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ELECTRIC SWITCHGEAR

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Our invention relates, generally, to electric switchgear and, more particularly, to switchgear of the drawout type.

When a circuit breaker, or similar apparatus, of the horizontal drawout type, is mounted in a cubicle or cell, it is the usual practice to provide a track structure which permits the switchgear unit to be rolled out of the cubicle to a position where it is readily available for inspection and maintenance.

An object of our invention, generally stated, is to provide a track structure for a removable unit which shall be simple and efficient in operation and which may be economically manufactured and installed.

A more specific object of our invention is to provide a folding track for an enclosed switchgear unit which may be utilized in a relatively small space.

Another object of our invention is to provide a folding track for a removable switchgear unit which will prevent movement of the unit when the track is folded.

A further object of our invention is to provide a folding track having an unfolded length which is much greater than the folded length.

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 for supporting a movable unit is so constructed that one end engages a wheel on the movable unit to prevent movement of the unit when the track is folded. Conversely, the track cannot be folded unless the unit is in its normal position. Provision is made for locking the folding portion in either the erected or the collapsed position.

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, in side elevation, of switchgear apparatus embodying our invention, a portion being broken away for clearness;

Fig. 2 is a view, in front elevation, of a portion of the structure shown in Fig. 1.

Referring to the drawing, the switchgear structure shown therein comprises a removable switchgear unit 10, which may be a circuit breaker of the drawout type or other switching equipment, such as a network protector, which is mounted in a sheet metal cubicle 11 having a cover or door 12. The switchgear unit 10 is supported

by rollers 13 disposed on opposite sides of the unit to run on a folding or collapsible track 14 disposed at each side of and within the housing 11.

The track 14 at each side of the housing comprises a stationary portion 15 and a folding extension portion 16. The stationary portion 15 is secured at one end to an upright member 17 of the housing 11 or to a similar frame member suitable for supporting the unit 10. 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 other end of the track.

As shown, the folding portion 16 of the track is pivotally secured to the stationary portion 15 by a pin 22 which passes through both portions. The folding portion 16 is locked or held securely in the erect position by a bolt or pin 23 which passes through the member 16 and may be threaded into the stationary member 15. When the track is folded, the bolt 23 is removed from the member 15 and inserted through the member 16 into the bracket 18. In this manner, the extension member may be securely locked in either its erected or its folded position.

The wheels or rollers 13 are mounted on pins 24 provided in brackets 25, one of which is disposed at each side of the switchgear unit and secured to a panel 26 disposed at the rear of the unit. The panel 26 may be utilized to support the mechanism for the switchgear unit 10.

As shown in Fig. 2, each wheel 13 is provided with a groove 27 which engages the extension portion 16 of the track 14 when the unit is withdrawn from the housing 11. A flange 28 is provided on each wheel to prevent it from leaving the edge of the track 16. When resting on the stationary portion 15 of the track 14, the load is carried by the outer periphery 29 of each wheel which engages the track. When the wheels are on the folding portion 16, the load is carried by the root of the groove 27.

As shown in Fig. 1, an upwardly projecting stop 31 is secured to the track 15 and disposed to engage the groove 27 in the rear wheel 13 when the unit 10 is fully inserted into the housing 11. Thus, the stop 31 prevents the wheel from leaving the edge of the track 15 by lateral movement and also limits the backward movement of the unit 10.

In order to prevent forward movement of the unit 10 when the track 14 is collapsed, the rear end of the folding portion 16 is provided with an arcuate surface 32 having a radius R which

is so proportioned relative to the normal position of the rear roller 13 that the curved end 32 actually engages the groove 27 in the roller at a point above the normal height of the track 16. Thus, when the track 16 is fully lowered, the roller 13 cannot move forward because of the curved end 32 of the track 16 and it cannot move backward because of the stop 31. Conversely, the track 16 cannot be dropped to its lowered position unless the roller is in its normal position. In this manner the unit 10 may be securely retained in the housing 11. A stop 33 is provided at the outer end of the track 16 to prevent the unit 10 from rolling off the track when the extension 16 is in the erected position, as shown by the dash-dot lines in Fig. 1.

From the foregoing description, it is apparent that we have provided a collapsible track for supporting a movable unit which can be folded or unfolded without lifting the unit and which prevents movement of the unit when the track is folded. Furthermore, the unfolded length of the track can greatly exceed the folded length and little space is required for changing the track from one position to the other.

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. In switchgear apparatus, in combination, a movable switchgear unit and a collapsible track for supporting the same, the track comprising a stationary portion and a folding portion pivotally secured to the stationary portion, said folding portion having an arcuate surface for engaging the movable unit to prevent movement thereof when the folding portion is in the collapsed position.

2. In switchgear apparatus, in combination, a movable switchgear unit and a collapsible track for supporting the same, the track comprising a stationary portion and an extension portion pivotally secured to the stationary portion and movable to either an erected position or a collapsed position, said extension portion having a rounded end for engaging the movable unit to prevent movement thereof when the extension portion is in the collapsed position.

3. In switchgear apparatus, in combination, a movable switchgear unit and a collapsible track for supporting the same, the track comprising a stationary portion and an extension portion pivotally secured to the stationary portion and movable to either an erected position or a collapsed position, said extension portion having a rounded end for engaging the movable unit to prevent movement thereof when the extension portion is in the collapsed position.

4. In switchgear apparatus, in combination, a movable switchgear unit and a collapsible track for supporting the same, the track comprising a stationary portion and an extension portion pivotally secured to the stationary portion and movable to either an erected position or a collapsed position, said extension portion having a rounded end for engaging the movable unit to prevent movement thereof when the extension portion is in the collapsed position, and means for locking the extension portion in the collapsed position.

5. In switchgear apparatus, in combination, a movable switchgear unit having supporting wheels thereon, a collapsible track for the wheels, said track comprising a stationary portion and an extension portion pivotally secured to the stationary portion and movable to either an erected position or a collapsed position, said extension portion having a rounded end for engaging a wheel on the unit to prevent movement thereof when the extension portion is in the collapsed position.

6. In switchgear apparatus, in combination, a movable switchgear unit having supporting wheels thereon, a collapsible track for the wheels, said track comprising a stationary portion and an extension portion pivotally secured to the stationary portion and movable to either an erected position or a collapsed position, stop means on the stationary portion for engaging a wheel on the unit, said extension portion having a rounded end for engaging said wheel to force it against said stop means when the extension portion is in the collapsed position.

7. In switchgear apparatus, in combination, a movable switchgear unit having supporting wheels thereon, a collapsible track for the wheels, said track comprising a stationary portion and an extension portion pivotally secured to the stationary portion and movable to either an erected position or a collapsed position, stop means on the stationary portion for engaging a wheel on the unit, said extension portion having a rounded end for engaging said wheel to force it against said stop means when the extension portion is in the collapsed position.

8. In switchgear apparatus, in combination, a movable switchgear unit having supporting wheels thereon, a collapsible track for the wheels, said track comprising a stationary portion and an extension portion pivotally secured to the stationary portion and movable to either an erected position or a collapsed position, stop means on the stationary portion for engaging a wheel on the unit, said extension portion having a rounded end for engaging said wheel to force it against said stop means when the extension portion is in the collapsed position, said wheel having an outer periphery for engaging the stationary portion of the track and a grooved surface for engaging the extension portion.

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