FIRE SAFETY APPLIANCE FOR APPLICATION TO THE OUTSIDE OF WINDOWS

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This invention relates to a new and improved fire safety appliance for use in upper story windows of hotels, hospitals, offices, and other buildings; whenever fire hazards require such extra safety devices to reduce loss of life in the event of sudden intense heat, smoke, or fumes in hallways, make the use of inside or outside fire escapes (when provided) unsafe or impossible, as happened in a number of big hotel disasters recently.

The principal object of my invention is to provide a specially designed body support for attachment to windows, in the form of a life belt or railing, at least one for each window, having associated therewith harnesses, one for each occupant of a room, the harnesses being connected to the life belt or railing by shroud lines, and the belt or railing having clew and clew lines designed for quick attachment to the bolts commonly furnished on the outside of the window frames for the attachment of window washer's slings. The railing is the preferred form of body support and comprises a metallic bracket designed to reach across the window opening and be quickly attached to the aforementioned bolts on the window frame and having the life lines of the one or more harnesses slidably attached thereto. In both forms, the person or persons using the belt or bracket for support stand substantially upright on the window ledge, facing inwardly, close to but not pressed against the window, as distinguished from hanging out into space from the window like a window washer, thereby reducing the feeling of giddiness and accordingly reducing likelihood of fainting, although with the present equipment in use properly, that would not be fatal. Also, the life lines are long enough to reach from the window belt or bracket into the room to permit each person to put on his or her harness in the comparative safety of the room after putting up the window belt or bracket and before mounting the window sill, and the belts of the harnesses to which the life lines are attached with snap buckles for quickly hitching the harness belt directly to the window belt, or bracket, as the case may be, so as to give each person a sense of greater security once he is standing on the ledge outside the window, and warrant his closing the window when heat and smoke in the room might not be serious enough to necessitate his doing so, thereby assuring the person a good supply of fresh air to avoid any danger of suffocation, and incidentally, helping also to curb the spread of the fire by reducing the chance of the fire reaching the window itself, and the resulting intense heat, and smoke in the room.

The harness inside the room after the window belt or bracket is applied to the window frame, are thereby also long enough to allow the person to lower himself below the window ledge in the event the heat or flames in the room make it too uncomfortable or even unsafe for him to stay on the ledge. The equipment described is obviously inexpensive and has the big advantage that the prospective user with the help of a few pictures posted in the rooms and hotel lobby to illustrate use of the equipment, will quickly understand what to do, and it, moreover, utilizes the window frame bolts which are already a part of the present equipment for window washing in the majority of modern tall structures, so that a further saving in cost is realized. Then, too, the average mechanically unskillful person, even under the stress of impending disaster, will at once perceive the general similarity in the manner of using this equipment to a window washer's apparatus and is not apt to encounter any difficulty in locating the window washer's bolts on the outside of the window frame and attaching the equipment thereto, thereby greatly reducing the likelihood of a person becoming a casualty despite the fact that life-saving equipment was there for him to use in the emergency. In that connection, it may be pointed out that many more or less elaborate and expensive devices and equipments have been proposed intended to save lives in hotel fires but are not practical because they fail to take into account the reluctance of the average person to undertake doing what only a steeple-jack, parachute jumper, or structural iron worker would be qualified or expected to do at a great height. The present equipment avoids that objection.

The invention is illustrated in the accompanying drawing, in which:

Fig. 1 is a front view of a fire safety appliance made in accordance with my invention, this form involving the use of a flexible window belt equipped with the window belt snap-fastener clips and being shown as associated with only one harness and the life-lines therefor, although two or even more of these harnesses may be provided in association with one of these window belts, depending, of course, upon the size of the window opening and the length of belt accordingly provided;

Fig. 2 is a view on a smaller scale illustrating the appliance in use, showing the window belt in place on the outside of the window frame, and the harness applied to a man inside the room preparatory to his getting up on the window sill and standing on the ledge outside;

Fig. 3 is a vertical section showing how the man
is finally hitched to the window belt for secure support while standing out on the window ledge, facing inwardly, and

Fig. 4 is a perspective view of a modified or alternative form of appliance in which a metal bracket is used instead of the window belt, the life lines of the harnesses being slidably connected thereto, and one of the window bolt snap-fastener clips on the ends being pivotally connected to the belt and the other having a universal joint connection therewith.

Similar reference numerals are applied to corresponding parts throughout these views.

