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D. ELLIS ET AL
LINE-STARTER CABINET
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2,393,034

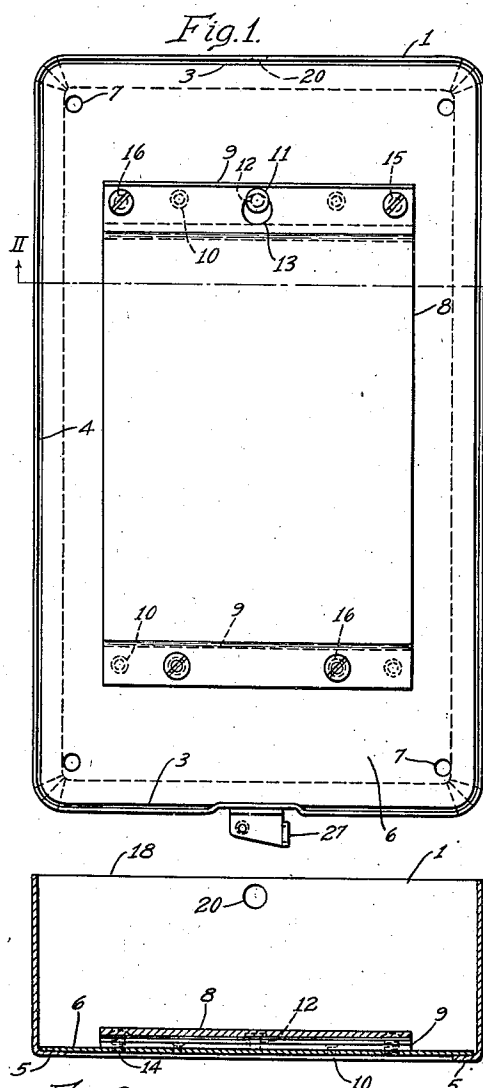


Fig. 2.

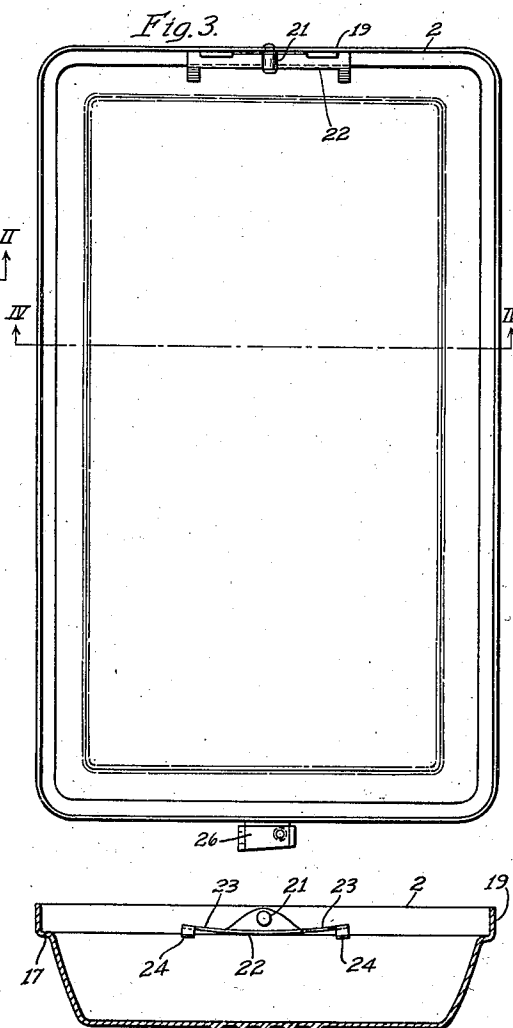


Fig. 4.

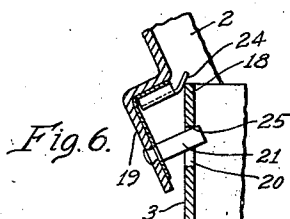


Fig. 6.

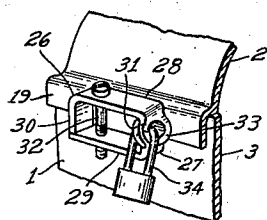


Fig. 5.

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LINE-STARTER CABINET

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2 Claims. (Cl. 220-31)

This invention relates to a cabinet structure, and more particularly to a cabinet for electric switches such as line-starters and the like.

Line-starters for connecting an electric motor or other load across a source of power supply are commonly mounted in a cabinet for protection against dirt and damage. The cabinet usually comprises a box-like container which is mounted on a suitable supporting structure and a lid or cover which is secured to the cabinet. Since it is at times necessary to repair or adjust the line-starter, it is desirable that access to or removal of the line-starter from the cabinet may be had with a minimum expenditure of time and effort. It is further desirable that the cabinet be simple in construction so as to be readily and economically manufacturable and reliable in operation from the standpoint of serving its intended purpose over long periods of time.

