Dec. 12, 1961 E. A. MARRYATT 3,012,626

EMERGENCY ESCAPE LADDERS

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Fig. 1.

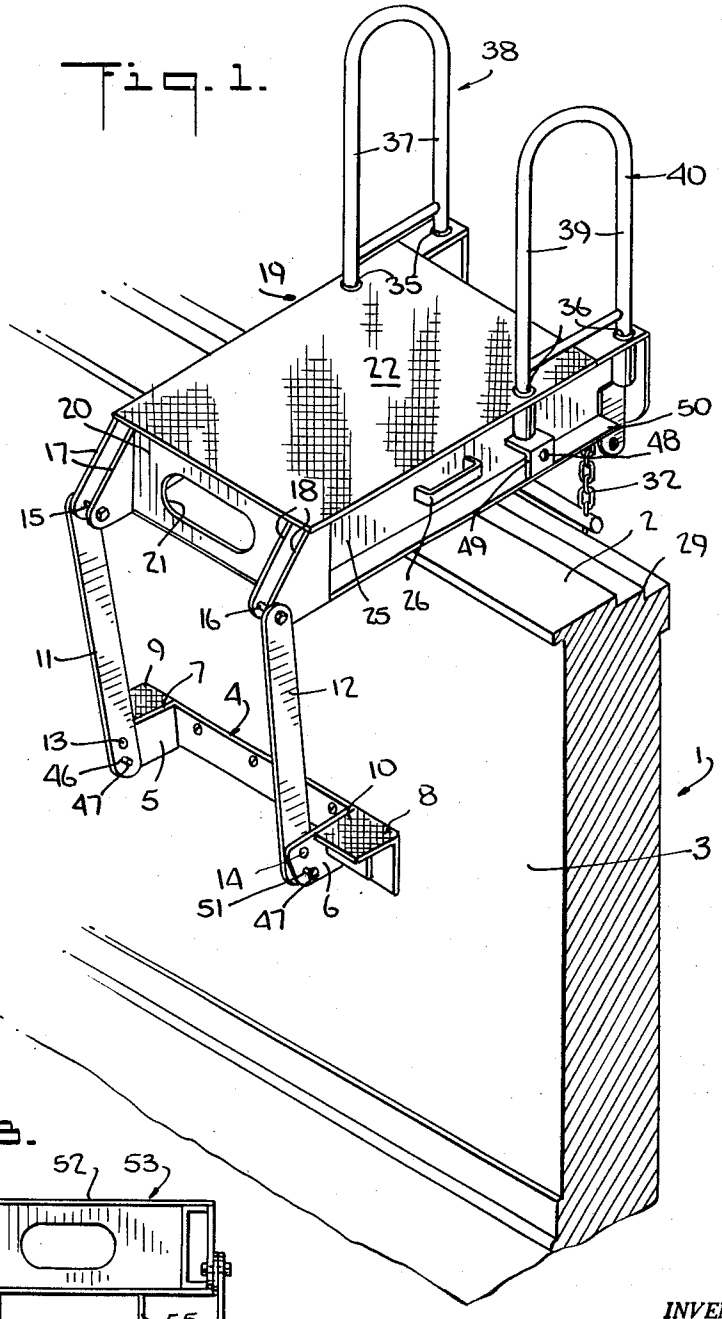
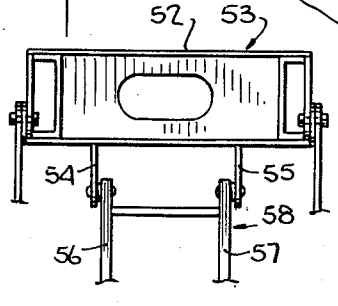


Fig. 8.



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EMERGENCY ESCAPE LADDERS

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Fig. 2.

