Jan. 10, 1950 G. R. BOSSETTA 2,493,853

LIFE SAVING DEVICE

Filed March 18, 1947 2 Sheets-Sheet 1

Fig. 1.

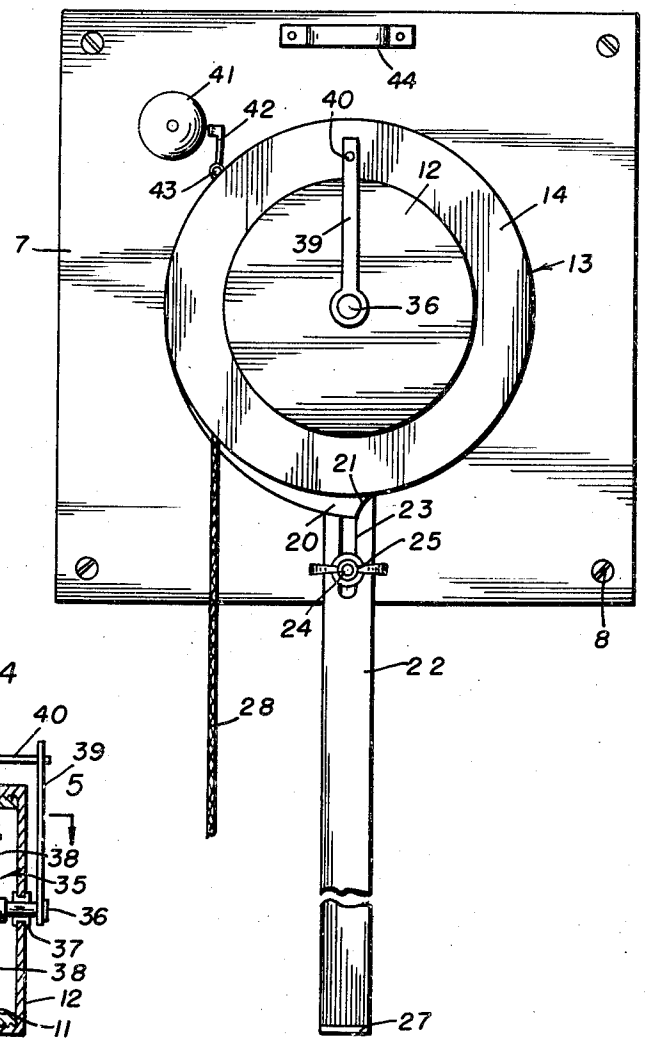
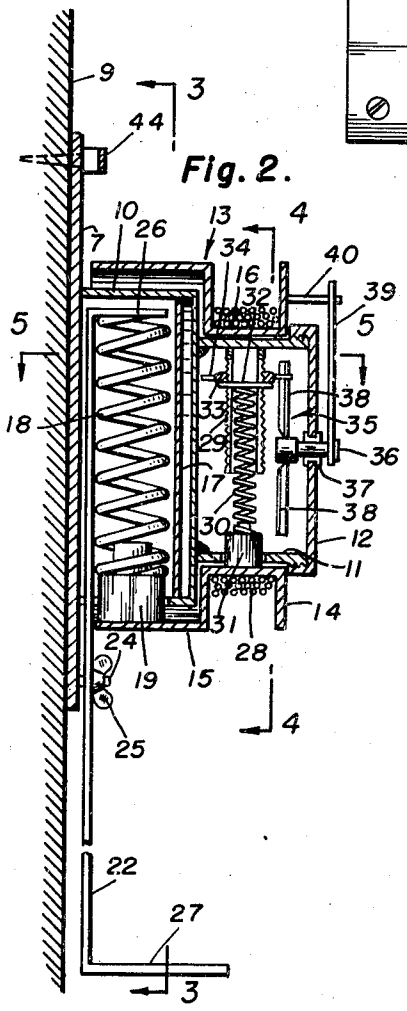


Fig. 2.



