Jan. 16, 1962 S. GOGOL ETAL 3,016,975

FIRE ESCAPE SLIDE

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FIG. 2

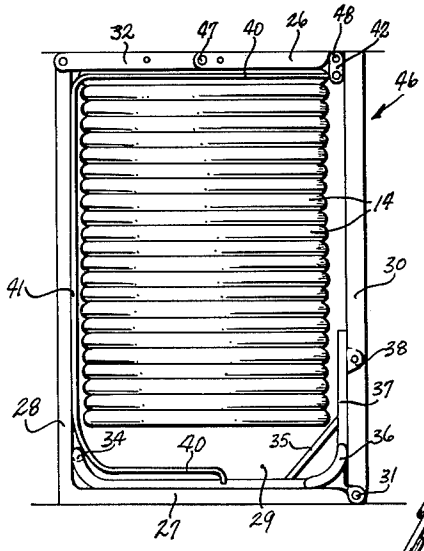


FIG. 1

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FIG. 3

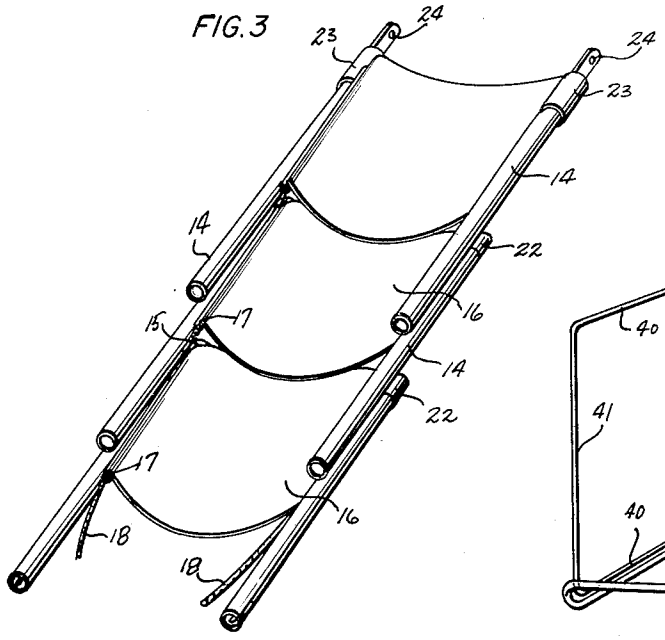


FIG. 6

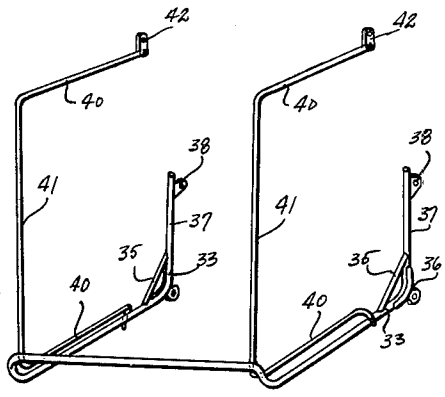


FIG. 4

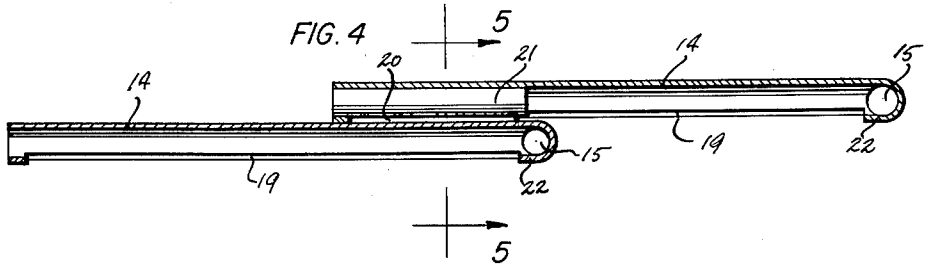
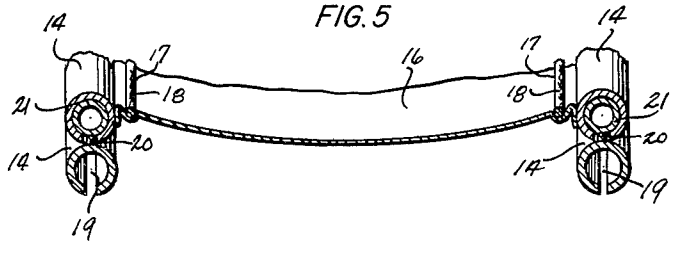


FIG. 5



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FIRE ESCAPE SLIDE

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This invention relates generally to fire escapes, and more specifically to a retractable slide type escape for use between a window and the ground.

