Jan. 31, 1928. 1,657,459

F. DAVIS

CIRCUIT CLOSER FOR ELECTRIC ALARMS

Filed Nov. 15, 1924 2 Sheets-Sheet 1

Fig. 1

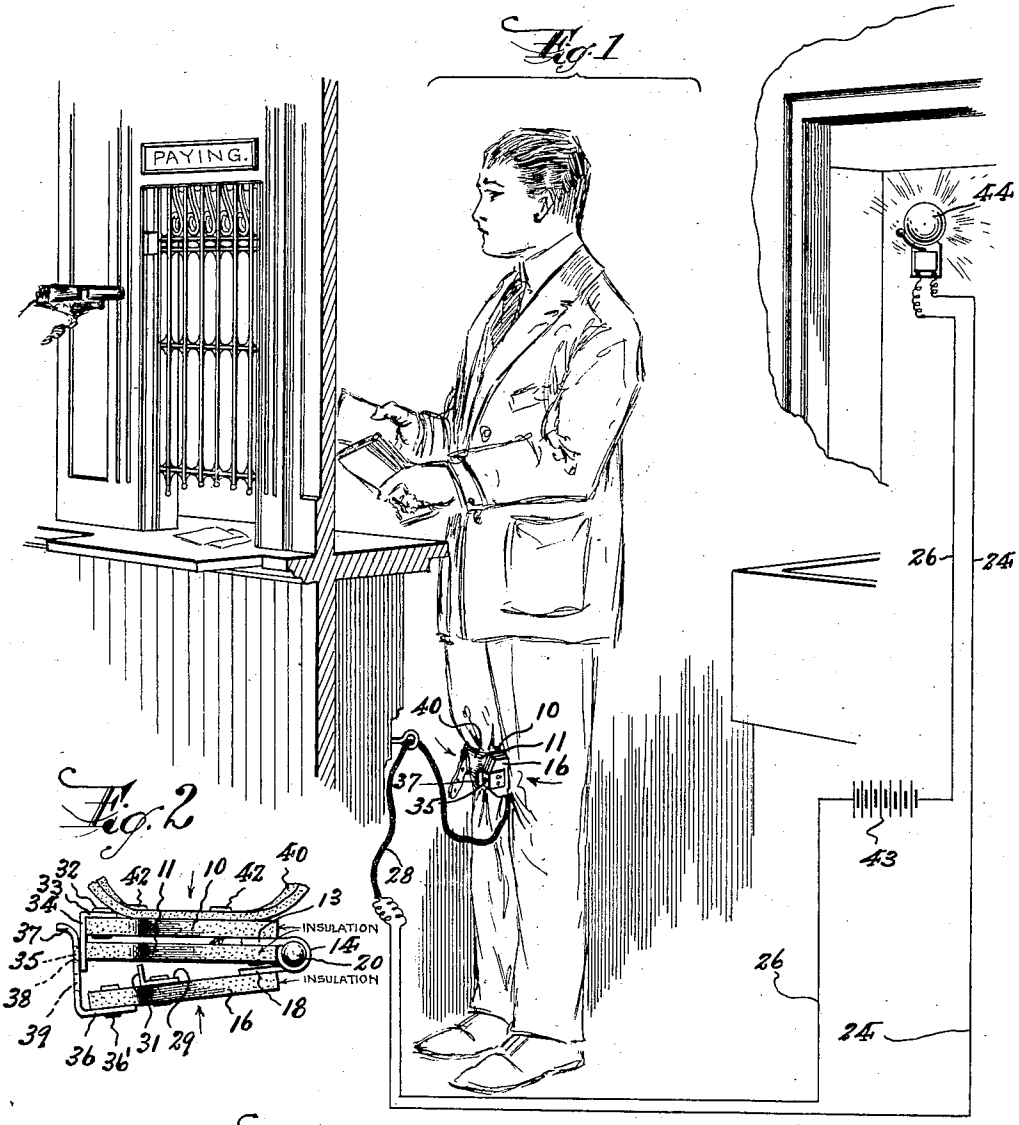
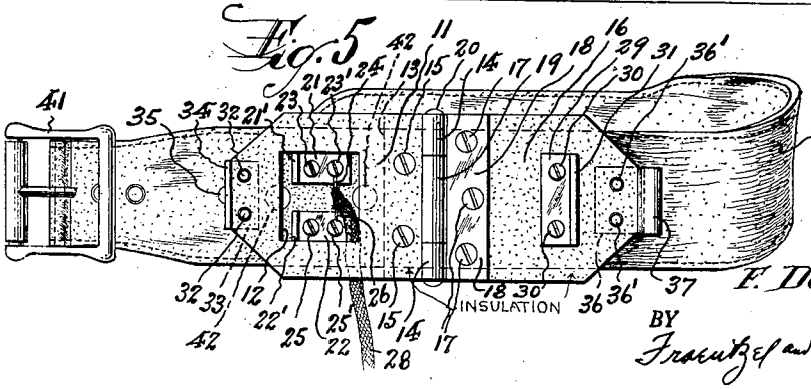


