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Robinson

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[54] **CASHIER'S BOOTH**

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[21] Appl. No.: **394,132**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 219,426, Jan. 20, 1972, abandoned.

[52] **U.S. Cl.** **109/7,** 109/23

[51] **Int. Cl.** **E05g 3/00**

[58] **Field of Search** 109/7, 6, 9, 23, 1–3, 109/45, 46, 63.5, 47, 10, 19; 340/280, 272; 177/45

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[57] **ABSTRACT**

Apparatus is provided to discriminate between authorized and unauthorized persons for permitting only authorized persons to operate a cash register. In its preferred form, the apparatus comprises a bullet-proof booth which encloses the register and which has a platform mounted on springs for displacement downwardly when a person stands on the platform to operate the register. Switch means provided below the platform cooperates with circuit means to supply power to the register only when a door to the booth is closed and to prevent electrical power from being supplied to the register when the weight of the person on the platform does not correspond to a preset authorized weight, or when an attempt is made to straddle the platform. In addition, photoelectric switches and light beams are provided in the booth to discriminate between the height of authorized and unauthorized persons.

Embodiments are disclosed wherein access to the receptacle is afforded when either height, weight or weight and door-closure conditions are met.

15 Claims, 7 Drawing Figures

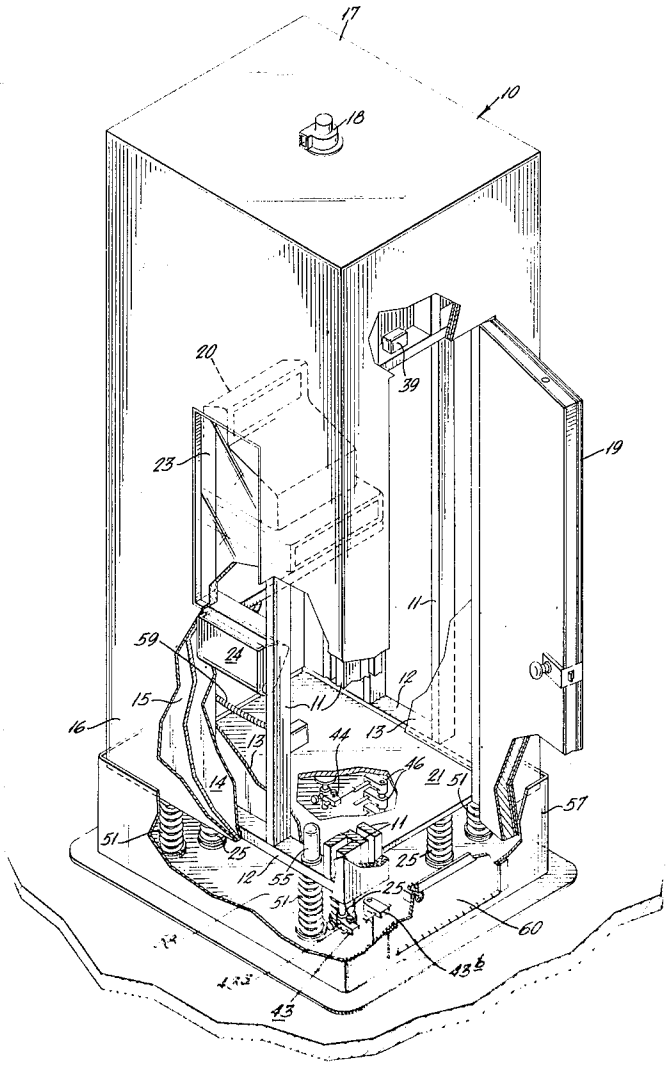


FIG. 1.

