April 1, 1941. P. S. PELL ET AL 2,236,833

CABLE AND STRUCTURAL SHAPE CUTTER

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Fig. 1.

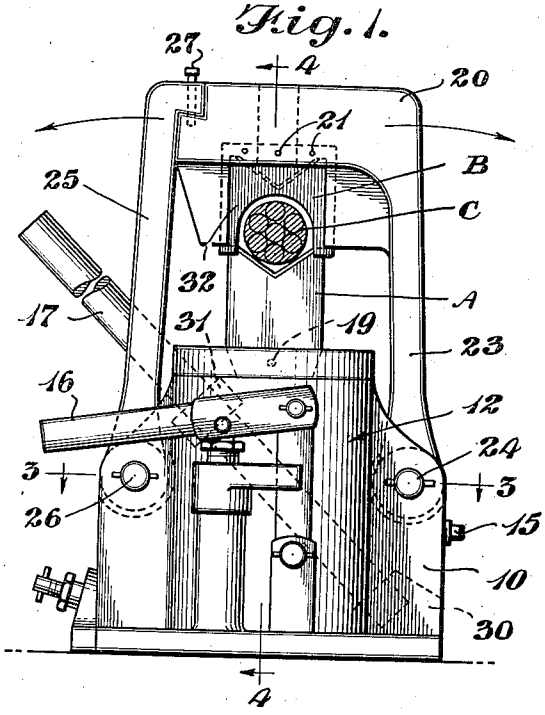
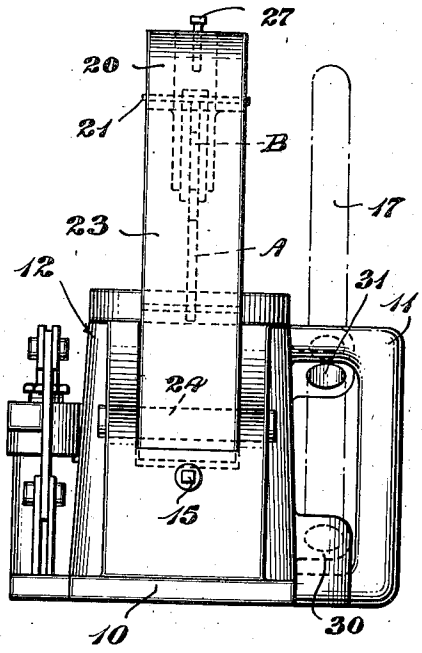


Fig. 2.



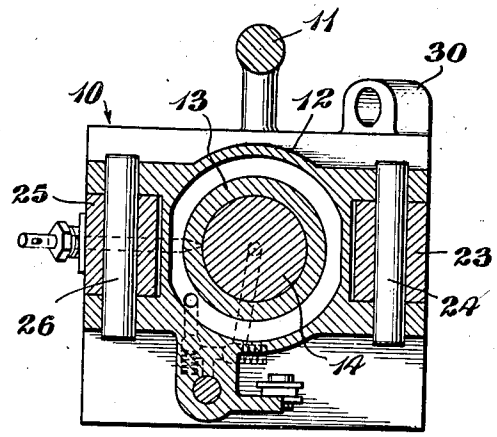


Fig. 3.

Fig. 5.

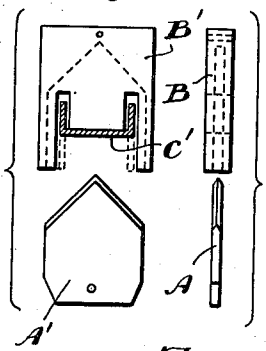


Fig. 7.

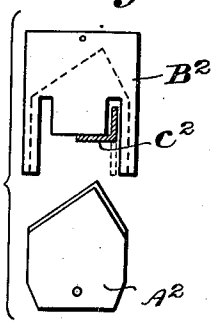


Fig. 6.

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Fig. 4.

