June 26, 1945. O. HAGE 2,379,001

DEVICE FOR REMOVING AND APPLYING CHAIN LINKS

Filed May 20, 1944

Fig. 1

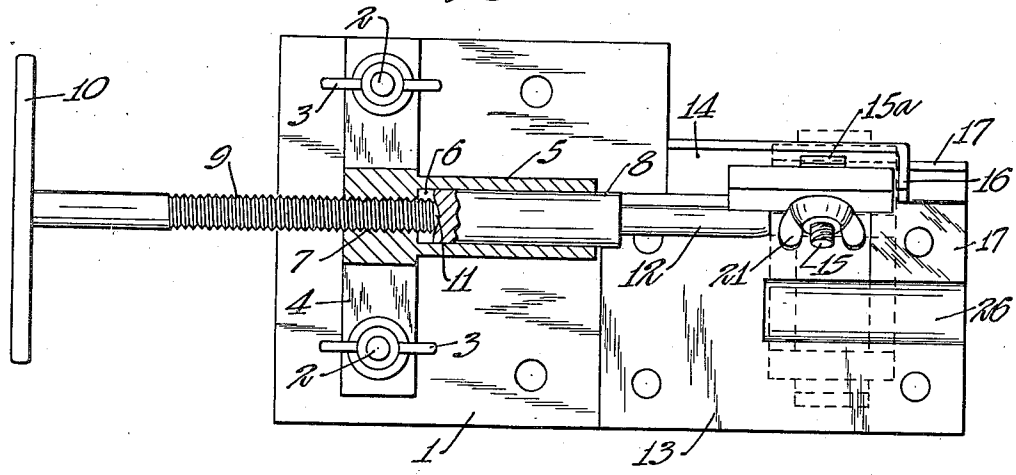


Fig. 2

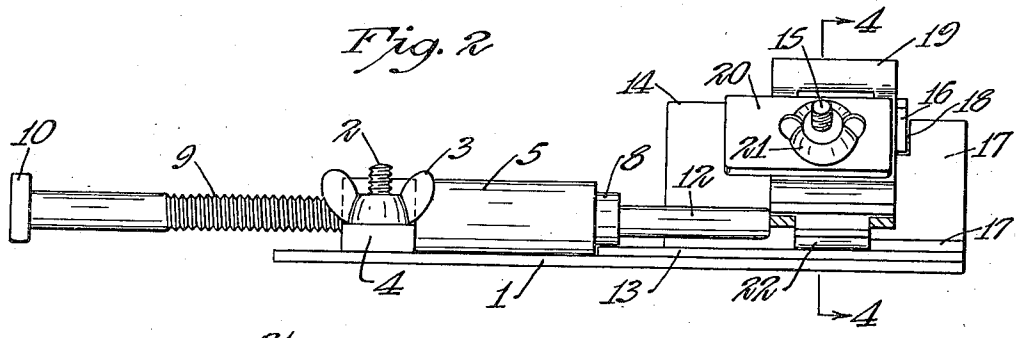


Fig. 3

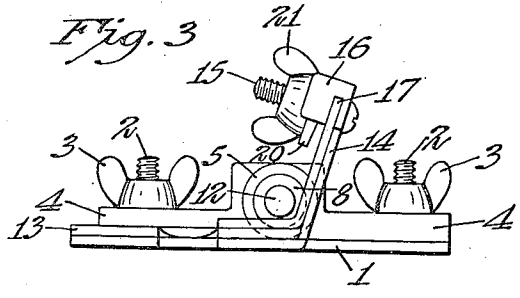


Fig. 5

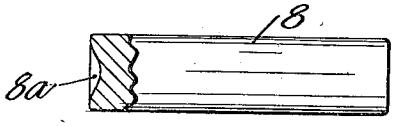
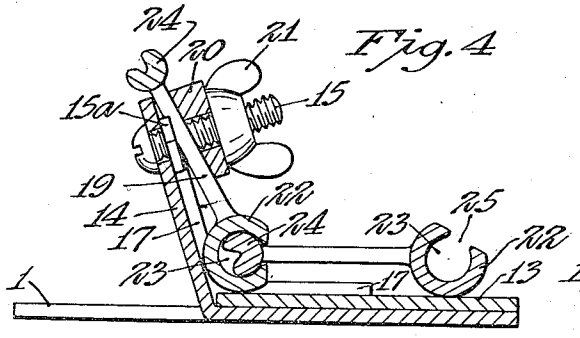


Fig. 4



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DEVICE FOR REMOVING AND APPLYING CHAIN LINKS

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6 Claims. (Cl. 59—7)

My invention relates to a tool for use in making repairs to chains of that type utilizing links having interfitting terminal hooks forming rolling connections.

