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PORTABLE CLAMP FOR ELONGATED TUBULAR ARTICLES

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2 Sheets-Sheet 2

Fig. 2

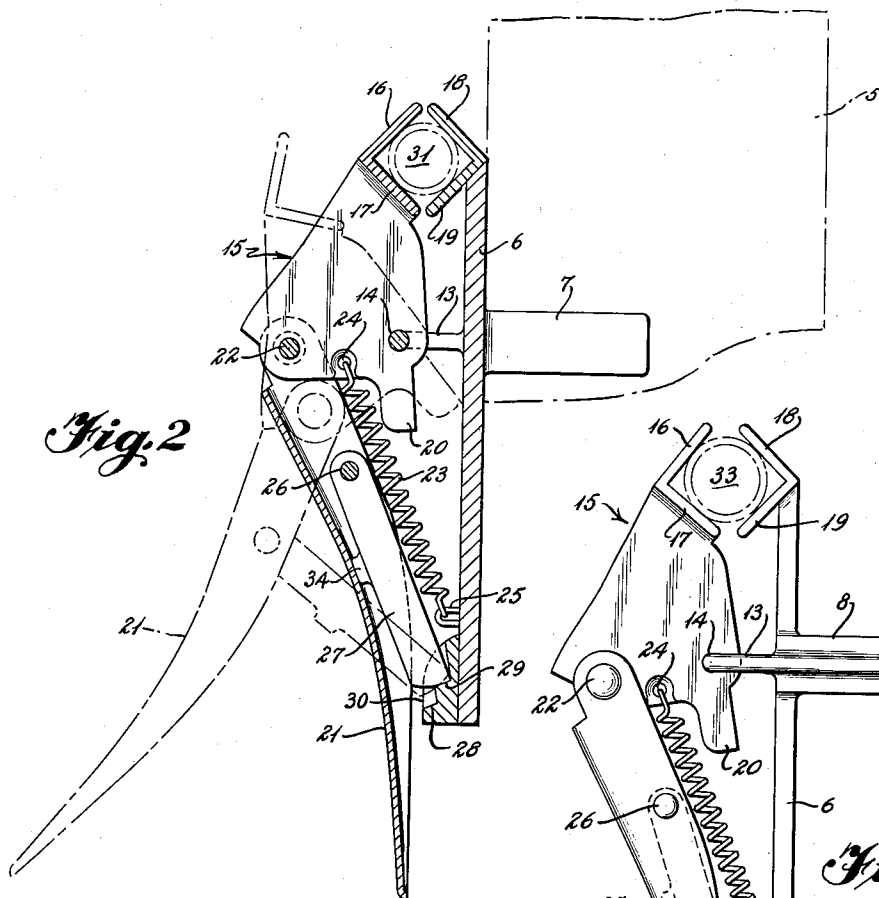


Fig. 3

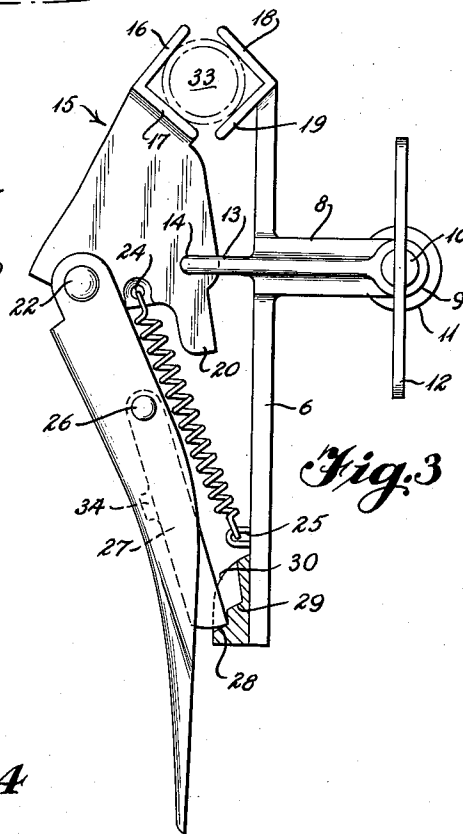
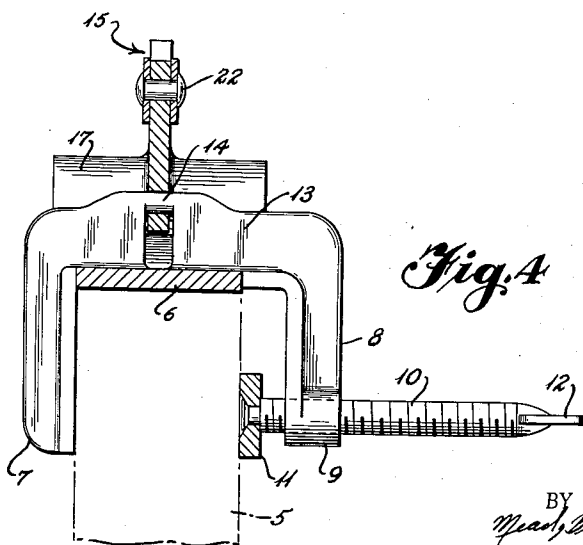


