Feb. 23, 1943. H. W. ROMANOFF 2,311,695

WIRE CUTTING TOOL

Filed April 25, 1941

FIG. 1

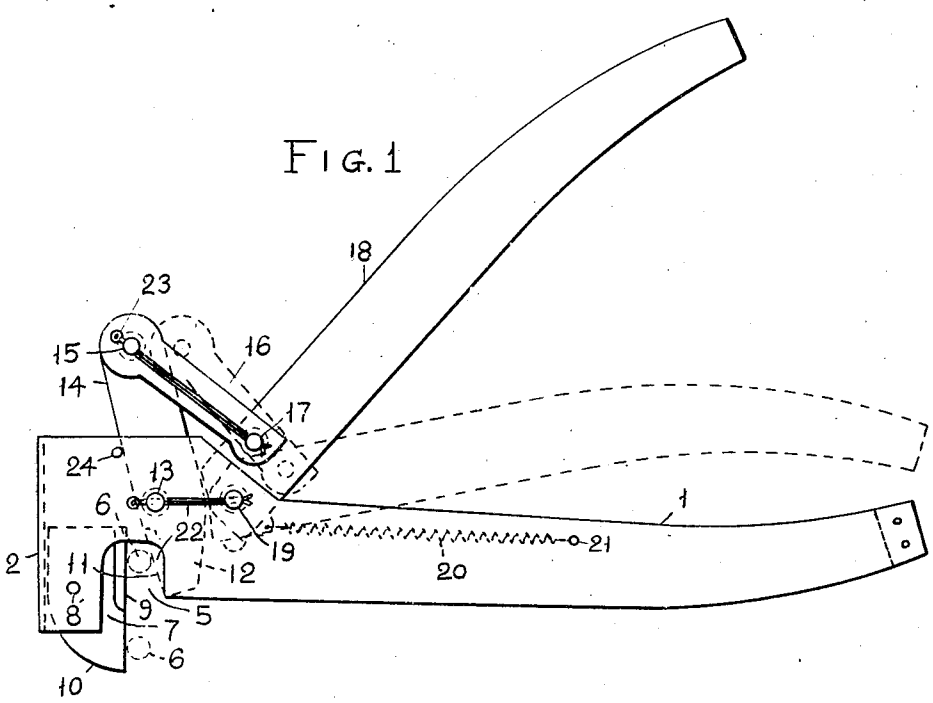
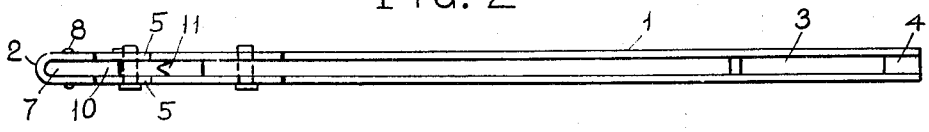


FIG. 2



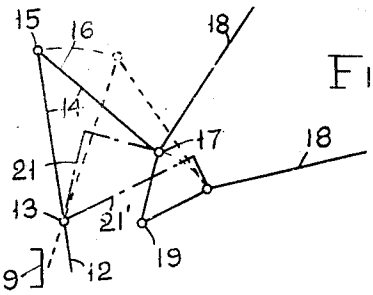


FIG. 3

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2,311,695

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2,311,695

WIRE CUTTING TOOL

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Application April 25, 1941, Serial No. 390,232

3 Claims. (Cl. 30—190)

My invention relates to wire cutting tools and has particular reference to portable tools for cutting heavy wire.

My invention has for its object to provide a portable tool particularly adapted for cutting barbed wire entanglement cables, steel wire, etc., which will be light, strong and inexpensive for manufacturing, and which will have provision for greatly increasing the applied force so that heavy wire can be cut with one hand. I provide my tool for this purpose with a double leverage, the levers being connected together by links.

Another object of my invention is to provide such lever arrangement that the force applied to the cutting elements or cutting jaws of the tool gradually increases as the cutting elements are moved together in accordance with the increase in resistance to cutting when the cross-sectional area of the cut in the wire is increased.

My invention is more fully described in the accompanying specification and drawing, in which:

Fig. 1 is a front view of my tool in an open position, the closed or operative position of the parts being indicated with dotted lines;

Fig. 2 is a side view of the same; and

Fig. 3 is a diagram of the levers acting on the cutting elements.

My wire cutting tool consists of an elongated member 1 preferably made of a steel plate bent over at 2, the two portions being brought together with a clearance 3 between them. The rear ends are joined together by a spacing block 4 and form a handle. Slots 5 are provided at the front at one side of the plates for receiving work such as wire 7 to be cut. A stationary cutter 7 is fitted at the front between the plates, being fastened as by a pin 8, the cutting edge 9 extending into the slot 5. A portion 10 of the cutter extends to the outside for guiding the wire into the slot.