Referring first to Figs. 1 to 3, the reference numeral 5 designates the life belt spanning the window opening at approximately waist height and detachably connected at its ends by snap-on clips 6 and 7 to the headed ends of two pairs of bolts 8 that project to a certain extent from the outer side of and are securely anchored in the window frame 9 on opposite sides of the window opening in the usual way. On most modern office and hotel and other tall buildings such bolts are already a part of the standardequipment on all upper story windows to enable window washers to take care of washing these windows in the well-known manner, namely, by standing on the ledge leaning out into space while supported by a rope sling attached at the ends to clips locked on the bolts, the sling being suitably secured intermediate its ends to a wide belt on the waist of the workman. However, only a window washer or one similarly constituted, mentally and physically, could use that sort of an outfit to stand on a window ledge for safety during a fire. Most persons, even highly trained in such an emergency, where they knew their lives depended upon it, could not steel themselves to use such a thing, especially at any considerable height. Hence, the importance of providing the life belt 5 which is taut enough and, of course, strong enough, and having non-yielding to provide a thoroughly reliable support for a person, or persons, standing substantially erect on the window ledge 10, as indicated in dotted lines at 11 in Fig. 3. Attached to the belt 5 by life lines 12 and 13 is a body harness 14 consisting of a belt 15 which extends around the waist of the person 11 and is fastened by means of a buckle 16 in front, and crossed-straps 17 and 18 which extend upwardly over the shoulders and downwardly through the crotch and are fastened to the back of the belt 15, as at 19, and to the front of the belt, as at 20, and have slack take-up adjustments 21 and 22 in the upper and lower front portions to permit adjusting the size of the harness to suit individual requirements. Rings 23 are provided intermediate the ends of the life lines 12 and 13, and snap buckles 24 are provided at the harness belt end of the life lines to connect to the rings 23 after the person has mounted the window sill 25 preparatory to standing on the ledge 10 and resting against the window belt 5. In other words, the purpose is to take up nearly all of the non-essential slack in the life lines 12 and 13, so that those lines alone would be sufficient to support the person on the ledge 10, even without the additional support of the belt, but the belt 5 gives assurance not only of adequate support, but relieves the person of anxiety while standing on the ledge that he would most likely otherwise suffer if he had only the life lines 12 and 13 for support. In fact, it is believed safe to say that only a small percentage of people who are unaccustomed to standing on a narrow window ledge at a great height would or could steel themselves to the ordeal of standing there with only the life lines for support; only an experienced window washer could be expected to do so. Furthermore, it must be remembered that two or more persons occupying a lone window belt, the harness 14 which is also shown in Fig. 3 is designed in such a way that the proper spacing from the point or points of attachment to the belt 5 at ring or rings 26 to take up substantially all of the slack in the life lines when the person has mounted the sill 25, so that he can step out onto the ledge 10 with a feeling of sufficient security and would remain upon the ledge even if he fainted, being supported not only by the more or less taut life lines, but also by the belt 5. In other words, a person slumping as a result of fainting would be sustained by the support of the body harness itself provided by the belt 5, as well as by the support of the life lines 12 and 13, and the added support of the body harness 14, and in the event of either of these two means of support, and the fact that the upper and lower window sashes 27 and 28 are usually closed after the person or persons have taken their positions on the ledge. The belt 5 is fairly wide and made of fire resistant material, and moreover has a number of flexible wires 29 extending therethrough lengthwise from one ring 26 to the other. The life lines 12 and 13 which are also preferably of fire resistant material, likewise have flexible wires 30 extending lengthwise from the rings 31 to the rings 32, and the harness 14 is made of fire resistant material likewise has flexible wires 33 extending lengthwise through at least the belt portion 15 and suitably connected to the ears 34 to which the rings 32 are attached. In that way, regardless of how serious the fire may be the equipment itself will be fire resistant and still afford protection. If, because of the heat in the room, the windows 27 and 28 give off so much heat that it becomes unbearable even out on the ledge 10, the buckles 24 can be unfastened from the rings 33 and permit the person standing on the ledge to lower himself to the window ledge. In other words, the extra length of the life lines 12 and 13 provided to reach from the window belt 5 into the room to permit the person to put on the harness 14 in the comparative safety of the room after he has put up the window belt and before he has mounted the window sill, serves this additional purpose in an unusual emergency. As stated before, in the large majority of cases, asphyxiation is the only cause of death, not actual burning, and hence, in nearly one hundred per cent of the instances where this equipment would be used it is believed that it would suffice merely to stand on the ledge with the windows closed so as to insure ample fresh air until the fire in the building has been extinguished and the air within has been cleared sufficiently to enable the survivors to leave their rooms and make their exits from the building safely.

