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Banner

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[54] **EMERGENCY FIRE EXIT MEANS**

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[21] Appl. No.: **284,630**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 137,244, April 26, 1971, Pat. No. 3,692,145.

[52] **U.S. Cl.** **182/78,** 182/70, 182/74

[51] **Int. Cl.** **E06c 9/14**

[58] **Field of Search** 182/70, 73, 76, 18, 19, 182/77, 78, 20, 21, 84

[56] **References Cited**

UNITED STATES PATENTS

1,395,563	11/1921	Drozdzynski	182/73
1,753,798	4/1930	Martin	182/70

Primary Examiner—Reinaldo P. Machado

[57] **ABSTRACT**

A emergency fire escape window exit means to be mounted to a wall of a building below a window, or attached in combination with a window or a door. A platform is pivotally mounted to the door, window or wall. A ladder is connected to the platform. When the platform is folded up, it provides an enclosure for the folded ladder. When the enclosure is opened, the platform falls pivotally to a horizontal position. The platform has a trap door in it, operating on hinges that also allow it to pivot downward and release an emergency ladder attached to it. The ladder descends to the ground. The emergency fire exit means can operate manually or automatically having an alarm means when tripped open. The combination with a window or door incorporate a swing sill and a drop sill attachment.

13 Claims, 10 Drawing Figures

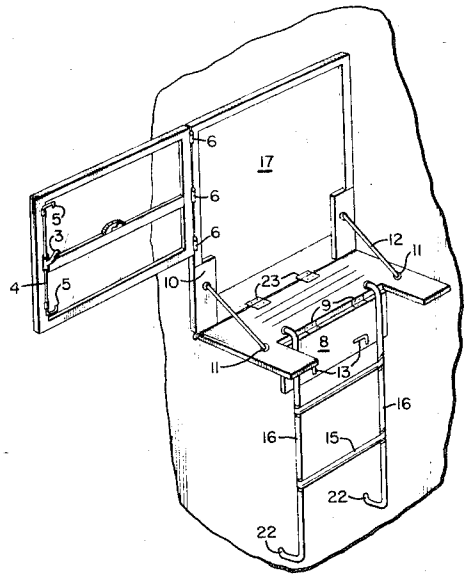


FIG.1

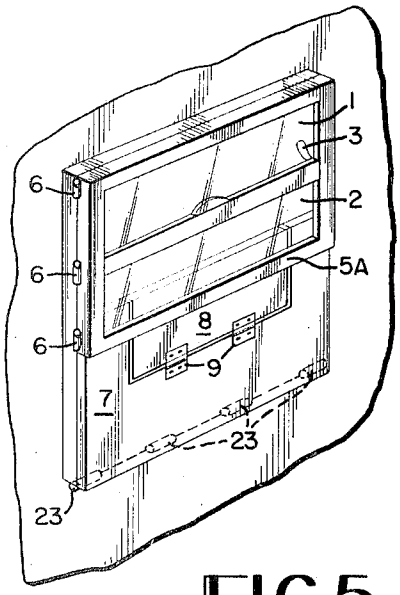


FIG.4

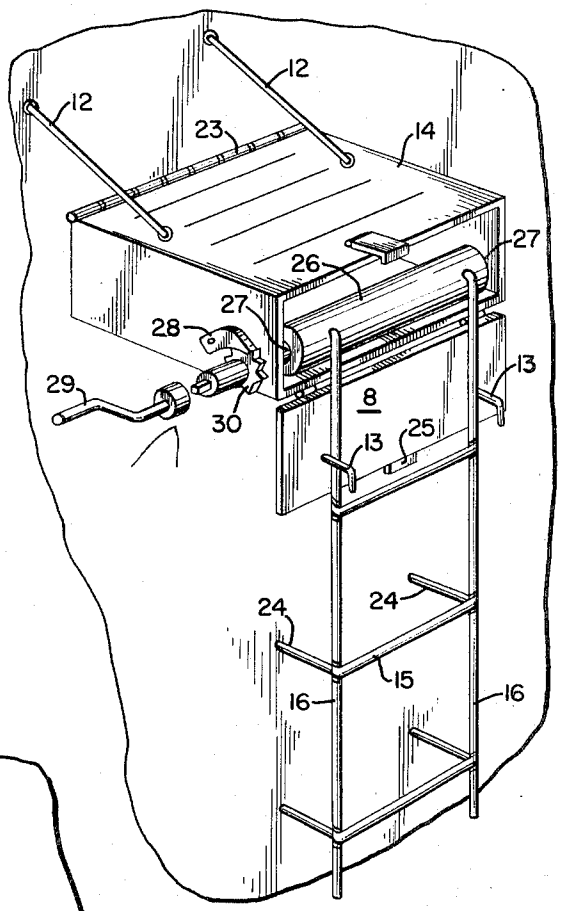
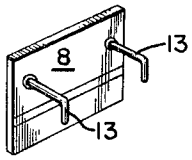