Fig. 4



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PORTABLE CLAMP FOR ELONGATED TUBULAR ARTICLES

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This invention relates to portable clamps for releasably holding elongated tubular articles.

In installation of flexible tubing or electric cable, the workman must finish the ends of the tubing or cable at the location where they terminate. For instance, in installing flexible electrical conduits such as armored cable the workman is required to saw off a few inches of the metal armor to expose the ends of the electrical wires. In many cases, the workman merely holds the end of the cable in one hand and with his other hand uses a saw to cut around the armor. This type of operation is inefficient and frequently results in damaging the cable or accidentally injuring the workman.

It is an object of this invention to provide a tool which enables a workman to perform his work efficiently, using both of his hands freely while firmly supporting the cable.

It is another objective of this invention to provide a clamp device for releasably holding elongated tubular articles while some operation is performed on the end of the article.

It is a further object of this invention to provide a portable device which may be secured to a structural member for releasably holding an elongated tubular article.

In the attainment of these objectives a feature of my invention involves a clamp device extending from a base plate which may be secured to a structural member. This clamp device includes a pair of jaws adapted to cooperatively enclose an elongated tubular article, one jaw being fixed on an end of the flat plate and the other pivotally connected to the plate and moveable relative to the fixed jaw. An adjustably fulcrumed operating handle is pivotally connected to the moveable jaw and through an adjustable fulcrum moves the moveable jaw against the force of a spring to enclose and lock an elongated tubular article of various diameters between the pair of jaws. An important aspect of the above arrangement is the provision of a pivot point for the moveable jaw which pivot transmits force directly to the clamping device to eliminate or minimize any torsional forces transmitted from the moveable jaw to the base plate. A series of fulcrum points on one end of the flat plate are employed to adjust the throw of the moveable jaw elements for different sizes of pipe and flexible electric cables.

Other objects and advantages of the invention will become apparent from the following specifications taken in connection with the accompanying drawings wherein:

Fig. 1 is an isometric view of a preferred embodiment of my clamp device;

Fig. 2 is a vertical cross sectional view of my device taken on lines 2—2 of Fig. 1;

Fig. 3 is similar to Fig. 2 but showing another mode of operation of my device; and

Fig. 4 is a horizontal cross sectional view of my device taken on lines 4—4 of Fig. 1.

Referring now to Fig. 1, a base plate 6 of substantially rigid metal has a surface adapted to be positioned flush

against a surface of a structural member 5. Extending from base plate 6 are arms 7 and 8 which partially enclose structural member 5. Arm 8 is provided with an enlargement 9 through which a clamping screw 10 is threaded, screw 10 having a rotatable head 11 on its inner end and a lever or handle 12 on its outer end. Base plate 6 is secured to the structural member by turning lever 12 in a clock-wise direction.

Shank 13 connects arms 7 and 8 and has formed thereon a pivot member 14. Pivot member 14 is located as closely as possible to the base plate fastening means to eliminate or minimize any torsional forces which would tend to joggle the base plate loose from the structural member.

Moveable jaw 15 is pivoted on pivot 14 formed on a shank 13 extending between arms 7 and 8 and has jaw portions 16 and 17 which cooperate with fixed jaw portions 18 and 19 to hold a flexible conduit or tubing.

In order to limit the degree of opening of the jaw members when opened there is an extension 20 on the moveable jaw member 15 which projects away from the pivot connection 14 and jaw members 16 and 17. This extension 20 contacts the base plate (see dotted sketch of Fig. 2) at a point slightly below shank 13 when the moveable jaw 15 is moved away from the fixed jaw.

An operating handle 21 pivotally connected to the moveable jaw member by a rivet 22 moves moveable jaw member 15 against the force of tension spring 23 towards the fixed jaw members 18 and 19. Spring member 23 is connected to the moveable jaw member 15 through an aperture 24 and the base member through hook 25 and exerts a force tending to pull the moveable jaw away from the fixed jaw.