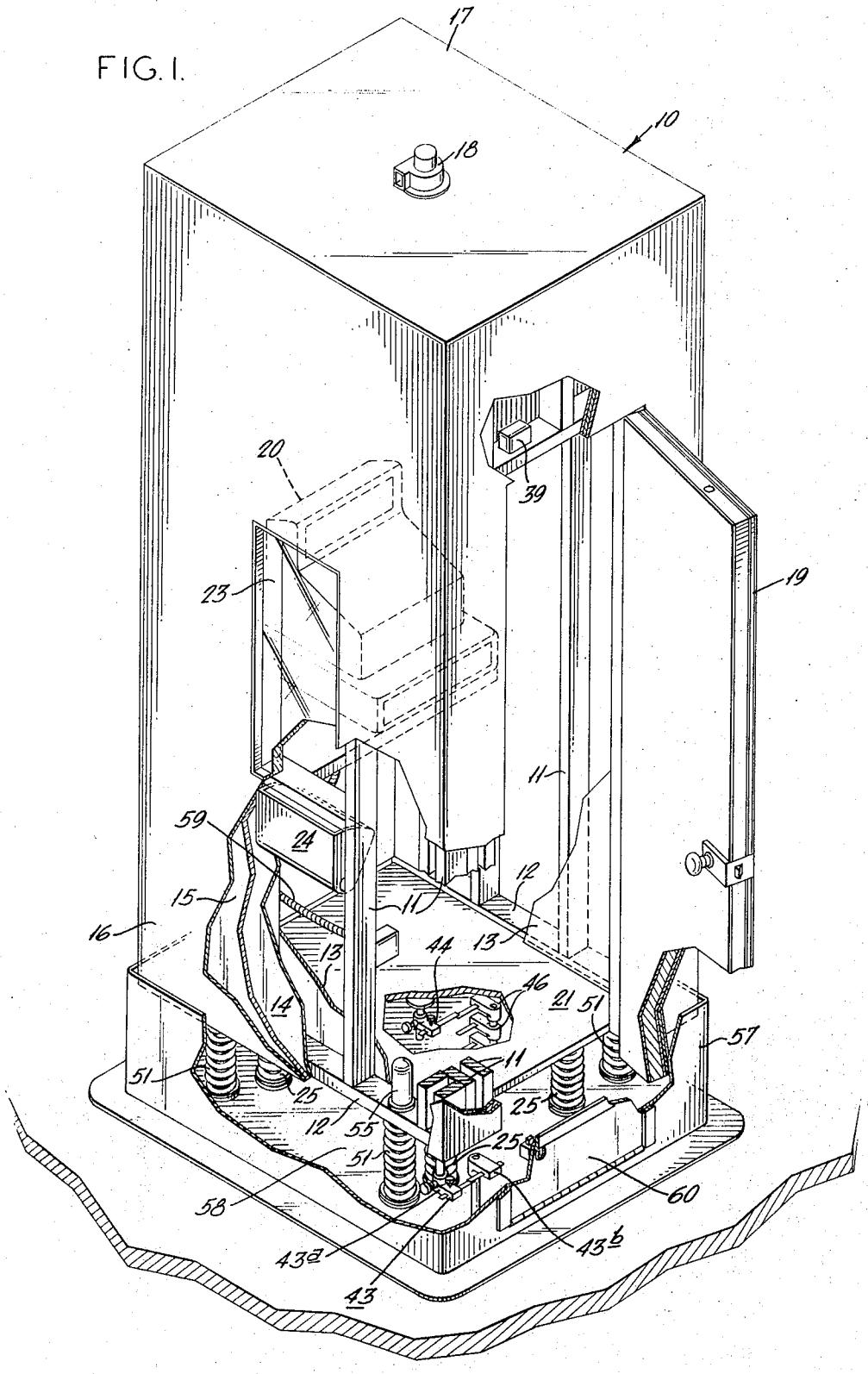

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FIG. 2.

