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F. D. JOHNSON ET AL

2,295,405

ELECTRIC SWITCHGEAR

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Fig. 1.

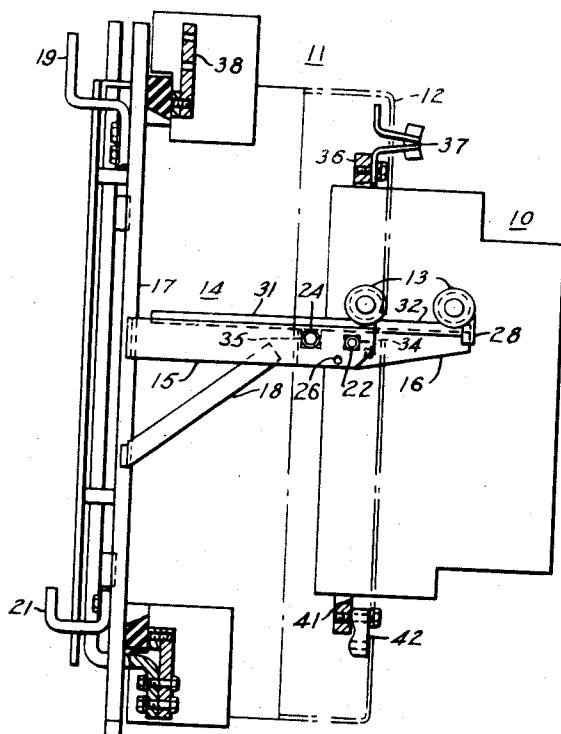


Fig. 2.

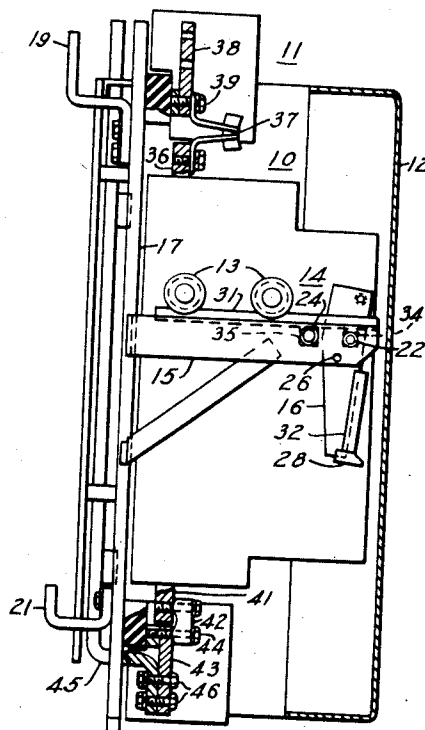


Fig. 3.

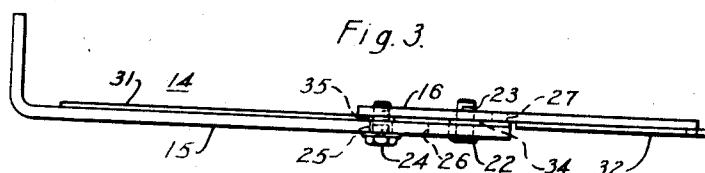
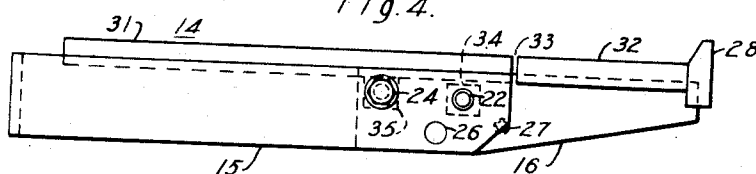


Fig. 4.



WITNESSES:

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ELECTRIC SWITCHGEAR

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3 Claims. (Cl. 105—51)

Our invention relates, generally, to electric switchgear and more particularly, to switchgear of the draw-out type.

