Nov. 5, 1935. J. S. FISCHER 2,020,052

BATTERY TERMINAL TOOL

Filed June 28, 1935

Fig. 1.

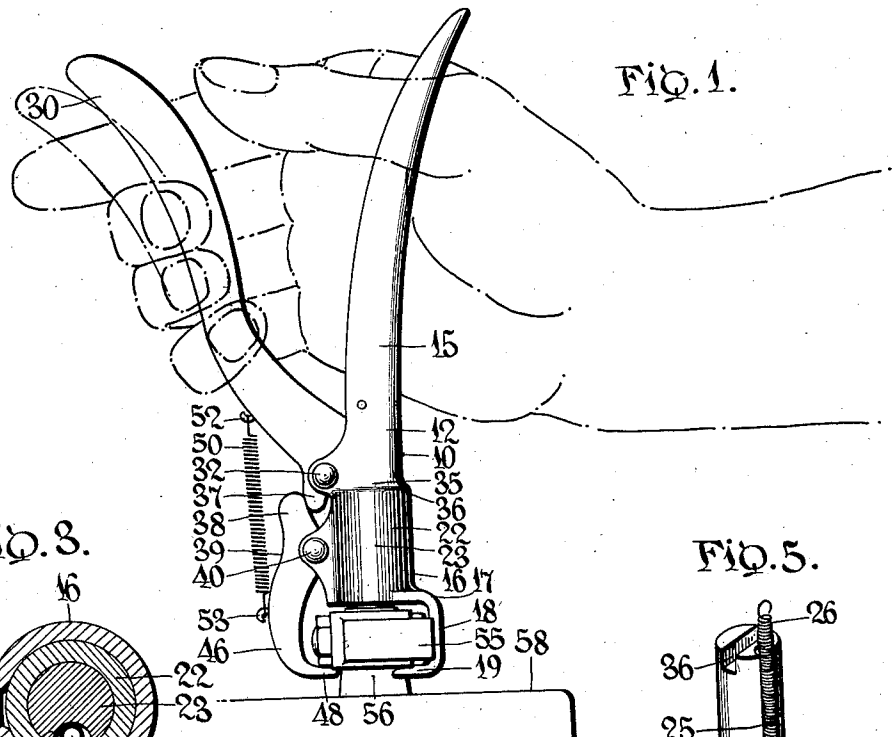


Fig. 3.

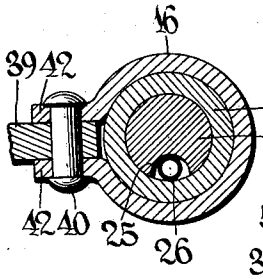


Fig. 5.

Fig. 2.

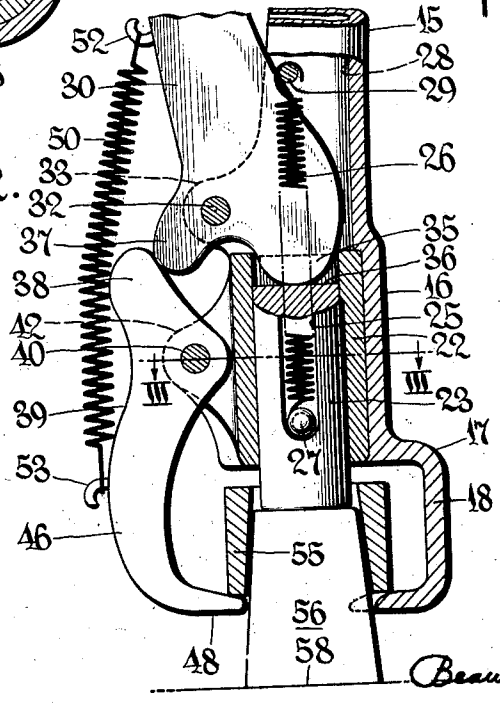
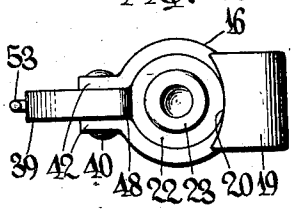


Fig. 4.



INVENTOR

John S. Fischer,

BY

Beau, Brooks, Buckley & Beau.

ATTORNEYS

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BATTERY TERMINAL TOOL

John S. Fischer, Cheektowaga, N. Y.

Application June 28, 1935, Serial No. 28,969

3 Claims. (Cl. 29—85)

This invention relates to battery terminal wrenches or tools, and it has particular relation to a tool for removing terminal clamps from a battery.

One object of the invention is to provide an improved type of tool or wrench which insures uniform and positive pressure in drawing a battery terminal from a battery post.

Another object of the invention is to provide an improved and simplified tool structure which is rugged and double-acting in its clamping and clamp forcing operation when manipulated to withdraw a terminal clamp from a battery post.

Another object of the invention is to provide an improved camming arrangement for operating the clamping and terminal forcing elements of the tool.

Referring to the drawing:

Fig. 1 is a side elevation of a tool embodying the invention;

Fig. 2 is a fragmentary view, on a larger scale, partially in vertical section and partially in elevation, and illustrating the principal features of the tool;

Fig. 3 is a cross-section taken substantially along the line III—III of Fig. 2;

Fig. 4 is an end elevation of the tool; and

Fig. 5 is a perspective of a plunger element included in the structure of the tool.

