

Nov. 3, 1942.

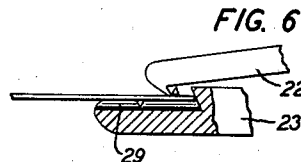
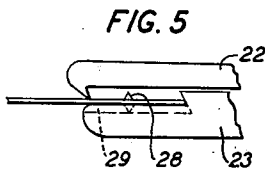
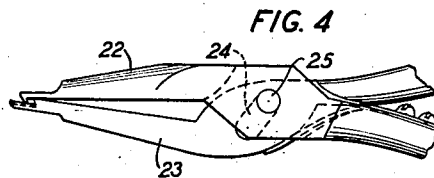
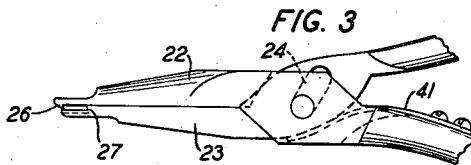
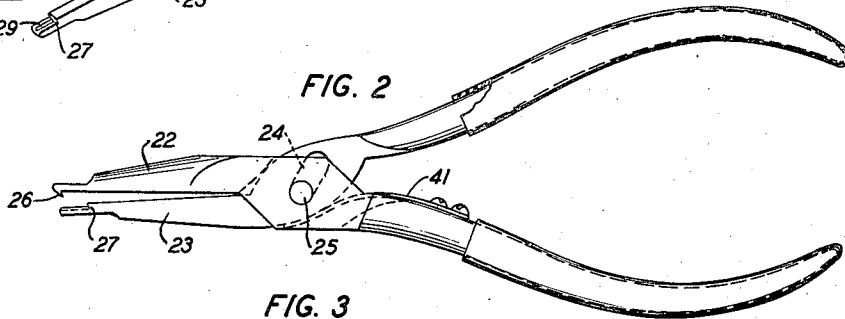
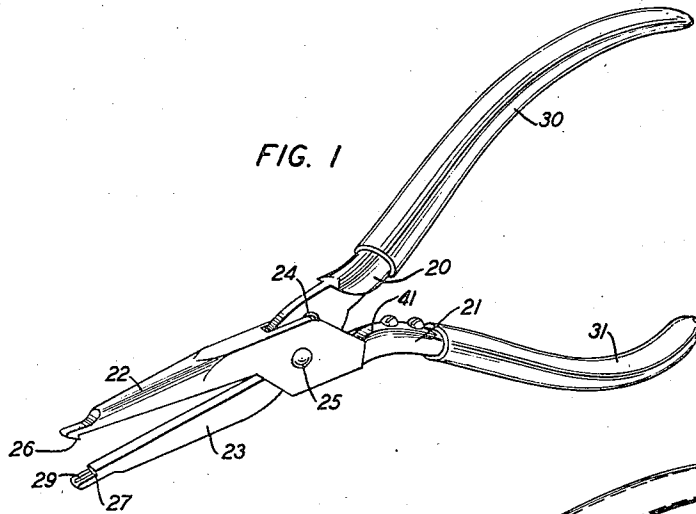
O. S. A. MESCH