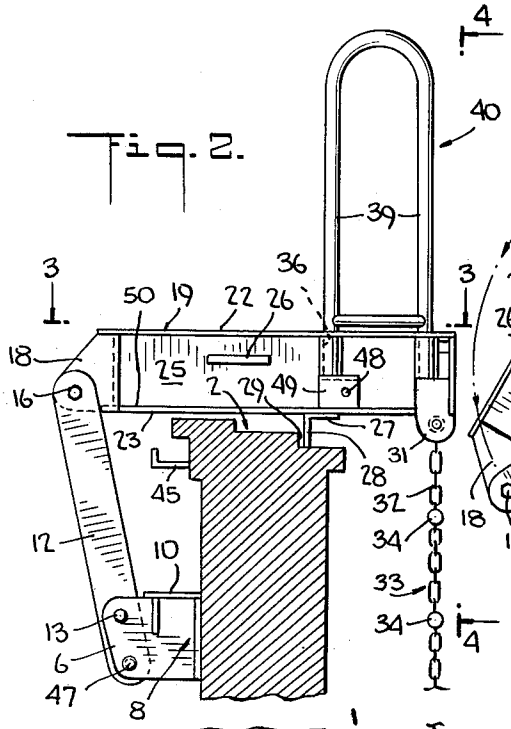
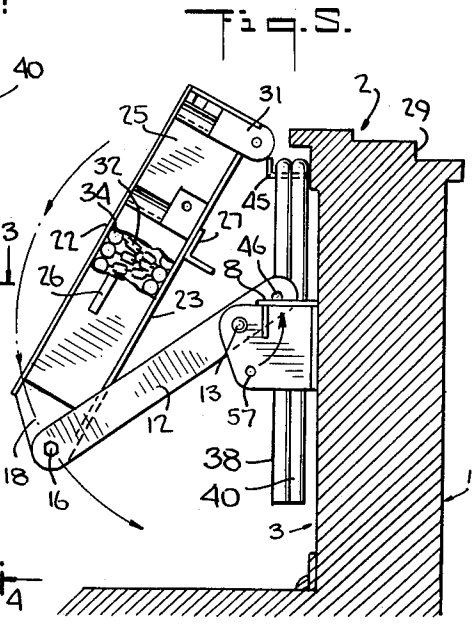


Fig. 5.



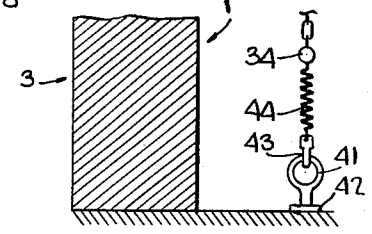


Fig. 3.

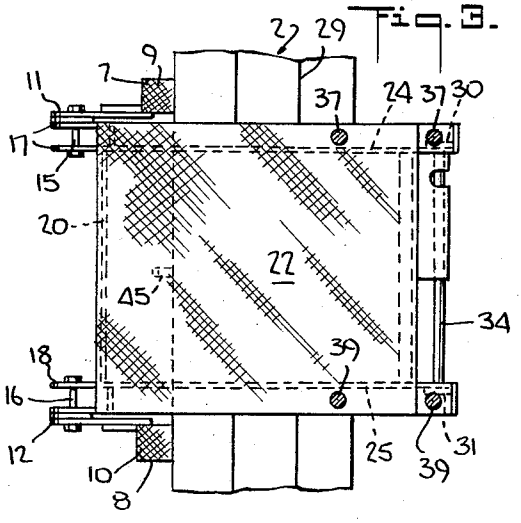
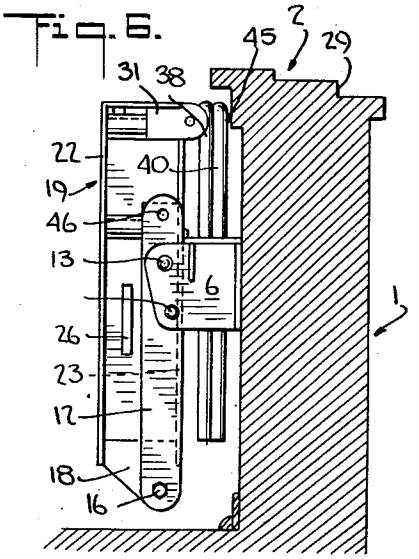


Fig. 6.