Inventor

Gaspar Robert Bossetta

By Clarence O'Brien and Harvey B. Jacobson

Attorneys

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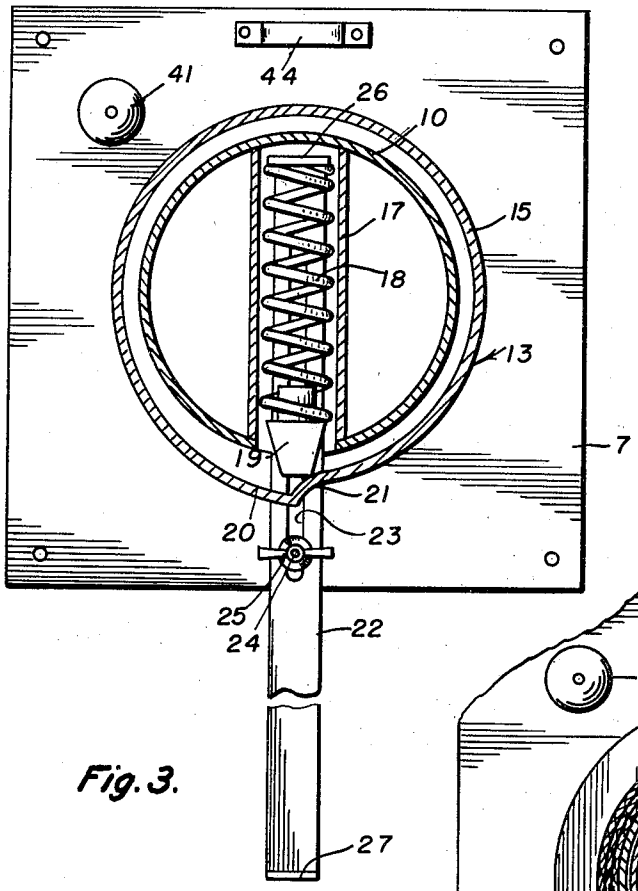


Fig. 3.

Fig. 6.

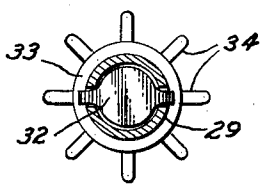


Fig. 4.

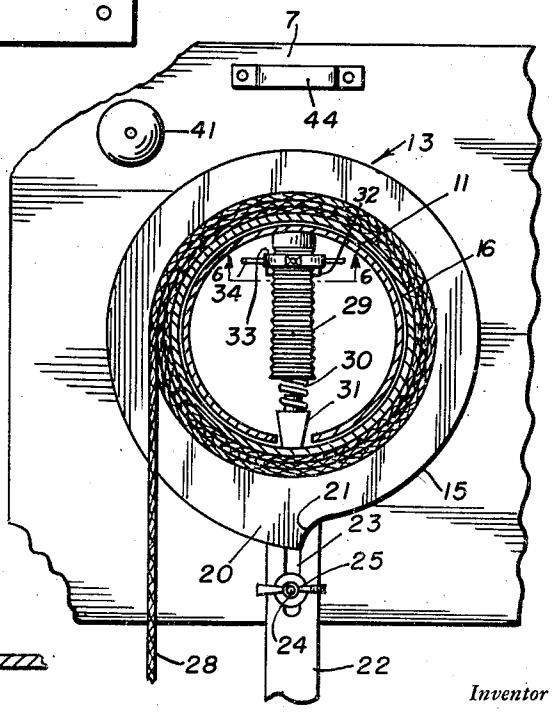
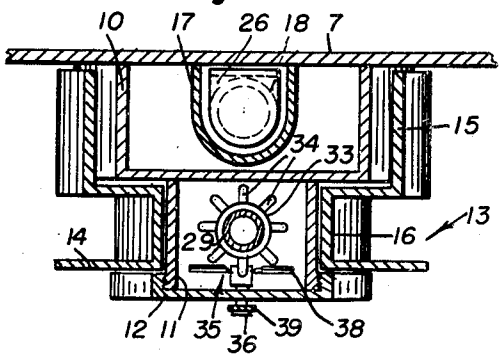


Fig. 5.



Inventor

Gaspar Robert Bossetta

By Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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LIFESAVING DEVICE

Gaspar Robert Bossetta, New Orleans, La.

