

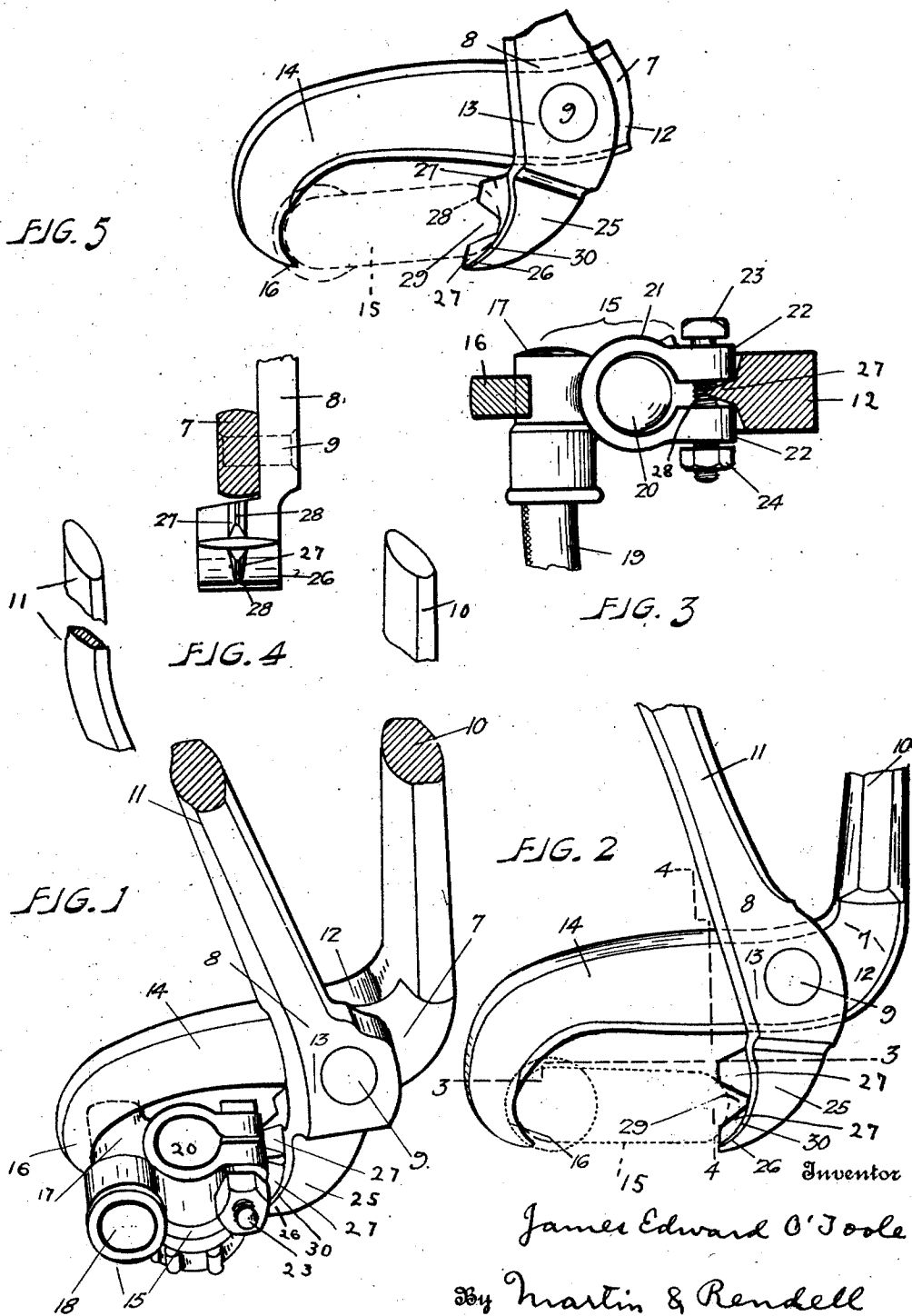
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BATTERY TERMINAL SPREADER AND LIFTER

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# UNITED STATES PATENT OFFICE.

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BATTERY-TERMINAL SPREADER AND LIFTER.

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My present invention relates to a battery terminal spreader and lifter.

The purpose of this invention is to provide a battery terminal spreader and lifter of new, convenient and effective form and particularly a tool that can be readily and easily operated with one hand.