When a circuit breaker, or similar equipment, of the draw-out type, is mounted in a sheet metal cubicle, it is the usual practice to provide a track structure which permits the equipment to be rolled out of the cubicle to a position where it is readily available for inspection and maintenance.

An object of our invention is to provide a track for draw-out switchgear which is of the proper length to permit the switchgear unit to be withdrawn a sufficient distance for servicing.

Another object of our invention is to provide a collapsible track for a cubicle which folds up, when not in use, to permit the closing of the cubicle door.

A further object of our invention is to provide a collapsible track for supporting a switchgear unit which is effective to prevent derailment of the unit as it passes over the junction point between the stationary and the folding portions of the track.

Still another object of our invention is to provide a collapsible track which will prevent the supported equipment from rolling off the end of the track when it is folded.

A still further object of our invention is to provide a collapsible track for a cubicle which is entirely contained within the cubicle when not in use.

Other objects of our invention will be explained fully hereinafter or will be apparent to those skilled in the art.

According to our invention, the folding portion of a collapsible track is so pivoted to the stationary portion that one end of the folding portion extends above the stationary portion when in the collapsed position, thereby preventing the supported equipment from rolling off the track. Provision is made for locking the folding portion in either the erected or the collapsed position. The rail portions of the track are so disposed that they are in alignment when the folding portion is raised to the erected position, thereby avoiding derailment of the equipment at the junction between the stationary and the folding portions.

For a fuller understanding of the nature and objects of the invention, reference may be had to the following detailed description, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a view, partially in section and partially in side elevation, of switchgear apparatus embodying our invention and showing a remov-

able unit withdrawn from its operating position in a cubicle;

Fig. 2 is a view, similar to Fig. 1, but showing the removable unit fully inserted into the cubicle;

Fig. 3 is an enlarged view, in plan, of one assembly of a track for supporting the removable switchgear unit; and

Fig. 4 is a view, in elevation, of the track assembly shown in Fig. 3.

Referring to the drawing, and particularly to Figs. 1 and 2, the switchgear structure shown therein comprises a removable switchgear unit 10, which may be a circuit breaker of the draw-out type or other switching equipment, such as a net-work protector, which is mounted in a sheet metal cubicle 11 having a cover or door 12. The switchgear unit 10 is supported by a pair of rollers 13 disposed on each side of the switchgear unit. The rollers 13 are grooved around their circumference in a manner to fit over the top edge of a supporting collapsible track 14 disposed at each side of and within the housing 11.

In order to simplify the drawing and description, only the details of the structure of the track for one side of the housing is shown. It will be understood that a track similar to that shown is provided for the other side of the housing.

The track 14 comprises a stationary portion 15 and a folding extension portion 16. The stationary portion 15 is secured at one end to an upright frame member, or panel, 17. A bracket 18 having one end secured to the upright member 17 and the other end secured to the stationary portion 15 is provided for supporting the outer end of the track. A pair of wall brackets 19 and 21 are secured to the upright member 17 for attaching the cubicle to a wall, or similar structure.

As shown more clearly in Figs. 3 and 4, the folding portion 16 of the track is pivotally secured to the stationary portion 15 by a pin 22 which passes through both portions and may be held in place by cotter key 23. The folding portion 16 is held securely in the erected position by a bolt 24. The bolt 24 passes through a clearance hole 25 in the member 15 into a tapped hole in the member 16. When the track is folded, the bolt 24 is removed from the hole 25 and inserted through a second clearance hole 25 in the member 15 into a tapped hole 27 in the member 16 which matches with the hole 26 when the track is in the folded position. In this manner, the extension member may be securely locked in either its erected or its folded position.

As shown in Fig. 2, when the extension member 16 is in its folded position, the one end of

the portion 16 extends above the stationary portion 15 to block outward movement of the breaker unit 10, thereby preventing the breaker from accidentally rolling off the track. Since the extension member 16 is securely held in its folded position, the breaker is prevented from rolling off the track even after the door 12 of the cubicle is opened. An upright member 28 is provided on the outer end of the extension member 16 to prevent the breaker unit from rolling off the track when the extension member is in the erected position.