Heretofore considerable difficulty has been experienced in separating the links for the purpose of making repairs and adjustments. This has been due to the fact that it has been necessary to force one link laterally relative to the other link engaged thereby in order to separate them, and no inexpensive and adequate means has been devised for properly supporting one of the links while the other is being separated from it by laterally shifting the same.

It is an object of my invention to provide an inexpensive tool having means for engaging links of different sizes in such a manner that other links connected thereto can be pushed or driven laterally out of engagement therewith without destroying any of the parts or without requiring the use of any special supplemental tools.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood the changes in the precise embodiment of the invention herein disclosed may be made within the scope of its claims without departing from the spirit of the invention.

In the accompanying drawing the preferred form of the invention has been shown.

Referring to the drawing wherein like characters indicate like parts throughout the several views:

Fig. 1 is a top plan view of my novel device equipped to detach and illustrating the method of detaching the chain links of the type above described, some parts being broken away and shown in section and some positions of the links being shown in dotted;

Fig. 2 is a side elevation of the device shown in Fig. 1;

Fig. 3 is an end elevation;

Fig. 4 is a section taken on the line 4—4 of Fig. 2; and

Fig. 5 is a side elevation of one of the attaching plungers, some parts being broken away and shown in section.

Referring to the drawing by characters of reference, 1 designates a steel base plate, shown as being rectangular in shape, to which is secured by means of threaded bolts 2 and thumb nuts 3, a bracket 4. Secured to bracket 4 and extending centrally down along the face of rectangular base plate 1 is a guide cylinder 5 being bored throughout its length. The open projecting end of guide cylinder 5 contains a cylindrical magazine or plunger carrying chamber 6. Connecting chamber 6 with the outer end of guide cylinder 5 is a threaded opening 7 of less diameter than cavity 6. Adapted to fit loosely into the magazine of chamber 6 are cylindrical plungers 8. Extending through the opening 7 is a threaded bolt or pusher rod 9 carrying a handle 10 and having a rounded contact end 11. The inside ends of plungers 8 are depressed at 8a to correspond approximately to the size of the rounded end 11 of the pusher rod 9. Plungers 8 may be of various lengths and as shown in Figs. 1 and 2 may have reduced working ends 12 for a purpose which will hereinafter become apparent.

Shown as riveted or otherwise secured to the end of base plate 1, opposite the guide cylinder 4, is a supplemental steel plate 13 which extends rearwardly so as to make an abutment surface for the unsecured open end of the guide cylinder 5. Supplemental steel plate 13 is rectangular in shape and extends in width slightly more than half the width of base plate 1. That end portion of the base plate 1 which is not covered by the supplemental base plate 13 is bent up on a diagonal to provide a work carrying flange 14.

Projecting inwardly through the upper central portion of work carrying flange 14 is a screw threaded bolt 15 which is held permanently to flange 14 by means of a nut 15a, see particularly Figs. 1 and 4. The upper corner of flange 14 is bent inward so as to provide an abutment ear 16.

Overlying a portion of supplemental base plate 13 and flange 14, and nested therewith, is an abutment plate 17. Abutment plate 17, as shown, is riveted or otherwise secured to supplemental base plate 13 and base plate 1, the portion overlying the base plate 13 acting as an abutment for the stationary link and the upper portion which overlies and nests with flange 14 being notched at 18 to receive the ear 16 and thus provide a reinforcement therefor.

When it is desired to separate two links of a chain, one of these links 19 is positioned on the work supporting flange 14 so that the threaded bolt 15 projects out through the central opening, as illustrated in Figs. 1, 2 and 4 of the drawing. An anchor plate 20 (see Fig. 2) is then placed over the threaded bolt 15 and a thumb nut 21 is tighteneed so as to secure the link to the inside diagonal face of the flange 14.

