May 15, 1923. 1,455,020

H. COLLINS

GRAPPLE

Filed Feb. 3, 1922

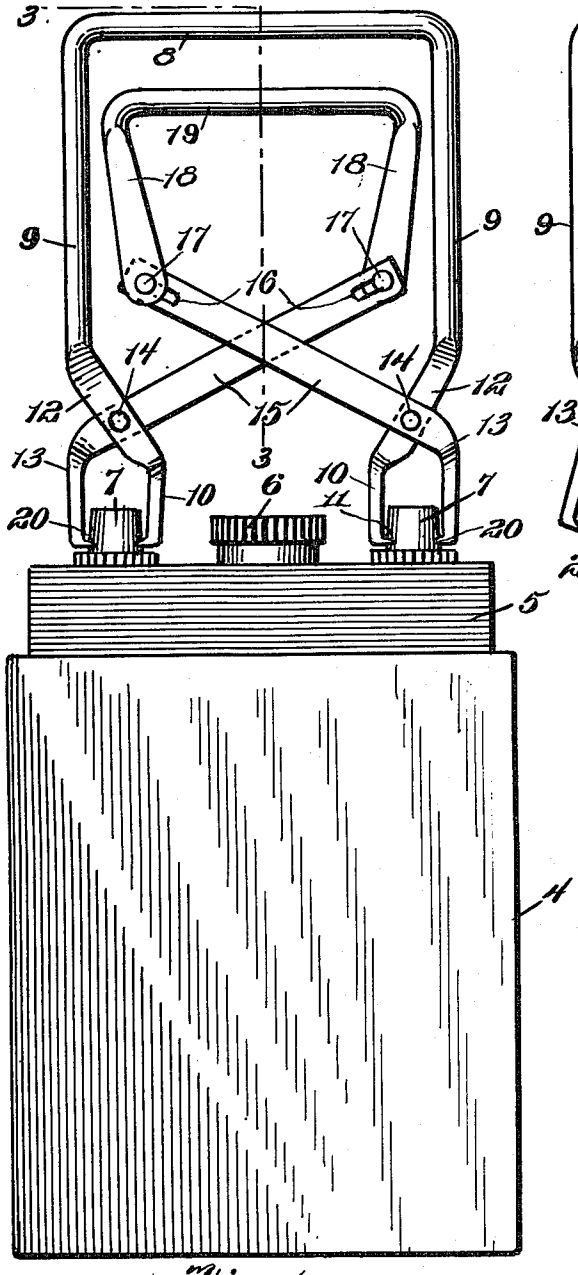


Fig. 1.

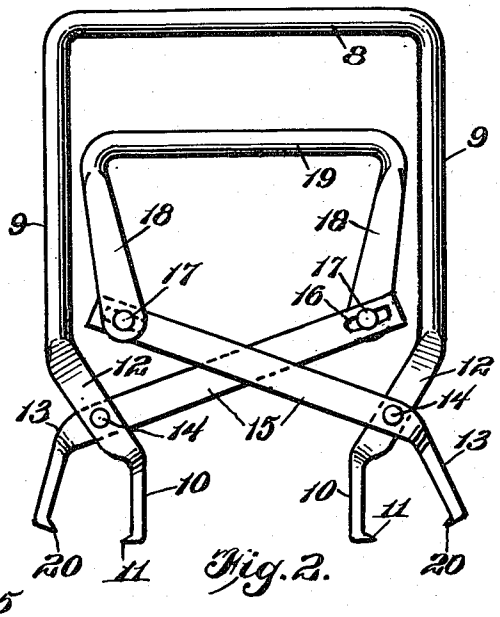


Fig. 2.

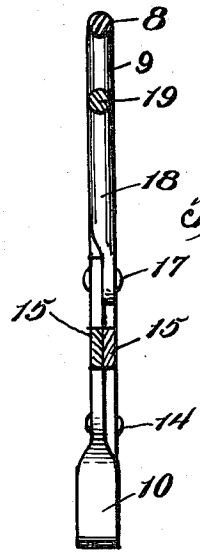


Fig. 3.

