United States Patent [19]

Hexdall

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[54] **PACKING CUTTER**

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[52] **U.S. Cl.** **30/231,** 30/233, 30/241, 83/623

[51] **Int. Cl.** **B26b 13/22**

[58] **Field of Search** 30/184, 231, 233, 241, 30/242, 243; 83/623

[56] **References Cited**

UNITED STATES PATENTS

262,638	8/1882	Bright	30/241
610,669	9/1898	Arms	30/242
1,082,385	12/1913	Zimmerman	30/233
1,413,447	4/1922	Wintemute	30/231

FOREIGN PATENTS OR APPLICATIONS

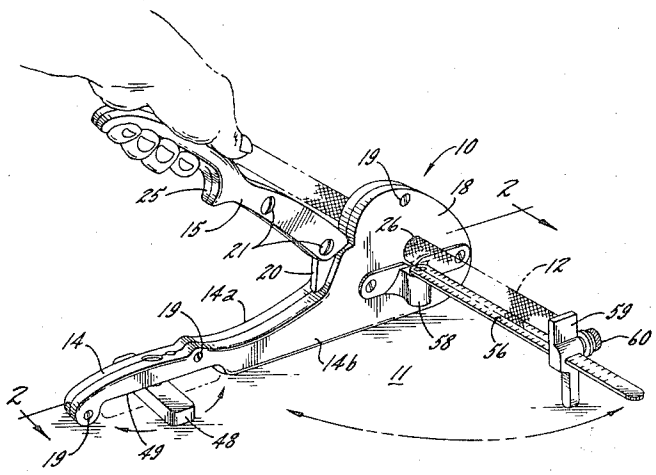
33,102	4/1924	Denmark	30/241

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[57] **ABSTRACT**

A hand operated rope cutter for cutting metallic rope or cable. The cutter includes a pair of handles connected to each other for relative pivotable movement and a pair of reciprocatable cutting blades having opposed V-shaped cutting edges. The cutting blades are operated through a rotary actuating member which transmits pivotable movement of one of the handles into equal and opposite reciprocating movement of said cutting blades. The cutter has self-contained means for supporting itself in an upright position on a flat work surface to facilitate the application of greater leverage to the operating handle and for permitting ready measurement of the rope that is to be cut.

11 Claims, 7 Drawing Figures



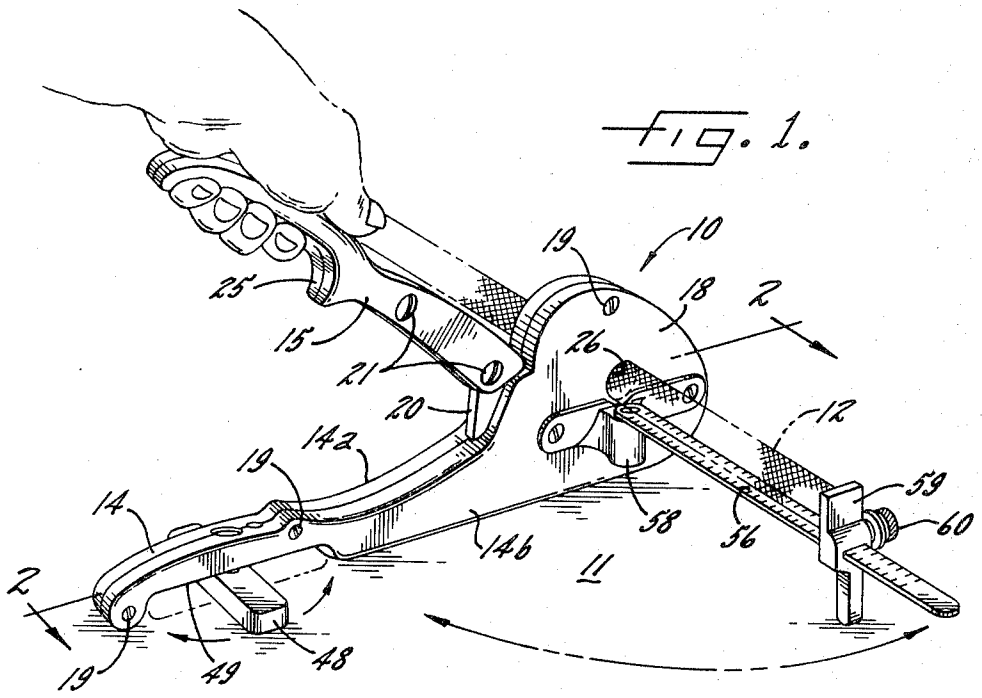

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Fig. 1.

