

April 3, 1956

P. R. DOEG

2,740,856

LOW VOLTAGE REVERSING EDGES

Filed June 23, 1952

2 Sheets-Sheet 1

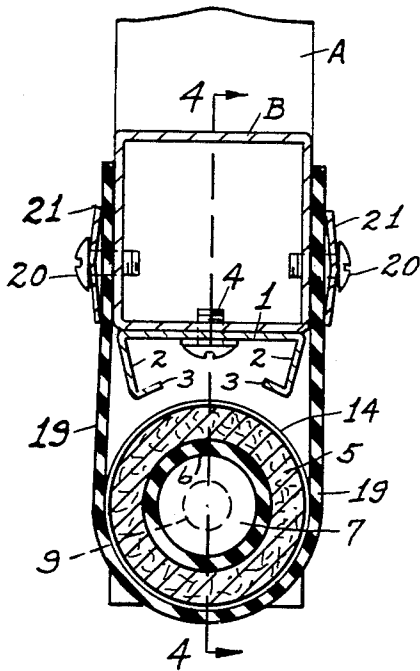
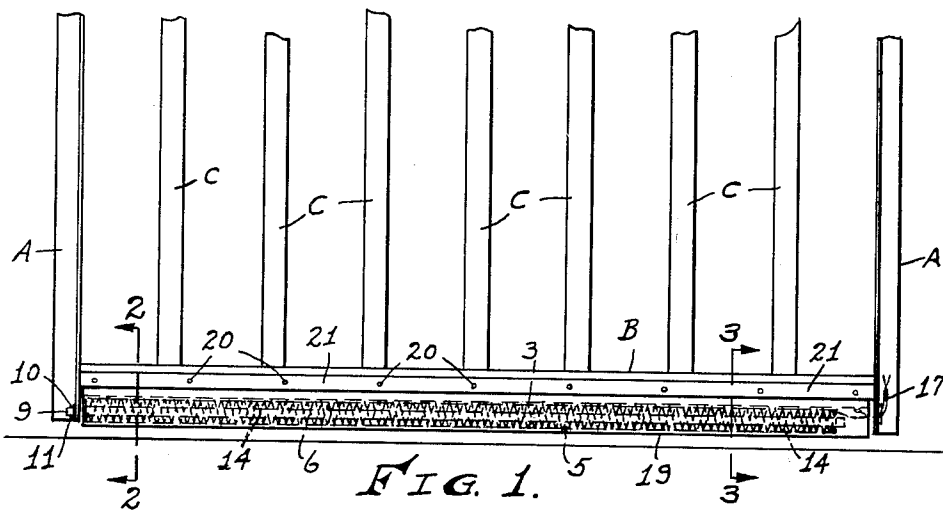


FIG. 2.

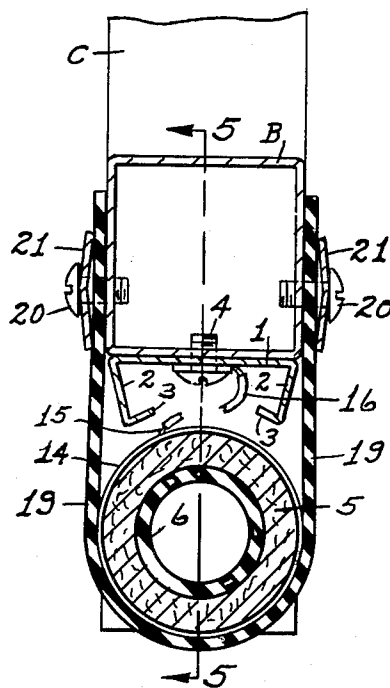


FIG. 3.

PAUL R. DOEG,
INVENTOR.

BY *Donald E. Windle.*
ATTORNEY.

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P. R. DOEG

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2 Sheets-Sheet 2

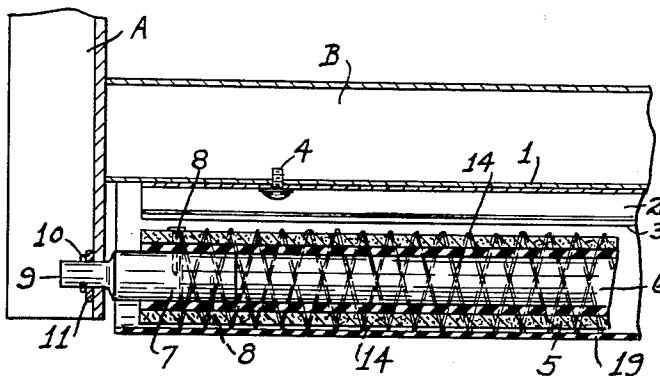


FIG. 4.

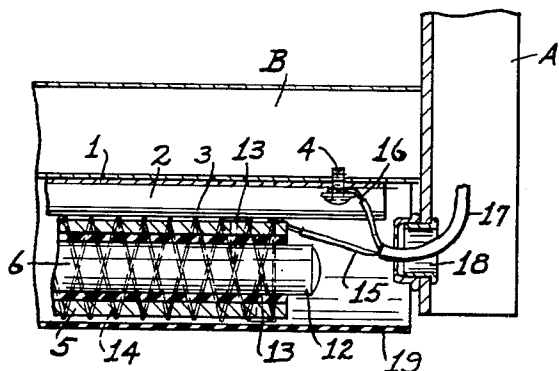


FIG. 5.