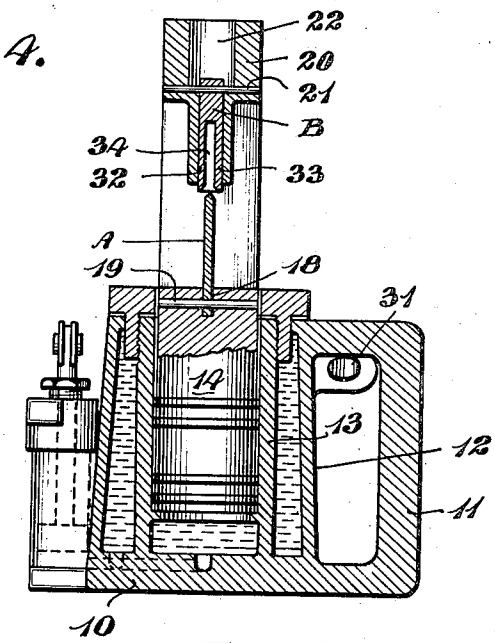


Fig. 8.

Fig. 10.

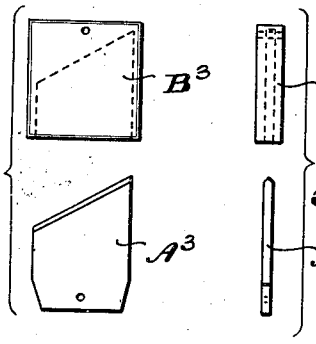


Fig. 9.

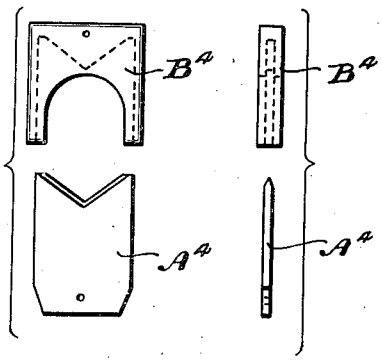


Fig. 11.

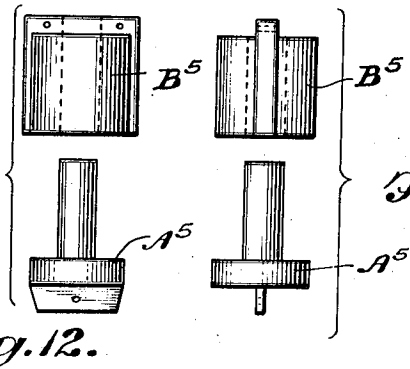


Fig. 12.

Fig. 13.

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UNITED STATES PATENT OFFICE

2,236,833

CABLE AND STRUCTURAL SHAPE CUTTER

Phil S. Pell and Arthur F. Wallace, Honolulu, Territory of Hawaii

Application September 30, 1940, Serial No. 359,168

6 Claims. (Cl. 164—56)

The invention relates to a simple and portable device for cutting cable and structural shapes including rounds, squares, rectangles, T's, channels, I-beams, H-beams, angles, bulb sections, reinforcing iron and other sections of similar nature, smoothly and with little effort on the part of an operator through the use of a movable cutter, preferably hydraulically actuated, passing through and guided in a space provided in a closely fitting and mating die.

One object of our invention is to provide a cutter which is portable and easily and conveniently handled.

Another object of our invention is to provide means for holding the cable or structural shape in the predetermined alignment without slippage or jumping.

Another object of our invention is to provide quickly interchangeable cutters with interchangeable mating dies for cable and structural shapes.

Another object of our invention is to provide a means for holding the cutter in a fixed position while cutting cable or structural shapes.

Another object of our invention is to provide interchangeable cutters with mating dies for rope and structural shapes.

Another object of our invention is to provide interchangeable dies with the dies grooved to take the flange of angle irons, T's, channels, I-beams, H-beams and similar structural shaps.

Another object of our invention is to provide interchangeable punches and mating dies for punching holes in structural sheets or shapes.

Other valuable features will be apparent from the following detailed description and drawings which are intended as illustrative only and not as limiting the invention to the particular details set forth.

