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SEARCH ROOM

Dec. 11, 1962 D. O'MEARA ETAL 3,067,700

BANK PROTECTING MEANS

Filed July 18, 1961 2 Sheets-Sheet 1

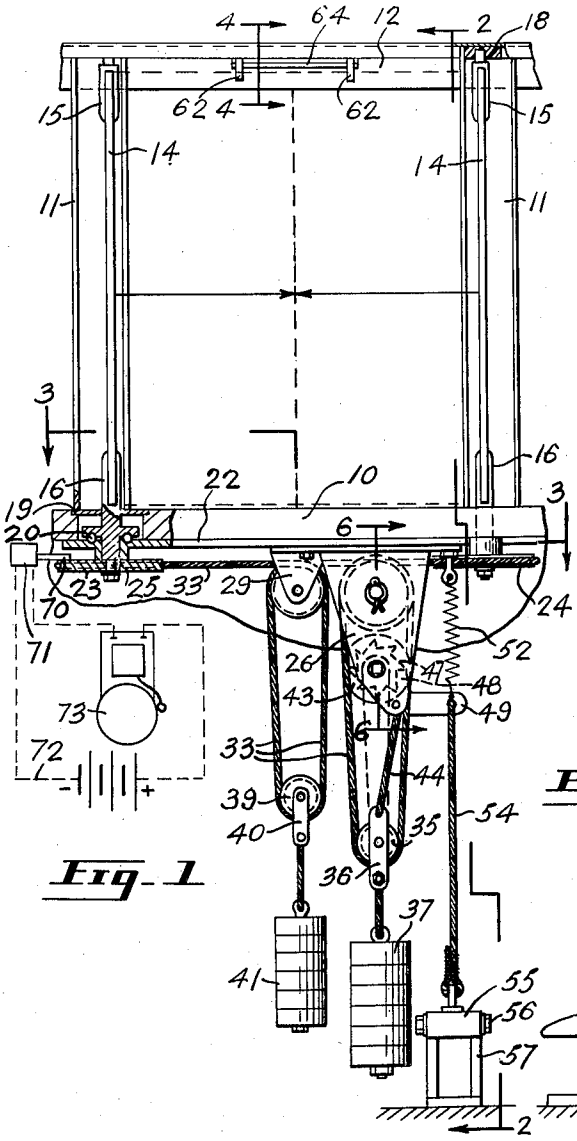

Fig. 1

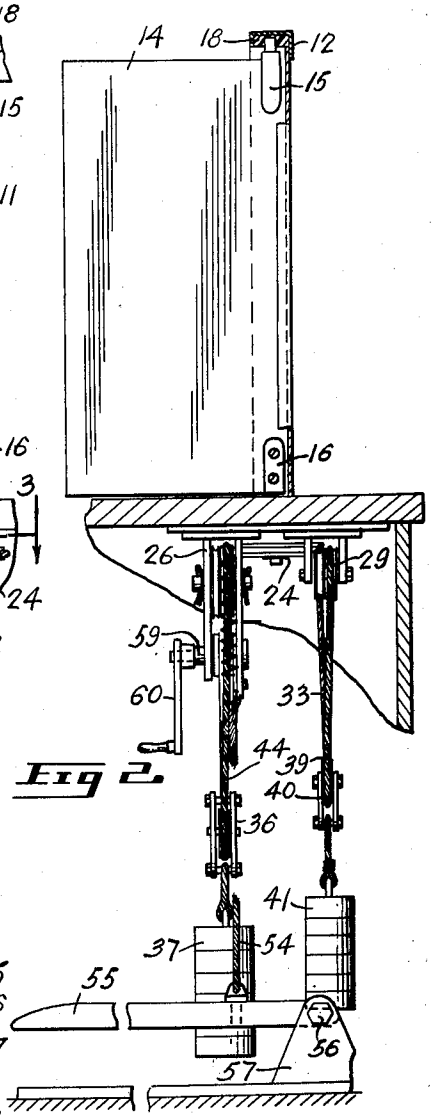

Fig 2.