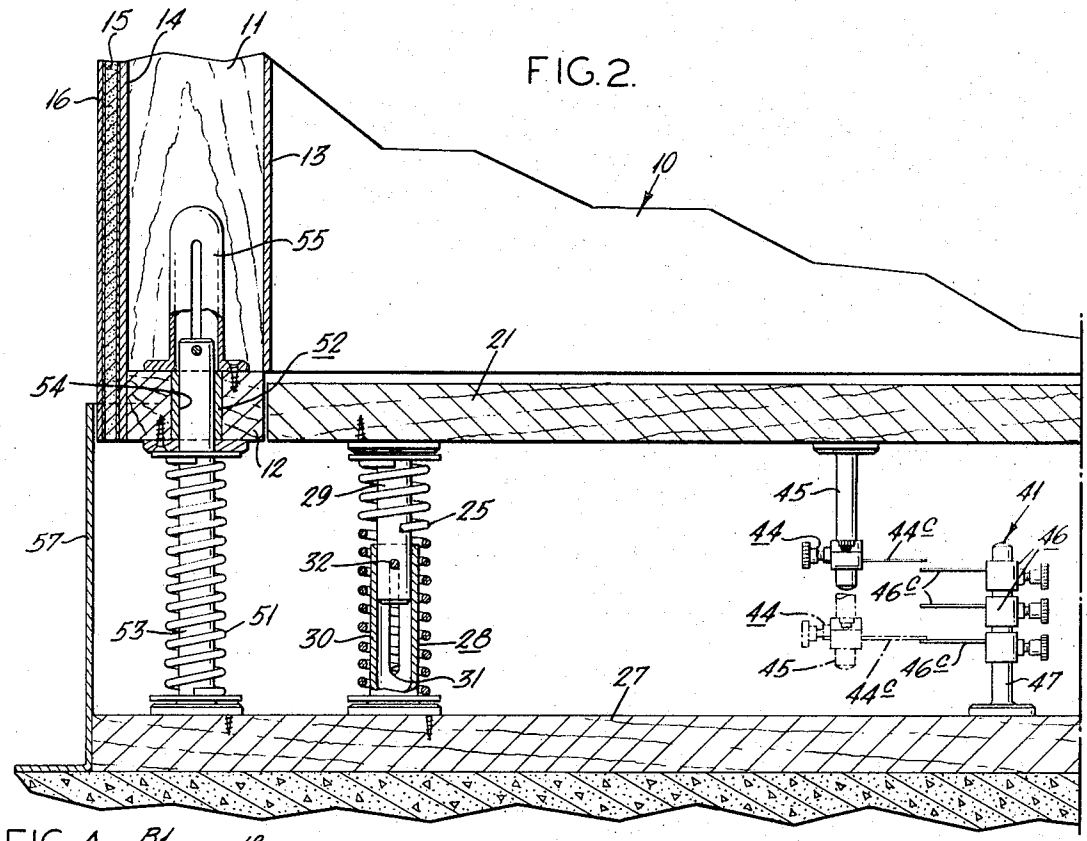


FIG. 4.

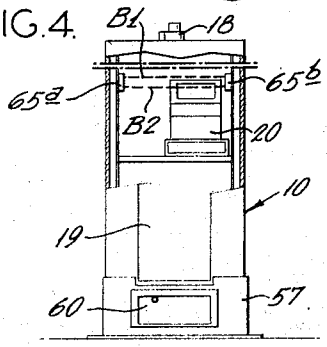


FIG. 3.

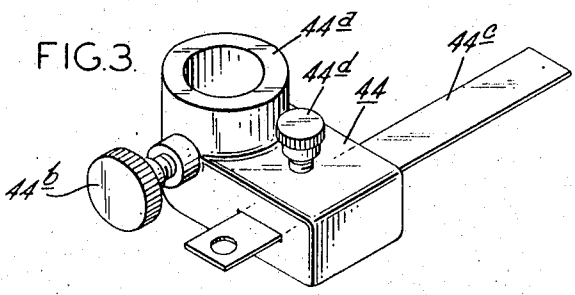


FIG. 5.