FIG.5



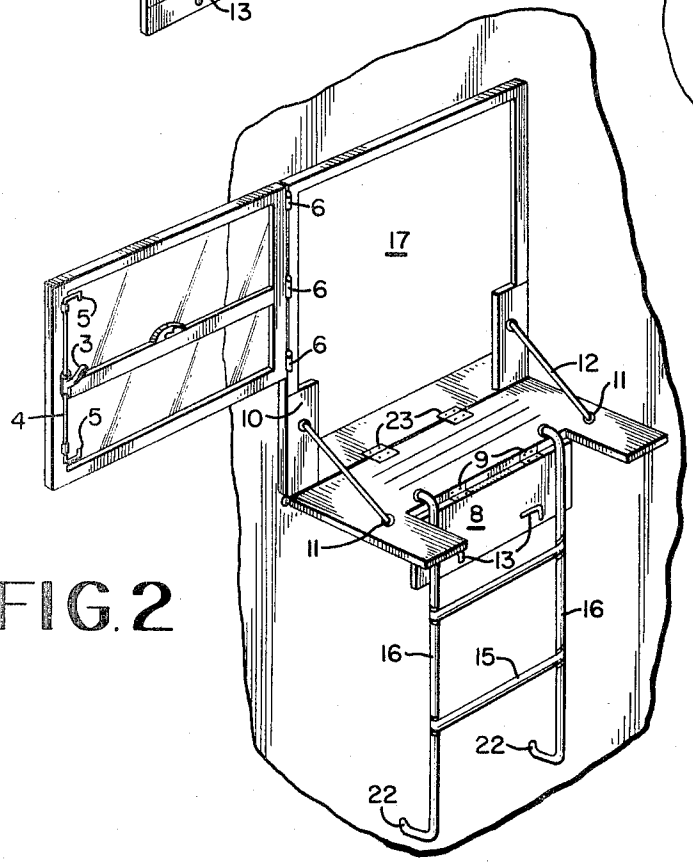


FIG.2

FIG.3

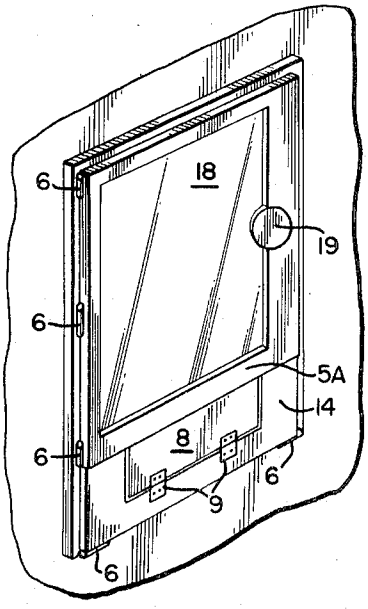


FIG.6

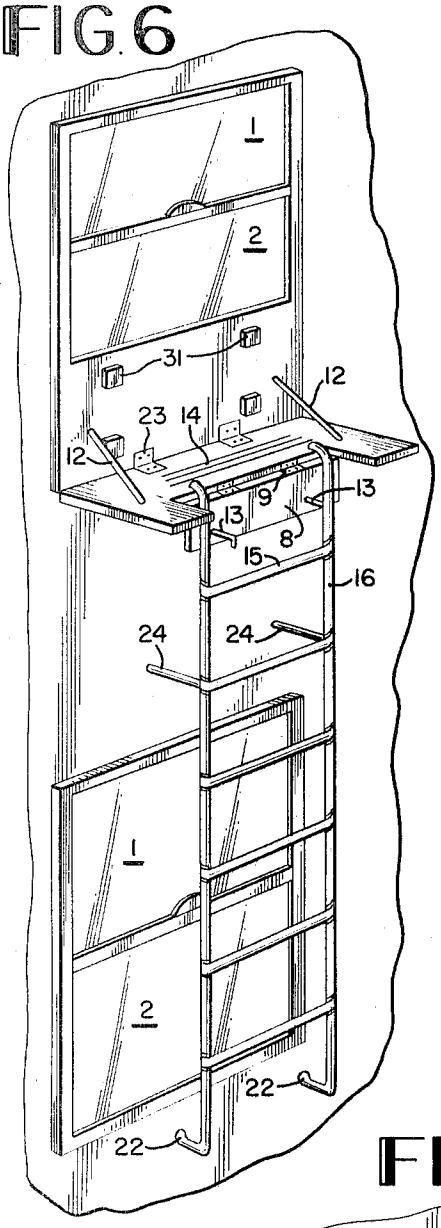


FIG.7

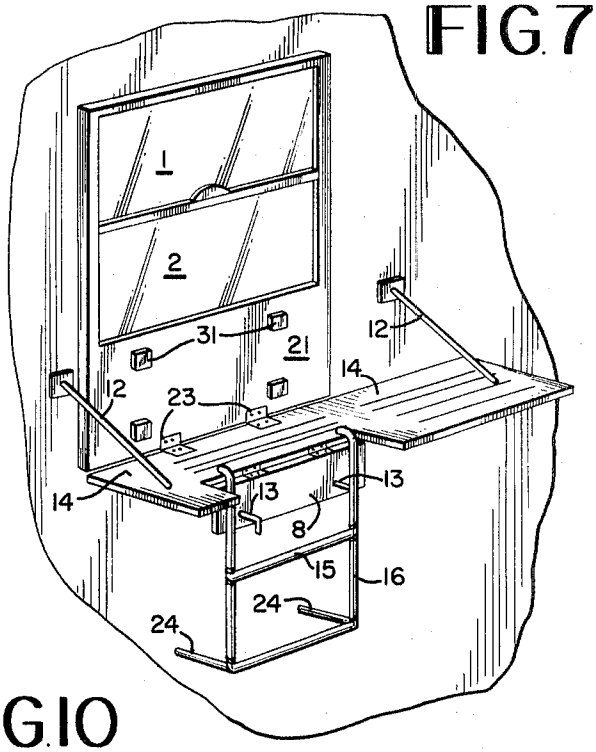


FIG.10

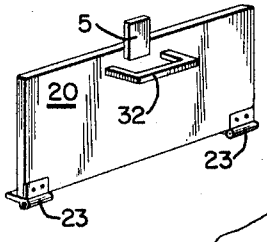


FIG.9

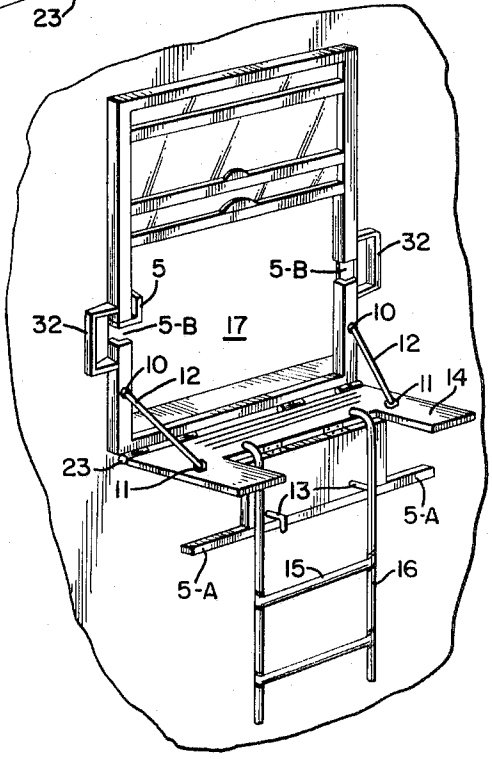
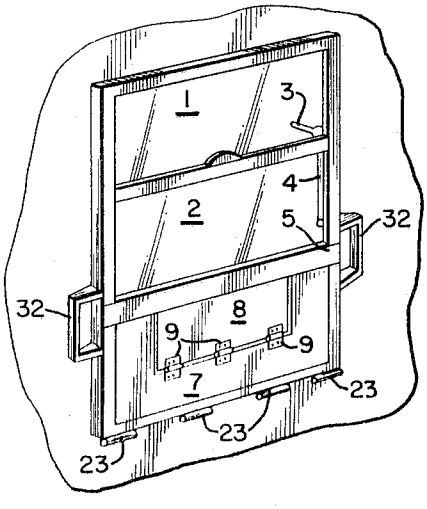


FIG.8



EMERGENCY FIRE EXIT MEANS

This application is a continuation in part to my prior application S.N. 137,244 filed Apr. 26, 1971 now U.S. Pat. No. 3,692,145.

That patent shows an emergency fire escape means. The present application is an improvement in that the fire escape device is attached in combination with a window or door in addition as a separate means when desired for permanent mounting under a window, on the outside wall of a building.

When constructed as part of a prime window, the bottom section will be so constructed to allow the fire escape device to be set into the building, having a slightly larger frame, custom fitting the installation and providing adequate holding of the emergency escape device as part of the window assembly base, installed as one unit. It also offers great improvement in restacking or inspection of the escape mechanism that will be accessible by removing a panel from the inside on a fire window exit allowing restacking or maintenance of the unit. Other prime windows of regular size structure will sacrifice the