A further purpose is to provide a tool of the class described of the crossed and pivoted connected members or plier type with one of the jaws of said tool provided with a vertically arranged projection or two spaced projections, said projections being wedge shaped in horizontal section and adapted to enter between and force apart the split ends of the terminal when the jaws of the tool are forced together; and further to provide the other jaw of said tool with a long part adapted to reach over the top of the terminal and then having a down-turned hook to engage the solid side of the terminal so that when the two jaws are forced together the split end is opened without strain upon the post or damage to any other part of the battery.

A further purpose is to provide a tool of the general construction mentioned having the jaw carrying the wedge projections also provided with an inturned hook which passes below the split end of the terminal to prevent the tool slipping off the terminal at the beginning of the operation but with said hook afterwards coming into operation towards the close of the spreading operation so as to slightly lift that end of the terminal after its split ends have been separated.

Further purposes of the invention are to provide a battery terminal lifter and spreader of the general type suggested and so constructed as to readily engage the terminal in any position of the terminal upon the battery and adapted to reach the battery whether it is under the floor boards or the splash pan of an automobile and further to have the parts of such form, construction and combination as to easily exert the required pressure upon the wedges to open the split end of the terminal no matter how badly corroded or "frozen" to the post the terminal may be.

Further purposes and advantages of the invention will appear from the specification and claims herein.

Fig. 1 is a perspective view of a tool embodying this invention with the parts shown in position upon a terminal with the parts of the tool and the parts of the terminal in

the relative position they occupy when the tool is first applied to a closed terminal.

Fig. 2 is a side elevation of the jaws, pivotal portions and lower part of the handles of the tool, with the terminal shown in dotted lines in its initial position.

Fig. 3 is a horizontal sectional view on line 3—3 of Fig. 2 as applied to a battery terminal, but with the parts of the tool and the terminal in the relative position they occupy after the jaws of the tool have been contracted and the split ends of the terminal opened.

Fig. 4 is a vertical sectional view of the tool on line 4—4 of Fig. 2.

Fig. 5 is a side view similar to Fig. 2 but with the jaws closed and with the terminal shown in dash lines in its final opened and lifted position.

Referring to the drawings in a more particular description it will be seen that the battery terminal spreader and lifter consists of two main members 7 and 8 crossing each other and connected to and pivoted upon each other by the pivot 9. Above the pivot 9 the portions of each member extend upwardly forming long strong handles 10 and 11 for the members 7 and 8 respectively, said handles being of sufficient length to secure the desired leverage when the tool is operated by one hand. Preferably the handle 11 about half way up in its length will be bent towards the handle 10 so as to be about parallel thereto as suggested in Fig. 1 in order to more readily allow the operator to hold and operate the tool.

The member 7 has its central or pivoting portion 12 arranged about horizontally while the pivoting portion 13 of the other member 8 is normally close to an upright or vertical position. The horizontal part 12 of the member 7 extends forwardly or to the left as the parts are seen in Figs. 1 and 2 in a relatively long horizontal jaw portion 14 extending over the top of the battery terminal 15 and towards the end of the jaw is provided with a downturned inwardly slanting hook 16 to engage the curved side of the solid portion 17 of the battery terminal.

It will be understood that the battery terminal 15 is of the general type clearly shown in Figs. 1 and 3 and consists of the rigid or solid portion 17 provided with an aperture 18 to receive the battery cable 19 to one side of the post 20 of the battery. Around the post

20 extends the split collar or ring 21 with its split ends 22 adapted to be brought together more or less closely so as to contract the collar 21 upon the post by means of the usual tightening bolt 23 and nut 24. This type of battery terminal provides the desired intimate contact of the collar 21 with the battery post 20 but requires considerable care and heretofore has required a more or less elaborate implement in order to spread the split ends 22 of the terminal to loosen the terminal from the battery without injuring the post or other parts of the battery.

From the pivoting portion 13 of the member 8 there projects downwardly a relatively short jaw 25 having towards its lower end an inwardly curved hook 26. Upon the forward face of this jaw there are provided two spaced wedge shaped projections 27 having the thin edges 28 thereof vertically arranged and in alignment and adapted to enter between split ends 22 of the terminal and force said split ends apart. Figs. 1 and 2 show the general construction and arrangement of these wedge shaped projections and the sectional view of the upper wedge 27 and its jaw 25 in Fig. 3 clearly show the shape and approximate proportion of these projections relative to the jaw and the manner in which the contraction of the jaws of the tool force the split ends 22 apart. Preferably the wedge shaped parts are formed as two spaced wedges as clearly indicated in Fig. 2, the opening 29 between said two wedges being really an interruption midway the vertical height of the wedge shaped part considered as a unit. This opening or interruption 29 is provided opposite the terminal bolt 23 so that if as often happens the terminal bolt has not been removed but simply its nut loosened, the tool can still be operated upon the terminal by the upper wedge projection 27 passing above the bolt and the lower projection passing below the bolt.