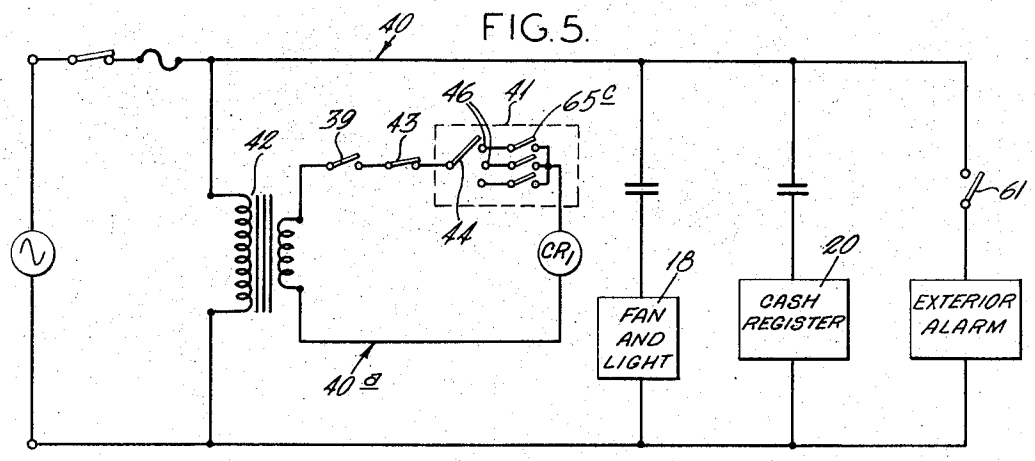


FIG. 5a

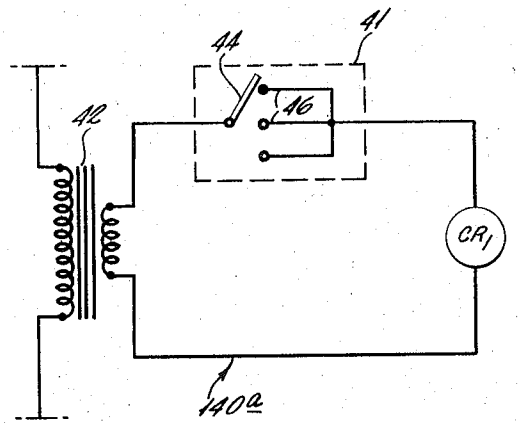
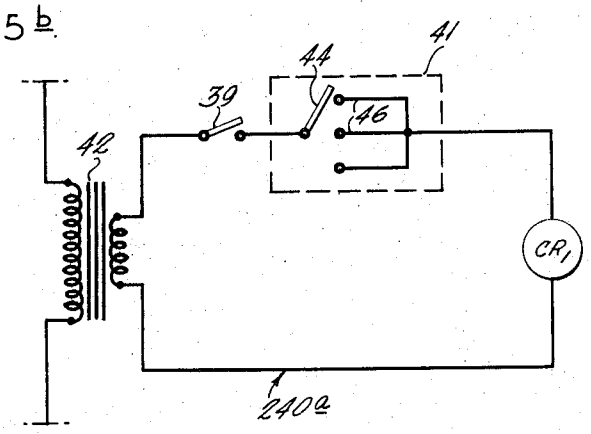


FIG. 5b



CASHIER'S BOOTH

The present application is a continuation-in-part of copending application Ser. No. 219,426, filed on Jan. 20, 1972, now abandoned, for a Cashier's Booth.

The present invention relates to theft-prevention apparatus, and more particularly, the present invention relates to apparatus for use in conjunction with a cash register to permit only authorized persons to operate the register.

At present, it is uncommon for business places such as drug stores, taverns, real-estate offices, and the like, in certain "high-crime" areas to be robbed frequently, often by armed robbers. As a result, businesses in these areas sometimes find it difficult to obtain theft insurance, and in many instances they are forced to become self-insurers. In most business establishments, the cash register is located as to be readily accessible to clerks authorized to operate the register; however, the same ready accessibility renders the establishment susceptable of being robbed successfully.

With the foregoing in mind, it is the primary object of the present invention to provide means for permitting a cash register to be operated only by authorized persons.

It is another object of the present invention to provide apparatus for use in conjunction with a cash register to discriminate automatically between persons authorized to have access to the register and persons not so authorized and to permit the register to be operated by only those authorized.

It is a further object of the present invention to provide means for discriminating between persons authorized and unauthorized to have access to a receptacle for valuables by comparing the weight of the person seeking access with a preset authorized weight and/or by comparing the height of the person seeking access with a preset authorized height.

As a still further object, the present invention provides apparatus which permits an authorized person to have access to a cash register only when standing in a bullet-proof booth containing the register so that he is there safe from physical harm and able to resist a robber's demands.

More specifically, the present invention provides apparatus for use in conjunction with an electrically-operated cash register to permit only authorized persons to obtain access to the register. The apparatus comprises a vertically-movable platform, means mounting the register sufficiently close to the platform to require a person to stand on the platform when using the register, switch means cooperable with the platform, and circuit means to supply power to the register to permit the same to be opened only when the platform is displaced downwardly a predetermined distance by the weight of a person on the platform and the switch means is contacted. The switch means is pre-set to the weight of a person authorized to have access to the register, and the switch means is adjustable to operate in a preselected range with respect to the pre-set weight to compensate for normal variatons in the weight of the authorized person. In addition, there is provided means to detect the height of the person seeking access for permitting access only when both weight and height conditions are met; however, embodiments are disclosed wherein the meeting of either height or weight-responsive conditions are required to open the register. In order to prevent a thief from forcing an authorized person to stand on the platform, a bullet-proof booth surrounds the platform and register, and, additional switch means is connected in the circuit to permit the register to open only when a door to the booth is closed. The booth is sized to receive only one person; however, to prevent a thief from straddling the platform by supporting himself on the inside of the booth when a person of an authorized weight is on the platform, the booth is mounted on springs for displacement relative to the platform, and normally closed switch means cooperates with the booth and the circuit to interrupt power to the register upon downward displacement of the booth.

These and other objects, features and advantages of the present invention should become apparent from the following description when taken in conjunction with the accompanying drawings in which:

FIG. **1** is a perspective view with portions broken away of a cashier's booth embodying the present invention;

FIG. **2** is an enlarged fragmentary sectional view of a lower portion of the booth illustrated in FIG. **1**;

FIG. **3** is a greatly enlarged perspective view of a portion of an adjustable switch assembly employed in the present invention;

FIG. **4** is a reduced front elevational view of the booth of the present invention having portions broken away to illustrate height discrimination means;

FIG. **5** is a schematic diagram of an electrical circuit associated with the present invention; which requires height, weight, door-closure and a non-straddling condition of a platform to be met before a receptacle located adjacent the platform may be opened;

FIG. **5***a* is a schematic diagram of a portion of the circuit illustrated in FIG. **5** but wherein only weight conditions must be met before access to the receptacle is permitted; and

FIG. **5***b* is a schematic diagram similar to FIG. **5***a* but of a circuit which requires both weight and door-closure conditions to be met before access to the receptacle is permitted.