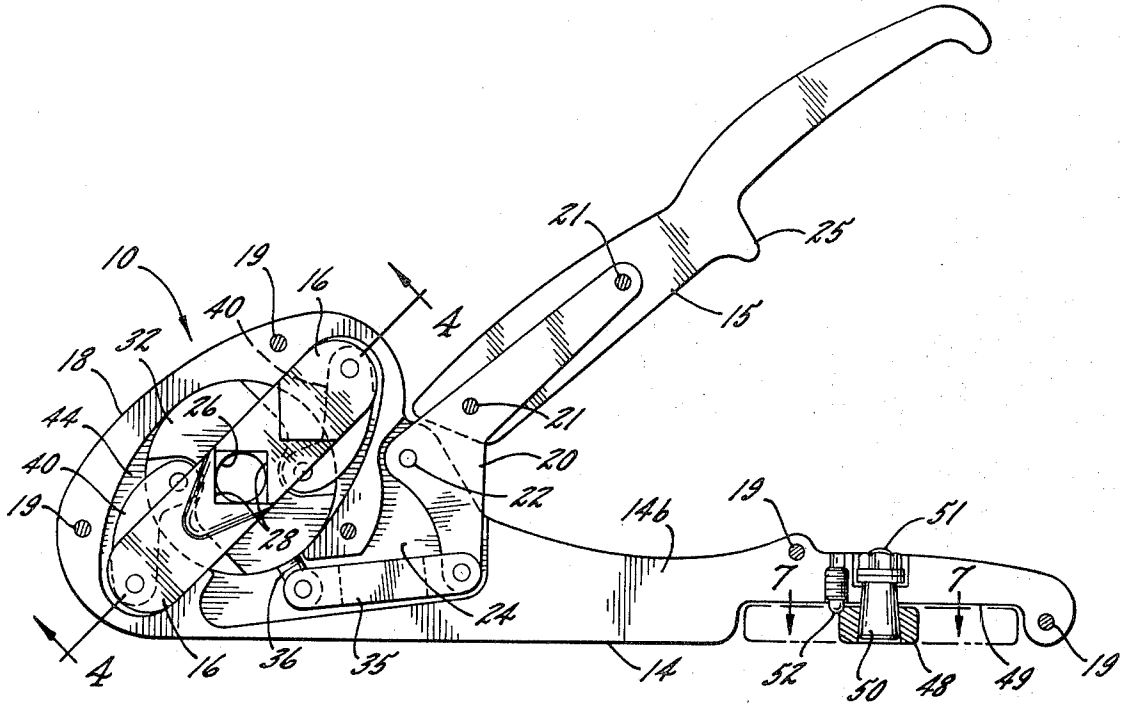

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Fig. 2.