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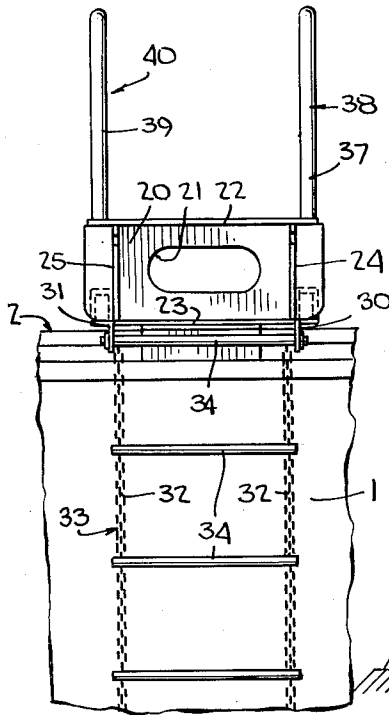
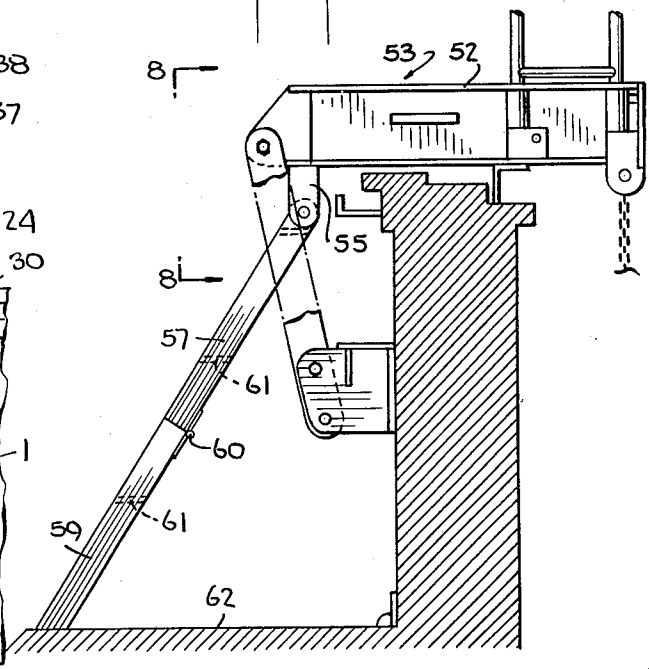


Fig. 4.

Fig. 7.



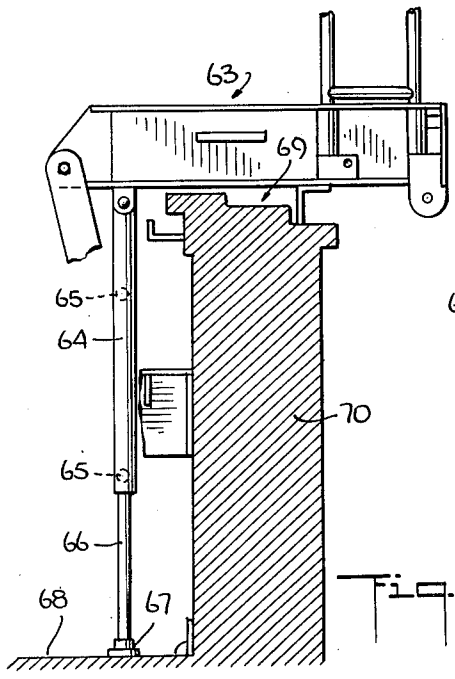


Fig. 10.

Fig. 11.

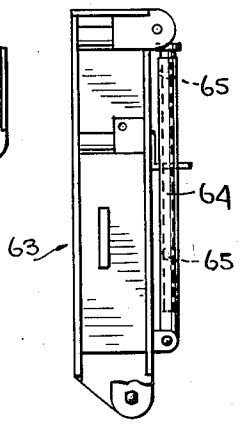
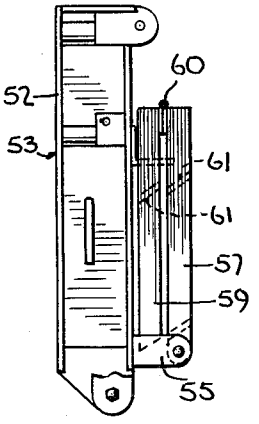


Fig. 9.



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Fig. 12.