Referring now to the drawings, there is illustrated in FIG. **1**, a cashier's booth **10** embodying the present invention. As illustrated therein, the booth **10** is about the size of a conventional telephone booth, i.e., large enough to contain a person comfortably in a standing position. The walls of the booth **10** are constructed of upstanding studs **11, 11** nailed at their bases to a horizontally-disposed nailer **12** and at their tops to a similarly-disposed nailer which is not shown. The interior of the booth **10** may be paneled as at **13** to provide a finished appearance; however, paneling is not necessary. The exterior of the booth is sheathed by a layer of steel **14** of sufficient thickness (about 3/16 inch) to stop or at least greatly retard a bullet. The steel **14** is covered by a layer of plaster board **15,** and the plaster board **15** is covered by an exterior layer of material **16** such as wood paneling, plaster, or the like, depending on the environment in which the booth **10** is to be installed and the desired aesthetics to be achieved. The top **17** of the booth **10** is similarly constructed, and a fan **18** and lamp (not shown) are mounted in the top of the booth to provide both ventilation and illumination. Access to and from the booth is provided by means of a door **19,** constructed generally along the lines of the walls of the booth **10.**

A receptacle such as an electrically-operated cash register **20** is provided in the booth **10**, and the register **20** is mounted in the booth **10** at an elevation as to be conveniently accessible by a person standing on a platform **21** forming the floor of the booth. In order to permit a person to receive and dispense cash while in the booth, a window **23** of bullet-proof glass is provided, and a depository **24** is provided below the window **23**. With this structure, a person standing inside the booth **10** with the door **19** closed is free from the threat of physical harm, and is thereby able to resist a robber's demands with impunity.

In order to prevent a robber from entering the booth **10** and operating the register **20**, the present invention provides means to discriminate between a robber and a person authorized to operate the register **20**. To this end, the platform **21** is mounted for vertical displacement in response to weight thereon, and discriminating means responsive to the displacement of the platform is provided. As best seen in FIG. **2**, the platform **21** is mounted for vertical displacement by means of a series of four springs **25,25** spaced apart below the platform **21** and engaging between the underside of the platform **21** and a datum such as wooden base **27**. In order to prevent the platform **21** from tilting when a person stands other than centrally thereon, for instance, when entering the booth **10** through the door **19**, there is provided a bearing assembly **28** associated with each spring. A typical bearing assembly **28** comprises a vertically disposed post **29** depending from the platform **21** and telescopically received in an upstanding hollow sleeve **30** mounted on the base **27**. The sleeve **30** is slotted longitudinally at **31**, and a pin **32** extending transversely to the post **29** engages in the slot **31** and operates to limit displacement of the platform **21** away from the base **27**. If desired, shock-absorber means may be provided between the platform **21** and the base **27** to dampen any tendency for the platform to oscillate after a sudden application of weight, for example, when a person initially enters the booth **10**, or in response to normal movement on the platform **21**.

For the purpose of supplying power to the register **20** in response to a predetermined downward displacement of the platform **21**, as determined by the weight of a person standing thereon, circuit means **40** such as illustrated in FIG. **4** is provided and a switch assembly **41** (FIG. **2**) is provided beneath the platform **21** and is connected in the circuit **40**. In the present instance, the circuit **40** includes a transformer **42** having its primary windings connected across a power supply, such as 120 VAC, and its secondary windings connected in a low-voltage circuit, such as a 12 VAC circuit **40***a* (FIG. **5**). The low-voltage circuit includes a normally-open switch **39**, a normally-closed switch **43**, and the switch assembly **41**, connected in series relation with the coil of a double pole relay CRI. One set of contacts of the relay CRI is connected across the 120 VAC supply and in series relation with the cash register **20**. Thus, when the switches **39**, **41** and **43** are closed, the coil of the relay CRI is energized and the contacts of the relay CRI are closed to supply power to the cash register **20** (as well as the fan and light) to permit the cash register **20** to be operated in the customary manner. Conversely, opening of either switch **39**, **41** or **43** causes the coil of the relay CRI to be deenergized, and the relay contacts to open for interrupting power to the register and the fan and light. In order to permit access to the register **20** only when weight conditions are met, the low-voltage circuit **40***a* of FIG. **5** is modified along the lines of the circuit **140***a* illustrated in FIG. **5***a*. In this circuit, power is supplied to the coil of the relay CR_1 when the weight-responsive switch member **44** engages one of the contacts **46,46**. In order to permit the register **20** to be opened when weight conditions are met and the door **19** is closed, the circuit **240***a* illustrated in FIG. **5***b* is provided. In this circuit, power is supplied to the coil of the relay CR_1 when the weight-responsive switch member **44** engages one of the contacts **46,46** and the switch **39** is closed.

