Sept. 22, 1931. S. N. TIDEMAN 1,824,244

CATENARY ROD BENDER

Filed June 23, 1930

Fig. 2

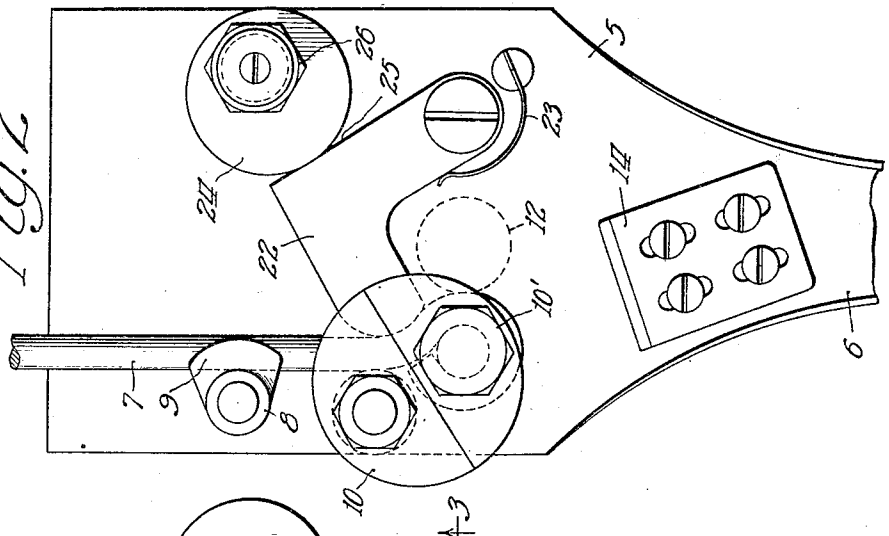


Fig. 1

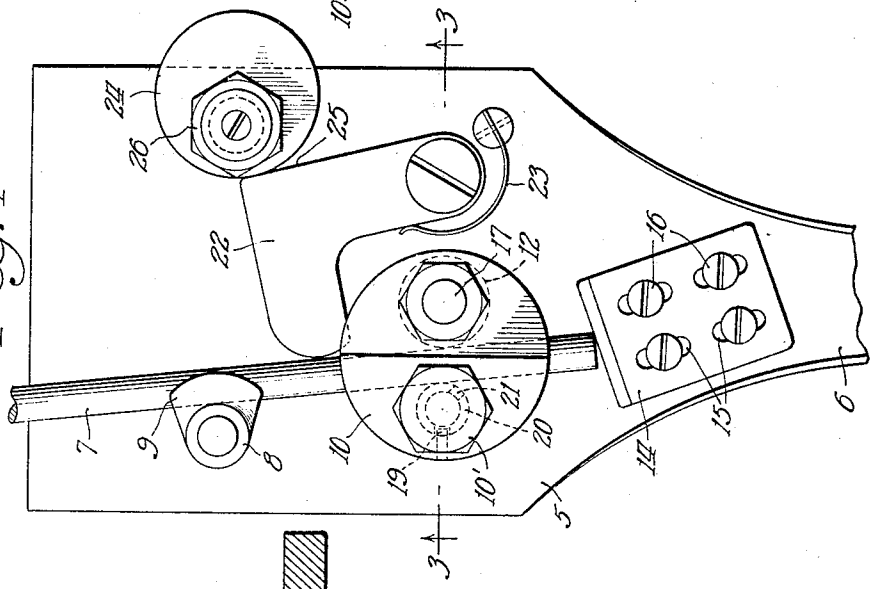
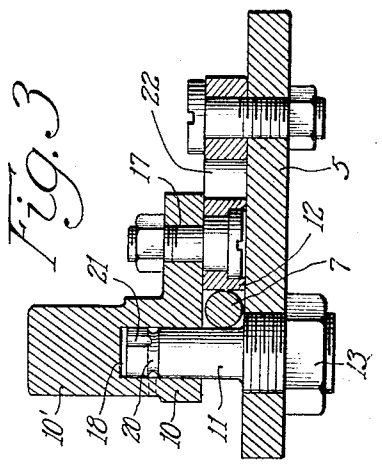


Fig. 3



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UNITED STATES PATENT OFFICE

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CATENARY ROD BENDER

Application filed June 23, 1930. Serial No. 463,222.

This invention relates to an eye bender and is particularly adapted for bending the ends of so called catenary hangers, such as are used to suspend a level trolley wire or intermediate messenger from the principal supporting messenger cable, which latter takes the form of a catenary curve when suspended between two supports.

This supporting messenger cable forming a catenary curve necessarily varies in distance from the supported level wire according to location and the length of rods necessary to connect the level wire to the catenary cable varies accordingly. While the required length of these rods is usually calculated mathematically, it is frequently desirable or necessary to establish this length experimentally in the field and cut and form the hangers to the correct length after the upper end of each hanger has been attached to the supporting messenger wire, leaving the lower end to be cut to proper length and lower loop in same formed in place after installation.

With the present invention, it is practicable, when it is desired to experimentally determine the proper length of catenary hangers after the upper attachments have been made, to cut the hanger rods to fit the level wire already temporarily installed in position or to cut them to a set of gauge marks attached to the top of the work car carrying the men doing the work.