Referring to the drawing, a tool 10 in which the invention is embodied comprises the body 12 of substantially shell-form and it can be composed of sheet metal material rolled to provide a channel-like handle 15 and a housing or bearing head 16. An extension 17 formed rigidly upon the head has an off-set intermediate portion 18 and an end finger 19 turned at substantially right angles to the handle. The extremity of the finger is provided with a concave portion 20 (Fig. 4).

A sleeve 22 is secured substantially coaxially inside the head 16 and slidably receives a plunger 23 that normally has its outer end substantially flush with the outer end of the sleeve and head assembly. One side of the plunger is formed with a groove 25 therein for receiving a coiled tension spring 26 that has one of its ends connected, as indicated at 27, to the plunger in the groove, and its other end extends into a hollow portion 28 of the handle where it is connected, as indicated at 29, to the latter. This coiled spring is tensioned between its connected ends and it constantly tends to draw the plunger inwardly into the sleeve 22.

A handle lever 30 having a pivotal support 32 is carried by lugs 33 formed as a part of the body of sheet metal of the handle 15, and the handle lever is formed with a cam extension 35 that engages in a slot 36 provided at the inner end of the plunger 23. The end of the cam extension is sufficiently narrow to enter the inner end of the sleeve 22.

A cam finger 37 extends integrally from the end portion of the lever 30 and at an angle to the cam extension 35. The outer end of the cam finger 37 engages a cam arm 38 of a clamping lever 39 and an intermediate portion of the latter is pivoted upon a pin 40 that is mounted in lugs 42 formed integrally upon one side of the head 16. The cam arm 38 extends outwardly at an angle to the head 16. A hook or claw 46 constituting the longer extension of the lever 39 has its end portion 48 disposed oppositely from the concave end of the finger 19 and its intermediate portion is bowed outwardly.

The levers 30 and 39 are provided with a coiled tension spring 50 normally under tension and having its opposite ends secured, as indicated at 52 and 53, to intermediate portions of the levers. This spring, together with the spring 26, tends to pivot the levers 30 and 46 outwardly or to an open position.

This construction of tool is particularly adapted to be employed as a battery terminal wrench and is adapted to be disposed upon a battery clamp 55 in such manner that the finger 19 engages beneath one of the lower edge portions of the clamp at one side of a battery post 56 of a battery 58, and the hook 48 engages beneath the lower edge portion of the battery clamp 55 on the opposite side of the battery post. If the terminal clamp happens to be close to the top surface of the battery the fingers 19 and 48 can be wedged beneath the terminal edges in starting the removing action. In this position the outer end of the plunger 23 contacts the top of the battery post 56 and in response to the closing of the handle 15 and lever 30 or moving them toward each other, the cam extension 35 presses the plunger 23 which is forced outwardly against the upper end of post 56, thus drawing the terminal clamp 55 upwardly away from the terminal post.

The leverage between the cam finger 37 and the lever 39 is such that very slight movement of the cam arm 38 provides for considerable movement of the hook 48. Hence, at the beginning of the closing action of the handle 15 and lever 30 of the tool, the hook 48 is immediately forced against or closely adjacent the side of the post 56 and continued pivotal movement of the handle lever 30 withdraws the terminal clamp 55

55. The contours of the engaging surfaces of the finger 37 and the cam finger 38 are such that, after the initial movement of the hook 48 upon the side of the battery post, the cam surfaces nearly bear against each other without causing further pivotal movement toward the terminal post. Therefore, there is positive holding of the terminal clamp to prevent it from slipping from the end of the tool.

It will be observed that the outwardly off-set portion 18 of the head extension and the outwardly bowed portion of the hook 46 provides considerable space between them within which the terminal clamp can be located in applying the tool thereto preparatory to operating the levers.

Although only one form of the invention has been shown and described in detail it will be apparent to those skilled in the art that the invention is not so limited but that various changes may be made therein without departing from the spirit of the invention or the scope of the intended claims.

I claim:

1. A tool comprising a body having an outwardly movable member therein, a lever connected to the body and having a portion normally movable toward said member, a clamping element pivoted to the body and having a portion operatively engaging the lever, said member and clamping element having means cooperating with the lever for forcing the member outwardly and operating the clamping member upon operation of the lever.

2. The tool comprising a body having an outwardly movable plunger mounted therein, clamping members on the body disposed outwardly from the plunger, one clamping member having a pivotal connection to the body, and a lever mounted upon the body of the tool, said lever having cam surfaces operatively engaging the latter member and the plunger to move the plunger toward the clamping region of the members and to cause clamping action of the latter.

3. A tool comprising a lever having a pair of cam projections at one end portion thereof, a support pivotally connected to the lever adjacent the cam projections, an outwardly movable member normally contacting one cam projection and operable outwardly in response to movement of the lever, a pair of jaws carried by the support for engaging a battery terminal clamp, one of said jaws being movable substantially transversely of the path of movement of said movable member and having operative contact with the other cam projection whereby operation of the lever causes movement of one jaw toward the other and movement of said movable member toward the engaging region of the jaws.

JOHN S. FISCHER.