A fire escape is considered an essential safety measure for buildings having more than one floor. Such an escape generally consists of a metal staircase constructed on the outside of the building, and having an entry point at each floor level. This escape, though practical, has several disadvantages. Upkeep costs are high, as a result of painting, inspection and periodic repairs. In operation, they are satsifactory providing there are only a limited number of people using the escape, and providing the fire or smoke caused thereby is not in the vicinity of the escape. In the event of there being excessive smoke in the vicinity, panic is likely to arise and the stairs themselves become a dangerous escape route, particularly at night or under inclement weather conditions. As a result of these inadequacies, we have invented an escape apparatus which is exceedingly rapid and efficient and which overcomes the above disadvantages.

It is therefore a primary object of this invention to provide a fire escape apparatus which may be stored inside the dwelling in a conveniently folded manner ready for instant use.

It is a further object of this invention to provide a fire escape apparatus which is constructed in the form of a slide such that the apparatus cannot become congested during use.

It is a still further object of this invention to provide a fire escape apparatus of the above class which is constructed in an efficient manner for economical production.

The invention consists of a series of slidingly engaging sections which are adapted to extend outwardly and downwardly to the ground from a window opening to form a smooth concave chute on which a person may slide. Each section slides beneath a succeeding section so as to form to rectangular pile which is stored conveniently in a specially designed box located on a floor inwardly of a window. An angular bracket is permanently secured on the outer wall beneath the window ledge to establish the angle at which the chute will extend, and a permanent landing frame may be constructed on the ground to slow up the descent of the user.

A full understanding of the construction of this invention, together with further novel features and advantages, will be had from the following detailed description of a preferred embodiment thereof, taken in conjunction with the attached drawings wherein:

FIG. 1 is a side elevation of the fire escape chute extended for operation.

FIG. 2 is a side elevation of the apparatus folded within a storage container shown with a side removed.

FIG. 3 is a fragmetary view of the slide shown extended for operation.

FIG. 4 is a cross sectional side elevation of the slide supporting members.

FIG. 5 is a cross sectional view taken along the line 5—5 of FIG. 4.

FIG. 6 is a perspective view showing the folded relation of the hand rails within the storage box.

Similar reference characters indicate corresponding parts throughout the several views in the drawing.

Referring now to the drawing in detail, the numeral 10 represents the outer wall of a building having vertically spaced floors 11 and a window opening 12.

The slide is constructed from a number of identical slide sections 13. Each section consists of two parallel spaced apart tubes 14. The upper end of each tube is secured to a cross member 15 which supports the underside of the upper end of a curved slide plate 16. The slide plate has opposing side edges securly fixed to the inwardly directed portion of the upper halves of the tubes 14. Small grooves 17 are pressed into the sides of the plate 16 adjacent the tubes 14 to provide a channel to slidingly receive nylon cords 18. The underside of each tube 14 is provided with a longitudinal slot 19 which is closed at each end. The upper side of each tube 14 is welded to a spacer 20 which extends at least ⅓ of the length thereof from the upper end. Mounted rigidly on the spacer 20 parallel with the tube is a length of tubing 21, adapted to slidably locate within another tube 14 which forms part of the adjacent slide section. The spacer locates within the slot 19 and controls the limits of travel of the tubing 21 within the tube 14. Initial assembly of the slide sections 13 is made before the end caps 22, which extend normally from the end of each cross member 15, are sealed over the upper ends of the tubes 14. From the view shown in FIG. 4, it will be seen that successive slide sections are free to retract over each other to form a rectangular pile shown in FIG. 2. The uppermost slide section 13 has lugs 23 secured to the ends of the tubes 14. The ends of the lugs are provided with holes 24 which pivotally engage at 48 with the forward portion of a container lid 26.

A container 46 which locates on the floor 11 beneath the window opening 12 consists of a rectangular box having a base 27, a rear wall 28 and two side panels 29 joined in a fixed relationship. A front panel 30 is hinged at the lower end to the base 27 by a pin 31, and is adapted to swing outwardly to the floor as seen in FIG. 1. The lid of the container has a rear hinged portion 32 which pivots about the top of the rear wall 28, and a forward portion 26 which is hinged at 47 to the front end of the rear portion 32, and completes the closure of the container. The lid is shown open in FIG. 1, and indicates the respective length of the two portions 32 and 26. Portion 32 extends upwardly to the surface of the window opening, and portion 26 is adapted to hinge at 47 to extend through the window opening and terminate at the edge of the wall 10.

Two L-shaped wire frames 33 are joined at one end in horizontal spaced apart relation by an upturned horizontal retaining bar 34. The two arms of each L frame 33 are braced by ties 35 which retain the arms normally with respect to each other. The connected frames are adapted to locate in the bottom of the container and are pivotally connected by hinge plates 36 to the ends of the pin 31 which hinges the front panel 30 to the base 27. Upwardly extending arms 37 of the frames 33 terminate with outwardly extending tabs 38 which are adapted to be selectively secured to the front panel 30 by a rod which releasably extends through the width of the front panel.