One of the principal objects of this invention is to provide a line-starter cabinet which will provide all of the above-mentioned features.

A further object is to provide the container and cover of a line-starter cabinet with an improved arrangement of cooperating parts for securing the cover to the container.

A further object is to provide improved structure for securing the cover of a line-starter cabinet in position comprising cooperating fulcruming parts respectively on the cover and container at one side of the cabinet, a spring for maintaining such parts in operative engagement, and a box-type fastening device at the other side of the container for securing the cover to the container.

A further object of this invention is the provision of an improved mounting for preliminarily supporting the line-starter in the cabinet which will facilitate the application of fastening elements such as threaded screws.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawing in which:

Figure 1 is a front elevational view of the container portion of a line-starter cabinet showing the base plate of a switch such as a line-starter mounted in position on the base of the container.

Fig. 2 is a sectional view taken substantially on the line II—II of Fig. 1.

Fig. 3 is a plan view of a cover member, looking toward the inside thereof, which is particularly adapted for application to the container shown in Fig. 1.

Fig. 4 is a sectional view taken substantially on the line IV—IV of Fig. 3.

Fig. 5 is an enlarged and broken-away perspective view of a portion of the cabinet structure illustrating a box-type mating structure for securing the cover to the container, and

Fig. 6 is a sectional view of a portion of the cabinet illustrating the relative positions of the fulcruming parts at the time the cover is initially applied to the container.

The cabinet structure comprises a box-shaped container member, indicated as a whole by the numeral 1, and a cover or lid, indicated as a whole by the numeral 2, for the container 1. The container 1 comprises upper and lower parallel side walls 3 and lateral parallel side walls 4. The side walls 3 and 4 are provided with in-turned flanges 5 at the base thereof to which the substantially flat base plate 6 of the container 1 is secured in such manner that the side walls 3 and 4 project outwardly therefrom. The container 1 is preferably mounted in position as shown in Fig. 1 on a suitable supporting structure (not shown) and openings 7 are provided in the base plate 6 through which fastening elements may be passed for accomplishing such mounting.

The container 1 is particularly adapted for the reception and protection of an electric switch such as a line-starter. Since this invention is concerned only with the structure by which a line-starter may be mounted in position, only the base plate or supporting member 8 on which the operating parts of a switch unit are mounted has been shown in the interest of simplicity, the operating parts or the type of switch unit to be mounted on the base plate 8 forming no part per se of this invention.

To mount the base plate 8 in position in the container 1, upper and lower supporting straps 9 are suitably secured as by rivets 10 to the base 6 of the container 1. The upper strap 9 is provided with a supporting pin having an enlarged head 11 and a reduced shank 12 connected to the supporting strap 9. The base plate 8 is provided with an opening 13 sufficiently large to permit it to be readily slipped over the head 11 into position as shown in Fig. 1. In such position the shank 12 supports the base 8 and the switch unit (not shown) to be carried thereby, and the enlarged head 11 engaging with the surface of the plate 8 will prevent disengagement of the plate 8 from the shank 12, even though the container 1 be subjected to a heavy shock.

The straps 9 and base 6 are provided with threaded openings for the reception of the

threaded ends 14 of screws having heads 15 engageable with the surface of the plate 8 in an annular area surrounding openings 16 formed in the plate 8 through which the threaded ends 14 may be passed. The opening 13 in the plate 8 is so located that when it is engaged with the shank 12 the openings 16 in the plate 8 will be aligned with the threaded openings in the straps 9 and base 6. Upon application of the screw fastening members, the heads 15 thereof will function to clamp the plate 8 to the base 6 of the container 1.

The shank 12 and opening 13, in addition to positioning the plate 8 for the reception of the threaded fastening elements, provides a desirable feature in supporting the plate 8 and its switch unit during application of the threaded fastening elements. In this manner, the manual support of the switch unit during the application of the fastening elements is eliminated. After removal of the threaded fastening elements, it is merely necessary to raise the plate 8 slightly so that the opening 13 will clear the head 11 to remove the switch from the container 1.

The top or cover 2, which forms a closure member for the container 1, comprises a box-shaped member having edge portions 17 adjacent its periphery for engagement with the outer edges 18 of the side walls 3 and 4. The edge portions 17 have depending flanges 19 adapted to lap the side walls of the container 1 when the cover is in position as best shown in Fig. 5.

To secure the cover 2 in position on the container 1, the upper side wall 3 is provided with an opening 20 for the reception of a pin 21 secured to and projecting inwardly from the flange 19 as shown in Fig. 3. To provide a tight fitting cover and to eliminate noise and wear from vibration in a manner to be described, a spring 22 is mounted adjacent the pin 21. The spring 22 is provided with a pair of resilient arms 23 respectively projecting in opposite directions from the pin 21 and positioned between the edge portion 17 and the pin 21. The outer ends of the spring arms 23 are provided with camming surfaces 24 to insure their engagement with the edge 18 of the upper side wall 3 of the container 1.

