June 9, 1931. G. J. ROTH. 1,809,068

FISH TAPE PULLER

Filed Feb. 11, 1930

Fig. 1.

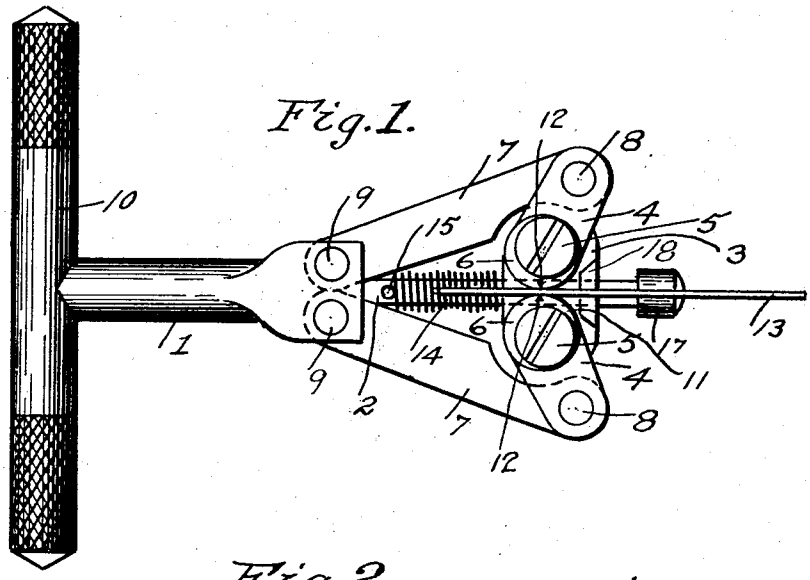


Fig. 2.

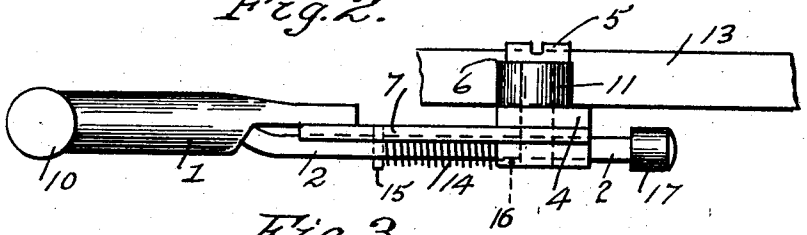


Fig. 3.

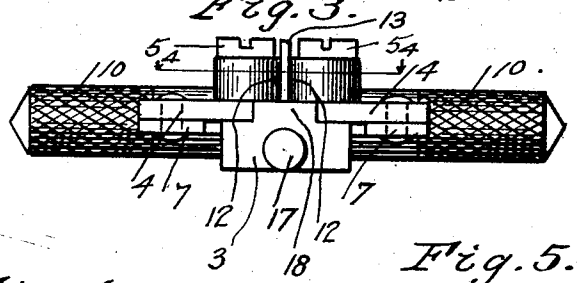


Fig. 4.

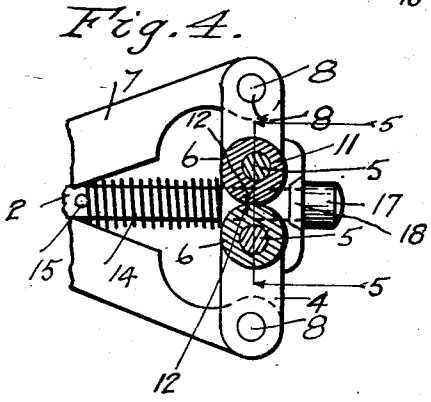
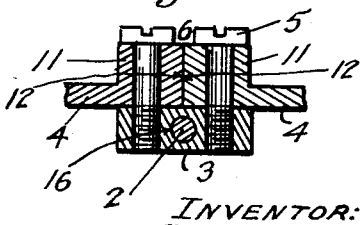


Fig. 5.



INVENTOR:
GEORGE J. ROTH.

BY

Alan Franklin

HIS ATTORNEY.

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UNITED STATES PATENT OFFICE

GEORGE J. ROTH, OF LOS ANGELES, CALIFORNIA

FISH TAPE PULLER

Application filed February 11, 1930. Serial No. 427,498.

This invention is a fish tape puller, particularly useful for pulling a steel fish tape and electric wires connected thereto, through an electric conduit.

The general object of the invention is to provide a pulling device which will readily grip a steel fish tape with great power, without bending or mutilating the same, for pulling the tape through a conduit, and which will readily release the tape after pulling the same any desired length for enabling the device to be moved backward to grip the tape at another point for pulling the tape another length.

A more particular object is to provide a fish tape puller with jaws arranged to apply their greatest leverage when in position for gripping the tape.

Other objects and advantages will appear hereinafter.

The invention is illustrated in the annexed drawings which form a part of this specification and in which,

Fig. 1 is a side view of my invention, with a fish tape gripped therein for pulling the tape.

Fig. 2 is an edge view of my invention as shown in Fig. 1.

Fig. 3 is an end view of my invention.

Fig. 4 is a fragmentary side view of my invention with the gripping jaws shown closed.