Two hand guard rails 39 have supporting legs 40 and connecting hand rail portions 41. One end of the upper supporting leg is pivotally mounted through drilled tabs 42 in conjunction with the end slide section lugs 24 to the forward end of lid portion 26.

A wedge shaped bracket 43 is securely mounted to the wall 10 beneath the window opening 12. This bracket controls the angle of slope of the extended slide.

A landing frame 44 having a curved sliding surface 45 is permanently secured in the ground at a fixed distance from the wall 10 such that when the escape slide is fully extended, the end of the slide will rest on top of the upper end of the sliding surface 45 and provide a change in sliding direction which eases the landing during escape.

The operation of the escape will be described with reference chiefly to FIGS. 1, 2 and 6. The full container which conceals the contracted and stored apparatus, is shown in FIG. 2. The front panel 30 is opened toward the floor. This action causes pivotal movement of the wire frames 33. The retaining bar 34 which engages behind the hand rail portions 41 pivots about hinge 47 causing the stack of slide sections to pivot upwardly. The sections are retained in stacked relationship by the hand rail portions 41. The rail legs 40 are now grasped in the hands and urged toward the window opening 12 causing the rear lid portion 26 to pivot and engage with the wall, and the forward lid portion 32 to pivot over the sill to bring the lugs 24 and hand rail tabs 42 adjacent the apex of the wedged shaped bracket 43. At this point the stacked slide sections will be completely inverted and located in a vertical manner on the window ledge with the retaining rail portions 41 in a vertical stance inwardly of the window openig. Further outward pivotal movement will be at the pivotal point 48 to which the lugs 23 of the top slide section 13 is secured. Hand rail portions 41 no longer restrict the slide sections from sliding relative to each other, with the result that the several sections slide out from between the hand rail legs 40 and extend downwardly to terminate on top of the landing frame 44. A rapid escape slide is thus effectively assembled for operation with the hand rail 41 in position to steady the user while climbing through the window.

The escape may be retracted with the aid of the nylon cords 18 which extend along each side of the curved slide plates 16 in grooves 17. The cords are drawn up from within the window which causes the slide sections to slide beneath each other until they are once again oriented in block form within the hand rail legs 40. The pin is removed from the tabs 38 which secure the arms 37 of the frames 33 to the front container panel 30. The frames may now pivot to the position shown in FIG. 2, leaving the panel 30 on the floor. The stacked slide sections are returned into the container carrying out the steps previously described in a reverse manner. With the slide sections now in the container, the front panel 30 is swung back into position and the retaining pin is replaced through the tabs 38 and the panel 30, in readiness for another emergency.

While we have described this device as an escape apparatus, it will be appreciated that it could serve wherever there is a need for a retractible slide chute, such as in the unloading of commercial goods from trucks or other means of transportation.

Having described the invention with considerable particularity, it should be understood that various modifications may be made to the detail thereof, without departing from the scope or spirit of the invention, as defined in the appended claims.

We claim:

1. A fire escape apparatus, comprising, in combination, a container located on a floor beneath a window opening, a lid hinged to a wall embracing side of said container and adapted to open and terminate on the outer side of said window opening, a slide constructed from a series of plates having identical tubular members supportingly engaging opposite edges of the plate, said tubular members connected together in a superimposed spaced manner and adapted to slidably retract beneath each other to form a substantially rectangular block to be received in said container, said slide pivotally secured at one end to said lid, and adapted to extend downwardly from said opening to the ground at an angle formed by a wedge shaped bracket secured beneath the outer side of said window opening, a support hand rail pivotally secured to one end of said slide and adapted to receive said rectangular block formed by the retracted slide, and a landing frame located on the ground to receive the other end of said slide.

2. A fire escape apparatus according to claim 1, wherein said container consists of a rectangular box having a front panel hinged to a base for opening to the level of said floor, an L-shaped bracket selectively secured to said front panel and adapted to extend over said base and engage beneath portions of said hand rail, and wherein said lid comprises two hinged sections, one of said lid sections being hinged to a wall engaging side of said container and adapted to hinge upwardly to embrace a wall and terminate at said window opening and the other of said lid sections being hinged to an end of said first mentioned lid section and adapted to extend through said window opening and terminate at the outer side of said wall.

3. A fire escape apparatus according to claim 1, wherein the tubular members are spaced in a parallel relationship by a support member secured across the upper ends of the members, and wherein the slide plate is curved and extends between upper portions of the tubular members and supported by the support member, slots formed longitudinally in the underside of the tubular members, slide connecting tubes rigidly mounted adjacent the upper side of said tubular members and extending parallel therewith to slidably engage within similar adjacent tubular members through the slots formed therein.

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