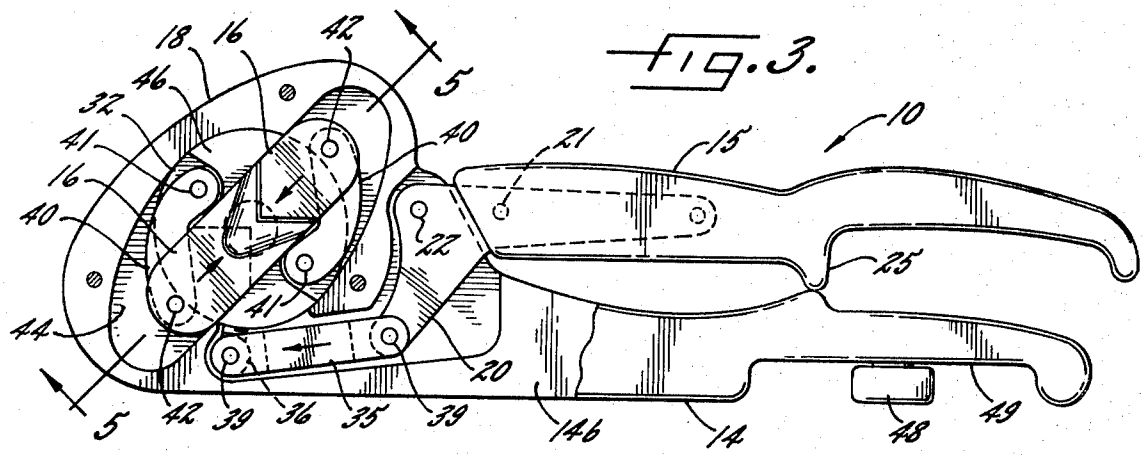


Fig. 3.

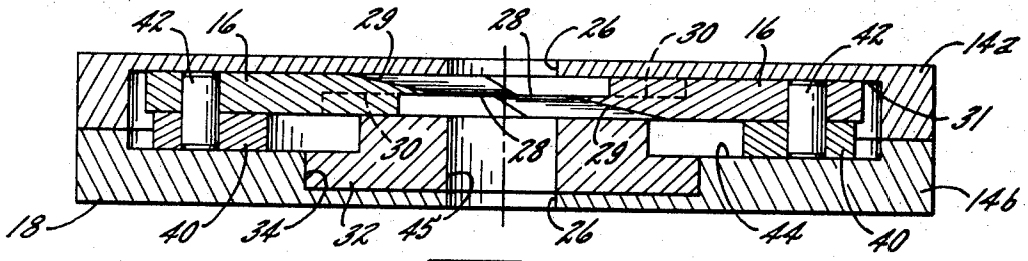


Fig. 4.

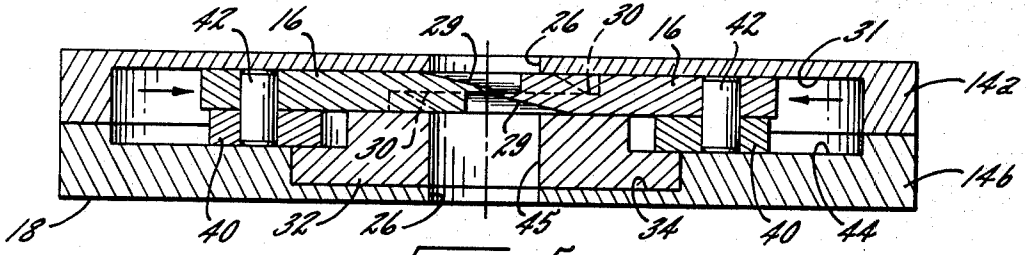


Fig. 5.

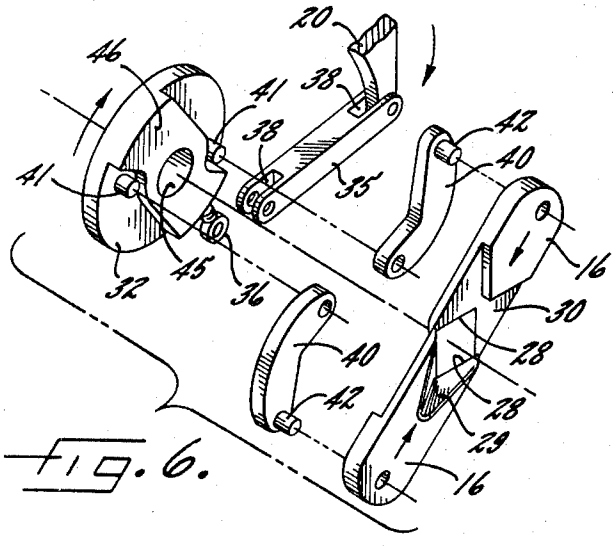


Fig. 6.

