

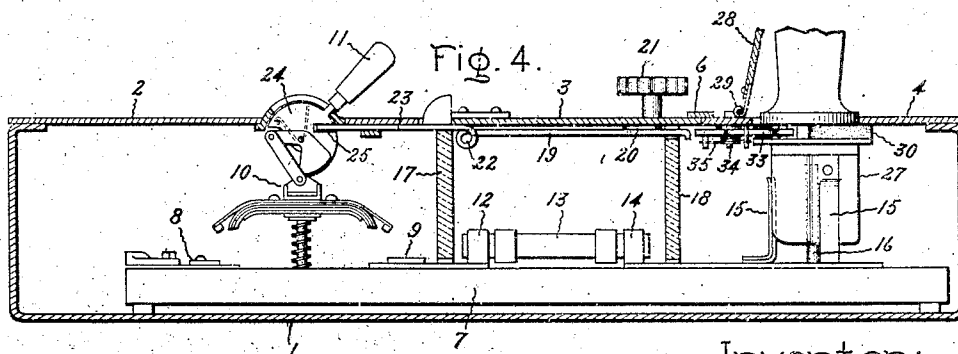
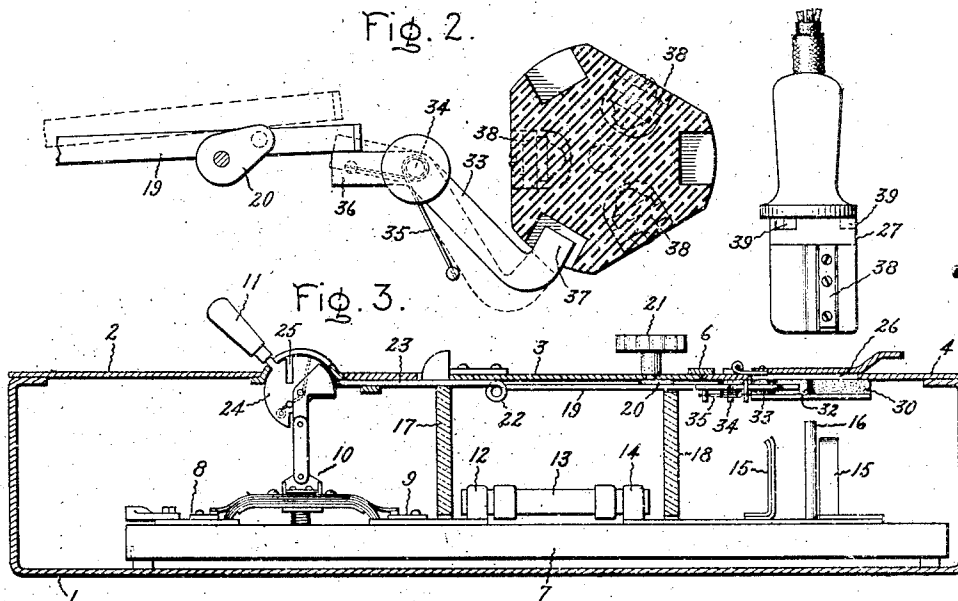
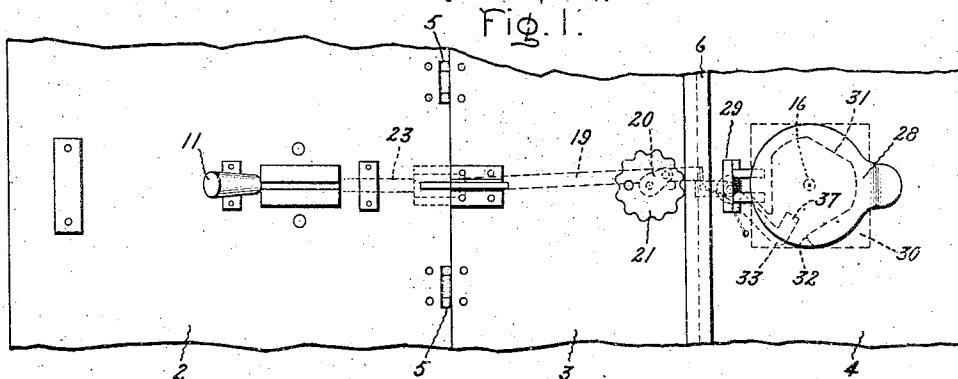
July 21, 1925.

1,547,145

A. W. LUNDSTROM

ELECTRIC SAFETY SWITCH AND PLUG COUPLING

Filed April 17, 1923



Inventor:
Axel W. Lundstrom,
by *Alexander S. Lund*
His Attorney.

UNITED STATES PATENT OFFICE.

AXEL W. LUNDSTROM, OF NEW YORK, N. Y., ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC SAFETY SWITCH AND PLUG COUPLING.

Application filed April 17, 1923. Serial No. 632,802.

To all whom it may concern:

Be it known that I, AXEL W. LUNDSTROM, a citizen of the United States, residing at New York, county of New York, and State of New York, have invented certain new and useful Improvements in Electric Safety Switches and Plug Couplings, of which the following is a specification.

The present invention relates to hand-operated switches for controlling electric circuits and more especially to safety switches or switches having the current-carrying parts enclosed in protective casings with only the hand-operating lever exposed outside thereof so that a workman, without electrical knowledge, may operate them in entire safety to his person.

The object of my invention is to provide an improved safety switch having contact connections for the detachable reception of an attachment plug whereby the electric circuit of a portable machine or tool may be readily connected to or detached from said switch and having means for preventing such connection or detachment of the plug except when the switch is positively locked in open circuit position.