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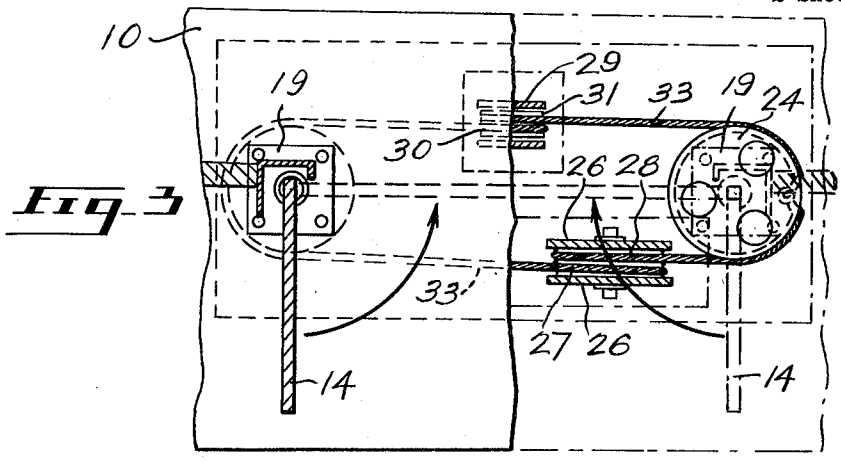

Fig. 3

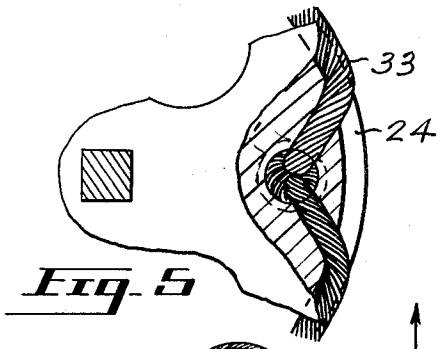

Fig. 5

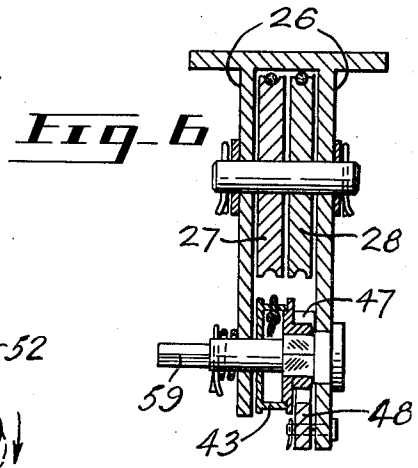

Fig. 6

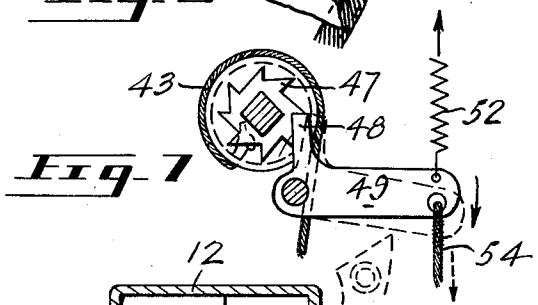

Fig. 7

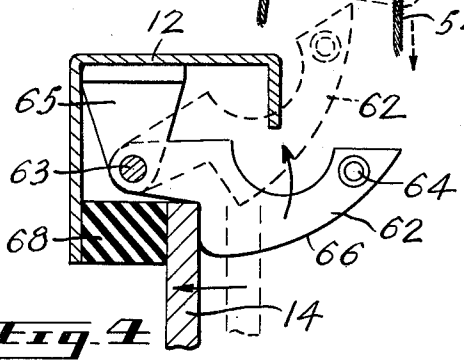

Fig. 4

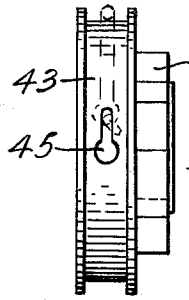

Fig. 8

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BANK PROTECTING MEANS

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This invention relates to a protective device for teller and cashier cages and the like having a window for access to the public; the device consists essentially of a shield of bullet-proof material which can be controlled by the teller to swing rapidly to close the window when a hold-up is attempted.

Although in later years the number of bank robberies has steadily increased and although many devices have been proposed for protection against robberies, none of these devices have found wide acceptance because most of them are designed to trap the robber rather than to protect the bank staff and funds. Furthermore the risk of such devices being set off accidentally and hurting valuable bank customers, and the psychologically adverse effect which such devices have on customers by their very presence has discouraged their use as doing more harm to the bank's reputation and business than the robberies they are designed to prevent.

In contrast to the previously proposed devices the present invention provides effective protection to the bank staff and prevents the robbery from being carried out. In addition the robber is free to get away and is furthermore encouraged to do so by the psychologically humiliating effect of having the teller's window shut in his face. The closing of the window takes place in a fairly discreet manner, so that the robber is less likely to lose his nerve and start shooting at the bank patrons.

If the device is accidentally operated while a legitimate customer is at the window, no great harm is done, and an apology is sufficient to set matters right. Furthermore the shield in accordance with the invention is not particularly conspicuous and may be mistaken for a simple shutter to close the window when it is not in use.

In accordance with a preferred embodiment of the invention the shield is operated by a weight which urges it to closed position, and is normally kept suspended by retaining means. A counterweight is provided to keep the shield in open position, and the retaining means can be released at will by the teller, preferably by means of a pedal.