It is important to note, particularly by reference to Fig. 2, that when link 19 is secured to

flange 14 by a clamp or anchor plate 20 and thumb screw 21, that lateral shifting movement in an outward direction is prevented by the upper end making contact with ear 16 and the sleeve end 22 butting against the abutment plate 17.

The adjacent link which is to be detached will lie loosely on the supplemental base plate 13. Plunger 8 having a reduced working end 12, as shown in Fig. 2, is then inserted into the guide cylinder 5. Thereafter the pusher rod 9 is screwed inwardly so that the rounded contact end 11 makes engagement with the depressed inner end 8a of plunger 8. Plunger 8 and its reduced shank portion 12, which is aligned with the circular opening 23 in the sleeve 22, is then pushed outward until it comes into contact with the pintle-pin end 24. Reduced end portion 12 being of slightly less diameter than the opening 23 of the link 19 will continue right through opening 23 of sleeve 22 until the link, lying loosely on plate 13 has been pushed laterally out of engagement with the link 19 secured under the clamp or anchoring plate 20. This is, of course, accomplished by temporarily spreading the open end of slot 25 in the sleeve 22 (see Fig. 4).

When it is desired to attach two such links 19 together, then in that event, one link is secured to supporting flange 14 in precisely the same manner described above and the other link is laid on the supplemental base plate 13, laterally of the link 19 secured beneath the anchor plate 20, but in such a position that the pintle pin 24 is in alignment with the circular opening 23 in the sleeve 22. However, for this purpose the short plunger 8, similar to that shown in Fig. 5, is utilized. By screwing the pusher rod 9 inwardly, the plunger 8 comes into contact with the pin end 24 of link 19 pushing the same into position by temporarily spreading the opening of slot 25.

Fig. 1 shows the supplemental base plate 12 as being notched or grooved at 26. This notch 26 is utilized when it is attempted to separate the links of smaller chains. Then in that event, sleeve 22 portion is allowed to drop into the slot or groove so as to obtain the desired amount of movement between the links, thereby making it possible to align a given link with the open ended slot.

It should be obvious that with different sized links, different size and shape plungers may be used.

What I claim is:

1. In a device for detaching chain links having slotted sleeves at one end thereof and pintle-acting pins at their other ends, a base plate, a link supporting flange projecting upward at an angle from one end of said base, means carried by said flange for anchoring one of said links against vertical and laterally outward shifting movements, a guide cylinder mounted on the other end of said base plate, said guide cylinder being bored throughout its length, a plunger carried by said guide cylinder and projectable out the inner end of said cylinder, and means for projecting said plunger from said guide cylinder.

2. The structure defined in claim 1 in which the axis of the guide cylinder is in pre-determined alignment with the axis of the opening in the slotted sleeve of a link which has been anchored to the angular bracket.

3. The structure defined in claim 1 in which the axis of the bore of the guide cylinder is in pre-determined alignment with the axis of the opening in the sleeve of the link anchored to the angular flange, said plunger having a reduced end portion capable of passing through the opening in the sleeve of said link.

4. The structure defined in claim 1 in which the degree of angularity between the base plate and the link supporting flange is such that when a link is secured to the flange, open slot out, the sides of an attached link lying on the base plate will be in alignment with the open slot.

5. In a device for attaching chain links having slotted sleeves at one end thereof and pintle-acting pins at their other ends, a base plate, a link supporting flange projecting upward at an angle from one end of said base, means carried by said flange for anchoring one of said links against vertical movements, an inturned lip on said flange for checking said link against outward lateral movement, a guide cylinder mounted on the other end of said base, said guide cylinder being bored throughout its length, and carrying a plunger in its inner end and a screw threaded pusher rod in its other end, the axis of the bore of said cylinder being in pre-determined alignment with the axis of the opening in the slotted sleeve of a link when anchored, slot out, to said bracket.

6. The structure defined in claim 5 in which the angle between the base plate and the supporting flange is such that when a detached link is pushed along the face of the base plate, slot up, the side of the link immediately below the cross pin will be in alignment with the end of the slot of the anchored link.

OSCAR HAGE.