Application March 18, 1947, Serial No. 735,447

9 Claims. (Cl. 254—151)

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This invention relates to fire escapes, life saving devices and alarms, generally speaking, and has more particular reference to a combination audible alarm and reel and cable type life saving device.

The invention is expressly, but not necessarily, adapted for use in hotels, office buildings and similarly congested places, particularly those having insufficient exits and facilities to permit individuals to flee the scene when trapped by fire or an equivalent disaster.

More specifically the invention appertains to comparatively simple, practical and expedient means which lends itself highly adaptable for ready use, in case of fire, in hotel rooms. In carrying out a preferred embodiment of the invention, a structure is employed wherein a suitable line or cable-equipped reel is supported on the wall or elsewhere in the room and within the vicinity of a window in a manner to permit an otherwise trapped individual or individuals to swing the cable out of the open window and to descend with safety to the ground.

Another object of the invention is to provide a life saving device of the type under advisement wherein, in addition to the reel and cable, an alarm bell is provided, this being sounded intermittently as the user makes a get-away and descends to safety. Thus, by providing all hotel rooms with such equipment, the sounding of a plurality of bells from various areas throughout the hotel will give an alert sufficient to warn other occupants of impending danger.

Another object of the invention has to do with a life saving device which is provided with means through the medium of which the operation of the reel and line may be set and controlled to accommodate and conform to weight requirements of different users ranging anywhere from seventy-five pounds on up to four or five hundred pounds, as requirements of the trade dictate.

Another object of the invention contemplates incorporation in the finished structure of an automatically operable compensator which comes into play as the cable or line is paid out, thus regulating the speed of rotation of the reel and unwinding of the line to meet requirements of safe and reliable descent of the user.

Other objects and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

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Figure 1 is an elevational view disclosing a combined alarm and life saving device constructed in accordance with the principles of the present invention.

Figure 2 is a sectional and elevational view taken centrally at right angles to Figure 1.

Figure 3 is a detail section on the vertical line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a similar vertical section on the line 4—4 of Figure 2.

Figure 5 is a horizontal section on the line 5—5 of Figure 2, also looking in the direction of the arrows.

Figure 6 is a horizontal section on the line 6—6 of Figure 4, looking in the direction of the arrows.

Reference is had now to the drawing by way of reference numerals denoting and differentiating the various mechanical elements and parts. Although it is necessary to consider the views in conjunction with one another, the essential parts may be seen in Figure 2 wherein the numeral 7 designates a base or foundation plate which is appropriately fastened at 8 to a wall or equivalent support 9. Since the invention is primarily adapted for use in hotel rooms, the plate will, of course, be mounted somewhere within the vicinity of a window or other means of escape. Mounted rigidly on the base plate (see Figure 5) is a substantially circular casing 10 and secured thereto and extending outwardly therefrom is a collar 11. This is externally screwthreaded at its outer end and a flanged cap is connected thereto, whereby to provide an assembling hub or axle for the freely rotatable reel 13. The reel proper 14 surrounds the hub and the flange 15 thereof rotatably surrounds the casing 10. The flange 15 is primarily a brake drum as will be hereinafter seen. Likewise, the web portion 16 of the reel has the additional function of a friction brake drum, this being secondary and supplemental to the main brake drum 15.

Attention is now directed to Figure 3 (see also Fig. 5) showing a cylinder mounted vertically and rigidly in the casing, said cylinder being denoted by the numeral 17. The cylinder serves to house a heavy-duty coiled spring 18. The spring, in turn, functions in conjunction with a suitably shaped and constructed brake shoe 19 which is projected thru the wall of the casing for frictional contact with the inner periphery of the brake drum 15. At a specified point, the brake drum is radially offset, as at 20, to provide a check shoulder 21 for the brake shoe. Thus,

during each revolution of the brake drum, the brake shoe strikes the shoulder 21 and momentarily checks the speed of rotation. The shoulder is of cam form to permit the brake shoe to ride thereover in an obvious manner.