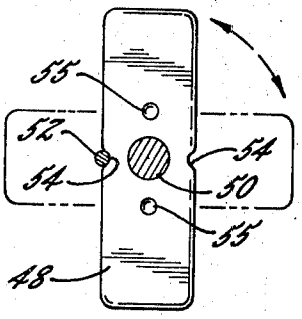


Fig. 7.

PACKING CUTTER

DESCRIPTION OF THE INVENTION

The present invention relates to rope cutters and more particularly to hand operated cutters for severing wire or metal reinforced rope or cable.

It is frequently necessary to take cutting shears or the like into the field to cut rope and cable that is used in the packing of heavy industrial equipment. The rope used in such packing is generally of a metal or metal reinforced construction, and portable hand cutters of the type heretofore known have been difficult to use and often have not been adapted to smoothly or readily cut the rope. Conventional cutters also require a substantial force to be exerted by the operator in cutting heavy gauge rope and if extensive cutting is required operator fatigue quickly results.

It is an object of the present invention to provide an improved rope cutter which is convenient and easy to use and is adapted to smoothly and efficiently cut metal packing rope.

Another object is to provide a rope cutter as characterized above which is portable, but may be readily mounted on a work bench or like stationary member to enable an operator to impart added leverage to the cutter handle during use.

A further object is to provide a rope cutter of the above type which includes self-contained means for measuring the rope that is to be cut.

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

FIG. 1 is a perspective of a rope cutter embodying the invention shown in its upright mounted position cutting a rope, shown in phantom;

FIG. 2 is an enlarged vertical section taken in the plane of line 2—2 in FIG. 1 showing the cutting blades in an open position;

FIG. 3 is an enlarged vertical section comparable to FIG. 2 but showing the cutter when the blades are in a closed position;

FIG. 4 is an enlarged section taken in the plane of line 4—4 in FIG. 2;

FIG. 5 is an enlarged section taken in the plane of line 5—5 in FIG. 3;

FIG. 6 is an enlarged and expanded view showing the cutting blades and the components of their actuating mechanism;

FIG. 7 is a fragmentary section taken in the plane of line 7—7 in FIG. 2 showing the mounting plate for the cutter in a transverse mounting position in solid lines and in a stored position in dashed lines.

While the invention is susceptible of various modifications and alternative forms, a specific embodiment thereof has been shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that it is not intended to limit the invention to the particular form disclosed, but, on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention.

Referring more particularly to FIG. 1 of the drawings, there is shown an illustrative cutter **10** embodying the present invention positioned on the top surface **11** of a work bench or the like and being used by an operator to cut a cable or rope **12** shown in phantom. The

rope cutter **10** includes a pair of handles **14, 15** which are adapted to operate a pair of opposed reciprocating cutting blades **16.** The handle **14** preferably serves as a base for the cutter and the handle **15** serves as the operating lever. The handle **14** includes a head portion **18** for housing the cutting blades **16** and is formed of a two-part cast construction comprising two longitudinal sections **14*a*, 14*b*** of substantially equal widths secured together by screws **19.** The operating handle **15** includes an extension **20** rigidly secured within a slot formed in the body of the handle **15** by rivets **21** and is pivotably mounted within the head **18** on a pivot rivet **22** supported between opposite sides of the sections **14*a*, 14*b*** and extending through the extension **20.** The handle sections **14*a*, 14*b*** each have a relieved area **24** shown in FIG. **2** which define an opening for receiving the extension line **20.** The operating handle **15** preferably is formed with a downwardly projecting ear **25** positioned just forward of the space normally occupied by the index finger and thumb of the operator to prevent forward slipping of his hand incident to movement of the handle **15.**

The handle head **18** is formed with a central aperture **26** through which the rope **12** to be cut is passed. The cutting blades **16** are relatively flat elongated members each having an opposed V-shaped cutting notch **28** which provides a square opening when the blades are in a retracted or open position, as shown in FIG. **2,** to permit insertion of the rope through the cutter head aperture **26.** The opposed V-shaped cutting notches **28** define four cutting surfaces which simultaneously engage the rope upon closure of the cutting blades, as will become apparent. To enhance the shearing action of the cutting blades **16,** the blades are formed with outer beveled surfaces **29** at their respective notches **28** and flat inner shearing surfaces **30** that move into close side-by-side relation during cutting.