In the preferred embodiment, the switch **39** is of the magnetic proximity type and is mounted in the door **19** and its jamb as illustrated in FIG. **1** to close only when the door **19** is closed so that, one of the conditions for causing power to be supplied to the cash register **20** is that the door **19** must be closed. The other condition which must be met before power is supplied to the cash register **20** is that the weight of the person standing on the platform in the booth must be within a predetermined range of the weight of the person authorized to operate the register. To this end, the switch assembly **41** includes a contact **44** mounted on a post **45** depending from the underside of the platform **21** and one or more, in the present instance three, complementary contact members **46,46** mounted in vertically spaced relation on an upstanding post **47** on the base **27**. As best seen in FIG. **3**, each member **44** comprises a bored collar portion **44***a* slidably engaging the post **45**, a thumbscrew **44***b* for frictional locking the collar **44***a* to the post **45**, and a flexible leaf **44***c*. The complementary contact members **46,46** are secured to their respective post **47** at elevations which cause their leafs **46***c*,**46***c* to engage the leaf **46***c* of the member **44** when a predetermined weight is applied on the platform **21** and the platform **21** moves downwardly. By adjusting the elevation of the members **46,46** relative to the member **44** the displacement distance of the platform **21**, which corresponds to the weight thereon, may be preset to the weight of the person authorized to operate the register **21**. Thus, only when both conditions are met, i.e., the door **19** is closed and the preset weight is on the platform can the register **20** be operated. In the event that the door **19** is closed but the weight on the platform **21** is greater or lesser than the preset weight, the leafs **44***c* and **46***c* disengage one another to prevent the coil of the relay CRI from being energized. In the illustrated embodiment, the switch assembly **41** comprises three contact members **46** on the post **47** to permit three persons, each of a different weight, to operate the cash register **20**.

It is known that a person's weight may tend to vary day to day and that such daily variations may amount to one or more pounds. In order to enable the switch assembly **41** to compensate for such variations, the leafs **44***c* and **46***c* are flexible, and the leaf **44***c* is mounted in the collar **44***a* by means of a friction lock **44***d* to permit the leaf **44***c* to be adjusted in a direction transverse to the path of movement of the platform **21**. The amount of overlap of the complementary leaf members **44***c* and **46***c* determines the range of weight variation with respect to the preset magnitude. For instance, when the leaf **44***c* is adjusted so that the overlap with the leaf **46***c* is slight, the leafs will disengage one another in response to a relatively small increase in weight above the preset magnitude. When the leaf **44***c*

is adjusted so that the overlap with the leaf **46***c* is greater, the leafs will remain engaged with one another for a greater amount of downward displacement of the platform **21** corresponding to a greater increase in weight above the preset magnitude. Thus, it should be apparent that by adjusting the amount of overlap of the leafs **44***c* and **46***c*, the sensitivity of the apparatus to variations in weight about a preset magnitude can be adjusted.

It is conceivable that a robber may attempt to enter the booth **10** with an authorized person in an attempt to meet both of the aforementioned conditions for obtaining access to the register **20.** However, the weight of two people on the platform would be so excessive as to cause the leafs **44***c* and **46***c* to disengage one another, thus preventing the platform weight condition from being met. If, however, an enterprising robber should attempt to straddle the platform **21** in an effort to reduce the load on the platform **21,** the switch means **43** in the circuit of FIG. **4** prevents power from being supplied to the register **20.** To this end, as best seen in FIG. **1,** the switch **43** is connected between the nailer **12** of the booth **10** and the base **27.** The switch **43** includes complementary members **43***a* and **43***b* which normally engage one another to perform the function of a normally-closed switch when connected in the circuit **40.** Like the platform **21,** the booth **10** is mounted for vertical movement on a series of springs **51,51** and a bearing assembly **52** (FIG. **2**) comprising an upstanding post **53** secured to the base **27** and a sleeve **54** in the bottom nailer **12** is associated with each spring **51** to prevent tilting of the booth **10.** Thus, downward displacement of the booth **10** relative to the base **27** causes the switch **43** to open to prevent energization of relay CRI and to prevent power from being supplied to the register **20.** It is noted, however, that unlike the bearing assemblies associated with the platform, the post **53** of each bearing assembly **52** projects upwardly into the walls of the booth **10.** Accordingly, in instances where the booth does not have interior paneling, it is necessary to provide a cap **55** over the ends of each post **53** to prevent a robber from foiling the apparatus by standing on the posts **53,53.**