Fig. 2

Fig. 5



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Fig. 6

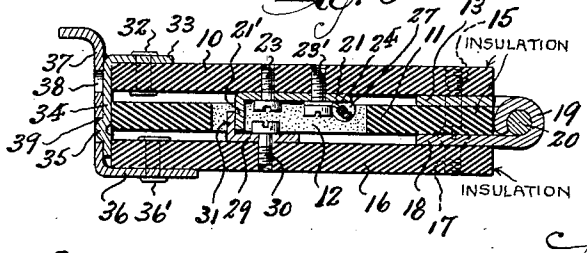


Fig. 4

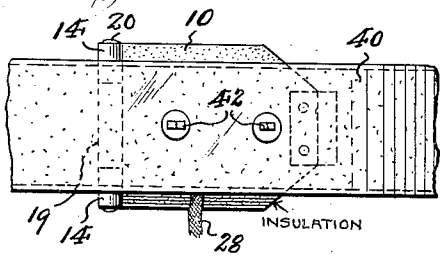
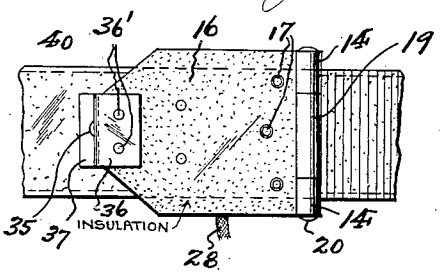


Fig. 3



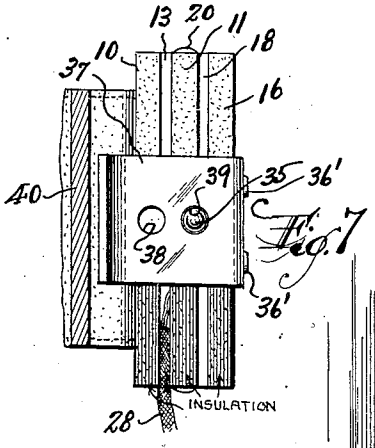


Fig. 7

Fig. 8



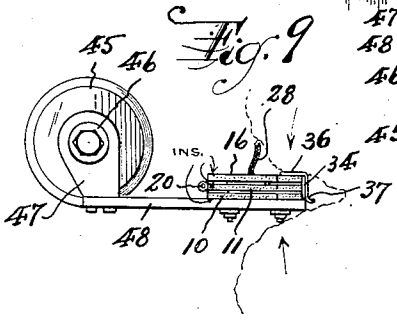


Fig. 9

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UNITED STATES PATENT OFFICE.

FRANK DAVIS, OF BROOKLYN, NEW YORK.

CIRCUIT CLOSER FOR ELECTRIC ALARMS.

Application filed November 15, 1924. Serial No. 750,051.

This invention relates, generally, to a novel circuit closer for electric alarm systems; and the invention has reference, more particularly, to a novel form of electric circuit closing switch for alarm signals systems adapted to be so related to the operator that the same may be secretly actuated as occasion may require.

The invention has for its principal object to provide a simple and yet effective construction of alarm circuit closing switch, which may be so related to the operator that actuation of the same may be accomplished without use of the hands or without any accompanying visible bodily movements likely to betray the fact that an alarm has been given; a switch of such general character serving as a protective measure for bank-tellers, cashiers, ticket-agents and other similarly employed persons, whereby such persons are enabled to speedily and secretly give an alarm, and thus summon prompt aid, in the event of attack by thieves, hold-ups or other persons with criminal intent.

The invention has for a further object to provide a novel construction of alarm circuit closing switch which may be either directly attached to the person of the operator, or separately mounted in convenient position relative to the normal station of the operator when engaged in carrying out his or her duties.

