

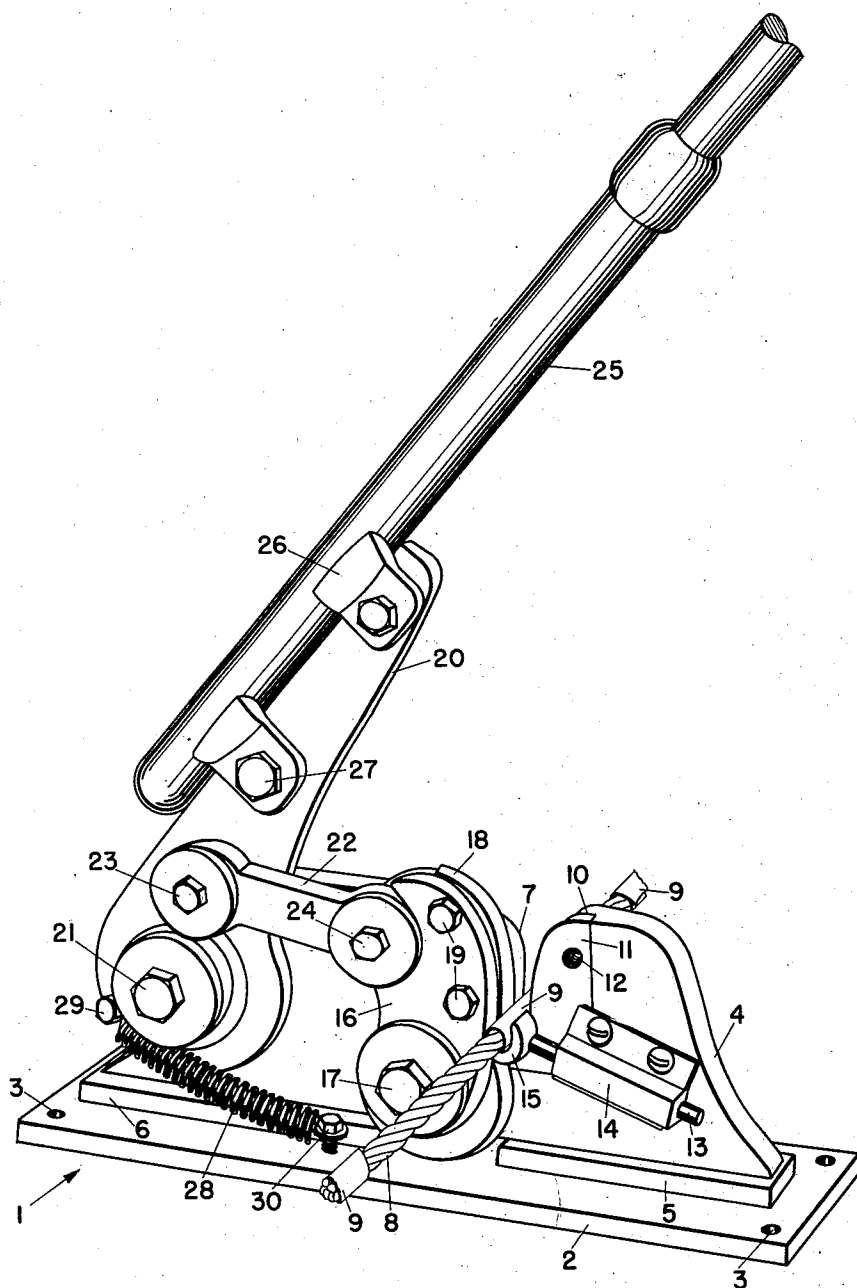
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G. N. NICKELL

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CUTTING MECHANISM

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INVENTOR

GUY N. NICKELL

BY

*McHayes*

ATTORNEY

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## CUTTING MECHANISM

Guy N. Nickell, Oakland, Calif.

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This invention relates to cutting mechanisms and more particularly to wire rope cutters.

An object of the invention is to provide an improved cutting mechanism for severing wire rope without flattening or otherwise distorting the same.

Other objects of the invention are to provide an improved cutting mechanism having means for supporting a wire rope or small cable during the cutting of the same so as to prevent distortion thereof and to assure an accurate, clean cut; to provide an improved wire rope cutter having a compound leverage for increasing the mechanical advantage and facilitating the actuation of its cutting element; to provide an improved cutter of the character described, wherein a portion of the rope support is resiliently mounted to facilitate cutting without distortion of the wire rope; and to provide improved elements and arrangements thereof in a cutting mechanism of the character described and for the purposes set forth.

In accomplishing these and other objects of the present invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

The figure is a perspective view of a cutting mechanism embodying the features of the present invention, and showing a served wire rope disposed in position for severing.

Referring more in detail to the drawing:

In the figure, the numeral 1 designates a wire rope or cable cutting mechanism having a substantially rectangular, flat base 2. Suitable openings 3 are formed in the base 2 adjacent its corners for permitting fastening of said base in a fixed position. An elongated, upright supporting member or flat plate 4 extends longitudinally of the base and is preferably secured centrally thereof by means of a pair of longitudinal, flat blocks or bars 5 and 6 so as to space the plate above said base. The bars 5 and 6 preferably have their inner end portions spaced apart.

A vertical slot or groove 7 is formed transversely in the plate 4 adjacent its forward end to provide a support for receiving a wire rope or cable 8 which preferably has been wrapped with metallic servings 9 in the usual manner. The slot 7 is preferably flared upwardly and outwardly and has its lower end (not shown) curved or arced.