One embodiment of the invention is shown in the accompanying drawing in which Fig. 1 is a front view, of the middle portion of a safety switch provided with attachment plug contacts and cutout means; Fig. 2 is an enlarged plan view of the plug fender and a cross section of the attachment plug; Fig. 3 is a longitudinal sectional elevation of the safety switch with the plug withdrawn, and Fig. 4 is a similar view with the plug inserted.

The enclosing protective casing is in the form of a sheet metal box 1 with a front also of sheet metal in three sections 2, 3, and 4, the outer sections 2 and 4 being rigidly connected to the box in any well known manner while the middle or door section 3 is connected by hinges 5 to the edge of section 2 whereby it may be opened outwardly, and at its edge opposite the hinges is a lap strip 6 adapted to overlies the adjacent edge of section 4 and conceal the joint between those sections.

Secured to the inside bottom of the box is a slab 7 of insulating material, on the left-hand end of which are mounted three pairs of switch contacts 8 and 9 and a three-pole switch mechanism 10 having an actu-

ating lever or handle 11 extending through a slot in section 2 of the front of the casing. The contacts 9 are electrically connected to contact clips 12 for one end of the fuses 13, while the opposite fuse clips 14 are respectively connected to contact fingers 15 secured to the right-hand end of the slab 7 about a central guide post 16. Between the switch mechanism and fuses is a transverse insulating portion 17 and between the fuses and the contact fingers is a similar partition 18 dividing the casing into three compartments with the middle one disposed beneath the door section 3, so that when the latter is open only the fuses 13 and their clips 12 and 14 are exposed.

The door 3 has on its inner side a reciprocating latch 19 normally engaging at its free end beneath the edge of the fixed front section 4 and actuated by a crank 20 at the inner end of the knob 21. The rear or left-hand end of the latch 19 has a hinged connection 22 with a sliding bolt 23 normally held against retraction or movement to the left by its end impinging upon the edge of a segment 24 forming part of the switch actuating lever 11 and concentric with its pivot. The segment 24 is provided with a slot 25 so disposed therein that when the switch is in full off position the end of the bolt 23 may freely enter it upon being retracted by the unlocking movement of the door latch 19, and while in engagement with the notch it serves to prevent movement of the switch lever 11, all as described and claimed in another application, Serial No. 283,800, filed by me April 9, 1919.

The fixed front section 4 is provided with a circular aperture 26 opposite the contact fingers 15 for the passage therethrough of the attachment plug 27 and over this aperture is a spring-pressed flap 28 hinged at 29 to the front section 4. Secured to the inside of the section 4 is a slab 30 of insulating material, such as indurated fibre, with a polygonal aperture 31 therein to serve as a guideway for the plug 27. One corner 32 of the slab 30 is cut away to provide play room for a fender pawl 33 mounted on a pivot 34 on the inside of the section 4 and biased to the dotted line position shown in Fig. 2 by a spring 35. The rear end 36 of the pawl lies in the path of the arcuate locking movement of the latch 19 so as to be moved thereby and held in the position in-

indicated in full lines in Fig. 2, while the latch is in its locking position with its bolt retracted from the slot 25 of the switch lever. In this position the bent end 37 of the pawl is disposed within the polygonal guide way 31 and serves as a barrier against the entrance of the plug 27.

As shown in Figs. 2 and 3, the plug 27 has a polygonally-shaped inner end with three contact plates 38 secured to the several sides and adapted to engage with the respective contact fingers 15. Above the plane of the outer ends of the plates 38 and half way between them the plug is provided with notches 39 of a size to permit the bent end 37 of the pawl to freely enter, as indicated in Fig. 2, and prevent removal of the plug until the switch is locked in open circuit position and the latch 19 moved from engagement with the pawl.

It is to be noted that all movable parts, other than those provided with a handle, are enclosed within the casing and that these handled parts are all located in the face of the casing so that a number of casings may be assembled side by side without lost space.

While I have shown and described the best embodiment of the invention known to me, I do not desire to be restricted thereto.

What I claim as new and desire to secure by Letters Patent of the United States, is:—

1. The combination with an electric switch and an enclosing protective casing therefor, of attachment plug contacts located within said casing and connectible in circuit through said switch, said casing having an opening opposite said contacts for the passage of the plug to said contacts, fender means mounted within said casing for preventing attachment or detachment of said plug, and hand-operated means coacting with said switch and said fender means for preventing closing of said switch while said fender means is in retracted position

and to lock said fender in operative position when the switch is freed.

2. The combination with an electric switch and an enclosing protective casing therefor, of attachment plug contacts located within said casing and connectible in circuit through said switch, said casing having a plug opening therein opposite said contacts, a fender mounted within said casing for preventing entrance or removal of said plug, and hand-operated means co-acting with said switch and said fender to prevent closure of the switch while the fender is in retractive condition and to prevent retraction of the fender while the switch is in closing condition.

3. The combination with an electric switch and an enclosing protective casing therefor, of attachment plug contacts mounted within said casing and connectible in circuit through said switch, said casing having an opening opposite said contacts for the introduction of a plug thereto, a fender pawl pivotally mounted within said casing adjacent the said plug opening, spring means tending to move said pawl into retracted position, and independently actuated means controlled by the position of said switch for advancing and holding said pawl in operative position.

4. The combination with an electric switch and thermal cutout, of an enclosing protective casing therefor having a door opposite said cutout, attachment plug contacts mounted in said casing and connectible in circuit through said switch and cutout, said casing having a passage opening therein opposite said contacts for the plug, a plug fender mounted adjacent said passage opening, and a hand-operated latch for the said door operating to actuate and hold the said fender in operative position.

In witness whereof, I have hereunto set my hand this 13 day of April, 1923.

AXEL W. LUNDSTROM.