The invention has for another object to provide a novel construction of alarm circuit closing switch which is provided with a novel double service lock means, which in one, or its normal initial position, serves to hold the switch contacts in normal initial open or separated condition, to normally maintain the alarm circuit open or interrupted, and guarded against accidental or untimely operation, and which in the other, or actuated position, serves to hold the switch contacts engaged in circuit closing position, once the switch has been actuated by the operator, so that the alarm continues to be given under all circumstances once its operation is initiated by the closing of the switch.

Other objects of this invention, not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a perspective view showing the novel alarm circuit closing switch applied to the person of the operator, so as to be concealed beneath the counter or desk at which such operator is stationed; Figure 2 is a top edge view of the switch in open or normal initial circuit interrupting position, said view being drawn on an enlarged scale; Figure 3 is a face view of the switch as mounted on a body attaching strap; Figure 4 is a rear face view of the same; Figure 5 is a face view of the switch and the body attaching strap, the face plate of the switch being swung open to show the circuit making contacts and the attachment of the circuit wires thereto; Figure 6 is a vertical longitudinal section through the switch, in its circuit closing position; Figure 7 is an end elevation of the switch, in said circuit closing position; Figure 8 is a perspective view showing a modified method of mounting the switch in detached relation to the body of the operator, but convenient to the normal station of the operator; and Figure 9 is a top view of said modified switch mounting arrangement, indicating the manner in which the switch is related to and actuated by the operator.

Similar characters of reference are employed in all of the hereinabove described views, to indicate corresponding parts.

The novel alarm circuit closing switch comprises a stationary base and a movable member pivotally connected with the base, said parts being preferably made of a suitable insulating or electrically non-conductive material. Preferably, the stationary base is made in two sections or parts comprising a main base-member 10 and a chambered outer plate or section 11 registered with said main base-member 10. Said outer plate or section 11 has its central portion cut away to provide a chamber 12. Inserted intermediate the rear end portions of said base-member 10 and outer plate or section 11 is the leaf or body 13 of a hinge element, which is provided at its outer margin with a pair of spaced hinge knuckles 14. Fastening screws 15, or equivalent fastening means, are passed through the outer plate or section 11, hinge leaf or body 13 and base-member 10, to thereby interconnect and secure together in proper assembled relation such parts. It will be obvious that it is within the scope of this invention to produce the base-member 10 and chambered plate or section 11 as an integral or one-piece construction, hence, although I

have shown and described said parts as separate members secured together, such construction is merely illustrative of a convenient manner of producing the stationary base as a whole, and I do not therefore intend to limit myself specifically to such arrangement or manner of construction.

The reference character 16 indicates the movable member of the switch structure, the same also preferably consisting of a block or plate of suitable insulating or electrically non-conductive material. Secured to the rear end portion of said movable member 16, by screws 17, or other equivalent fastening means, is the leaf or body 18 of a complemental hinge element, which is provided at its outer margin with a central hinge knuckle 19 adapted to be inserted between and alined with the knuckles 14 of the first mentioned hinge element, so that a hinge pintle 20 may be inserted through the alined knuckles, to thus operatively assemble the hinge elements together, and thereby pivotally connect said movable member 16 with the stationary base of the switch structure.

Secured to the base-member 10, so as to be disposed within the chamber 12 of the plate or section 11, but electrically separated one from the other by being suitably spaced apart, are a pair of electrically conductive contact members, which, for convenience, will be designated as the positive contact member 21 and the negative contact member 22. The positive contact member 21 is secured to the base-member 10 by fastening screws 23 and 23′, one of which, as 23′, may serve as a binding-post for attaching or connecting therewith a positive alarm circuit wire 24. In like manner, the negative contact member 22 is secured to the base member 10 by fastening screws 25 and 25′, one of which, as 25′, may serve as a binding post for attaching or connecting therewith a negative alarm circuit wire 26. The positive contact-member 21 is provided at its outward end with an upturned right angled contact lug 21′, and the negative contact-member 22 is likewise provided at its outward end with a similar upturned right angled contact lug 22′. Said contact lugs 21′ and 22′ are transversely alined one with the other, and project into the chamber 12 of the plate or section 11. The inner face of said plate or section 11 is provided, to the rear of said contact-members 21 and 22, with a lateral channel or groove 27 extending from the chamber 12 outwardly to the adjacent outer edge of the base member, thus providing a lead-in or way through which the cable 28 carrying the circuit wires 24 and 26 may be introduced into the chamber 12, so that said respective circuit wires may be operatively connected with the respective contact members. It will be understood that the lead-in channel or groove 27 is illustrative of only one way in which the circuit wires may be introduced into the chamber 12, and that various other arrangements in this particular are possible and may be adopted as convenience may dictate.