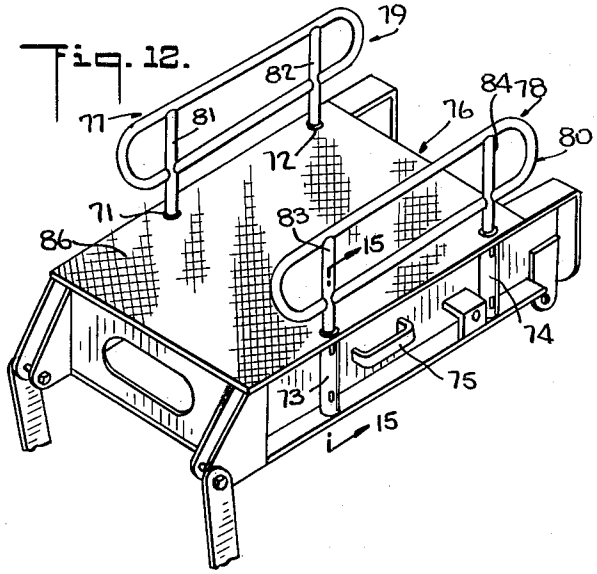


Fig. 15.

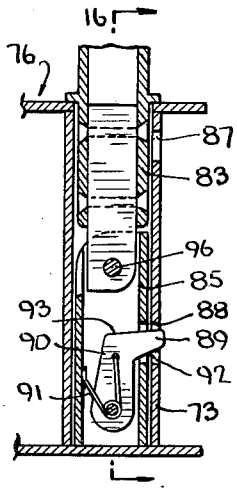


Fig. 13.

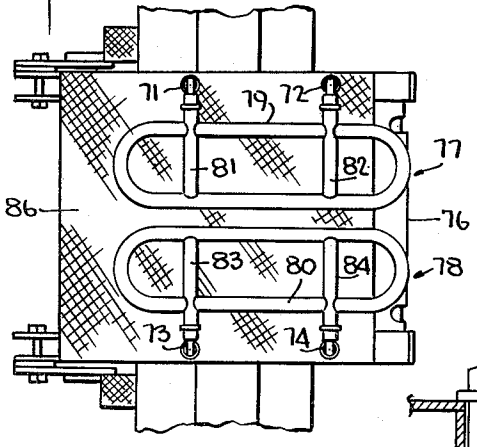


Fig. 17.

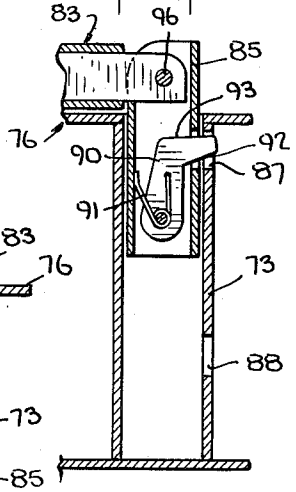
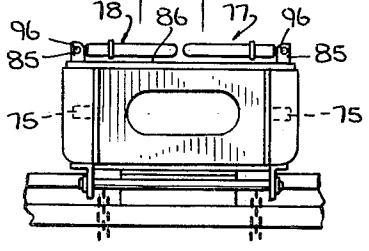


Fig. 14.



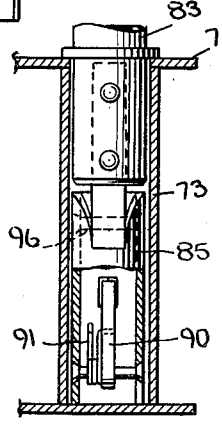


Fig. 16.

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United States Patent Office 3,012,626 Patented Dec. 12, 1961

3,012,626

EMERGENCY ESCAPE LADDERS

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Filed Aug. 10, 1959, Ser. No. 832,541
5 Claims. (Cl. 182—70)

This invention relates to ladders in general and more especially to emergency escape ladders such as fire escapes and the like.

Among the objects of the present invention it is aimed to provide an improved emergency escape ladder for use primarily by way of windows, and the like, contemplating the use of a housing pivotally connected to the inside of a building such as an office building, dwelling, institution, or the like and a flexible ladder permanently connected at one end to the housing to enable draping the housing across the window sill or the like and suspending the ladder from the portion of the housing disposed on the outside of the building in case of an emergency, which housing is constructed not only to facilitate ready and safe access to the ladder when the ladder is so suspended on the outside of a building, but also to eliminate danger of injury from the ladder when draped across the window sill as an instance.