2,300,516

SHEARING TOOL

Filed April 1, 1941

2 Sheets-Sheet 1



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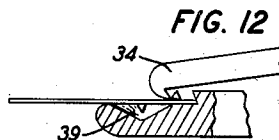
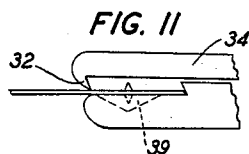
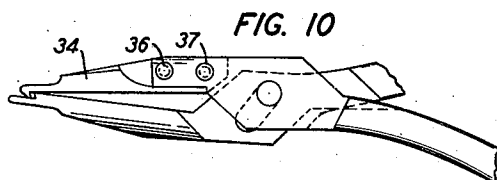
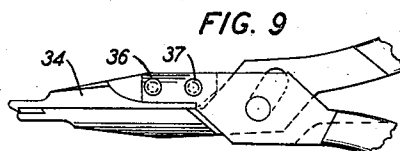
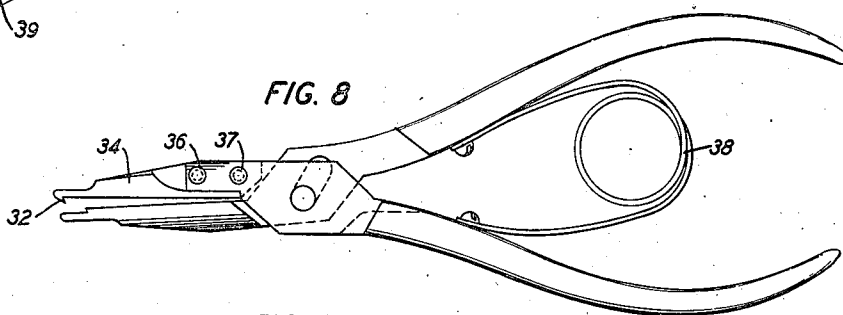
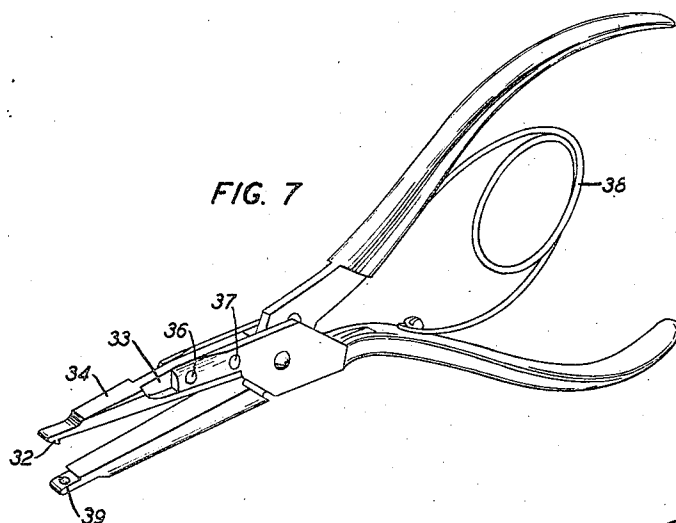
O. S. A. MESCH

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SHEARING TOOL

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,300,516

SHEARING TOOL

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Application April 1, 1941, Serial No. 386,269

4 Claims. (Cl. 30—124)

This invention relates to a tool for removing projections from work surfaces, and more particularly for removing worn, pitted or loose contacts from springs of relays, switches and various other electrical apparatus.

The tool of this invention comprises a long-nose pliers having an inclined slot in one jaw and a fixed pin in the other, instead of the conventional pivot joint, to provide for both pivotal and longitudinal movements, and the end of one jaw is provided with a cutting edge located at right angles to the center line of the jaw while the other jaw is provided with a stop near the same end. In using the tool the end of the contact spring is placed against the stop portion of the one jaw and the cutting edge of the other jaw is placed in back of the contact point to be removed. As pressure is applied to the handles, the jaws are first brought together to grip the spring whereupon the camming action of the slot produces a rearward motion of the jaw having the cutting edge so that the cutting edge moves along the spring with a raking motion which shears the contact off flush with the surface of the spring.

Referring to the drawings,

Fig. 1 is a perspective view of the tool with the jaws in the full operated position showing the cutter element formed with one of the jaws and a longitudinally disposed groove in the other jaw;

Fig. 2 is a side elevation with the jaws in an intermediate position and showing the manner of insulating the handles of the tool;

Fig. 3 is a similar view with the jaws in a closed position;

Fig. 4 is a similar view with the jaws fully operated;

Figs. 5 and 6 are enlarged views similar to Figs. 3 and 4, the former showing the jaws grasping a contact spring and the latter showing the shearing off operation of one of the contacts carried by the spring;

Fig. 7 is a modification of the tool shown in Figs. 1 to 6 in which embodiment the handles are not insulated, and also in which a counter bore, instead of a slot is provided with the lower jaw the jaws being in their open position;

Fig. 8 is a side elevation with the jaws in their intermediate position;

Fig. 9 is a similar view with the jaws in their closed position;

Fig. 10 is a similar view with the jaws fully operated; and

Figs. 11 and 12 are enlarged views similar to Figs. 9 and 10, the former showing the jaws

grasping a contact spring and the latter showing the shearing off of the contact.