Attention is next directed to a weight regulator bar 22, this being slotted at 23 and operable over a stud 24 on the base plate, which stud carries a thumb-nut 25 for regulation and adjustment purposes. The upper slotted end of the bar extends up and into the cylinder 17 where it is bent laterally, as at 26, to provide a thrust element or abutment engaging the upper coils of the spring 18. The lower portion of the bar reaches down to a point within the vicinity of the floor, where it is provided with a lateral foot piece or pedal 27. The user, by standing on the foot piece 27, thus transmits his weight to the spring 18 by way of the bar and abutment 26. Consequently, the spring is sufficiently compressed to sustain the weight of the particular user. Then, the nut 25 is tightened on the stud 24 to hold the bar. This arrangement tensions the friction brake shoe 19 in such a manner that it serves to adapt its braking function to meet given requirements. It is obvious that the bar and spring tensioning means will thus be set for each individual.

The cable or safety line is denoted by the numeral 28 and is normally wound on the reel or drum 14. Also, in practice, the free end thereof may be provided with a practical safety belt or other accessory or appliance to facilitate handling and convenience of use as well as safety during the period of descent. It is believed that, in practice, a light wire of sufficient tensile strength may be employed, allowing some one thousand feet of "cable" to be employed to accommodate use by individuals from a considerable height in the hotel or other buildings.

Attention is now directed particularly to Figure 2 in which the numeral 29 designates a vertical, externally screw-threaded cylinder to accommodate the auxiliary brake spring 30. This spring is partly housed in the cylinder and serves to press the auxiliary brake shoe 31 through an opening in the hub and against the inner periphy or auxiliary brake drum 16. The numeral 32 designates a follower which is slidable in the cylinder and which serves to compress the spring 30 for tensioning same. A feed nut 33 is threaded exteriorly on the cylinder and rests upon and engages projections on the follower 32, the feed nut is provided with circumferentially spaced, radial fingers 34, whereby said nut is automatically rotated and fed downwardly to put the follower under pressure and to progressively tension the spring and to apply the pressure of the brake shoe 31 accordingly. To accomplish this, a wheel-like rotor is provided, the same denoted by the numeral 35. This is provided with a stub axle 36 rotatable in a suitable bearing 37 in the cap 12. On the inner end of the shaft are suitably fashioned blades 38 which intermittently engage the fingers 34 and thus turn the nut to cause the same to function in progressively stressing and applying the drag action of the brake shoe 31. Motion is transmitted to the shaft 36 by way of an actuator arm 39 which is connected by a pin 40 to the adjacent flange of the reel. Thus, as the reel unwinds and the cable is paid out, the arm 39 rotates the rotor and the rotor, in turn, automatically adjusts the nut 33. In connection with this phase of the structure, it is to be noted that when the primary brake is set to accommodate a given weight, in the manner previously described, and

the cable pays out, it adds additional weight to the load, the cable and individual together, and this has to be compensated for by slowing down the rotation of the reel. It follows, therefore, that the automatic auxiliary or compensator brake 31 just described, accomplishes the end sought.

The aural or audible alarm means comprises a simple bell 41 which is mounted on the base plate and which is struck intermittently by a rotating or flying clapper or hammer 42. This hammer is pivotally mounted, as at 43, on the brake flange and at each rotation of the drum or reel, the hammer comes into play to strike the bell.

In practice, the entire device may be encased or suitably housed in an appropriate outer container, Instructions may be printed thereon to comply with fire regulations or other requirements. It is believed unnecessary, however, to illustrate such added accessories, since they are not deemed to be essential parts of the invention.

The invention comprehends, as disclosed, a device mechanically operated to be placed in hotel rooms so as to provide each guest occupying a room a safe exit by mechanical means in case of fire, and at the same time to provide a method for spreading the alarm in case of fire, with the same device, when said device is in use, thereby allowing the person detecting the fire in hotel, office building, or other high building to spread the alarm without subjecting himself or herself to unnecessary delay in making his exit, by setting off said alarm by the mere use of the device in using it as a means of escape from said fire trap.