It is still another object of the present invention to provide an improved emergency escape ladder for use by way of windows or the like contemplating a housing pivotally connected to the inside of a building, such as an office building, dwelling, institution, or the like, and a flexible ladder permanently connected at one end of the housing to enable draping the housing across a window sill or the like and suspending the ladder from the portion of the housing disposed on the outside of the building in case of an emergency, which housing is provided with a platform and handrails to facilitate ready and safe access to the ladder when so suspended on the outside of the building, which housing stores and conceals the ladder from view when not in use inside of the building and at the same time clears the window sill and outside of the building when not in use.

It is still another object of the present invention to provide an improved emergency escape ladder for use by way of windows or the like contemplating a housing pivotally connected to the inside of the building and a flexible ladder permanently connected at one end of the housing to enable draping the housing across the window sill and suspending the ladder from the portion of the housing disposed on the outside of the building in case of an emergency, which housing is provided with a platform and safety hand rails which hand rails can be folded up and disposed adjacent to the platform of the housing and in turn anchored erect extending from the platform of the housing into position to be engaged by the escapee.

These and other features, capabilities, and advantages of the invention will appear from the subjoined detailed description of specific embodiments thereof illustrated in the accompanying drawings in which:

FIG. 1 is a perspective of one embodiment showing the ladder and housing in position in case of an emergency.

FIG. 2 is a side elevation of the embodiment shown in FIG. 1.

FIG. 3 is a section on the line 3—3 of FIG. 2.

FIG. 4 is a front elevation on the line 4—4 of FIG. 2.

FIG. 5 is a side elevation of the embodiment shown in FIG. 1 when being returned to collapsed position.

FIG. 6 is a side elevation of the embodiment shown in FIG. 1 completely collapsed.

FIG. 7 is a side elevation similar to FIG. 2 of an embodiment equipped with a foldable ladder.

FIG. 8 is a rear elevation on the line 8—8 of FIG. 7.

FIG. 9 is a side elevation of the embodiment shown in FIG. 7 in collapsed position.

FIG. 10 is a side elevation similar to FIG. 7 of a third embodiment equipped with a telescopic ladder.

FIG. 11 is a side elevation of the embodiment shown in FIG. 10 in collapsed position.

FIG. 12 is a perspective, FIG. 13 a plan view, and FIG. 14 a rear elevation, all partly broken away of still another embodiment.

FIG. 15 is an enlarged section partly broken away along the line 15—15 of FIG. 12.

FIG. 16 is an enlarged section partly broken away along the line 16—16 of FIG. 15.

FIG. 17 is an enlarged section of the portion shown in FIG. 15 in a folded or stored position.

In the embodiment shown in FIGS. 1 to 6 inclusive there is illustrated a building wall 1 having a window sill 2. On the inner face 3 of the wall 1 just below the sill 2 there is secured a longitudinally extending bracket 4 having two outwardly and vertically extending tongues 5 and 6 adjacent to the same and outwardly of the tongues 5 and 6 there are provided two outwardly and horizontally extending steps 7 and 8 respectively which have non-skid surfaces 9 and 10 respectively. To the tongues 5 and 6 there are operatively connected the arms 11 and 12 respectively by means of the pins 13 and 14 respectively. The outer ends of the arms 11 and 12 are pivotally connected by the pins 15 and 16 respectively to the extensions 17 and 18 respectively. The extensions 17 and 18 are formed at the inner or lower end of the housing 19 which in the present instance is provided with a bottom or end piece 20 having an opening 21 therein, a top wall 22 and a bottom wall 23 and two narrow side walls 24 and 25. The narrow side walls are provided with handles 26 extending outwardly therefrom. The outer face of the wide top wall 22 is also provided with a non-skid surface.

The bottom wall 23 is provided with an angle iron 27 having the web 28 extending outwardly from the wall 23 to form an abutment for cooperation with the shoulder 29 provided in the conventional window sill 2. The outer or upper end of the housing 19 is provided with the ears 30 and 31 extending from the narrow side walls 24 and 25 to receive the cross rod 34 in turn to receive the upper ends of the chain stiles 32 of the flexible ladder 33 which is preferably provided with rigid rungs 34.