In accordance with the present invention, a rotary actuating means is provided for translating pivotable movement of the operating handle into equal and opposite reciprocating motion of the cutting blades. To this end, the cutting blades are slidably mounted in a recessed slot **31** formed in the section **14a** and a cylindrical actuator member **32** is rotatably supported within a cylindrical recess **34** in the opposite housing section **14b.** In order to rotate the actuator **32** upon pivotable movement of the operating handle **14** a link **35** is connected between the end of the operating handle extension **20** and a radial eye **36** extending from the actuator **32.** Opposite ends of the connecting link **35** each are formed with a longitudinal slot **38** which receive the extension **20** and the eye **36,** respectively, and dowel pins **39** are inserted in aligned apertures in one end of the link **35** and the eye **36** and in the other end of the link **35** and the extension **20.**

To reciprocate cutting blades **16** upon rotational movement of the actuator **32,** a pair of toggle links **40** each connect one of the blades **16** to the actuator. The illustrated actuator **32** has a pair of lateral lugs **41** positioned on diametrically opposed sides thereof over which an apertured end of each one of the toggle links **40** are loosely fitted for relative rotational movement. The other end of each toggle link **40** is provided with a lug **42** adapted to be loosely mounted within an apertured end of one of the cutting blades **16.** When the handle sections **14*a*, 14*b*** are secured together as shown in the illustrated embodiment, they retain the actuator

32, the connecting link 35, the toggle links 40, and the cutting blades 16 in their assembled condition. The relieved areas 24, 44 in the handle section 14*b* permit movement of the connecting link 35 and the toggle links 40, respectively, as is necessary during a cutting operation. The actuator 32 has a central opening 45 aligned with the head aperture 26 to permit the passage of rope through the head 18 when the cutting blades 16 are in a retracted position. An elevated pad 46 formed on the actuator serves to provide side support for the reciprocating blades 16.

During use of the cutter, the raising of the operating handle 15 to the position shown in FIG. 2 causes the connecting link 35 to be drawn to a rearward position which in turn rotates the actuator 32 in a counterclockwise direction, as viewed in FIG. 2. Such counterclockwise movement of the actuator 32 causes the toggle links 40 to force the cutting blades 16 in opposite outward directions so that the V-shaped notches 28 of the cutting blades form a substantially square aperture that permits a rope to be inserted through the head and actuator openings 26, 45, respectively. When the desired length of rope has been passed through the cutter head 18, by then moving the operating handle 15 in a downward direction to the position shown in FIG. 3, the connecting link 35 is moved forwardly causing the actuator 32 to rotate in a clockwise direction, as viewed in FIG. 3. Such clockwise rotational movement of the actuator 32 forces the toggle links 40 to draw the cutting blades 16 inwardly to shear the cord as the square-shaped opening of the notches 28 reduces in size and the blade shearing surfaces 30 are forced into side-by-side relation. The four-way cutting and shearing action of the notches 28 has been found to smoothly and effectively sever even relatively heavy gauge metallic cords and substantially eliminate the smashing and resultant ragged edge cut that heretofore has been typical of many metal rope cutters.

In keeping with the invention, the cutter has self-contained means for supporting itself in an upright position on a flat work surface to facilitate the application of greater leverage to the operating handle during cutting and for permitting easy measurement of the rope that is to be cut. The support means in the illustrated cutter includes a bar 48 disposed within a recess 49 formed in the underside of the handle 14 near its outer end. The support bar 48 may be selectively rotated from a stored position in longitudinal alignment with the handle, shown in dashed lines in FIGS. 1 and 7, to a transversely disposed supporting position shown in solid lines. The support bar 48 is rotatably supported by a tapered lug 50 held within complementary-shaped tapered apertures in the support bar 48 and handle 14, and a lock nut 51 threadably engages the upper end of the lug 50 to secure it in place (FIG. 2). In order to selectively retain the support bar 48 in either of its stored or its supporting positions, a spring-biased ball detent 52 is supported in depending fashion in the handle 14 for engagement with one of two small side notches 54 when the bar 48 is in a transverse position or for engagement with one of two recesses 55 formed in the top side of the support bar 48 when in a stored position (FIG. 7). It will be apparent that the force of the spring detent 52 may be designed to be overcome when the support bar 48 is manually rotated to change its position.

