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CUTTING PLIER

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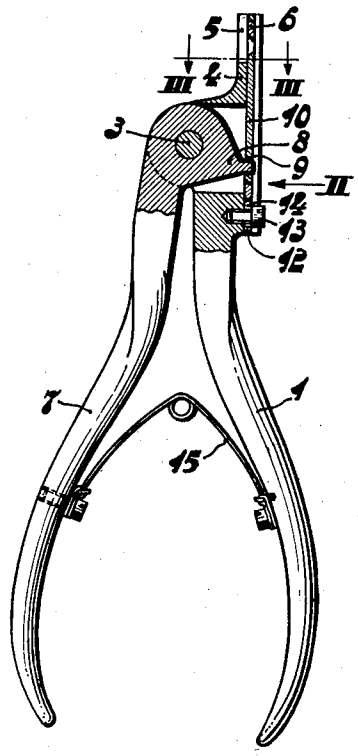


Fig. 1.

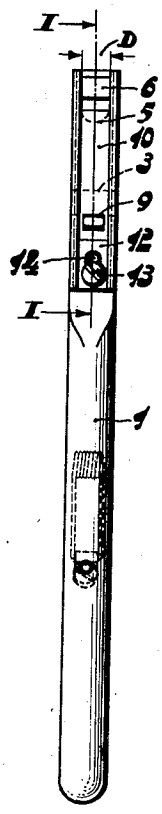


Fig. 2.

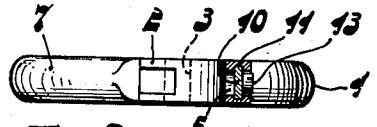


Fig. 3.

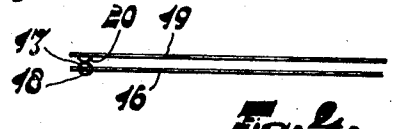


Fig. 4.

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CUTTING PLIER

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1 Claim. (Cl. 30—182)

Cutting pliers each comprising two blades and two handles pivotally connected together are generally known. However, if there is only little space above the part to be cut, pliers of known type can be used with difficulty only and cannot be used more particularly for removing the heads of the contact points of resilient relay tongues. Said heads may in certain cases burn in or oxidize during use and then require replacement. If such a relay tongue comprises a contact point on one side only, the contact point may be removed with the use of piercing pliers. However, if a contact point is provided on each side of the tongue, either one head or both heads must be cut off to permit replacement.

The cutting pliers according to the invention are suitable more particularly for cutting parts which are used in practically inaccessible places and are characterized in that the direction of the movements of the blades with respect to one another, when the handles are operated, is at right angles to the direction of movement of the handles. Since the cutting action proper lies in a plane different from that in which the handles move, it is thus also possible for areas which are difficult to reach to be treated by the cutting pliers.

In one embodiment of the invention, one handle comprises a blade rigidly secured thereto, whereas the second blade is moved by the second lever by way of leverage. When use is made of the pliers, said embodiment affords the advantage that the first blade may be supported behind the object to be cut off, which may be important for areas which are difficult to reach.

In another embodiment of the invention, the movement of the second blade is guided by a groove provided in line with the first handle. Consequently, the position of the cutting surface of the second blade with respect to the cutting surface of the first blade is perfectly determined in a simple manner, since the first blade is rigidly secured to the first handle.

In one advantageous embodiment of the invention, a compression spring is provided between the two handles, the outward movement of the two handles brought about by the compression spring being limited by an abutment, which is preferably adjustable and which limits the movement of the second blade. In this embodiment of the invention, the stroke of the movement of each handle is thus determined in a simple manner by the distance required between the blades.

In order that the invention may be readily carried into effect, it will now be described, by way of example, with reference to the accompanying drawing, in which

Fig. 1 is a side view of a pair of cutting pliers, in which the upper part is a cross-section taken along the line I—I of Fig. 2, as viewed in the direction of the arrow.

Fig. 2 is an elevation view of the cutting pliers of Fig. 1, as viewed in the direction of the arrow II.

Fig. 3 is a plan view of a cross-section taken along the line III—III of the pliers of Fig. 1, and

Fig. 4 shows a relay tongue comprising a contact point on each side thereof.

A handle 1 comprising two tongues 2 which are pivotally arranged on a shaft 3 exhibits, at its upper extremity, an extension 4 which has been hollowed in the form of a U (5). The U-shaped cavity 5 accommodates a blade 6 which is rigidly secured to the extension 4 and hence to the handle 1. A second handle 7 can pivot at 3 between the two tongues 2 of handle 1 and comprises a lever 8 which is rigidly connected to the handle 7. The extremity of the lever 8 engages in a cavity 9 of a blade 10. The latter can slide in two grooves 11 provided in the extension 4 of the lever 1. The grooves preferably extend to the top of the extension 4, the blade 6 being secured in the grooves, so that it is ensured that the cutting edges of the blades 6 and 10 are exactly in opposition to one another. The movement of the blade 10 is limited by an adjustable abutment 12 provided on the handle 1 by means of a screw 13. The adjustability is obtained due to the abutment 12 exhibiting a groove 14. Provided between the two handles is a compression spring 15 which tends to move the handles away from one another, which movement is limited due to the blade 10 in its downward movement engaging the abutment 12.

In Fig. 4, reference numeral 16 indicates a relay tongue, the extremity of which exhibits two contact points 17 and 18. A second relay tongue 19 comprises a contact point 20, which engages the contact point 17. It may become necessary for the contact points 17 and 18 to be renewed and it will be evident that the point 17 cannot be removed with a pair of cutting pliers of ordinary type, while in many cases point 18 is also difficult to reach. However, the pliers described may be moved from the left-hand side between the two tongues 16 and 19 until the head 17 is located between the blades 6 and 10 and, as the case may be, the blade 6 engages behind the head 17. If, now, the handle 7 is moved towards the handle 1, the head 17 is cut off and the head 18 can also readily be removed, whereupon the tongue 16 may be fitted with new contact points in the known manner. If the cutting pliers are used only for the purpose described, it is preferable for the spacing D between the two limbs of the extension 4 to be such that the tongue 16 in its width exactly fits between the two edges, so that the pliers are guided by the tongue.

However, it will be evident that the pliers can be used in all those cases in which either there is only little space above the material to be removed or the material is difficult to reach and service.

What is claimed is:

Cutting pliers for use with relay contacts mounted on supports comprising a pair of pivotally connected handles, one of said handles being provided with an extension having a guide groove therein extending co-planar with said handles and which has a dimension extending transverse to said handles corresponding to the dimension of each of said relay contact supports transverse to the longitudinal axis thereof, said relay contact supports fitting snugly and slidably guided in said guide groove, a blade operatively connected to each of said handles whereby the direction of movement of said blades relative to each other and a selected relay contact is substantially at right angles to the direction of movement of said handles.

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