In order to use the device, it is desirable to provide a suitable handle 44 on the base plate. Thus the user, by catching hold of the handle 44, may then step on the footpiece 27. This will force the spring 18 down and will put the desired tension on the brake shoe 19 depending on the weight of the user. Thus, the brake means is tensioned to function in confirmation with the weight of the user. The construction will be such that some ten pounds or so may constitute a differential between the "setting" of the device and the actual weight of the user, this to time and permit the reel to turn at a relatively slow speed. Then, by catching hold of the cable or attaching same by a belt or the like, the user may escape through an open window and descend slowly. During the course of descent, the brake shoe 19 checks each revolution of the reel by the shoulder and check means shown in Figure 3. It is obvious, therefore, that although the reel does not come to a stop completely, it is virtually slowed down and hence the operation of the cable is neither too rapid nor too jerky. It is obvious, too, that when once the brake shoe 19 is set by way of the bar 22, the thumb screw 25 is tightened to establish and hold the setting. It is further evident that as the reel permits the cable to unwind, the actuator arm 39 turns the rotor 35 which, in turn, operates the nut 33 which presses down on the spring 30 and applies the secondary brake shoe 31 against the secondary brake band 16. As previously stated, as the cable pays out, it, in conjunction with the weight of the user, adds to the load which is imposed, and to prevent the reel from turning too freely, the secondary brake 31 automatically comes into play and puts a proportionate and further drag on said reel.

The device can be used by more than one person provided there is still wire or cable on the reel and the computing or weighting lever is released and reset, say, for instance, as on a second floor of a hotel. A person jumps out of bed, dresses ap-

propriately, stands on the computing lever, tightens the butterfly screw, puts on belt, and jumps out the window. The reel unwinds, rings the bell and stops when he has reached the sidewalk. If another person rushes into said room, he can unscrew the thumb-nut, release the spring, stand on the lever, tighten the spring then fastening a suitable handle (not shown) to the line, and then jump out of the window.

The device may be used as a safety appliance attached to workers on scaffolds, such as window washers, painters, etc. It can be hooked on poles to protect lives of linemen. It would hold and permit the descent at a safe speed of anyone who had set it as to his weight before attaching the belt connected to it.

In view of the foregoing description taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention, the same is susceptible to certain changes fully comprehended by the spirit of the invention as herein described and within the scope of the appended claims.

What is claimed as new is:

1. A life saving device of the class described comprising a relatively fixed foundation including hub means, a reel mounted freely for rotation on said hub means, said reel being adapted to carry a safety cable, said reel including a friction brake drum, a cylinder, a spring in said cylinder, a brake shoe cooperable with the spring, said brake shoe being also cooperable with the brake drum, and means for adjusting and regulating the tension of the spring to control the action of the brake shoe, said means including a depending bar provided with a foot pedal, said bar having one end portion engageable with said spring.

2. A safety device of the class described comprising a foundation plate, a casing on said plate, a hub carried by said casing, a cylinder in said casing, a spring in said cylinder, a reel mounted on said hub structure and including a brake band surrounding the casing, a brake shoe cooperable with said spring and also with said brake drum, a foot controlled bar slidably mounted on said base plate, the upper end of said bar being laterally bent and engaging one end of said coiled spring, the lower end of said bar being provided with a foot pedal.

3. A safety device of the class described comprising a foundation plate, a casing on said plate, a hub carried by said casing, a cylinder in said casing, a spring in said cylinder, a reel mounted on said hub structure and including a brake band surrounding the casing, a brake shoe cooperable with said spring and also with said brake drum, a foot controlled bar slidably mounted on said base plate, the upper end of said bar being laterally bent and engaging one end of said coiled spring, the lower end of said bar being provided with a foot pedal, a screw-threaded stud on said plate, said bar having a slot through and beyond which said stud extends, and a clamping nut carried by said stud and engageable with said bar to fasten the bar in a predetermined and established position.