window space to permit the installation of the escape device on the lower part of the frame. This will allow installations on both new homes and replacements on existing homes offering a fire safety device to all forms of home dwellers private and tenement. The window and door means incorporate swing or drop sills wherein the window or door can swing open to permit greater exits in emergency.

When constructed as part of a door, it converts a door into a fire escape exit having a means of descending to the ground level. As part of a door construction it offers optimum exit space for quick exit to the fire escape device. When the door is opened it will actuate an alarm designating its use and it will release the fire escape device into an open position.

An improvement is shown wherein the platform of the emergency fire escape device platform is larger than just the width of a prime window and therefore it can afford greater standing space for people to escape a fire in a multiple dwelling, private home, office building or factory where the larger platform places the escape ladder in a position in line with other windows below it or aside from them as may be required to avoid window flames below.

Another improvement is shown wherein this emergency fire escape ladder when used at one window, will provide equal escape protection below it at other windows such as in a private home or multiple dwelling where people require access from below. In that case, the people below will only need a platform only or can eliminate same by exiting through their window right on to the escape ladder. The escape ladder is held off with stand-off hooks making an exit from below safe.

Another improvement is general use of the fire escape device by ships for safe storage of ladders that could be operated manually or electrically controlled by the Captain of a ship, particularly on cruise ships or smaller craft where this fire escape device would be used as a ladder, attached to the railing of a ship by securing means. The same securing means would be useful in attaching the emergency escape ladder to a window as a temporary means of escape.

An improvement is shown in the adaptation of the fire escape means when it becomes part of a door or window and the mechanism becomes accessible from the inside by a removable inspection panel, assuring easy restacking when used for fire drills and visual inspection periodically.

An improvement is shown wherein a wind-up unit is attached to a trap door and same is released when the platform extends horizontally. This would provide a means of winding up the ladder part back on to a spool, ready for use again. The spool has a crank handle for this purpose. The combination of the spool and the patent emergency fire escape means will add greater efficiency to the use of the device.