A movable cutter 11 is provided in the rear of the slots, forming a portion of a lever 12. The latter is pivoted on a pin 13, the longer arm 14 of the lever extending outside the member 1 and being provided with a pin 15 for links 16. The latter are pivoted at 17 to a bar 18 having a handle portion at the rear, the front end being pivoted on a pin 19. A spring 20 is attached at one end to the front end of the bar 18, the rear end being held by a pin 21. The spring pulls the front end of the arm 13 to the rear, thereby raising the handle portion as shown in Fig. 1. The movable cutter is turned to the rear, leaving an open space in the slots 5 for the wire or cable 6. The handles of the tool can be held in an operator's hand and drawn together, causing the cutter 11 to advance toward the stationary cutting element 10 until the wire is cut in two.

The force exerted by the fingers of the operator's hand on the handles is greatly multiplied by my arrangement of two levers, the leverage ratio of one lever being multiplied by the corresponding ratio of the other lever. The levers are diagrammatically shown in Fig. 3. The levers are so arranged as regards their angular positions that the total leverage ratio is gradually increased when the handles are moved together, thereby increasing the force applied to the cutters. This arrangement has an advantage in that the cutting can be done more rapidly at the beginning when the cutting area is small, applying a greater force at the end when the cutting area is the greatest.

As shown in Fig. 3, the projected length 21 of the lever arm 14 is relatively short at the beginning when the bar 18 is raised, increasing to 21' when the bar 18 is moved into the final position.

In order to facilitate the assembly of my device, I provide cotter pins 22 and 23 for the pivot pins 13, 19 and 15, 17, the other ends of the pins having flat heads.

A pin 24 may be provided for limiting the outward movement of the bar 18. The front edge of the bar 18 can be made for this purpose to abut the lever 14.

My tool can be conveniently carried in a pocket, is very light and strong, and can be used for cutting heavy wire, cables, small bolts or screws, etc.

It is understood that my wire cutting tool may be further modified without departing from the spirit of the invention, as set forth in the appended claims.

I claim as my invention:

1. A wire cutting tool comprising an elongated member formed of two plates spaced apart and joined at the ends, the rear ends of the plates forming a handle, the plates having a transverse slot at the front extending from the edges in a transverse direction for receiving a wire to be cut, a stationary cutter supported between the plate at the front of the slot, a lever pivotally supported between the plates, the inner arm of the lever having a cutting edge at the rear of the slot adapted to advance against the stationary cutter, the outer arm of the lever being substantially longer than the inner arm and extending

outward from the plates opposite the slotted side, an elongated bar pivotally supported at the front end between the plates at the rear of the lever, the rear end of the bar being shaped as a handle, and a link between the outer end of the outer lever arm and a portion of the bar at the rear of its pivoting point, the link and the lever being pivoted together at a small angle to each other, the link being substantially transverse to the bar, the handles being adapted to be manually drawn together for cutting the wire.

2. A wire cutting tool comprising an elongated member formed of two plates spaced apart and joined at the ends, the rear ends of the plates forming a handle, the plates having a transverse slot at the front extending from the edges in a transverse direction for receiving a wire to be cut, a stationary cutter supported between the plate at the front of the slot, a lever pivotally supported between the plates, the inner arm of the lever having a cutting edge at the rear of the slot adapted to advance against the stationary cutter, the outer arm of the lever being substantially longer than the inner arm and extending outward from the plates, an elongated bar pivotally supported at the front end between the plates at the rear of the lever, the rear end of the bar being shaped as a handle, and a link between the outer end of the outer lever arm and a portion of the bar at the rear of its pivoting point, the link and the lever being pivoted together at a small angle to each other, the link being substantially transverse to the bar, the handles being adapted to be manually drawn together for cutting the wire.

3. A wire cutting tool comprising an elongated member formed of two plates spaced apart and joined at the ends, the rear ends of the plates forming a handle, the plates having a transverse slot at the front extending from the edges in a transverse direction for receiving a wire to be cut, a stationary cutter supported between the plate at the front of the slot, a lever pivotally supported between the plates, the inner arm of the lever having a cutting edge at the rear of the slot adapted to advance against the stationary cutter, the outer arm of the lever being substantially longer than the inner arm, an elongated bar pivotally supported between the plates having inner and outer ends, the outer end of the bar being shaped as a handle, and a link pivotally connected at one end to the inner end of the bar; the other end of the link being pivotally connected to the outer end of the lever, the link being substantially transverse to the bar, the handles being adapted to be drawn together for cutting a wire.

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