In addition to the weight conditions which must be met before a person can obtain access to the register **20,** the present invention also provides in the preferred embodiment of FIGS. **1–3** and **5,** means to discriminate between the height of authorized and unauthorized persons. To this end, there is provided in the booth **10,** emitter means **65***a* to project upper and lower beams of light B1 and B2, respectively, across the booth **10** in front of the register **20.** Receiver means **65***b* is provided to receive the beams B_1 and B_2 on the other side of the booth. The upper beam B_1 is located so as to clear the top of the head of an authorized person when standing on the platform **21,** and the lower beam B_2 is located as to be interrupted by the head of the person when standing on the platform. The receiver **65***b* includes an internal normally-open switch **65***c* wired in series with one of the switch members **44** (FIG. **4**), and the switch **65***c* is operable to close only when the upper beam B_1 is unbroken and the lower beam B_2 is broken. Thus, both weight and height conditions must be met before the register **20** is energized. If more than one person is to be authorized to use the booth **10,** additional beam emitters and receivers may be employed and mounted at corresponding elevations in the booth **10.** In such event, the internal switch of each additional receiver is wired in series with the weight-responsive switch member **44** of the corresponding person to ensure energization of the register **20** only when a person of both the proper height and weight is standing on the platform **21.**

In order to conceal the circuits, switches and the like, a skirt **57** is provided around the lower portion of the booth **10** to cooperate with the platform **21** and base **27** to provide a chamber **58.** Power to the apparatus is supplied to a junction box (not shown) which may be located in the chamber **58.** Preferably, the cash register **20** is permanently wired into the booth **10** by means of armored cable **59** (FIG. **1**) to prevent a robber from attempting to by-pass the system by utilizing an extension cord. A lockable hatch **60** is provided in the skirt **57** to provide access to the apparatus in the chamber **58** for permitting the same to be initially and periodically adjusted and maintained while preventing unauthorized access to the chamber **58.** If desired, a toggle switch **61** (FIG. **4**) may be provided in the booth **10** and wired in the circuit **40** to an exterior alarm to permit a person to summon aid while inside the booth **10.**

In use, the booth **10** is installed in a business establishment at a location which is convenient to clerks authorized to operate the cash register **20.** The switch assembly **41** is adjusted to operate in response to the weight of an authorized person by moving one of the members **46,46** either upwardly or downwardly until its leaf **46***c* engages the leaf **44***c* of its complementary member **44.** Preferably, such adjustment is effected accurately with the person standing on the platform **21.** Of course, if more persons of different weights are to be authorized to operate the register **20,** the other switch members **46** may be similarly adjusted.

In using the apparatus, an authorized clerk simply enters the booth **10** and closes the door **19** to operate the cash register **20** in the customary manner. The clerk may then pass change or the like through the depository **24,** or after the clerk has made a deposit or obtained the desired change from the register **20,** he may then close the register **20** and exit the booth **10** to resume his normal duties.

In the event of a robbery attempt, the robber would not be able to operate the cash register **20,** except in the extremely unlikely event that his weight and height is substantially the same as one of the store clerks authorized to operate the register. If he were to force an authorized clerk to enter the booth **10,** it would be necessary for the clerk to close the door **19** before the register **20** could be opened. However, once the door **19** is closed the clerk would be safe from harm and he could resist the robber's demands with impunity, since the door **19** is lockable from inside the booth **10.** If the robber were to attempt to enter the booth **10** with the authorized person, in spite of the small size of the booth, the switch assembly **44** would open if both stood on the platform **21.** In the event that the robber were to attempt to straddle the platform **21,** the booth **10** would move downwardly and the switch **43** would open to prevent power from being supplied to the register **20.**

In view of the foregoing, it should be apparent that novel apparatus has now been provided for permitting only authorized persons to have access to a cash register and for preventing unauthorized persons from obtaining access to the register whether by themselves or

by forcing an authorized person to grant them access. In one embodiment, access to a receptacle is afforded when a weight and door-closure conditions are met. In another embodiment, the control circuit is modified so that access is afforded when only a weight condition is met. In a further embodiment, a height-responsive condition is required to be met in addition to weight and door-closure conditions.

While a preferred embodiment of the present invention has been described in detail, various modifications, alterations and changes may be made without departing from the spirit and scope of the present invention as described in the appended claims.

