratchet mechanism of ordinary construction, whereby as the shaft 32 is revolved in the opposite direction by the recoil of said spring, said gear will be revolved in the opposite direction.

Motion is communicated from the gear 34 to the bell crank levers 7, through the pinion 35, shaft 36, eccentric crank 37, rod 38, and arm 39, and from said pinion to the bell crank lever 27 through said pinion 35, shaft 36, eccentrics 37 and 40, and rod 41. It will be understood that the spring 31 and the operative mechanism connected therewith is normally retained at rest by contact of the lower end of the arm 42, (see Fig. 7), with the outer end of the arm 43, said arm 42 being provided at its lower end with an angular recess 42' for the reception of the angular bend 43' formed in connection with said arm. The arm 42 is disengaged from the outer end of the arm 43 through the lever 44, and motion is communicated to said lever 44 from an electromagnet 45.

It will be understood that by moving the electric switch 44, which is preferably lo-

cated near the door or window leading to the fire escape, the electric circuit 46 is closed between the battery 47 and the signal bell 48, and simultaneously between said battery and the electromagnet 45, whereby the signal bell 48 is sounded and the armature 49 is drawn down in contact with said electromagnet, whereby the arm 50 of said lever is forced down, when its opposite arm 51 is raised and brought into contact with the lower end of said arm 42, whereby the lower end of said arm 42 is disengaged from the outer end of said arm 43, when said arm 43 is thereby released, when the arm 52 is free to move downwardly far enough to permit the arm 53 to be brought out of contact with the eccentric 40, whereby the shaft 36 is permitted to perform a half revolution in its supporting bearings, the bell crank lever is turned on its supporting pivot 30 and its arm 26 is disengaged from the platform, the arm 39 is drawn inwardly by the eccentric 37, and the arm 28 is thrown out of contact with the ladder, whereby said ladder is free to drop of its own gravity from its folded position shown in Figs. 2 and 3 to the vertical position shown in Figs. 4 and 5.

When the doors of the inclosure are in their folded position, the rear door 25 is brought in contact with the head 54 of the rod 55, whereby said rod is forced inwardly and the spring 56 is compressed between the head 54 and the supporting standard 57. When, however, the folding doors are released, as previously described, and the ladder is permitted to drop from the folded to the vertical position, the mechanism driven by the spiral spring 31 is released, and unless stopped, will continue to operate until the spring has run down. When, however, the rear door is thrown out of contact with the member 54, said rod 55 is thrown toward the left, reference being had to Fig. 6, by the recoil of the spring 56, whereby the stop 58 is turned inwardly and brought into position to contact with the eccentric 40, as the same is turned a half revolution with its supporting shaft. When the eccentric 40 is brought into contact with said stop 58, the movement of the spring and spring driven mechanism is arrested. Motion is communicated from the spiral spring 56 to said stop 58 through the rod 55, pivotal bolt 59, arm 60, and shaft 61, with which shaft the stop 58 is rigidly connected. Thus it will be understood that the spring driven mechanism is stopped, when the inclosing doors are shut, by contact of the arm 52 with the lower end of the arm 53, that as soon as said doors are thrown open, and the ladder has been dropped to the vertical position, said spring driven mechanism is arrested, as stated, by contact of the stop 58 with the eccentric 40.

62 is a spring actuated vibratory arm, 130

which is adapted to vibrate rapidly in the ordinary manner, between the terminal 63 and the electromagnet 45, so long as the electromagnets 45 are energized, but such  
5 vibratory movement of said arm will cease as soon as the electric circuit is opened.

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

10 In a fire escape of the described class, the combination of a frame adapted to be supported from the exterior wall of a building, a foldable ladder supported by said frame, mechanical means for normally retaining  
15 said ladder in a folded position on said frame, a coiled power spring, a winding shaft for supporting said spring, means for

communicating motion from said winding shaft to said ladder retaining means, means for normally holding said winding shaft 20 against the recoil of said power spring, electrically controlled means for releasing said winding shaft, and manually actuated means for producing the initial action for releasing said electrically controlled means, 25 all substantially as and for the purpose specified.

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

JOHN STEPHAN.

Witnesses:

JAS. B. ERWIN,  
I. D. BREMER.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."

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