Two and three story homes do not have fire escapes from the upper floors and these are not yet required by the building codes or regulations. Since most of the homes are of wood frame construction containing highly inflammable parts, the occupants are sometimes trapped on an upper floor and unable to escape. The use of ladders of flexible construction, such as rope or wire from a window, with or without carrying a child or a grown person, requires great physical prowess to negotiate an exit. Climbing out of a window backwards on to a moving flexible ladder is dangerous and people are as afraid of climbing and height as they sometimes are of fire. The combination of the two causes hysteria plus panic and subsequent loss of life unnecessarily. Also in panic while in smoke or fire conditions it would usually be difficult to locate a throw out type ladder or undesirable to waste precious time unwinding a ladder that may or may not work and that you can not carry down a child with you. In the event of a fire, you have but a few minutes before superheated air and gasses overcome the victims and it is imperative that speed and ability to exit from a fire are inseparably important. This invention improves the safety factor considerably by providing permanent means of escape on the outside of a building affording the greatest protection. The present invention provides an emergency fire escape means, which is pivotally mounted under a window on the outside wall, or as part of a window - emergency escape unit or a door-escape unit, or as part of a ship being mounted so as to provide emergency escape means to lifeboats below. A ladder means is mounted in the device enclosure which will differ on a door or window unit as compared to a separate emergency escape attached to the wall of a building, and having the same general size and appearance as an extending air conditioner unit. It will be made of weather resistant materials.

To activate the fire escape means on a wall, the user opens a single lock control on top of the enclosure. The enclosure is then released by gravity or the additional use of a pressure spring into a horizontal position. The ladder is connected to a trap door assembly or to the building, the trap door pivots on a hinge rotating 180° from the closed position. The trap door descends down vertically, releasing the ladder inside that is guided by ladder hooks directing the directing the downward motion of said ladder properly. The ladder is spaced away from the building, held away by stand-off steady rests. This also permits descent on either side of the ladder permitting use on multiple dwellings where needed for the floors below.

To activate the door-fire escape means the user would release the door and said escape means would become effective. With the door open and the ladder platform open and the ladder in the downward position it would be relatively simple and safe to use by all

parties seeking to escape a fire. This could operate electrically or automatically in case of a fire where a fire control would activate the unit. The difference between a door-escape means and a window-escape means is that the size of the opening on a door unit is larger and a door swings completely out of the way while a window can be made to operate the same, but on a smaller opening basis.

To activate the window unit where the emergency escape is made part of a double hung window the user would lift the double hung window upwards and unlock the entire bottom side of the window including the sill that is designed to pivot outward exposing the escape unit without obstacles. When constructed as part of a ordinary double hung window it would have the window on top and the escape unit below permanently attached in one unit and would require the occupants to climb out of the window as compared to the larger opening afforded by a emergency fire exit door or window wherein the frame is larger permitting larger exits. The size of the emergency escape ladder platform is not restricted to any single design, it can be made offset as shown. Said emergency escape means attachable to windows, boat rails and buildings by securing means.

Accordingly, a principal object of the invention is to provide new and improved fire exit escape means for private homes, industrial buildings and tenements and ships.

Another object of the invention is to provide new and improved fire exit escape means, in a fire escape door having the emergency fire escape attached thereto, operated manually or automatically in case of fire and having an alarm means of it's own, useful when seeking outside assistance.

Another object of the invention is to provide new and improved fire exit escape means, in a fire escape window having the emergency fire escape attached thereto wherein the said window pivots open swinging outward or descending downward pivoting on hinges, or where it is stationary, having the escape means.

Another object of the invention is to provide new and improved fire escape means for ships, wherein the apparatus would be placed to afford ladder exits at strategic points required for the safety of passengers or used for boarding means.

Another object of the invention is to provide new and improved fire escape means for private homes, attachable to all private dwellings for safe fire exit, having a safety platform for escaping fires and permitting safe descent from a building.