This tool is particularly adapted for use by men working on the deck of such work car operated on a railroad track in establishing supporting connection between the contact wire and the supporting cable.

The principal purpose of this invention, therefore, is to provide a tool of this character by means of which the end of a rod may be bent to form an eye or hook therein without the aid of any auxiliary mechanism, except a common wrench selected as particularly adapted for use with this tool, making it possible for the tool to be operated by one man.

There is, however, in the above specific purpose of the tool nothing to detract from its use for bending of a loop in the end of a rod where such work is done to established measurement and executed in the shop. This tool is equally adaptable for this purpose when secured in a vise or by other methods to a bench.

I will describe one form which the invention may take by reference to the accompanying drawings wherein—

Fig. 1 is a side view of the tool showing it in position to bend the lower end of the catenary rod;

Fig. 2 is a view similar to Fig. 1 showing the bending operation completed; and

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

Referring now in detail to the drawings, the tool is made up of a base plate 5 which has a handle portion 6 that may be extended to any suitable or desired length, the operating elements all being mounted upon this base plate. The rod 7 is the element to be bent and is shown in Fig. 1 as in the position it occupies immediately before the bending operation begins. A suitable guide indicated at 8 has an overhanging lip 9 beneath which the rod 7 passes. This rod is then extended beneath the roller support 10 between the pivot pin 11 of this support and the roller 12 carried by the support. The pivot pin 11 is, of course, fixed on the base plate 5 for example by screw threading it into the base plate and fastening it by means of the lock nut 13.

In the first operation, the rod is slid into the position shown in Fig. 1 so that it abuts against the stop member 14 mounted on the plate 5 so as to have a limited amount of adjustment. This adjustment is accomplished by means of the slots 15 and the screws such as 16 which secure the stop 14 to the base plate. Roller 12 is secured by means of the bolt 17 to the member 10, and this member 10 is mounted on the pivot pin 11 by means of the socket 18 which has the projecting pin 19 therein cooperating with the corresponding groove 20 that encircles the pivot pin 11 and also the vertically extending groove 21 which permits the pin 19 in one position of the member 10 to move upwardly out of the groove 20 and thus enable the member 10 to be lifted off the pin 11 so that the rod 7 may

be removed after it is bent. As shown, the position which the member 10 occupies when pin 19 aligns the groove 21 is the position in Fig. 2 at the completion of the bending operation.

The initial bending operation which takes place is accomplished by means of the member 22 which as shown is yieldingly pressed as by means of the spring 23 fixed on the base 5 into the position shown in Fig. 1. A cam 24 engages with the straight back 25 of the member 22 so that as this cam 24 is rotated for example by applying a wrench to the nut 26 thereon it will force the member 22 to the left as shown in Fig. 1 into the position shown in Fig. 2, which, of course, causes an initial bending of the rod 7 immediately back of the pin 11. The wrench is then applied to the projecting portions 10′ of the member 10 which member is now in the position shown in Fig. 1, and the member 10 is turned in a clockwise direction into the position shown in Fig. 2, the roller 12, of course, forcing the rod 7 to bend around into the eye shape shown in Fig. 2.

It is obvious, of course, that once the member 22 has been moved into the position shown in Fig. 2, the tool is more or less secured to the catenary rod so that the rod cannot escape, and this leaves the operator free to manipulate the member 10 without any difficulty.

After the bending operation is completed, the pin 19 comes into alignment with the slot 21 so that the member 10 can be lifted off its pivot pin 11 and the rod removed. The member 10 can then be replaced, and the groove 20 will retain it on the member 5 until it is used again.

From the above description, it is thought that the construction and operation of this device will be clear to those skilled in this art and the advantages thereof readily apparent.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A hand tool for rod bending comprising a base having a pair of spaced stationary guides and a pair of movable members whose normal resting position leaves a path for insertion of the rod between the stationary guides and the movable members, means for moving one of said members against the rod between said guides to form an initial bend, and means for turning the other member about the guide nearest the inserted end of the rod to bend it into substantially a loop, said last named means being pivoted on the guide about which the rod is bent and removable therefrom in only one position.

2. A hand tool for rod bending comprising a base having a pair of spaced stationary guides and a pair of movable members whose normal resting position leaves a path for insertion of the rod between the stationary guides and the movable members, means for moving one of said members against the rod between said guides to form an initial bend, and means for turning the other member about the guide nearest the inserted end of the rod to bend it into substantially a loop, said last named means comprising a plate carried on said last named guide and overlying said rod to hold it on said guide and having a projection forming said means for turning said other member.

3. In a hand tool for rod bending, a base having a stationary guide and a movable member spaced apart normally to permit insertion of a rod therebetween, a holding member held in position on the side of the rod on which the movable member lies, and means for moving said movable member about the stationary guide with the rod therebetween to form a loop in the end of the rod, said means comprising a plate removably pivoted on said stationary guide and spaced from said base so that the rod may pass between it and the base and be held on said stationary guide by said plate during the bending of the rod.

In witness whereof, I hereunto subscribe my name this 5th day of June A. D., 1930.

SELIM N. TIDEMAN.