As shown, a relatively thin member 31 is secured at the top of the stationary portion 15 and a similar member 32 is secured at the top of the extension portion 16. The members 31 and 32 extend above the portions 15 and 16 and constitute the actual rails for the grooved portions of the rollers 13 on the breaker unit.

In order to prevent derailment of the breaker unit at the junction point between the rails 31 and 32, the ends of which abut at 33, the members 15 and 16 are offset from each other as shown in Fig. 3, and the rail member 31 is secured to one side of the stationary portion 15. The rail 32 is secured to the side of the folding portion 16, which is adjacent the stationary portion 15, thereby placing the rails 31 and 32 in alignment with each other. A spacing washer 34, which is the same thickness as the rails 31 and 32, is provided between the members 15 and 16 on the pivot pin 22 to space the members 15 and 16 from each other the desired distance. A similar spacing washer 35 is provided between the members 15 and 16 in alignment with the hole 25 for the bolt 24.

When the breaker unit 10 is in its operating position, its top terminal 36 may be connected through a fuse link 37 to a power conductor 38 by means of a removable bolt 39. The bottom terminal 41 of the breaker unit is connected through a bridging conductor 42 to a conductor 43 by means of a removable bolt 44. The conductor 43 may, in turn, be connected to a power conductor 45 by means of bolts 46.

When it is desired to remove the breaker unit from the housing 11, the bolts 39 and 44 may be removed to disconnect the breaker from the power conductors, after which it may be rolled to the position shown in Fig. 1. Other well known means, such as disconnecting contacts, may be utilized to connect the breaker to the power conductors, thereby making it possible to withdraw the breaker without removing any bolts. When the switchgear unit is in the position shown in Fig. 1, it is available for inspection and maintenance, or, if desired, it may be completely removed from the track by means of a handling unit or a crane.

As shown in Fig. 2, when the breaker 10 is inserted in the housing 11 to its operating position

and the extension member 16 is folded down, the door 12 of the housing may be closed, thereby completely enclosing the breaker unit and the track in the cubicle.

From the foregoing description, it is apparent that we have provided a collapsible track structure of a simple design which is of sufficient length to permit the removable switchgear unit to be moved to a position where it may be readily inspected or completely removed from the housing if desired. Furthermore, there is no danger of the equipment becoming derailed when passing over the track junction between the stationary and the folding portions of the track, since both portions are maintained in alignment. When the track is locked in its folded position, the equipment is prevented from accidentally rolling off the stationary portion of the track. Also, the track is completely contained within the housing when not in use, there being no detachable portions of the track requiring storage at another place when not in actual use.

Since numerous changes may be made in the above described construction and different embodiments of the invention may be made without departing from the spirit and scope thereof, it is intended that all matter contained in the foregoing description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

We claim as our invention:

1. A collapsible track comprising a stationary portion and a folding extension portion pivotally secured to and overlapping a portion of the stationary portion, said stationary portion having a rail extending above the top surface thereof, and said extension portion having a rail disposed at its top in alignment with and abutting the rail on the stationary portion.

2. A collapsible track comprising a stationary portion and a folding extension portion pivotally secured to and overlapping a portion of the stationary portion, said stationary portion having a rail extending above the top surface thereof, and said extension portion having a rail disposed at its top in alignment with the rail on the stationary portion, said rails having abutting ends when the extension portion is raised to its erected position.

3. A collapsible track comprising a stationary portion and a folding extension portion pivotally secured to and overlapping a portion of the stationary portion, said stationary portion having a rail secured to its side adjacent the folding portion, said folding portion having a rail secured to its side adjacent the stationary portion, whereby said rails are in alignment and having abutting ends when the extension portion is raised to its erected position.

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