Another object of the invention is to provide an emergency fire device that can accomodate more than one person safely. Said invention containing safety lights and warning alarm operated by heat sensors or by manual opening of the device. Said invention having an emergency harness device for lowering children or someone hurt in a fire.

Another object of the invention is to provide in combination a window or door and fire escape device means that provides a safe emergency fire exit means incorporating new opening of a window sill affording greater exit size for maximum safety use.

These and other objects of the invention will be apparent to the following specifications and drawings, of which I seek letters patent on.

FIG. 1 is a perspective view of an embodiment of the invention, an emergency window escape unit in closed position, having hinges to swing on and locking means.

FIG. 2 is a perspective view of the embodiment of FIG. 1 in an open position.

FIG. 3 is a perspective view of an embodiment of the invention a door-escape means in closed position.

FIG. 4 is a perspective view of an embodiment in this invention attachable to the trap door or to the platform means to afford a wind-up type operated ladder that will automatically eject the ladder when in the downward position.

FIG. 5 is a perspective detail view of the trap door embodiment in this invention.

FIG. 6 is a perspective view of the ladder in an open position affording entry below from a wall, window or door means in this patent.

FIG. 7 is a perspective view of an extended platform to hold greater loads that may be necessary in multiple dwellings or other use.

FIG. 8 is a front view of an emergency fire escape window means in a closed position, showing the window sill 5-A in a normal position keeping the fire escape device locked below in a vertical position. One window frame supports the window, the movable sill and the emergency fire escape platform means.

FIG. 9 is a front view of the opened fire emergency window exit where the window sill has descended 180° with the trap door 8 on the emergency escape platform. The sill cutout 5-B opened by the sill lock 5 releases downward with the platform 14, leaving open a greater exit area.

FIG. 10 is a front view of an inside bottom window panel that is removable on the inside of a window that when removed allows inspection and restacking while providing decor. The panel 20 has a handle 32 and a form of locking means 5 with hinges 23.

The operation of the embodiments in the emergency fire exit means shown are as follows. The device shown in FIG. 1 is in a closed position, it is a double hung window, as an example, with window panes 1 & 2 that operate vertically. It has a hand operated lock handle 3 with linkage 4 going to the locks 5. When the lock 5 has been released the window assembly swings outwardly on hinges 6 permitting unobstructed exit from said window. When the double hung or other type window has been released, it will automatically release the emergency fire escape means 7 that is held in place by the unopened window. FIG. 1 shows the trap door 8 that swings down vertically with the hinges 9. FIG. 2 shows the same window 1 & 2 in the open position. Mount supports 10 hold bracket bolts 11 and platform holding brackets 12. FIG. 2 shows the ladder release hooks 13 in the final resting position with the platform 14 in the extended position ready for use. The trap door 8 is at a 90° angle from the non skid platform 14, the ladder rungs 15 and the ladder 16. FIG. 2 shows the open space 17 wherein exit from a fire can easily be accomplished. FIG. 3 shows a closed emergency fire escape door 18 having a lock 19 which presents a different exit in size than the window 1 and 2 shown in FIG. 1. FIG. 3 illustrates a larger frame supporting a larger opening and the emergency escape device attached below, however, there should be no limitation to the size of the frame or window or doors used as emergency exit means shown in this application. FIG. 4 shows a fire escape emergency exit that employs a winding mechanism 26 and 27, having a release lock 25, a spline 28, a crank and handle 29. The unit employs the same de-