To mount the cover 2 on the container 1, the cover 2 is held in an angular position with respect to the container 1 and the pin 21 is inserted through the opening 20 as shown in Fig. 6. In this showing it will be noted that the opening 20 is considerably larger in diameter than the pin 21 so that the pin may be readily entered at an angle with respect to the opening 20. The cover 2 is then swung downwardly to engage the edge portions 17 with the edges 18 of the side walls 3 and 4. As this movement takes place the camming surfaces 24 at the ends of the spring arms 23 cause the spring ends to ride up over the edges 18, and continued movement of the cover to its closed position will effect a compression or tensioning of the spring arms 23. The resilient force exerted by the spring arms 23 when the cover is in its closed position functions to maintain the pin 21 tightly engaged with the upper edge of the opening 20. This resilient force likewise is effective to provide a tight fitting cover and eliminates noise and wear due to vibration. The cover 2, in moving to its completely closed position from its initial angular position as shown in Fig. 6, will fulcrum about the point 25 at the upper edge of the opening 20. In this manner the edge of the opening 20 and the pin 21 provide fulcruming parts about which

the cover 2 may be swung to its closed position and the spring 24 is effective to maintain the pin or fulcrum part 21 in engagement with its fulcrum seat 25.

Fastening means is provided adjacent the lower side wall 3 on the side of the cabinet opposite that containing the opening 20. The fastening means comprises a pair of L-shaped brackets 26 and 27 respectively having their longer arms 28 and 29 secured to the flange 19 on the cover 2 and to the side wall 3 of the container 1. Upon movement of the cover 2 to its closed position, the shorter arms 30 and 31 of the L-shaped brackets will engage with the longer arms 28 and 29 to form a box-shaped structure as shown in Fig. 5. The arm 28 is provided with an opening for the reception of a headed screw 32 and the arm 29 is provided with a threaded opening for engagement with the threaded end of the screw 32. The screw 32 is effective to draw the arms 28 and 29 toward each other to engage the edge portion 17 of the cover 2 tightly with the edges 18 and the side walls 3 and 4. The arms 30 and 31 provide the end walls of the box-shaped structure provided by the L-shaped brackets and act as compression members for preventing the brackets from being crushed or bent out of shape regardless of the clamping force applied to the arms or side walls 28 and 29 by the screw 32.

The arm 31 of the bracket 27 is provided with an opening alignable with an opening formed in a part 33 depending from the free end of the side wall 28 provided by the bracket 26. The hasp 34 of a lock may be passed through the aligned openings in the parts 31 and 33 to prevent unauthorized removal of the cover 2.

From the foregoing it will be noted that the cover 2 is of the lift-off type and may be removed by loosening only one screw. After removal of the cover 2, the switch unit carrying base plate 8 may be readily removed from the container 1, as explained above, by removal of the fastening elements 14 and lifting the plate outwardly over the enlarged head 11 and out of engagement with the supporting shank 12. In this manner it will be apparent that there is provided a line-starter cabinet in which access to and removal of the line-starter is had with a minimum of time and effort. Moreover, these features are provided by parts which are simple in construction and are readily and economically manufacturable. It will also be noted that the cabinet of this invention contains no parts which are likely to become worn or damaged, and is therefore capable of serving its intended purpose over a long period of time.

Since certain changes may be made in the above construction, and different embodiments of the invention may be made without departing from the scope thereof, it is intended that all matter contained in the above 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 container, comprising a box member open at its front and having side walls with substantially straight front edges, a closure member designed for covering said box member and being fully removable therefrom, said closure member having a flange portion and forming a peripheral inner ledge so as to overlap said edges while substantially abutting against them at said ledge when said closure member is in full closing position on said box member, one of said side walls of said box member having an opening near the

edge of said wall, and said flange portion of said closure member having an inwardly projecting part for loosely engaging said opening, a spring located between said ledge and said edge near said opening and attached to one of said members so as to bias said closure member away from said box member when said closure member is in full closing position, and fastening means attached to said two members at the side of said box member opposite said opening for locking both members together.

2. A container, comprising a box member open at its front and having side walls with substantially straight front edges, a closure member designed for covering said box member and being fully removable therefrom, said closure member having a flange portion and forming a peripheral inner ledge so as to overlap said edges while sub-

stantially abutting against them at said ledge when said closure member is in full closing position on said box member, one of said side walls of said box member having an opening near the edge of said wall, and said flange portion of said closure member having an inwardly projecting part for loosely engaging said opening, a spring attached to said closure member so as to abut resiliently against said edge near said opening in order to bias said closure member away from said box member when said closure member is in full closing position, and fastening means attached to said two members at the side of said box member opposite said opening for locking both members together.

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