A recess 10 is formed in the plate forwardly of and adjacent the slot for receiving a shearing element or cutting blade 11 of hardened metal

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The blade 11 forms a portion of the forward side wall of the slot and is held in place by one or more countersunk screws 12. In order to resiliently support the wire rope 8, a spring-pressed plunger or rod 13 is secured to the flat surface of the plate forwardly of the slot by a suitable bracket or housing 14. The rod 13 is rearwardly and upwardly directed and its rear end carries a substantially semi-circular jaw 15 which is aligned with the lower end of the slot and receives the rope.

For shearing the rope, a cutting element or arm 16 is pivotally connected by a suitable bolt 17 to the lower portion of the plate 4 rearwardly of the slot and above the space between the bars 5 and 6. The arm 16 is disposed parallel to the plate and has its forward inner surface recessed to receive a blade 18 of hardened metal, which blade is removably fixed to said arm by bolts 19. As will be hereinafter more fully explained, the blade 18 is adapted to coact with the blade 11 upon clockwise pivoting of the arm relative to the plate and its slot so as to cut or shear the rope. It is preferable that the blade 18 be in substantial alignment with the spring-pressed rod 13.

For swinging the arm 16, an operating lever 20 is pivotally attached to the lower rear extremity of the plate 4 and is preferably rotatably supported upon a bolt 21. A link 22 and suitable bolts 23 and 24 pivotally connect the lever 20, immediately above the bolt 21, to the rear upper end portion of the arm, said arm portion being recessed to receive the forward end of the link. In order to increase the mechanical advantage of the shearing action applied to the arm 16 and its blade 18, the distance between the pivot points 17 and 24 is greater than the distance between the pivot points 21 and 23. The lever projects upwardly parallel to the plate at a forward inclination and has a suitable handle 25 fastened to the upper portion thereof by lugs 26 and bolts 27. A coiled or spiral tension spring 28, fastened to the lower portion of the lever by a screw 29 and to the base 3 adjacent the arm by a screw 30, maintains said lever in its upper or counter-clockwise position.

## Operation

The operation of a cutting mechanism as described is as follows:

A wire rope or cable 8, preferably having servings 9 wrapped therearound, is positioned in the slot 7 of the plate 4 with one of the servings disposed in said slot and partially supported by the

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spring-pressed rod 13. The handle 25 is then swung downwardly so as to pivot the lever 20 in a clockwise direction. Due to the pivotal connection provided between the lever and the arm 16 by the link 22, the leverage is compounded so as to readily swing said arm in a similar direction. The cutting blade 18 is moved forwardly relative to the slot and the stationary blade 11 so as to shear or sever the rope through one of the servings. Since the spring-pressed rod 13 resiliently supports the portion of the rope sheared by the blade 18, flattening and distortion of said rope is prevented and subsequent insertion of the rope in securing clips (not shown) is facilitated.

While I have shown but one embodiment of my invention, it is susceptible to modification without departing from the spirit of the invention. I do not wish, therefore, to be limited by the disclosures set forth, but only by the scope of the appended claims.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

I claim:

1. A cutting mechanism including, a base, an upright plate extending longitudinally of the base, the plate having a transverse vertical slot formed therein adjacent its forward end, the forward portion of the plate being recessed adjacent the slot, a stationary cutting blade removably secured within the recess so as to form a portion of the forward side wall of said slot, a spring-pressed rod carried by said forward plate portion and disposed at an upward rearward inclination, a semi-circular jaw mounted on the rear end of the rod in substantial alignment with the slot, an arm pivotally secured to the lower rear portion of the plate adjacent said slot, a cutting blade removably secured to the arm and adapted to coact with the stationary blade and jaw upon swinging of said arm toward the same, an operating lever pivotally connected to said rear plate portion and projecting upwardly therefrom, a link pivotally connecting the intermediate portion of the lever to the upper end of the arm whereby swinging of said lever actuates said arm, and a tension spring connecting the lower portion of the lever to the base for urging said lever to its retracted position.

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2. A mechanism for cutting wipe rope including, a base, an upright plate extending longitudinally of the base, the plate having a vertical slot adjacent its forward end, a removable stationary blade being recessed in the portion of said plate adjacent the slot so as to form a portion of its forward side wall, a spring-pressed support carried by said forward plate portion, the support having means in alignment with said slot for engaging wire rope disposed in the slot, a shearing element pivotally secured to the rear portion of the plate adjacent said slot, the shearing element having a removable blade aligned with said support and adapted to coact therewith and with the stationary blade upon swinging of said element toward the same, a lever pivotally connected to said plate rearwardly of the element, resilient means for urging the lever to its retracted position, and a link connecting said lever to said element whereby the element is actuated by swinging movement of the lever.

3. A cable cutter including, a base, an upright plate mounted on the base, the plate having a vertical slot, a cutting blade removably secured to said plate forwardly of and contiguous to the slot, rearwardly-directed resilient means carried by the plate forwardly of said slot and having a portion aligned therewith, a shearing element pivoted to said plate rearwardly of the slot and adapted to coact with the blade and resilient means upon movement toward the latter, and a pivoted lever having pivotal connection with the element for swinging the same.

4. A cable cutting mechanism including, a base, a grooved supporting member for receiving cable to be cut, a shearing element pivoted to the member rearwardly of its groove, means for swinging the element forwardly of the groove so as to shear cable disposed therein, and resilient means positioned adjacent to said groove for supporting cable upon shearing thereof.

GUY N. NICKELL.

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