signed platform **14**, ladder hooks **13**, brackets **12** and other parts common to this invention. It would have a ratchet **30** to hold the position of the ladder while rewinding and it is unrestricted in the downward travel. FIG. **5** shows the trap door **8** with the ladder holding hooks **13** in the final downward position after it has ejected the ladder mechanism **15** and **16**. FIGS. **6** shows one type of Strap hinge **23** on the emergency platform **14** with stand-off arms **24** keeping the ladder from the wall. In FIG. **6** it is clearly shown how a door unit **18** or a window unit **1** and **2** or the emergency fire escape means **14** can operate on a multiple dwelling serving the windows below affording fire protection. The windows below can optionally have the platform **14** installed without the ladder unit that would be provided from the window above. Private homes with two or more stories could utilize this means of escape without having to spend a lot of money to accomplish optimum protection. FIG. **7** shows a larger platform **14** built to hold a greater amount of people and affording more space. FIGS. **6** and **7** show non-swinging windows. The emergency escape means is fastened to the building by bolts **31** providing one illustrated securing means to a wall. FIG. **8** shows the emergency fire window exit with a swingable window sill that can swing downward as shown in FIG. **9** or outward as in FIG. **2** or it can remain in place wherein we have a window and attached emergency escape in combination, on one rectangular frame housing the escape mechanism. Wherein that the window swings outward, it can do so with or without the movable sill and still offer an effective means of fire exit. The most desirable accomplishment of greatest safe exit occurs with the movable sill, leaving open an entire area, where the space created is comparable to the opening of a door. FIG. **9** shows the same window as in FIG. **8** with window panes **1** and **2** in an open position for exit and the window sill **5-A** has been unlocked **5** from the cutouts **5-B**, the emergency platform **14** has pivoted downward 90° while the window sill **5-A** attached to the trap door **8** has moved 180° downward, having released the ladder **16**. FIG. **10** shows the inside removable inspection panel **20** with handle **32**, a form of locking means **5** hinges **23** installed on the inside side.

The emergency fire exit means shown in the various figures are attachable to buildings by many securing methods to the inside or outside of a structure depending upon the type of construction or the amount of renovation involved, or the building codes and their individual requirements in different localities. The flexibility of design of changes in sizes and shapes of frames and windows or doors to accomodate this new safety device is anticipated in building new fire-windows, fire-doors and fire escape devices for general use.

Although the invention has been described in detail with respect to an exemplary embodiment thereof, it will be understood by those of ordinary skill in the art that other variations and modifications may be effected within the scope and spirit of the invention.

I claim:

1. A emergency fire exit means comprising in combination a window and fire escape means including a frame, a movable sill, a platform pivotally mounted on said frame, a ladder mounted on said platform, a means for releasing said ladder, a movable trap door mounted in said platform so that when said platform is rotated 90° to an open position said trap door moves 180° and the ladder is released, said emergency fire exit means having signal and emergency safety means.

2. Apparatus as in claim **1**, wherein said movable sill is attached to said trap door pivoting downwardly when released.

3. Apparatus as in claim **1**, wherein said movable sill is attached to said window, swinging outwardly.

4. Apparatus as in claim **1**, wherein said frame is unrestricted in size shape and materials for attachment of said window, and said fire escape means thereto.

5. Apparatus as in claim **1**, wherein said emergency fire exit means is attachably fastened to windows, rails and buildings by securing means.

6. Apparatus as in claim **1**, wherein said ladder drops vertically in line with windows below, making said windows below accessible for fire exits.

7. Apparatus as in claim **1**, wherein said platform is made to allow a greater amount of standing room, where the increased size removes the victims from the window escaped from.

8. Apparatus as in claim **7**, wherein said platform releases said ladder downwardly bypassing the windows below, wherein certain hazards would be desirable.

9. Apparatus as in claim **1**, wherein said fire escape means contains a rotatable roller to store said ladder and release said ladder and roll up said ladder.

10. Apparatus as in claim **1**, wherein said signal means comprises an alarm and electric circuit and light responsive to signal when the emergency fire exit means has been opened for use.

11. Apparatus as in claim **1**, wherein said emergency safety means comprises a emergency lowering harness to lower victims and invalids from the fire area to ground safety, said safety means incorporating holding handles placed for safety.

12. Apparatus as in claim **1**, wherein said emergency fire exit means can be operated manually, by releasing a lock, and automatically by heat sensors, smoke and gas sensors, and electrically controlled.

13. Apparatus as in claim **1**, wherein said window means incorporates a door swinging outwardly of solid frame and of glass construction.

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