Secured to the inner face of said movable member 16 is an electrically conductive bridge contact-piece 29, which is fastened in a proper location by means of fastening screws 30, or any other convenient form of fastening means. The contact piece 29 is provided with a transverse upturned right angled contact-flange 31, which, when the movable member 16 is inwardly swung to closed position relative to the stationary base, is carried into bridging mutual contact with the contact lugs 21′ and 22′, to thus bridge the normal gap therebetween, and consequently close the circuit through the positive and negative branches or wires of the alarm circuit.

Secured to the forward end portion of the base-member 10, by means of rivets 32, or any other suitable form of fastening means, is a lock-plate 33, the free end portion 34 of which is turned to extend across the end of the stationary base formed by said base-member 10 and plate or section 11 toward the free end of the movable member 16. Said end portion 34 is provided with an outwardly projecting nosing or catch stud 35. Secured to the free end portion of said movable member 16, by means of rivets 36′, or any other suitable form of fastening means, is a latch-plate 36 provided with a spring-like arm or extension 37 turned to extend across the end of the movable member 16 toward the stationary base, and so as to engage over the end portion 34 of said lock-plate 33. Said spring-like arm or extension 37 is provided with a pair of spaced latch-openings or sockets 38 and 39, which are longitudinally alined and positioned so as to be selectively engageable with the nosing or catch stud 35. The said latch-openings or sockets are so spaced apart that when the latch-opening or socket 38, which is adjacent to the free end of the spring-like arm or extension 37, is engaged with the nosing or catch-stud 35 (as shown in Figure 2), the movable plate 16 will be held in normal initial outwardly swung or open position, whereby the contact-flange 31 of the bridge contact-piece 29 is held disengaged from the contact-lugs 21′ and 22′ of the contact-members of the stationary base, thus normally maintaining the electric alarm circuit open or interrupted. The described latch means, thus positioned, serves to hold the movable member 16 in normal open or inoperative position against accidental or unintended movement. When sufficient inward swinging pressure is brought to bear upon the movable member 16, the spring-like arm or extension 37 yields outwardly to free said nosing or catch stud 35 from the normally engaged latch opening or

socket 38, thus permitting the movable member 16 to swing toward the stationary base, thereby carrying its bridge contact-piece inward so that the contact-flange 31 thereof will electrically and mutually engage the contact lugs 21′ and 22′ to close the electrical gap therebetween and consequently complete the alarm circuit. When the circuit is thus closed, the spring-like arm or extension 37 has been moved sufficiently to cause its second latch-opening or socket 39 to engage over the nosing or catch stud 35, thus locking the switch in circuit closing condition and thus maintaining the latter condition, even though the pressure exerted by the operator should be relaxed, and consequently assuring the continuous sounding of an alarm once the giving of the same is initiated.

From the above description it will be quite evident that the alarm circuit closing switch is of considerable value as a protective measure for bank-clerks, cashiers, ticket agents and other persons occupying stations of employment involving the handling of money or other valuables, and who are subject to the hazards of being attacked with criminal intent. The construction and type of switch above-described lends itself readily both to concealment, as well as to a method of operation not requiring the use of the operator's hands or feet, but rather by a method of operation requiring but a minimum of bodily movement, and that of a nature little likely to be detected by the person or persons against whom the alarm is desired to be given. Preferably, and especially when used by male operator's it is desirable that the novel alarm circuit closing switch be attached to the person of the operator, so that the same may be actuated from any given position the said operator may occupy at the necessary moment. To this end I provide an attachment strap 40 having suitable means, such e. g. as a buckle 41, for connecting its meeting ends. This attachment strap 40 is suitably secured to the base member 10 by means of rivets 42, or by any other desired form of fastening means. The operator, in securing the device in operative relation to his person, encircles one leg with the strap, so that the switch device is located on the inside of one leg and between the legs in a position above but close to the knees, as shown in Figure 1. The cable 28 carrying the alarm circuit wires 24 and 26 may then be suitably supported so as to trail after the operator, without interfering with free movement as the latter may move about. Being thus attached adjacent to the knees of the operator, the switch device is concealed from observers by the counter, desk or similar place at which the operator is stationed when carrying on the duties of his employment. The circuit wires 24 and 26 are connected, through a suitable source of electrical energy, such e. g. as the battery 43, with an alarm sounding means, such e. g. as an electric bell 44. The alarm bell, or other alarm sounding means, may be located in any place near to or distant from the operator, as circumstances of use may make desirable. It will be understood, that the character of the alarm device per se, as well as of the particular character of the source of electrical energy, may be varied in any way desirable, and that as to these features the above description and the accompanying drawings are merely illustrative.