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UNITED STATES PATENT OFFICE.

HARRY COLLINS, OF SWEETWATER, TEXAS.

GRAPPLE.

Application filed February 3, 1922. Serial No. 533,910.

To all whom it may concern:

Be it known that I, HARRY COLLINS, a citizen of the United States, residing at Sweetwater, in the county of Nolan and State of Texas, have invented new and useful Improvements in Grapples, of which the following is a specification.

This invention relates generally to grapples, and particularly to grapples for use in the removal of the cells or jars from the storage battery box.

As is generally known to those familiar with the construction and assemblage of storage batteries, when it is required to remove any or all of the cells or elements of such batteries from the box, pliers are ordinarily employed. The pliers are gripped upon the posts of the cells or elements and upward pull is applied. In this operation, it frequently happens that the posts are damaged, bent or broken, and it not infrequently happens that the jars themselves are cracked, chipped or broken. Furthermore, in the removal of the cells or elements in this crude manner, unnecessary effort is usually expended, in that equal pull upon the posts of each cell or element can not be maintained.

It is the primary object of my invention to provide a grapple of simple and inexpensive construction for use particularly in lifting the cells or elements from the battery boxes, and wherein the objections incident to the above outlined method are entirely overcome.

A further object of the invention is to provide a grapple of such construction that the posts of the cell, elements, or jar are gripped at one time and rigidly held with equal degrees of pressure in the lifting operation, whereby uniform pull is applied to the posts.

A further object of the invention is to provide a grapple so constructed that when pull is applied to the grapple, after once being engaged with the posts, danger of breakage or injury to the posts or plates or to the jar is entirely eliminated.

A further object of the invention is to provide a grapple so constructed and operated that the grip of the grapple upon the posts will be increased accordingly with the degree of pull required to remove the cells or elements from the box.

Still further and particular objects are to provide a grapple which may be manufactured at extremely low cost, which is simple of construction and which involves the use of but few parts, the said parts being readily assembled, free of complicated mechanism and positive of operation, which may be operated by those ordinarily unskilled in work of this kind, and which can not become readily deranged or broken.

The invention consists of the features of construction, combination and arrangement of parts, hereinafter fully described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is an end elevation of a storage battery of familiar type and illustrating as applied thereto a grapple constructed in accordance with the invention,

Figure 2 is an elevation of the grapple with the jaws in releasing position, and

Figure 3 is a sectional view taken substantially upon line 3—3 of Figure 1.

Referring now more particularly to the drawing, 4 indicates the battery box and 5 a cell therein; the latter having the filling opening 6 at substantially the center of the top thereof, and the posts or extremities 7 near the outer extremities of the said cell and upon the upper surface thereof.

The grapple of my invention includes a pair of grapple members each adapted simultaneously to engage with a post or terminal of the battery cell, or element and means of an improved nature is employed for creating binding action of these grip members upon the posts when upward pull is applied to the grapple.

In carrying out this end, I employ a metallic bar of proper length bent inwardly of its ends to provide a substantially straight handle portion 8, from the ends of which extend the spaced parallel arms 9. These arms are preferably spaced apart a distance greater than the distance between the posts 7 of the battery cell or element, and the said arms extend inwardly near their free ends and are shaped so as to provide fixed jaws 10 to engage with the inner or adjacent sides of the said terminals. The extremities of these fixed jaws may be provided with inwardly directed teeth or gripping faces 11 whereby a positive grip or hold may be had upon the terminals 7. The bar of which this member is formed is preferably round throughout the greater part of its length,

however, near its free ends it is flattened as at 12.