In the drawings, 20, 21 designate the handles of the pliers. Formed on these members are jaws 22, 23 disposed in face-to-face relation. The jaw 22 on handle 21 has an inclined slot 24 in which a pin 25 on jaw 23 of handle 20 rides. The end of jaw 22 has a cutting edge 26 located at right angles to the center line of the jaw. The jaw 23 has a stop 27, to serve for preventing the movement of the contact support during the cutting or shearing operation of the contact off such support.

When the handles 20, 21 are pressed together two forces are involved at right angles to each other, one vertical and one horizontal, to produce first a downward action to bring the jaws 22, 23 together to grip the contact spring between them and forcing the cutting edge 26 of jaw 22 firmly against the spring and then a camming action takes place to cause a rearward movement of the cutting edge along the spring to cause the cutting edge to engage the base of the contact and shear the contact off flush with the surface of the spring. To provide for contact springs having contacts on both sides a groove 29 is provided in jaw 23 which receives the lower contact.

In order to protect the workman from electric shocks the handles 20, 21 are insulated with cotton sleeving 30, 31 dipped in lacquer.

The handles are held in open position by a flat spring 41 riveted to the handle 21 and bearing against the jaw 23.

Referring now to the modification shown in Figs. 7 to 12, the cutting edge 32 instead of being integral with the jaw is formed on an insert or removable and replaceable member 33. This member is attached to the jaw 34 by rivets 36, 37. Thus, when the cutting edge of this insert gets dull, the insert can be readily replaced with a new insert having a sharp cutting edge.

In this modification, the handles are not insulated, and a different spring arrangement is used, consisting of a conventional form of spring.

The pin and slot arrangement, however, is precisely the same as that in the form shown in Figs. 1 to 6 and its action identical therewith when the tool is used.

Instead of providing a slot as 29 shown in the jaw 23, Figs. 1 to 6, to take care of springs having contacts on both faces thereof, a counter bore 39 is provided as best shown in Figs. 11 and 12.

While the invention has been illustrated as em-

bodied in a tool for shearing off electrical contacts, it is to be understood that it is not so limited, since it is also applicable to shearing off projections on other work surfaces.

It is also to be understood that the details of construction may be varied as to shape, proportion and manner of assemblage without departing from the spirit of the invention.

What is claimed is:

1. A contact shearing tool in the form of pliers comprising a pair of relatively movable members each having a jaw, one of said pliers having an inclined slot and the other having a pin guided therein to provide for pivotal and longitudinal movements of said jaws relative to each other, one jaw having a stop near the end thereof for locating the contact support and the other jaw having a cutting edge at its outer end movable toward said stop following the closure of said jaws for shearing the contact.

2. A contact shearing tool in the form of pliers comprising a pair of relatively movable members each having a jaw, one member having an inclined slot and the other having a pin guided therein to provide for pivotal and longitudinal movements of said jaws relative to each other, one jaw having a stop near the end thereof serving for locating the contact support and the other jaw having a cutting edge at its outer end

to shear the contact off the support upon the longitudinal movement of said jaws, said stop jaw having a longitudinal groove therein for receiving a contact secured to the opposite side of the support.

3. A contact shearing tool in the form of pliers comprising a pair of relatively movable members each having a jaw, one member having an inclined slot and the other having a pin guided therein to provide for pivotal and longitudinal movements, one jaw having a stop near the end thereof to serve for locating the contact support and the other having a cutting edge at its outer end, the jaws with said stop having a counter bore therein for receiving a second contact carried by the contact support.

4. A contact shearing tool in the form of a pair of pliers comprising a pair of relatively movable members, one member having an inclined slot and the other having a pin guided therein to provide for pivotal and longitudinal movements, one jaw having a stop at a predetermined distance from the end thereof for locating the contact support and a cutting member secured to the other movable member for cutting the contact off the support upon the pivotal and longitudinal movement of said pliers relative to each other.

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