In the modified form illustrated in Fig. 4, a U-shaped metal bracket 5a is provided instead of the belt 5 to extend across the middle of the window opening and be attached by means of the clips 6a and 7a to the bolts 3. The arm 35 on one end of the bracket 5a is pivotally connected on a vertical axis by a bolt 36 to a horizontal lug 37 provided on the clip 7a. The other
arm 28 of the bracket 6a has a universal joint connection with the clip 6b through an intermediate swivel block 39 that is pivotally connected on a horizontal axis as at 40 to the vertically extending leg 41 provided on the clip 6a, the arm 33 being pivotally connected to the block 38 on a transverse axis, as at 42. The purpose of this construction is to facilitate mounting the bracket on the bars of window bolts 8 on opposite sides of the window frame on the outside thereof, the clip 6b being first attached to the bolts on the left hand side while the bracket 6a extends into the room and rests more or less on the window sill, after which the bracket 6a can easily be swung outwardly through the window opening and then upwardly enough to permit attaching the other clip 7a to the bolts 8 on the right hand side of the window. It may be possible to eliminate the pivot 38 and make the bracket 6a rigid with the clip 7a, but it is obvious that a universal joint connection with the other clip at the other end of the bracket is essential, otherwise one person might find it rather difficult to attach the bracket by means of the two clips to the bolts on the window frame, working from the inside of the window as he would have to. There are several advantages in the use of the bracket 6a as compared with use of the belt 5. First of all, it is fireproof and affords a rigid and hence more satisfactory support for the person or persons standing on the window ledge 10. Then, too, the rings 31a provided on the ends of the life lines 12a and 12b for each harness 14a are soldered freely on the cross-section 43 of the bracket 6a to positions directly behind and on opposite sides of the person connected therewith, so that the buckles 24a can be fastened directly to these rings instead of having to be fastened to rings 23 intermediate the end of the life lines, as in the other construction. Moreover, there is no confusion where two or even more persons are attached by means of their life lines to the same bracket, because each person will have his or her pair of rings 31a directly behind and connected to buckles 24a. Here again, it will be understood that the life lines, and the harnesses, will be of fire resistant material and incorporate flexible wire reinforcements as in the other construction, also that the life lines will be long enough to reach from the window bracket into the room far enough to permit putting on the harness in the comparative safety of the room before mounting the window sill, at which time the buckles 24a will, of course, be connected immediately to the rings 31a or to the ears 44 extending therefrom.

In passing, it may be stated that the clips 6 and 7 and clips 6b and 7a are of a well-known type commonly used having T-slots 46 extending lengthwise thereof into which the square heads on the bolts 8 are entered through the widened lower end 45 of the slots, a leaf spring 47 being provided in each clip extending lengthwise thereof and riveted at one end as at 48, and arranged to yield to the heads of the bolts and thereby expand the Keeper of the two bolts when the lower one has entered the slot 45. This makes a very secure and reliable fastening and one which will not become accidentally fastened, because until the operator purposely releases the spring catch 47 by lifting on the knob 48 to move the free end of the spring clear of the upper bolt, the clip cannot be moved endwise relative to the bolts. In the form shown in Figs. 1 to 3, the clips 6 and 7 are connected by rings 50 to the rings 28, the ring 58 for clip 7 being shown as broken to permit showing the clip 7 turned around to expose the opposite face from that exposed on clip 6 in Fig. 1.

It is believed the foregoing description conveys a good understanding of the objects and advantages of my invention. The appended claims have been drawn to cover all legitimate modifications and adaptations.

I claim:

1. An escape apparatus for persons trapped within a windowed burning building comprising in combination, an elongated horizontal support including means at each end thereof cooperative with means mounted at the sides of a window opening exteriorly of the window for detachably securing the support by such ends to the opposite sides of the window opening at a level above the window ledge generally corresponding to the waist level of a person standing erect on the window ledge, the distance between such end and the window being such that said support engages the back of the person standing substantially erect on the window ledge, a body harness including a waist band at the person, a pair of life lines connecting opposite sides of said waist band to said support, the length of said lines being such as to enable the person with said harness secured to the ends of said horizontal support to the opposite sides of the window opening while standing on the floor inside the window and to hang by said life lines below the window ledge, and interchangeable fastener members one of which members is carried by the waist band of said harness for detachably connecting said waist band in close proximity to said support.

2. Apparatus as defined in claim 1 wherein said horizontal support is constituted by a length of flexible material and wherein said interchangeable fastener members are constituted by one member on each life line adjacent the end connected to said support cooperative with another member at each side of said waist band.

3. Apparatus as defined in claim 1 wherein said horizontal support is constituted by a rigid U-shaped bracket including fastener devices at each end thereof for detachably securing the same to the mounting means at the sides of the window opening, one end of said bracket being pivotally attached to the fastener device at such end on a vertical pivot axis and the other end of said bracket being pivotally attached to the fastener device at such end on a universal pivot axis, and wherein said interchangeable fastener members are constituted by one member at each side of said waist band cooperative with another member on said bracket.

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