Each of the fixed jaw members 10 has pivoted thereto a movable jaw member 13, the latter being pivoted inwardly from their ends as at 14 to the flattened portions 12 of arms 9. The jaws 13 carry extensions 15 disposed at an obtuse angle to the said jaws and extending toward each other from their pivotal connection with the portions 12 so as to overlap adjacent their inner ends. The inner extremities of extensions 15 are provided with longitudinally disposed slots 16 through which extend pins or studs 17 carried by the lower ends of arms 18 of a hand grip 19. The hand grip 19 is disposed directly beneath and parallel with the handle 8, and is capable of moving between arms 9 and in a direction parallel therewith.

In operation, the grapple will be positioned over the battery cell with the inner or fixed jaws 10 disposed adjacent to the posts or terminals 7 of the cell or element and upon the inner sides thereof. In this application of the grapple, the hand grip 19 will have been released so that the weight of the said hand grip and the extensions 15 will have caused the jaw members 13 to have rocked upon their pivots 14 to extend the jaws 13 outwardly beyond the outer edges of terminal 7. After the grapple has been positioned over the terminals, as described, the hand grip 19 is grasped and moved upwardly, whereupon the extensions 15 will be raised and will rock upon their pivots 14; causing jaws 13 to move inwardly into engagement with the outer surfaces of the posts 7. As this upward lifting movement of the hand grip continues, the engaging or gripping surfaces 20 at the lower ends of jaws 13 will be caused to bite into or securely engage with the posts 7, and in a like manner the fixed jaws will be bound with the inner surfaces of the said posts. The cell or elements may then be lifted from the box 4, and equal pull will be delivered to each of the posts. This pull will be made in an upward direction, of course, and there will be no tendency or inclination to bend or twist the posts 7 or to distort them from their true positions. Furthermore, the grapple is constructed and operated in such manner that danger of injury to the cap of the filling opening 6 or the nozzle thereof is entirely obviated, as the jaws can in no way come into engagement with the said cap during the operation of the device.

By thus employing toggle mechanism in connection with the gripping jaws of the grapple, it is apparent that not only will equal degrees of gripping pressure be exerted upon the posts of the cell or elements, but this gripping action will be increased commensurate with the degree of power required in lifting the elements from the jar or the cell from the box or case.

In order that proper clearance of the extensions 15 may be obtained, and in order that free working of these parts may be assured, the said extensions are pivoted upon opposing faces of the flattened portions 12 of arms 9.

While the above is a description of the invention in its preferred embodiment, it is to be understood that various changes in the construction and arrangement of parts may be resorted to if desired, without departing from the spirit of the invention as defined by the claims.

Having thus fully described my invention, I claim:—

1. In a device of the class described, a pair of spaced fixed jaws, movable jaws for each of said fixed jaws, a movable hand grip, and toggle mechanism connecting the hand grip with said movable jaws.

2. In a device of the class described, a pair of fixed jaws, a movable jaw for each of said fixed jaws, extensions carried by the movable jaws, the said extensions being disposed in crossed relation, and a hand grip connected to the ends of said extensions.

3. In a device of the class described, a pair of arms, fixed jaws carried by said arms, movable jaws pivoted upon said arms and each movable toward and away from its adjacent fixed jaw, extensions on said movable jaws disposed between said arms and in crossed relation, and a hand grip connected to the extremities of said extensions.

4. In a device of the class described, a pair of spaced parallel arms, fixed jaw members at the extremities of said arms, movable jaws pivoted to said fixed jaws and movable toward or away from said fixed jaws, extensions on said movable jaws disposed between the said spaced arms and in overlapping relation, the inner extremities of said extensions having longitudinal slots therein, a hand grip, and pins carried by said hand grip and engaged in said slots.

5. In a device of the class described, a grapple comprising a bar bent to provide a straight handle and spaced parallel arms extending from the ends of said handle, the free ends of said arms being bent inwardly and providing spaced parallel fixed jaws, the portions of said arms adjacent to said fixed jaws being flattened, movable jaws pivoted inwardly from their ends to said flattened portions, extensions on said movable jaws disposed between the said parallel arms and in overlapping relation, a hand grip, arms extending from said hand grip, and pins carried by said arms and engaged with the extremities of said extensions.

In testimony whereof I affix my signature.

HARRY COLLINS.