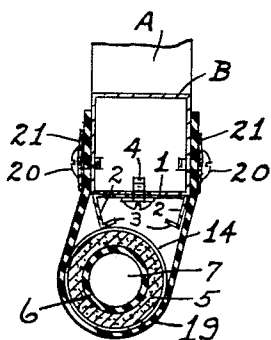


FIG. 6.

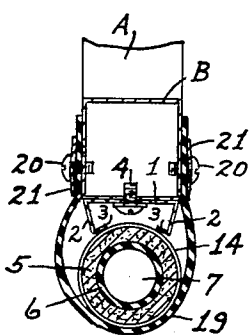


FIG. 7.

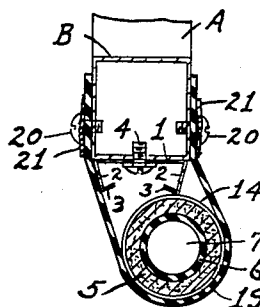


FIG. 8.

PAUL R. DOEG,
INVENTOR.

BY *Donald E. Windle.*
ATTORNEY.

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LOW VOLTAGE REVERSING EDGES

Paul R. Doeg, Lynbrook, N. Y., assignor to The Peelle Company, Brooklyn, N. Y., a corporation of New York

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3 Claims. (Cl. 200—61.43)

The present invention relates to low voltage reversing edges, or what is commonly called safety edges, applied particularly to vertically movable devices such as car-riding elevator gates, or the same may be used in connection with counterbalanced freight elevator doors. The description herein will be held more particularly to the herein mentioned car-riding elevator gates. The gates are commonly made of a framework of a convenient pattern composed primarily of vertically-positioned side rails and having a horizontally-disposed bottom rail extending therebetween. Intermediate members and a top rail are also provided to complete the gate structure. The gates are adapted to move vertically between suitable guides provided on the elevator car and are electrically operated. Without the use of a reversing edge secured to and depending from the horizontally positioned bottom rail, the gate, in closing, may strike a person who may be obstructing the gate travel, or it may be that objects being moved onto or off of the elevator car may be projecting into the path of the downwardly closing gate.

It is necessary that the electrical wiring of the reversing edge be connected in a low voltage circuit and connected with a reversing relay in the gate operating circuit. Engagement of the reversing edge with a foreign object in its closing movement will cause the electric operator to instantly reverse the direction of movement of the gate to its open position and thereby avoiding damage either to the object or to the gate itself.

The principal object of the invention is the provision of a reversing edge which is adaptable to electrically-operated gates having vertical movements in opening and closing.

A second object is the provision of a reversing edge having extremely resilient or flexible parts therein and preventing damage to any foreign object struck by the reversing edge in the closing movements of the gate.

Another object is the provision of a reversing edge device which is capable of making electrical contact at any point throughout its length.

A still further object is the provision of a reversing edge which is simple of construction and which is economical to manufacture.

Other objects and particular advantages of the invention will become more apparent in the course of the following description, with reference being had to the accompanying drawings forming a part hereof, in which:

Figure 1 is an elevation of the lower end portion of a gate and showing a reversing edge mechanism secured thereto and with the reversing edge mechanism embodying the principles of the invention.

Figure 2 is a detail vertical section through the lower rail of the gate and through the reversing edge, taken on line 2—2 of Figure 1.

Figure 3 is also a vertical section through the bottom rail of the gate and the reversing edge, as taken on line 3—3 of Figure 1.

Figure 4 is a detail longitudinal section, taken on line

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4—4 of Figure 2, and showing one end of the reversing edge.

Figure 5 is also a detail longitudinal section through the reversing edge, taken on line 5—5 of Figure 3.

Figures 6, 7 and 8 are detail sections through the reversing edge similar to that shown in Figure 2, but with the members thereof being shown in various circuit-making positions.

Like reference characters designate like parts throughout the several views.

In order that the device, the construction, and the operation thereof may be better understood and appreciated, I will now take up a detailed description thereof, in which the same will be more fully set forth.

Referring now to the drawings in detail, letters A designate vertically-disposed side rails of the gate structure having a bottom rail member B secured therebetween near the lower ends thereof. Letters C designate vertically-disposed intermediate members of the gate construction.

1 designates a contact bar which is of channel shape having legs 2 formed thereon and with inwardly-directed flanges 3 being formed on the legs, and with flanges 3 forming electrical contact surfaces as will be hereinafter set forth. The contact bar is suitably secured to rail B, preferably by means of screws 4, as shown in Figures 2, 3, 4, 6, 7 and 8.