4. A safety device of the class described comprising a foundation plate, a casing on said plate, a hub carried by said casing, a cylinder in said casing, a spring in said cylinder, a reel mounted on said hub structure and including a brake band surrounding the casing, a brake shoe cooperable with said spring and also with said brake drum, a foot controlled bar slidably mounted on said base plate, the upper end of said bar being laterally bent and engaging one end of said coiled spring, the lower end of said bar being provided with a foot pedal, a screw-threaded stud on said base plate, said bar having a slot through and beyond which said stud extends, and a clamping nut carried by said stud and engageable with said bar to fasten the bar in a predetermined and established position, a screw-threaded cylinder in said hub, a coiled spring in said cylinder, a brake shoe on said spring cooperable with an adjacent portion of the reel, a follower mounted in said cylinder and engaging said spring, and a feed nut on said cylinder cooperable with said follower.

5. A safety device of the class described comprising a foundation plate, a casing on said plate, a hub carried by said casing, a cylinder in said casing, a spring in said cylinder, a reel mounted on said hub structure and including a brake band surrounding the casing, a brake shoe cooperable with said spring and also with said brake drum, a foot controlled bar slidably mounted on said base plate, the upper end of said bar being laterally bent and engaging one end of said coiled spring, the lower end of said bar being provided with a foot pedal, a screw-threaded stud on said base plate, said bar having a slot through and beyond which said stud extends, and a clamping nut carried by said stud and engageable with said bar to fasten the bar in a predetermined and established position, a screw-threaded cylinder in said hub, a coiled spring in said cylinder, a brake shoe on said spring cooperable with an adjacent portion of the reel, a follower mounted in said cylinder and engaging said spring, and a feed nut on said cylinder cooperable with said follower, said feed nut being provided with circumferentially spaced radial fingers, a bladed rotor mounted in said hub, the blades thereof being progressively and successively cooperable with said fingers, and an operating connection between said rotor and reel.

6. A safety device of the class described comprising a foundation plate, a casing on said plate, a hub carried by said casing, a cylinder in said casing, a spring in said cylinder, a reel mounted on said hub structure and including a brake band surrounding the casing, a brake shoe cooperable with said spring and also with said brake drum, a foot controlled bar slidably mounted on said base plate, the upper end of said bar slidably mounted on said base plate, the upper end of said bar being laterally bent and engaging one end of said coiled spring, the lower end of said bar being provided with a foot pedal, a screw-threaded stud on said base plate, said bar having a slot through and beyond which said stud extends, and a clamping nut carried by said stud and engageable with said bar to fasten the bar in a predetermined and established position, a screw-threaded cylinder in said hub, a coiled spring in said cylinder, a brake shoe on said spring cooperable with an adjacent portion of the reel, a follower mounted in said cylinder and engaging said spring, and a feed nut on said cylinder cooperable with said follower, said feed nut being provided with circumferentially spaced radial fingers, a bladed rotor mounted in said hub, the blades thereof being progressively and successively cooperable with said fingers, and an operating connection between said rotor and reel

including an arm connected to the rotor at one end and connected, at its opposite end, to said reel.

7. In a safety device of the class described, a base plate, a hub structure on said base plate, a reel mounted on said hub structure and including a brake drum, said brake drum being provided at a predetermined point with a radial offset defining a check shoulder, and an adjustable brake shoe mounted in said hub structure engageable with said brake band and said shoulder in the manner and for the purposes described.

8. A life saving device of the class described comprising a relatively fixed foundation including hub means, a reel mounted for rotation on said hub means, said reel being adapted to accommodate a safety lowering cable, said reel including a friction brake drum surrounding said hub means, a cylinder mounted in said drum, a spring in said cylinder, a brake shoe in frictional wiping contact with said brake drum, said spring bearing against said brake shoe, together with manually regulated and set means for adjustably tensioning the spring to provide same with greater or less compression depending upon the requirements of users varying in weight.

9. A life saving device of the class described

comprising a relatively fixed foundation including hub means, a reel mounted for rotation on said hub means, a safety lowering cable wound on said reel, said reel including a brake drum surrounding said hub means, a brake shoe in wiping contact with said brake drum, a coiled spring engaging the brake shoe, means for operatively supporting the spring in said hub means, a relatively fixed stud provided with a clamping nut, a bar having a slotted portion operable on the stud and held in adjusted positions by said clamping nut, said bar being connected at its upper end to said spring and being provided at its lower end with means for conveniently regulating the compressional forces of said spring.

GASPAR ROBERT BOSSETTA.

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