In the drawings:

Fig. 1 is an elevation of the cutting device embodying the present invention, parts being shown in section.

Fig. 2 is a side elevation of the device.

Fig. 3 is a horizontal section on the line 3—3 of Fig. 1.

Fig. 4 is a section taken on line 4—4 of Fig. 1, parts being shown in elevation.

Fig. 5 is a side elevation of a cutter and die for channel sections.

Fig. 6 is a front elevation of the same.

Fig. 7 is a side elevation of a cutter and die for angle irons.

Fig. 8 is a side elevation of a cutter and die for shearing structural shapes.

Fig. 9 is a front elevation of the same.

Fig. 10 is a V-shaped cutter and die for cable, structural rounds, squares, rectangles, hexagonals and the like.

Fig. 11 is a front view of the same.

Fig. 12 is a front view of a punch and die for use with the apparatus.

Fig. 13 is a side elevation of the same.

According to the preferred embodiment of the invention the improved wire rope or other structural shape cutting device consists of a die mounted in a housing or support, preferably hinged to a base which base houses a hydraulic or other jack so that by swinging the hinged support outwardly a wire rope or other structural shape may be inserted within the cutter after which the hinged support is swung back and secured in position. Below the die and attached to the hydraulic ram of the jack is mounted the cutting blade which is adapted to pass through a space formed between two adjacent sides of the die, and thereby shear the wire rope or other structural shape.

In the case of structural shapes such as angles, T's, channels, H-beams, I-beams and bulb sections, the blade first pierces the section and then continues to shear through the section.

Referring to the drawings in detail 10 indicates a suitable base for the portable apparatus which base is preferably provided with a carrying handle 11 integral therewith. Mounted within the base is a suitable jack 12 preferably of the hydraulic type and is herein shown provided with a cylinder 13 within which works a piston or plunger 14. A fitting 15 is provided for supplying or removing pressure fluid. A suitable operating handle 16 and sockets 30 and 31 may be provided in the cutter base 10 opposite the jack pump side to provide for the insertion of a rod 17 for stabilizing the apparatus during the cutting operation. The jack may be of any suitable construction and while the hydraulic jack is preferred pneumatic or other fluid operation may be employed within the scope of the invention.

According to the preferred embodiment of the invention a cutter member A is carried by the piston 14 or other movable portion of the jack. Various cutter shapes are shown in Figures 5 to 13 and it will be understood that these are illustrative only, and that others may be employed for cutting different shapes. Figs. 5 and 6 show an inverted V-shaped cutter with the center of the V on the center line of the cutter. Fig. 7 shows an inverted V-shaped cutter with the center line of the V offset with respect to the center line of the cutter. In Figs. 8 and 9 a cutter and die for shearing structural shapes are illustrated. In Fig. 10 a cable cutter is illustrated, this being the form shown in connection with the complete apparatus in Figs. 1, 2 and 4. In Figs. 12 and 13 punch and die members for use with the apparatus are disclosed.

In each case the cutter member or blade slidably fits in a groove or recess formed between the two sides of a die member B. As shown in Fig. 4,

the die member is provided with two lips 32 and 33 between which there is provided a recess or space 34 within which the cutter blade accurately fits so that there is a telescoping operation when the blade is moved upwardly. While the cutter blade is preferably the movable member a reversal of parts is contemplated and it is within the scope of the invention in its broadest aspects that the cutter should be stationary and the die movable.

As shown in Fig. 4 the cutter blade A is tightly fitted in a slot 18 in the piston 14 and secured in place by means of a pin 19.

The die B is similarly secured within a support or housing 20 which is fixed with reference to the base when the cutter is in operation but is adapted to be swung outwardly to permit the work to be applied. One or more pins 21 may be employed for securing the die in place. Above the die a suitable opening 22 may be provided for the discharge of punchings.

As shown in Fig. 1 the die support 20 is provided with an arm 23 hingedly secured to the base at 24. This permits the arm to be swung outwardly for applying the work and swung back when the work is in place. A suitable holding arm 25 is hingedly mounted at 26 and is adapted to be secured to the support 20 by means of a pin 27 or other suitable fastening means.