5 designates a sponge rubber tube which is of such length so as to extend substantially the length of rail B and has a live rubber core member 6 of tubular construction and which normally prevents collapsing of the sponge rubber tube. The live rubber inner core member 6 is merely inserted into sponge rubber tube 5, preferably without the use of adhesives. One end of assembled tube members 5 and 6 is supported by the adjacent gate rail A by means of a non-electrical fiber plug 7 which extends into one end of tube 6 and is secured therein by means of nails 8, or by other suitable means. The outer end 9 of plug 7 is of smaller diameter than the body thereof and is secured through the adjacent leg of member A by a cotter 10, and with washer 11 being interposed between cotter 10 and member A. The opposite end of inner tube member 6 is provided with a plug 12 secured therein by nails or tacks 13, or by other suitable means, as shown in Figure 5. Woven braided electrical wire hose 14 is drawn over the sponge rubber tube 5 from end to end, and is of such size so as to not depress into the sponge rubber. One end of the woven braided electrical wire 14 is electrically connected with a woven braided flexible wire 15 forming one side of an electrical circuit to a reversing relay (not shown). The other side 6 of the electrical circuit to the reversing relay is secured to contact bar 1 by being secured under one of the screws 4, as shown in Figure 5. The electrical conductor 17 extends outwardly through insulating thimble 18 which is inserted in an aperture formed through the adjacent leg of gate rail A.

The assembly, as described above, is enclosed and cradled or supported by means of a sheath 19 preferably made of suitable flexible material such as neoprene. The longitudinal edges of sheath 19 are secured to bottom rail B of the gate by means of screws 20 extending through suitable binding strips 21, as shown more clearly in Figures 2 and 3.

It will be noted by referring to Figures 6 and 7 that, should the device come into contact with an object from either side, the sheath, together with tube 5, carrying the braided flexible wire hose 14 will cause wire hose 14 to come into contact with flange 3 of the contact bar and thereby complete an electrical circuit through wires 15 and 16 and cause reversal movement of the gate through the reversing relay. Likewise, should the reversing edge strike an object directly below, the mem-

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bers will assume the position shown in Figure 7 and the electrical circuit will be established through the contact of the braided flexible wire hose 14 against flanges 3 of the contact bar.

It is to be brought out that members 6 and 19 are of extremely flexible material while tube 5 is of sponge rubber, and that the same is capable of cushioning action in striking an object and, in the case of a person being struck by the device, no injury will be inflicted by the contact thereof.

It is to be further brought out that, with the members being extremely flexible, only that portion of the device coming into contact with an object will flex. It is therefore necessary that only a small portion flex to cause electrical contact between the woven braided flexible wire hose 14 and flanges 5 in order to complete the electrical circuit to the reversing relay to cause reversal movement of the downward travel of the gate.

It is to be understood that I am not to be limited to the arrangement of the parts herein described or to the specific materials named herein, but that minor changes may be made therein insofar as the changes may fall within the scope of the appended claims.

Having now shown and described the invention, what I claim, is:

1. In combination, a reversing edge device, said device being composed of a smooth-surfaced composite flexible tube having a woven braided flexible wire hose fitted therearound, a sheath member forming a cradle carrying the composite flexible tube together with the braided flexible wire hose, a channel located within the sheath member above the composite flexible tube, with said channel having downwardly-directed legs with an inwardly-turned flange formed on each of the legs, and with movement of the sheath out of its normal position bringing the braided flexible wire hose into electrical contact with one or both of the inwardly-turned flanges of the channel and completing an electrical circuit therethrough.

2. A reversing edge comprising a smooth-surfaced flexible tubular member having a woven braided flexible

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wire hose fitted therearound with the braided flexible wire hose being connected with and forming a part of one side of an electrical circuit, a channel forming a second side of the electrical circuit, with the channel being mounted above the flexible member and having downwardly-extending legs with inwardly-turned flanges, a sheath member, said flexible tubular member being cradled in the sheath below the channel and in close proximity with the inwardly-turned flanges of the channel, and with the sheath enclosing both the channel and the flexible tubular member permitting swinging movement of the flexible tubular member with the swinging movement bringing the woven braided flexible wire hose into electrical contact with the inwardly-turned flanges of the channel.

3. In a reversing edge, a channel forming one side of an electrical circuit with said channel having downwardly-extending legs with inwardly-turned flanges, a sheath enclosing said channel, a smooth-surfaced flexible tubular member positioned below the inwardly-turned flanges of the channel and carried by the sheath, a woven braided flexible wire hose fitted over the tubular member with the woven braided flexible wire hose forming a second side of the electrical circuit, with the sheath being swingable with relation to the channel, and with swinging motion of the sheath bringing the woven flexible wire hose into electrical contact with the inwardly-turned flanges of the channel.

References Cited in the file of this patent

UNITED STATES PATENTS

1,511,055	Entwistle	Oct. 7, 1924
1,576,950	Conklin	Mar. 16, 1928
1,890,809	Forman	Dec. 13, 1932
2,048,514	Peelle	July 21, 1936
2,135,131	Bassett	Nov. 1, 1938
2,437,969	Paul	Mar. 16, 1948
2,595,291	Ramsey et al.	May 6, 1952