When the switch device is attached to the person of the operator in the manner above described, the same may be easily actuated by the operator, as occasion may require, from either a standing or sitting position. Such actuation is accomplished merely by squeezing the knees together, thus exerting pressure upon the movable member 16 sufficient to swing the same from open to closed position, all of which is accomplished with little bodily effort, and with so little bodily movement that the act is not betrayed to an observer.

It may be desired, especially when the switch device is to be used by a female operator, to mount the switch device independently of the person of the operator, but supported nevertheless in a concealed position subject to actuation by pressure of the knees of the operator. An illustration of one such method of and means for mounting the switch device is shown in Figures 8 and 9. A suitable base or pedestal 45 is provided, from which extends upwardly a standard 46 of suitable height. Attached to the upper free end of this standard 46 is an off-set bracket 47, to which is secured, by suitable fastening means, an outwardly extending supporting plate 48, preferably made of a suitable insulating material. The base-member 10 of the switch device is fastened to the free end portion of said supporting plate 48 so as to be disposed to be engaged between the knees of the operator sitting or standing in front of the supporting means, in the manner indicated in Figures 8 and 9 of the drawings. It will be understood that, when occasion requires, the operator by exerting a squeezing pressure with the knees upon the switch device, as thus supported, may thereby actuate the same, with but little bodily effort and without necessity of employing betraying bodily movement.

I am aware that some changes may be made in the various arrangements and combinations of the several devices and parts of my novel alarm circuit closing switch device, without departing from the scope of this invention as above described and as defined in the appended claims. Hence, I do not limit my invention to the exact arrangements and combinations of the various de-

vices and parts as described in the foregoing specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying drawings.

I claim:—

1. An electrical switch device, comprising a pair of pivotally connected members, electric contact making means carried by said members and held normally separated when said members are disposed in initial open relation, a catch-nosing on one of said members, a spring-like latch on the other of said members, said latch having a pair of latch sockets, one of said latch sockets when engaged with said catch-nosing serving to yieldably retain said members in open circuit interrupting relation, and the other of said latch sockets when engaged with said catch nosing serving to hold said members in closed circuit making relation.

2. An electric switch device for alarm circuits, comprising a pair of pivotally connected members, electric contact making means carried by said members and held normally separated when said members are disposed in initial open relation, a catch-nosing on one of said members, a spring-like latch on the other of said members, said latch having a pair of latch sockets, one of said latch sockets when engaged with said catch nosing serving to yieldably retain said members in open circuit interrupting relation, the other of said latch sockets when engaged with said catch nosing serving to hold said members in closed circuit making relation, and an attachment strap secured to one of said members for fastening said switch device to the person of the operator.

3. In a hold-up alarm system, the combination, with an alarm circuit, of a pressure-actuated circuit closer for said alarm circuit normally urged to inoperative position, means for securing said circuit closer at the inner side of the knee of a wearer to be actuated by pressure of the opposite knee, and flexible conductors connecting said circuit closer with the alarm circuit.

4. In a hold-up alarm system, the combination, with an alarm circuit, of a pressure-actuated circuit closer for said alarm circuit normally urged to inoperative position, a leg band carrying said circuit closer in position to be actuated by knee pressure, and flexible conductors connecting said circuit closer with said alarm circuit, whereby an alarm circuit may be established by the wearer in any position within the limits of the connected flexible conductors.

5. In a hold-up alarm system, the combination, with an alarm circuit, of a pressure-actuated circuit closer for said alarm circuit normally urged to inoperative position, means for mounting said circuit closer on a leg of a wearer in position to be actuated by the other leg, and a floor cord connecting said circuit closer with said alarm circuit while permitting the wearer a limited amount of perambulation.

In testimony that I claim the invention set forth above I have hereunto set my hand this 12th day of November, 1924.

FRANK DAVIS.