The arrangement is such that the closing of the shield takes place almost instantaneously so as not to give the robber time to shoot or attempt to keep the window open. A lock is provided to engage the shield in the closed position to prevent its being opened from outside the cage.

A preferred embodiment of the invention is illustrated by way of example in the accompanying drawings, in which:

FIG. 1 is an elevation of the protective device from the teller's side:

FIG. 2 is a vertical section along line 2—2 of FIG. 1;

FIG. 3 is a horizontal section along line 3—3 of FIG. 1;

FIG. 4 is a detail showing the lock in section along line 4—4 of FIG. 1;

FIG. 5 is a broken away fragmentary plan of one of the pulleys which operate the shields, showing the attachment of the pulley cable;

FIG. 6 is a detail showing the pulleys from which the weight is suspended, in section along line 6—6 of FIG. 1;

FIG. 7 is a detail elevation of the ratchet and pawl

mechanism for keeping the weight in raised position and for releasing the same;

FIG. 8 is a detail elevation of the pulley from which the weight is suspended in the open position.

With reference to FIGS. 1, 2 and 3, numeral 10 indicates the counter over which business is transacted. The teller's window is defined by a pair of posts 11 and by a horizontal frame member 12. The posts and the frame member are made of profiled metal plate.

Shield 14 of steel or, preferably, of bullet-proof glass are mounted by means of top and bottom hinge pins 15 and 16 on vertical axes along the sides of the window behind the posts 11. The top hinge pins 15 are carried in bearings 18 secured to the underside of frame member 12 and the bottom hinge pins 16 extend through mask plates 19 and are carried by ball bearings 20 on a supporting plate 22 secured underneath the counter 10 and extending across the width of the window. The bottom pins 16 extend past the bearings 20 and have pulleys 23 and 24 secured to the squared bottom ends 25 thereof.

A double bracket 26 is attached to the supporting plate 22 and has mounted thereon a pair of independently rotating pulleys 27 and 28. A further double bracket 29 is attached to the supporting plate 22 and has mounted thereon a second pair of independently rotating pulleys 30 and 31. The pulleys 27—28 and 30—31 are located on opposite sides with respect to a central plane including the axes of rotation of pulleys 23 and 24 and have their peripheries aligned with the peripheries of pulleys 23 and 24. A cable 33 has its ends secured together in an eye in pulley 24 (FIG. 5) and rides over the pulleys 27—28 so as to form a loop, over pulley 23 and over pulleys 30—31 so as to form another loop.

The loop of cable 33 formed by pulleys 27—28 carries a sheave 35 to the block 36 of which is suspended a weight 37. Similarly the loop formed by pulleys 30—31 carries a sheave 39 to the block 40 of which is suspended a counterweight 41 which is substantially lighter than the weight 37.

The double bracket 26 has mounted on it underneath the pulleys 27 and 28 a drum 43 over which is wound a cable 44 which is attached at one end to the sheave block 36. The other end of the cable 44 is attached to the drum 43 by means of an eye 45 (FIG. 8). The drum 43 has secured to it a ratchet wheel 47 which is engaged by a pawl 48 integral with a lever 49 pivoted at 50 to the double bracket 26.

The lever 49 is urged upwardly in a position where the pawl 48 engages the ratchet wheel 47, by a spring 52 attached to the supporting plate 22. A release cable 54 is attached to the lever 49 and to a pedal 55 located near the floor and pivotally mounted at 56 to a floor bracket 57.

The assembly of drum 43 and ratchet wheel 47 is provided with a protruding square shaft portion 59 engageable by a removable handle 60 (not shown in FIG. 1).

The above described device operates as follows: when a hold-up occurs, the teller steps on the pedal 55 pulling down on the lever 49 against the action of spring 52 and causing the pawl 48 to release the ratchet wheel 47. Cable 44 unwinds from the drum 43 and causes the weight 37 to pull down on the sheave 35 thereby rotating the pulleys 23 and 24 so as to swing the shields 14 to close the window. At the same time the counterweight 41 is pulled up and keeps the cable 33 taut.

When it is desired to open the window again the drum 43 is rotated by means of the handle 60 so as to rewind the cable 44 and raise the weight 37. As the weight 37 is raised the counterweight 41 descends and rotates

the pulleys 23 and 24 to swing the shields 14 to open position. The weight 37 is kept in the raised position armed for the next emergency by the pawl 48 engaging the ratchet 47.