The wide top wall 22 is preferably provided with two pairs of sockets 35 and 36 along their sides, the pair 35 to receive the arms 37 of the U-shaped handle bracket 38 and the pair 36 to receive the arms 39 of the U-shaped handle bracket 40.

In some instances as shown in FIG. 2, a pair of anchoring rings 41 may be secured to the brackets 42 anchored in the ground adjacent to the building wall 1 to receive snap hooks 43 connected to the tension springs 44 which are connected to the lower ends of the chain stiles 33. Adjacent the window sill 2 on the inner face of the building wall 1 there is preferably provided the hook 45 to receive the U-shaped handles 38 and 40, see FIG. 6, when the housing 19 is folded down alongside of the inner face of the building wall 1. In this position the openings 46 in the ends of the arms 11 and 12 are disposed above the steps 9 and 10 in position to receive the pins 47 to extend into the openings 48 formed in the angle irons 49 secured to the outwardly extending flanges 50 of the side walls 24 and 25 of the housing 19 as shown in FIG. 6.

In the use of the escape, that is in the case of an emergency, the pins 47 extend through the openings 51 in the tongues 5 and 6 into the openings 46 in the arms 11 and 12 as shown in FIG. 1.

In order to facilitate access to the platform 52 of the housing 53 shown in FIGS. 7, 8 and 9, a pair of downwardly extending bars 54 and 55 are provided pivotally connected to the side bars 56 and 57 of the foldable lad-

der 58. The bars 56 and 57 are pivotally connected to the side bars 59 by the hinges 60. These bars 56, 57 and 59 in turn are provided with rungs 61. The bars 56, 57 and 59 of the ladder 58 are extended in emergency use, see FIG. 7, where the lower ends of the side bars 59 engage the floor 62 of the building and in stored position, as shown in FIG. 9, the side bars 59 are folded alongside of and inside of the side bars 56 and 57 between the building wall 1 and the housing 53.

In the embodiment shown in FIGS. 10 and 11 the housing 63 has pivotally connected thereto the tubular bars 64 connected to one another by the rungs 65 which bars 64 have telescopically connected thereto the extensions 66 which have feet 67 to engage the floor 68 when the extensions 66 are projected into extended position, that shown in FIG. 10, when the housing 63 is positioned on the window sill 69. On the other hand, when the housing 63 is folded up inside of the building wall 70, the extensions 66 are withdrawn into the tubular bars 64 and the bars 64 folded up alongside of the housing 63 between the building wall 70 and the housing 63 as shown in FIG. 11.

Excellent results have been achieved when the housing 19, arms 11 and 12 and rails 38 and 40 are composed of some suitable metal such as steel, aluminum, or the like and the stiles 30 and rungs 34 of the ladder of steel.

The embodiment shown in FIGS. 12 to 17 inclusive differs from the embodiment shown in FIGS. 1 to 6 in part in that the pairs of sockets 71, 72 and 73, 74 are spaced apart a greater distance than is the case with the sockets 35 and 36 with one of the sockets 71 and 73 of each pair disposed forwardly of the handle 75 and the sockets 72 and 74 of each pair disposed just forwardly of the rear end of the housing 76. Furthermore the safety rails 77 and 78 have substantially elliptical upper sections 79 and 80 respectively preferably tubular in conformation, the elliptical section 79 being connected to the upper straight sections 81 and 82 and the elliptical section 80 being connected to the upper straight sections 83 and 84.

The upper straight tubular sections 81, 82, 83 and 84 are in turn pivotally connected to the lower tubular sections 85, see FIGS. 15 and 17 at 96. The lower tubular sections 85 of the lower portions of their associated lower tubular sections 81, 82, 83 and 84 are slidably or telescopically mounted in the sockets 71, 72, 73 and 74 respectively to enable the elliptical sections 79 and 80 to lie flat on the platform 86 of the housing 76 in collapsed or stored position when the lower tubular sections 85 are in their relatively raised position as shown in FIG. 17 and in turn to anchor the elliptical sections 79 and 80 in the erect position shown in FIG. 12 when the tubular sections 85 are disposed in their relatively descended position on the lower ends of the tubular sections 81, 82, 83 and 84 and slid or telescoped into the tubular sections 85 as shown in FIGS. 15 and 16.

