May 16, 1933. M. W. SEVERANCE 1,908,926

LIFTING DEVICE

Filed Jan. 17, 1931

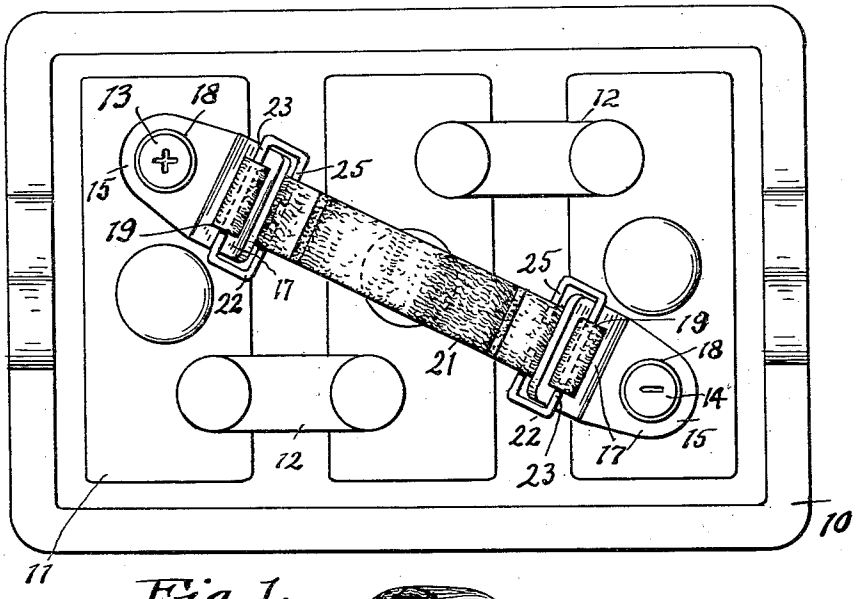


Fig. 1.

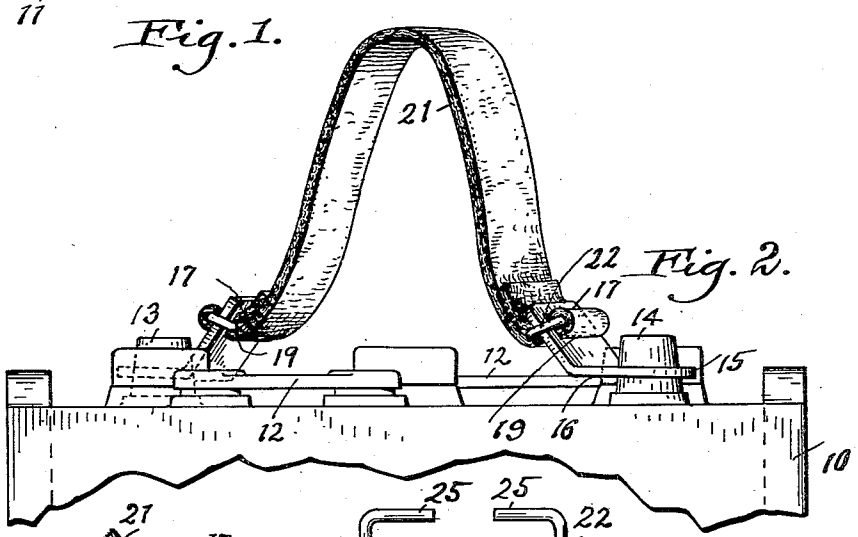


Fig. 2.

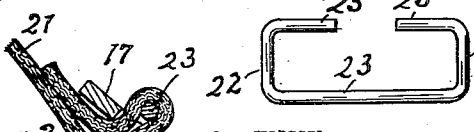


Fig. 5.

Fig. 3.

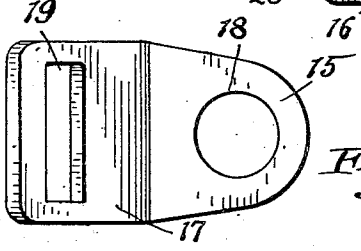


Fig. 4.

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UNITED STATES PATENT OFFICE

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LIFTING DEVICE

Application filed January 17, 1931. Serial No. 509,455.

This invention relates to a lifting device and is particularly adapted for use in connection with the lifting of storage batteries.

Considerable difficulty is encountered in removing storage batteries from motor vehicles and containers due to the inaccessibility thereof and it is therefore one of the principal objects of the present invention to provide a lifting device which will overcome this objection.

Another object of the present invention is to provide an improved lifting device which is simple in construction, efficient in operation, and inexpensive to manufacture.

It is a further object of the present invention to provide a lifting device engageable with the terminal posts of a storage battery and by an upward pull or lift upon the handle portion produce a gripping action upon the terminal posts sufficient to prevent disengagement.

With the objects above indicated and other objects hereinafter explained in view, the invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawing,

Figure 1 is a top plan view of a storage battery showing the lifting device embodying the present invention;

Fig. 2 is a side elevational view of that shown in Fig. 1;

Fig. 3 is a fragmentary sectional view of one of the gripping members in its normal position and further showing the manner of preventing accidental disengagement between the strap and the gripping member;

Fig. 4 is a top plan view of one of the gripping members; and

Fig. 5 is a plan view of one of the strap securing members.