FIG. 4 shows a locking device to keep the shields locked in the closed position. The device, also shown in FIG. 1, comprises a pair of latch hooks 62, one for each shield 14, connected by rods 63 and 64, and pivotally mounted on brackets 65 secured to the underside of the horizontal frame member 12. The latch hooks 62 are urged down by their own weight and have bottom cam surfaces 66 which are engaged by the top edges of the shields 14 as these are closing, so as to raise the hooks, as shown in dotted lines in FIG. 4. When the shields 14 reach the closed position the hooks 62 drop down behind the shields and effectively lock the same.

FIG. 4 also shows a strip 68 of resilient material such as hard rubber or plastic, secured to the frame member 12, which acts as an abutment against which the shields 14 strike as they reach the closed position.

As shown in FIG. 1, the pulley 23 is provided with a switch trip 70 adapted to trip a toggle switch 71 in an electric circuit 72 which includes an alarm bell 73. The switch 71 is closed when the shields swing to closed position, to sound an alarm and warn that a robbery attempt is taking place.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A protective device for teller and cashier cages and the like having an access window, comprising a bullet-proof shield pivotally mounted on a vertical axis located alongside said window, a pulley operatively connected to said shield and having its axis concentric with the axis of said shield, a cable riding on said pulley, a weight suspended from said cable on one side of said pulley, a counterweight suspended from said cable on the other side of said pulley, said weight urging said pulley in a direction to swing said shield to close said window, said counterweight urging said pulley in a direction to swing said shield to open said window, said counterweight being lighter than said weight, retaining means from which said weight is suspended in a position to allow said counterweight to keep said shield in open position, and releasing means located inside said cage and connected to said retaining means to release the same to allow said weight to operate said pulley to swing said shield to closed position.

2. A protective device for teller and cashier cages and the like having an access window, comprising a bullet-proof shield pivotally mounted on a vertical axis located alongside said window, a first pulley coaxial with said vertical axis and operatively connected with said shield, a cable riding on said first pulley, a second pulley mounted on a horizontal axis and carrying said cable on one side of said pulley, a weight suspended from said cable under said second pulley and urging said first pulley in a direction to swing said shield to close said window, a third pulley mounted on a horizontal axis and carrying said cable on the other side of said first pulley, a counterweight suspended from said cable under said third pulley and urging said first pulley in a direction to swing said shield to open said window, said counterweight being lighter than said weight, a drum mounted on a horizontal axis between said second pulley and said weight, a further cable attached to said drum and to said weight,

a ratchet secured to said drum, a pawl engaging said ratchet to hold said weight suspended in a position to allow said counterweight to keep said shield in open position, and means inside said cage to release said pawl to allow said weight to operate said second and first pulleys to swing said shield to closed position.

3. A protective device according to claim 2, wherein said pawl is provided with a pivoted lever rigid therewith and a spring urging said pawl in ratchet-engaging position, and said releasing means comprises a tensile member attached to said lever and a pedal to which said tensile member is connected.

4. A protective device according to claim 2, wherein said window has a frame member across the top thereof, a latch hook pivotally mounted on said frame member for swinging movement in a vertical plane transverse to said window and positioned to lock said shield in the closed position thereof, said hook having on its underside a cam surface whereby it is engaged and lifted by said shield as the shield closes and then drops to a locked position as said shield reaches its closed position.

5. A protective device according to claim 2, further comprising an electrical circuit including an alarm bell and a switch, wherein said first pulley has a switch trip adapted to trip said switch to close said circuit as the shield swings to closed position.

6. A protective device for teller and cashier cages and the like having an access window, comprising two bullet-proof shields pivotally mounted on vertical axes along each side of said window, first pulleys coaxial with said vertical axes and operatively connected with said shields, a pair of second pulleys mounted on a horizontal axis, a pair of third pulleys mounted on a horizontal axis, a first and a second sheave, a cable riding on said first pulleys, the courses of cable on one side of said first pulleys riding each on one of said second pulleys and carrying the first sheave, the courses of cable on the other side of said first pulleys riding each on one of said second pulleys and carrying the second sheave, a weight suspended from said first sheave and urging said first pulleys in a direction to swing said shields to close said window, a counterweight suspended from said second sheave and urging said first pulleys in a direction to swing said shields to open said window, said counterweight being lighter than said weight, a drum mounted on a horizontal axis between said second pulleys and said first sheave, a cable attached to said drum and to said first sheave, a ratchet secured to said drum, a pawl engaging said ratchet to hold said weight suspended in a position to allow said counterweight to keep said shields in open position, a pivoted lever rigid with said pawl, a spring urging said pawl in ratchet-engaging position, a tensile member attached to said lever and a pedal to which said tensile member is attached, said pedal being located inside said cage and being adapted to release said pawl to allow said weight to operate said second and first pulleys to swing said shields to closed position.

7. A protective device according to claim 6, wherein said rope has its ends secured to one of said first pulleys.

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