Fig. 5 is a fragmentary cross sectional view taken on line 5—5 of Fig. 4 showing pivot connections of the gripping jaws and cross head.

Corresponding parts are designated by the same reference characters in all the figures.

My invention comprises primarily a pulling shank 1; a guide rod 2 secured at one end to one end of said shank; a cross head 3 slidably mounted on said guide rod; a pair of jaw levers 4 pivoted at their gripping ends to said cross head by means of screws 5; a pair of gripping jaws 6 formed on the inner ends of said jaw levers 4; a pair of links 7 pivotally connected at one end, at 8, to the outer ends of said jaws and pivoted at their other ends, at 9, to the inner end of shank 1; and a handle 10 secured between its ends to the outer end of said shank and extending at right angles thereto.

The jaws 6 are in the form of cylindrical studs 11 outstanding from the inner ends of the jaw levers 4, the jaw surfaces 12 of which studs are smooth and without teeth. The pivot screws 5 of the jaw levers 4 seat in the crosshead 3 with their heads engaging the outer ends of the jaw studs 11 and said screws extend axially through the cylindrical jaw studs 11 and eccentrically to said studs and the jaws 6, so that when the jaw levers 4 swing backwardly on their pivots 8 the jaws 6 will be caused to swing together on their eccentric screw pivots 5 into their maximum, gripping position for gripping the fish tape 13, in which position the jaw levers 4 extend at right angles to the pulling direction of the device (Fig. 1). The distance between the pivot 5 and the connecting pin 8 compared to the distance between said pivot and the gripping surface 12 of the jaw 6 of each jaw lever is in the ratio of substantially 15 to 1, which gives the jaw levers great leverage for causing the smooth gripping surfaces 12 of the jaws 6 to grip the tape 13 with unusually great power without bending or mutilating the tape and without liability of the jaws slipping on the tape. A spring 14 surrounding the guide rod 2 bears at one end against a pin 15 on the rod and at its other end against the crosshead 3 whereby the jaw levers 4 are yieldingly urged rearwardly and the jaws 6 yieldingly urged into gripping position for gripping the tape. The guide rod 2 slidably extends through a bore 16 in the cross head 3 and is formed with a head 17 on its outer end against which head the cross head abuts under the influence of the spring 14, whereby the rearward movement of the jaw levers 4 is limited and the jaws are arrested in their maximum gripping position (Fig. 3). The cross head 3 is formed at its outer edge with an outstanding guide lug 18 for engaging one edge of the tape and guiding the tape properly between the jaws 6 to be gripped by said jaws.

The operation of my invention is as follows:

The tape 13 is introduced between the jaws

6, which, together with the cross head 3, yield forwardly against the tension of spring 14 to receive the tape, the jaw levers 4 swinging forwardly on their pivots 8 and the links 7 swinging inwardly on their pivots 9. The spring 14 then urges the cross head 3 rearwardly, whereby the jaw levers 4 are caused to swing rearwardly on their pivots 8 and the jaws 6 are caused to grip the tape under the influence of the spring 14. Upon grasping the handle 10 and pulling forwardly, the full pulling force, through shank 1 and links 7, is applied to the outer ends of the jaw levers 4, whereupon said levers are swung on their pivots 5 and the jaws 6 are caused to grip the tape firmly under the full leverage of said levers, which is about 15 to 1, and the tape is pulled forwardly, any resistance of the tape being readily overcome as there is no possibility of the jaws slipping along the tape when thus gripping the tape. When the tape is pulled out and it is necessary to get another grip on the tape further backward it is only necessary to push rearwardly with the handle 10, whereupon the jaw levers 4, jaws 6 and cross head 3 are caused to move forwardly against the tension of the spring 14, so that the jaws may slide rearwardly along the tape.

I do not limit my invention to the exact details of construction herein disclosed because certain changes might be made therein without departing from the spirit of the invention.

I claim as my invention:

1. A puller comprising a pulling shank, a pair of links connected at one end to said shank, a pair of jaw levers connected at one end to the other end of said links respectively, jaws formed on the other ends respectively of said jaw levers for gripping a tape therebetween, and a cross head to which the jaw ends of said levers are pivoted to cause the jaw ends of said levers to swing rearwardly and said jaws to grip the tape when said shank is pulled forwardly, a guide rod on which said cross head is slidably mounted, and a head on the end of said rod for engaging and arresting the rearward movement of said cross head and said jaw levers with said jaws in maximum gripping position.

2. A puller comprising a pulling shank, a pair of links connected at one end to said shank, a pair of jaw levers connected at one end to the other end of said links respectively, jaws formed on the other ends respectively of said jaw levers for gripping a tape therebetween, and a cross head to which the jaw ends of said levers are pivoted to cause the jaw ends of said levers to swing rearwardly and said jaws to grip the tape when said shank is pulled forwardly, a guide rod on which said cross head is slidably mounted and a head on the end of said rod for engaging and arresting the rearward movement of said crosshead and said jaw levers with said jaws in maximum gripping position, a pin on said rod and a spring surrounding said rod and bearing at its ends against said pin and said cross head respectively for urging said levers rearwardly into arrested position as aforesaid.

GEORGE J. ROTH.