To measure the rope to be cut and to further support the cutter in an upright position during use, a measuring rod 56 is rotatably secured to the cutter head 18 immediately below the aperture 26. The measuring rod 56 is rotatably supported by a bracket 58 secured to the head 18 and may be selectively moved from a stored position adjacent the side of the base handle 14 to an outwardly extending position perpendicular to the handle. The upper surface of the measuring rod 56 is formed with a scale, and a marker 59 is mounted for selective positioning on the rod 56. To secure the marker 59 at a desired setting on the measuring rod 56, a suitable locking screw 60 is provided in the side thereof. It will be seen that the marker 59 not only provides a convenient means for assisting in the measurement of rope that is drawn through the cutter head aperture 26, but it serves in conjunction with the measuring rod 56 to provide a further point of support for maintaining the cutter in an upright position on the top surface of a worktable in the field so that an operator may easily apply the necessary leverage to the handle for quick and sure cutting of the cable. When use of the cutter is completed, the measuring rod 56 and support bar 48 may be easily rotated to their stored positions for convenient handling and storage of the cutter.

I claim:

1. A rope cutter comprising, in combination, a pair of handles, one of said handles having a head at an end thereof and the other of said handles being pivotably secured to said head, a pair of cutting blades having opposed cutting edges mounted within said head for opposite reciprocating movement, actuating means for moving said cutting blades between an open position for receiving a rope to be cut and a closed cutting position, said actuating means including an actuator member rotatably mounted within said head, first linkage means connecting said actuator member to said pivotable handle for imparting rotary movement to said actuating member in response to pivoting movement of said handle, and second linkage means connecting said actuator member to said cutting blades for imparting reciprocating movement to said cutting blades in response to rotation of said actuator member.

2. The rope cutter of claim 1 in which said second linkage means includes a pair of toggle links each connecting one of said cutting members to said actuator member.

3. The rope cutter of claim 2 in which said toggle links are connected to said actuator at diametrically opposed points and cause said cutting blades to reciprocate in equal and opposite directions in response to pivoting movement of said pivotable handle.

4. The rope cutter of claim 1 in which said cutting blades have opposed V-shaped notches which each define two cutting edges.

5. The rope cutter of claim 1 in which said head and actuator member have aligned apertures through which rope to be cut may be passed when said cutting blades are in an open position.

6. The rope cutter of claim 1 in which said one handle head comprises a pair of longitudinal sections joined together along a common longitudinal plane, at least one of said sections being formed with a recessed area which defines an internal compartment for housing said cutting blades and said actuating means.

7. The rope cutter of claim 6 in which one of said sections is formed with a recessed area for containment of

said actuator member for relative rotational movement and the other said section is formed with a recessed slot for receiving said cutting members for relative reciprocating movement.

8. The rope cutter of claim 1 in which said one handle has a support bar mounted near the outer end thereof, said support bar being selectively rotatable from a stored position in longitudinal alignment with said handle to a transverse position for supporting said cutter in an upright position.

9. The rope cutter of claim 5 including a measuring rod rotatably supported at one end adjacent said head aperture for selective movement from a stored position adjacent said one handle to a transverse position for measuring rope that is to be cut by said cutter.

10. The rope cutter of claim 9 in which said measuring rod has a selectively positionable marker mounted thereon, locking means for locking said marker in a selected position on said rod, and said measuring rod and marker being adapted to support said cutter in an upright position when said measuring rod is in a transverse position.

11. The rope cutter of claim 1 in which said one handle has a support bar mounted near the outer end thereof, said support bar being selectively rotatable from a stored position in longitudinal alignment with said handle to a transverse position for supporting said cutter in an upright position, a measuring rod rotatably supported at one end to said head for selected movement from a stored position adjacent said one handle to a transverse position for supporting said cutter in an upright position and for measuring rope to be cut.

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