To anchor the lower tubular sections 85 in their upper and lower positions there are provided the openings 87 and 88 in the tubular sections 71, 72, 73 and 74 to receive the projections or noses 89 formed at the upper ends of the levers 90 pivotally connected in the lower ends of the tubular sections 85 and provided with springs 91 to urge the projections 89 outwardly and into the openings 87 or 88 when registering with the same.

To enable the sections 79 and 80 to be quickly moved from their stored position on the platform 86, FIG. 13, into their erect position, that shown in FIG. 12, the lower edges 92 of the projections 89 are inclined to form cam faces to cooperate with the lower edges of the openings 87 and deflect the levers 90 inwardly to clear the openings 87 and allow the tubular sections 85 to be lowered. The springs 91 on the other hand will act on the levers 90 to cause the projections 89 immediately to snap into the lower openings 88 when the projections 89 register with the same. The upper edges 93 of the projections 89 will not serve as cams to cooperate with the upper edges of the openings 88 when again raising the sections 79 and 80 so that the tubular sections 81, 82, 83 and 84 clear the tubular sections 85 to enable the sections 79 and 80 to be folded over upon the platform 86. However, since the emergency will then have disappeared, the slightly additional time required manually to depress the projections 89 and clear the openings 88 before raising the sections 79 and 80 will be immaterial and not objectionable. The several parts of the embodiment disclosed in FIGS. 12 to 17 with the exception of the chain ladders may of course also be composed of steel or aluminum and the ladders composed of steel to produce satisfactory results.

When the handle sections 79 and 80 are permanently connected to the housing 76 as is the case in this embodiment, they can be used instead of the handles 75 to manipulate the housing 76 into and out of emergency position.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. The combination with the window sill of a building an inner wall, a pair of arms pivotally connected to said inner wall and extending downwardly when out of use, a housing pivotally connected at one end to the free ends of said arms and extending upwardly when out of use, a flexible ladder connected to the other end of said housing, said arms being folded against said housing and in turn against said inner wall when not in use and being extended with said housing draped across said window sill in case of an emergency with said ladder extending down from said housing along the outside of said building, said housing having a vertically extending wall forming the inwardly facing wall of said housing in out of use position and forming a horizontally extending platform extending across said window sill for escapees in case of an emergency.

2. The combination as set forth in claim 1 in which said housing consists of a container open at one end to receive said ladder when not in use.

3. The combination as set forth in claim 1 in which said housing comprises a non-skid platform to receive escapees when the housing is draped across said window sill, and removable handles secured to said platform adjacent said ladder to enable escapees to grip said handles and let themselves down onto said ladder in case of an emergency and in which said housing consists of a container open at one end to receive said ladder when not in use.

4. The combination with the window sill of a building having an inner wall, a pair of arms pivotally connected to said inner wall and extending downwardly in out of use position, a housing pivotally connected at one end to the free end of said arms and extending upwardly when not in use, a flexible ladder connected to the other end of said housing, said arms being folded against said housing and in turn against said inner wall when not in use and being extended upwardly with said housing extended across said window sill in case of an emergency with said ladder suspended from said housing along the outside of said building, said housing having a platform positioned horizontally for receiving escapees when said housing is extended across said window sill and positioned vertically when not in use, and steps adjacent said arms to facilitate escapees climbing onto said platform in case of an emergency.

5. In an emergency escape for a building, having a window sill, the combination with arms pivotally connected to the inside of the building adjacent the window sill and extending downwardly when not in use, a housing pivotally connected at one end to the free ends of said arms, a flexible ladder connected to the other end of said housing, said arms being folded against the inner wall of the building when not in use and being extended

with said housing extending across the window sill in case of an emergency with said ladder extending down from said housing along the outside of the building, a platform on said housing extending horizontally to receive escapees when said housing is extended across the window sill, and handles secured to said housing, said handles consisting of upper gripping sections, lower sections pivotally connected at their upper ends to said upper gripping sections, sockets in said housing to receive said lower sections and parts of said upper sections, and means for anchoring said lower sections in descended or emergency position and in raised or stored position where said upper sections are folded over onto said platform.

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