A rivet 26 pivotally connects a link 27 to the operating handle 21. The other end of link 27 may be received in one of series of fulcrum points 28 or 29 formed on the end of the base plate opposite the end having the fixed jaw portions 18 and 19. Guide members 30 and 31 keep link 27 seated on the fulcrum points 28 or 29.

Fulcrum points 28 and 29 change the throw of the moveable jaw member. As illustrated in Figs. 2 and 3, fulcrum point 29 adapts the clamp for use with small diameter electric cables such as shown at 31 (Fig. 2) while fulcrum point 28 adapts the tool for use with a larger size cable such as shown at 33 (Fig. 3).

Projection 34 on link 27 prevents the latching (or locking) effect of the toggle mechanism from losing its effect by preventing pivot point 26 from passing out of alignment with the fulcrum point and pivot 22.

In use, the device is secured to any convenient structural member by clamping screw 10 and link 27 is placed in fulcrum point 27 or 28, depending upon the diameter of the flexible conduit. The flexible conduit is then placed in the space between the fixed and moveable jaw portions and operating handle 21 is moved towards the base plate until the selected fulcrum point, rivet 26 and rivet 22 are in alignment. The cable is then securely clamped between the two jaws and ready to be worked on by the workman.

The foregoing description is one embodiment of the invention and it will be apparent to those skilled in the art that various changes and modifications can be made therein without departing from the scope of the invention.

What I claim as my invention is:

1. A portable clamp for holding elongated tubular articles on a structural member comprising a flat base plate having a surface for abutting said structural member, clamp means extending from said base plate for releasably securing said base plate to said structural member, an article engaging jaw fixed on one end of said base plate, a projection extending from a surface of said base plate opposite said clamp means, a pivot formed on said

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projection, a moveable article engaging jaw having an extension thereon pivotally connected to said projection at said pivot, and an adjustably fulcrumed handle pivotally connected to said moveable jaw for moving said moveable jaw toward said fixed jaw and releasably holding an article therebetween.

2. A tool for holding tubular articles on a structural member comprising a flat base plate adapted to be positioned flush with a surface of said structural member, a fixed jaw on one end of said flat base plate, mounting means extending from said flat plate positioned intermediate the longitudinal length thereof for releasably securing said base plate to said structural member, a second article engaging jaw pivotally connected to said base plate moveable towards said fixed jaw to partially enclose an article therebetween, an adjustably fulcrumed handle pivotally connected to said second jaw for moving said second jaw towards said fixed jaw and releasably holding an article therebetween, and a spring member extending between said base plate and said second jaw for moving said second jaw away from said fixed jaw.

3. A portable clamp for holding elongated tubular articles on a structural member comprising a flat base plate having a surface for engagement with the structural member, means on said base plate intermediate the ends thereof for releasably securing said base plate to said structural member, an article engaging jaw fixedly mounted on one end of said base plate, a plurality of fulcrum points on the other end of said base plate, said fulcrum points comprising a plurality of stepped abutments a moveable article engaging jaw complementary to said fixed jaw pivotally connected to said base plate opposite said base plate securing means, an operating handle pivotally connected at one end to said moveable jaw, a link having one end pivotally connected to said operating handle intermediate the ends thereof and having the other end adapted to engage one of said fulcrum points to cause said moveable jaw to move when said operating handle moves towards said base plate in an arc towards said fixed jaw determined by which of said plurality of fulcrum points is engaged by said link, and a spring member extending between said base plate

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and said moveable jaw for moving said moveable jaw away from said fixed jaw.

4. A portable clamp for holding elongated tubular articles on a structural member comprising a flat base plate having a surface for engagement with the structural member, means on said base plate intermediate the ends thereof for releasably securing said base plate to said structural member, an article engaging jaw fixedly mounted on one end of said base plate, a plurality of fulcrum points on the other end of said base plate, a moveable article engaging jaw complementary to said fixed jaw pivotally connected to said base plate opposite said base plate securing means, an operating handle pivotally connected at one end to said moveable jaw, a link having one end pivotally connected to said operating handle intermediate the ends thereof and having the other end adapted to engage one of said fulcrum points to cause said moveable jaw to move when said operating handle moves toward said base plate in an arc towards said fixed jaw a predetermined distance, means bounding said fulcrum points to prevent said link from leaving said fulcrum points, a spring member extending between said base plate and said moveable jaw for moving said moveable jaw away from said fixed jaw, and means operating between said moveable jaw and said fixed jaw to limit the movement of said moveable jaw away from said fixed jaw.

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