As the split ends of the collar portion 21 are opened it will be obvious that the circle of the collar 21 is spread out and so a large part of its inner face will be separated from the now smaller circle of the post 20 as clearly shown in Fig. 3. This opening of the terminal disengages the terminal from much the larger portion of the circumference of the post 20. Some portion of the post and the collar may still be in intimate contact, usually such portion being the part of the collar away from the split ends 22. To loosen up this flat and corroded engagement instead of encircling engagement I provide means upon the tool which will operate to give a slight lifting action upon the terminal towards the end of the contraction of the jaws and after the split ends have been well opened so that the lifting action may be effected. This lifting action is accomplished by means of the inturned hook 26 upon the

short jaw 25 being so proportioned or so sharply curved inwardly that towards the end of the contracting motion of the two jaws towards each other the forward concave face 30 of the hook will engage the lower outer curved portions 31 of the split ends 22 with a camming action and gradually lift this end of the terminal a little. This lifting action by the concave face 30 of the hook 25 is clearly seen from a comparison of Figs. 2 and 5. In Fig. 2 the jaws are shown in the opened position with the terminal shown in dotted lines just beginning to be engaged by the wedge shaped projections 27. In Fig. 5 the jaws have been moved to their closed or contracted position and the spread ends 22 of the split collar 21 have been opened, as plainly shown in Fig. 3 by the wedge projections and the lower outer rounded portion of the parts 22 by engagement with the cam faces 30 have bodily lifted the right-hand end of the terminal a little so that the upper wedge is almost entirely between the parts 22 while the lower wedge has its lower part below the terminal. A very slight amount of lifting action upon the right-hand end of the terminal is sufficient to loosen the inner part of the collar 21 from its engagement with the adjacent surface of the post 20. As during the whole operation of spreading the terminal and also during this lifting operation, the hook 16 on the jaw 14 securely engages the outer curved part of the solid portion 17 of the terminal, no lateral movement or strain is placed upon the post 20 or the battery therebelow. It will be noted particularly that the hook 20 has a concave face fitting the engaged surface of the solid portion 17 of the terminal so that the slight lifting or swinging upwardly of the split ends of the terminal is not interfered with since the rounded part of said solid portion 17 of the terminal can move readily in the concave seat of the hook 16.

What I claim as new and desire to secure by Letters Patent is:

1. A battery terminal spreader and lifter consisting of two crossed and pivotally connected members, the long upwardly extending ends of which form handles, the jaw portion of one member having a long horizontal part adapted to go over the top of the terminal and having a downwardly extending inturned hook to engage the solid side of the terminal and the jaw of the other member having a wedge shaped projection having its thin edge vertically arranged and adapted to enter between and force apart the split ends of the terminal, said second jaw having an inturned hook at its lower end adapted to engage with an upward camming action the lower side of the split ends of the terminal.

2. A battery terminal spreader consisting of two crossed and pivotally connected mem-

bers, the long upwardly extending ends of which form handles, the jaw portion of one member having a long horizontal part adapted to go over the top of the terminal and having a downwardly extending int<sup>5</sup>urned hook to engage the solid side of the terminal and the jaw of the other member having a pair of spaced wedge-shaped projections having their thin edges vertically arranged and adapted to enter between and force apart the split ends of the terminal.

10 3. A battery terminal spreader and lifter consisting of two crossed and pivotally connected members, the long upwardly extending ends of which form handles, the jaw portion of one member having a long horizontal

part adapted to go over the top of the terminal and having a downwardly extending int<sup>20</sup>urned hook to engage the solid side of the terminal and the jaw of the other member having a pair of spaced wedge shaped projections having their thin edges vertically arranged and adapted to enter between and force apart the split ends of the terminal, said second jaw having an int<sup>25</sup>urned hook at its lower end adapted to engage with an upward camming acton the lower side of the split ends of the terminal.

In witness whereof I have affixed my signature, this 22nd day of May, 1928.

JAMES EDWARD O'TOOLE.