In the drawing, the lifting device is illustrated in its adaptation with the usual type of storage battery comprising a box or container 10 within which are disposed a plurality of cells 11, three of which are herein shown. These cells 11 are electrically connected by means of strap connectors 12 and the outermost cells are provided respectively with an upwardly extending positive terminal post 13 and a negative terminal post 14. These posts 13 and 14 are frusto-conically shaped and are supported in the cover at the diagonally opposite corners of the box 10.

Battery boxes of the present construction are ordinarily provided with finger holes or grips upon the ends of the boxes by which the battery may be lifted but when disposed within a support in a motor vehicle or within a container, these finger holes or grips are quite inaccessible with the result that other means for lifting the battery must be resorted to.

The lifting device embodying the present invention consists of a pair of gripping members 15 which have substantially flat horizontal portions 16 and angular extensions 17 preferably formed integral therewith. The portions 16 have transversely extending apertures 18 of sufficient diameter to extend over the ends of the terminal posts 13 and 14 as shown more clearly in Fig. 3. The angular extensions 17 are provided with transverse slots 19 through which extend the looped ends 20 of an insulated hand-strap 21 connecting the gripping members 15 together. Means are provided for preventing accidental disengagement between the looped ends 20 of the strap 21 and the angular extensions 17, and consist of substantially C-shaped locking members 22. These locking members 22 have portions 23 which extend through the looped ends 20 of the strap 21 and on the outer surface of the angular extensions 17 while the side portions 24 extend around the sides of the angular extensions 17. The free ends 25 of the locking members 22 extend inwardly toward each other and are disposed between the looped ends 20 of the strap 21 but upon the opposite side of the extensions 17. It will be readily seen therefore that an upward pull upon the strap 21 will tend to force the portion 23 against the upper surface of the extension 17, thus preventing the looped ends 20 from being pulled through the transverse slots 19 and, at the same time, the free ends 25 will be forced toward the undersurface of the angular extension 17 and thus tend to grip the free ends of the strap 21, thus preventing

accidental displacement between the strap 21 and the gripping members 15.

It is important in the efficient operation of the lifting device that the angular extensions 17 extend at a suitable angle between a horizontal position and a vertical position which will produce the desired gripping action between the gripping members 15 and the terminal posts 13 and 14. It has been found that an approximately 45° angularity with respect to the substantially horizontal portions 16 best fulfills the requirements although variations from this angle may be made where conditions require it. The angle of the extensions 17 should also be sufficient to permit placing the fingers thereunder in order to disengage the gripping members 15 from the terminal posts when the lifting device is to be removed. It will be readily seen that the closer the angular extensions 17 approach the horizontal the more gripping or biting action is produced upon the terminal posts and that the closer the angular extensions 17 approach the vertical the lesser will be the biting or gripping action between the gripping members and the terminal posts.

In the operation of the device the transverse openings 18 in the gripping members 15 may be placed over the terminal posts 13 and 14 respectively until the surface surrounding the openings engages the terminal posts 13 and 14. The strap 21 is then gripped adjacent its central portion and moved upwardly, which movement tilts the gripping members 15 sufficiently to bite or grip the terminal posts 13 and 14 to such an extent that the battery can be lifted and carried about without danger of accidental disengagement. It will be readily seen from Figs. 1 and 2 of the drawing that when the gripping members have been applied to the posts of a storage battery and the device is ready for lifting the battery, the gripping members and the flexible handle lie along or above a straight line passing through the axes of the battery posts. In other words, the angularly disposed plate portions of the gripping members and the flexible lifting strap all lie substantially in the vertical plane which passes through the axes of the terminal posts of the battery.

While I have described the preferred embodiments of the invention it is to be understood that I am not to be limited thereto inasmuch as changes and modifications may be resorted to without departing from the spirit of the invention as defined in the appended claims.

Having thus described my invention I claim:

1. A lifting device for storage batteries comprising a strap flexible throughout its length and constituting a hand grip, gripping members attached thereto, said members having angularly disposed portions, corresponding portions of said members having openings engageable with the terminal posts of the battery while other corresponding portions have slots for receiving the ends of said strap, and securing means engageable with the ends of said strap and the associated angular portions for preventing accidental displacement therebetween.

2. A lifting device for storage batteries comprising a flexible hand strap, gripping members attached thereto, said members having angularly disposed portions, corresponding portions of said members having openings engageable with the terminal posts of the battery while other corresponding portions have slots for receiving the looped ends of said strap, and securing means partially disposed in said looped ends and cooperating with the associated angular portions for preventing accidental displacement therebetween.

3. A lifting device for storage batteries comprising a flexible lifting strap, and gripping members connected therewith, each gripping member having a plate portion with an opening therein engageable with a terminal post of a battery, and another plate portion to which an end of said flexible strap is connected, such other plate portion being inclined upwardly in obtuse relation to the first mentioned plate portion, said gripping members and lifting strap being so arranged that the strap and the obtusely disposed plate portions of the gripping members are in substantially the same vertical plane when the device is applied to the posts of a battery.

4. A lifting device for storage batteries comprising a flexible lifting strap, and gripping members connected therewith, each gripping member having a plate portion with an opening therein engageable with a terminal post of a battery, and a second plate portion to which an end of said flexible strap is connected, said second plate portion being inclined upwardly in obtuse relation to the first mentioned plate portion and being provided with a slot through which said strap extends, said gripping members and lifting strap being arranged so that the strap and the obtusely disposed plate portions of the gripping members are in substantially the same vertical plane when the device is applied to the posts of a battery.

In testimony whereof, I hereunto affix my signature.

MALVERN W. SEVERANCE.