I claim:

1. Apparatus for use in conjunction with a receptacle for valuables to permit only authorized persons to obtain access to the receptacle, comprising: a platform, means mounting said receptacle at a location with respect to said platform to require a person to support himself on the platform when obtaining access to the receptacle, and means responsive to weight on said platform for permitting access to said receptacle when a predetermined authorized weight is applied to said platform and for preventing access to said receptacle when unauthorized weights different from said predetermined weight are applied to said platform, whereby access to the receptacle is permitted only by an authorized person having a weight corresponding to the preset authorized weight.

2. Apparatus according to claim 1 wherein said weight responsive means includes means mounting said platform for vertical displacement with respect to a datum and control means engageable upon a predetermined downward displacement of said platform with respect to the datum to permit access to said receptacle.

3. Apparatus according to claim 2 including electrically-operated means providing access to said receptacle and wherein said control means includes a circuit connecting said electrically-operated means to an electrical power supply, and a switch connected in said circuit for closing said circuit to supply power to said electrically-operated means when said authorized weight is on said platform and to prevent power from being supplied to said electrically-operated means when said unauthorized weights are on said platform.

4. Apparatus according to claim 3 wherein said switch means includes a switch member carried on said platform and a complementary member fixed with respect to said datum and located in the path of movement of said switch member, said members being connected in said circuit and being engageable to complete the circuit upon a predetermined displacement of said platform in response to the application of said authorized weight, at least one of said members being flexible to permit said members to disengage one another when a greater than authorized weight is applied on said platform and said platform-carried member is displaced downwardly below its complementary member.

5. Apparatus according to claim 4 including means mounting one of said members for displacement transversely to the path of movement of said platform to permit the range of contact of said members to be varied to ensure engagement of said members over a limited range of weights in the vicinity of said preset authorized weight, whereby the apparatus is insensitive to slight changes in the normal weight of a person authorized to have access to the receptacle.

6. Apparatus according to claim 4 including at least another complementary switch member associated with said one complementary member, and including common post means mounting said complementary members at different elevations with respect to said datum to cause said platform-mounted member to effect engagement with a selected one of the complementary members depending on the displacement of the platform as determined by the weight applied thereon.

7. Apparatus according to claim 6 including height-responsive switch means connected in series with each of said complementary members in said circuit, means to detect the height of a person on the platform, and means coupling said height-responsive switch means with said height detection means in said circuit to cause said electrically-energized means to be powered only when both height and weight conditions are met.

8. Apparatus according to claim 3 including means providing a bullet-proof enclosure surrounding said platform and receptacle, a door providing access to said enclosure, and a second normally open switch connected in said circuit in series relation with said first-mentioned switch and closeable in response to closing of said door, so that access to said receptacle is permitted only when both switches are closed.

9. Apparatus according to claim 8 including means mounting said enclosure for displacement downwardly relative to said platform and datum and including third normally-closed switch means connected in said circuit and between said enclosure and said datum to disable said electrically-operated means in response to downward displacement of said enclosure, so that access to the receptacle by an unauthorized person cannot be effected by his straddling the platform in the enclosure when an authorized person is on the platform.

10. Apparatus according to claim 9 including a skirt surrounding a lower portion of said enclosure for telescopically receiving said enclosure, said skirt cooperating with said platform and datum to define a chamber with said platform-operated and enclosure-operated switches being mounted in said chamber, and including a hatch in said skirt providing a service access to said chamber.

11. Apparatus according to claim 10 wherein said platform mounting means includes a series of spring elements located in said chamber and supporting said platform at spaced locations and bearing means associated with each of said spring elements to prevent said platform from tilting when a weight is applied at a location other than centrally on the platform.

12. Apparatus according to claim 11 wherein spring elements include compression springs engaging between said platform and said datum to bias said platform away from said datum, and said bearing means includes a vertically-disposed post, depending from said platform and toward said datum, a sleeve mounted on said datum and slidably engaging said post, and means limiting axial displacement of said post upwardly relative to said sleeve so that in the absence of weight on the platform, the platform is maintained by the springs at a predetermined elevation with respect to the datum.

13. Apparatus according to claim 1 including means to detect the height of a person standing on the plat-

form for cooperating with said weight responsive means to permit access to the receptacle only when authorized height and weight conditions are met.

14. Apparatus according to claim **13** wherein said height detection means includes means to emit upper and lower horizontally-extending vertically-spaced light beams at an elevation above the platform corresponding to the height of an authorized person, the upper beam normally passing over the head of the person and the lower being interrupted by the person while on the platform, and including receiver means operable when the upper beam is unbroken and the lower beam is broken to permit access to the receptacle.

15. Apparatus according to claim **1** including means providing an enclosure around said platform, a door affording entry and egress to and from said enclosure, and means operable in response to a closed position of said door and cooperable with said weight responsive means to afford access to said receptacle.

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