To operate, the hinged cover or support 20 is swung outwardly and the wire cable or bar is laid on the edge of the cutter blade A. The hinged support or cover is then swung back into position and through the operation of the hydraulic jack and piston 14 the cutter blade A is forced upwardly through the material to be cut, finally being completely forced into the die.

Before cutting cable it is preferable to seize the rope on each side of the point to be cut so as to prevent spreading of the strands and to insure a square cut.

With cable cutters requiring the use of heavy blows of a hammer to drive the cutter through the cable, there is also a tendency for the cable to jump on the rebound from the hammer blow and before the cutter is struck again the point of first penetration must be aligned to the cutter. This procedure is repeated until the cutter is driven deep enough into the cable to stick. Obviously, this disadvantage is avoided according to the present arrangement. Also in cable cutters requiring the use of heavy blows from a hammer to drive the cutter through the cable, the cutter must rest on a solid foundation or the resiliency of the foundation will absorb practically all the force from the hammer.

According to the present design any ordinary flooring is satisfactory or the cable cutter may be applied to a cable in mid-air and work as well.

It is also within the scope of the invention, in its broadest aspects, to make the base and reinforced die housing a single one-piece unit open at both ends and one side so that the cable or other structural shapes may be readily inserted for cutting at any point of their length.

Other modifications and variations will be apparent within the scope of the appended claims.

It will be understood that one of the important features of the invention is the interchangeability of the various die and cutter members, each of which is rigidly held in a suitable groove in its supporting member, and is removably secured by one or more pins.

We claim:

1. A portable manually operated tool for cutting cable or structural shapes, comprising a base member, a hydraulic jack formed within the base member and including a movable piston, an upper member pivotally secured to said base about a horizontal axis, and including a supporting head, means for releasably securing the head portion above said piston, cooperating cutter and die members carried by said piston and said head, and means for actuating said piston to force the cutter and die members into cutting relation.

2. A portable manually operated tool for cutting cable and other shapes, comprising a base member, a fluid operated jack formed within the base member and including a reciprocable plunger, a supporting head adapted to be releasably secured in alignment with said plunger, said supporting head being mounted upon an arm hingedly secured to the base member, means for releasably securing the head in alignment with the plunger, cooperating cutter and die members carried by said plunger and said head, and means for actuating said plunger to force the cutter and die members into cutting relation.

3. A portable manually operated tool for cutting cable or structural shapes, comprising a base member, a fluid operated jack formed within the base member and including a reciprocable plunger, a swinging member pivotally secured to said base, and including a supporting head, means for releasably securing the head portion in alignment with said plunger, cooperating cutter and die members carried by said plunger and said head, and means for actuating said plunger to force the cutter and die members into cutting relation.

4. A portable manually operated tool for cutting cable or structural shapes, comprising a base member, a fluid operated jack formed within the base member and including a reciprocable plunger, an upper member pivotally secured to said base about a horizontal axis, and including a supporting head, means for releasably securing the head portion above said plunger, cooperating cutter and die members carried by said plunger and said head, and means for actuating said plunger to force the cutter and die members into cutting relation.

5. A portable manually operated tool for cutting cable or structural shapes, comprising a base member, a hydraulic jack formed within the base member and including a movable piston, a swinging member pivotally secured to said base, and including a supporting head, means for releasably securing the head portion in alignment with said piston, cooperating cutter and die members carried by said piston and said head, and means for actuating said piston to force the cutter and die members into cutting relation.

6. A portable manually operated tool for cutting cable or other shapes, comprising a base member, a fluid operated jack formed within the base member and including a reciprocable plunger, a cutter blade detachably secured to the plunger head, a swinging member pivotally secured to said base and including a supporting head, said supporting head being grooved, a die member releasably secured within the grooved portion of said supporting head, means for releasably securing the supporting head with the die member in alignment with the cutter member, and means for actuating said plunger to force the cutter and die members into cutting relation.

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