May 15, 1928. 1,670,221

S. K. TIBBENS

TIRE CHAIN REPAIR TOOL

Filed Sept. 2, 1926

Fig. 1.

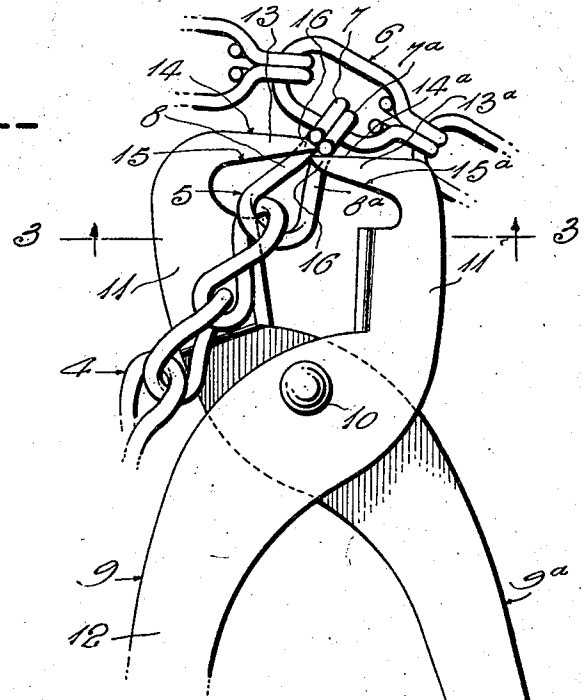


Fig. 3.

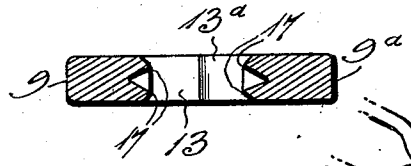
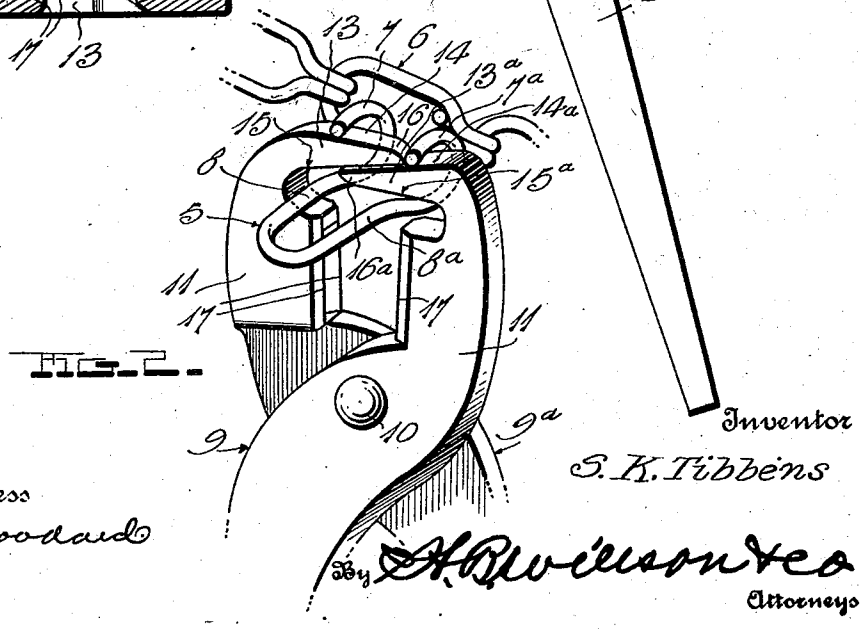


Fig. 2.



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UNITED STATES PATENT OFFICE.

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TIRE-CHAIN REPAIR TOOL.

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The invention relates to improvements in tools of the type designed for permitting quick and easy detachment of cross chains from tire chains, and the substitution of new cross chains. Heretofore, when inserting one or more new cross chains, it has been customary to also apply new hooks, said hooks being used to connect the cross chain with the side chains. As these hooks receive very little wear however, there is no necessity of renewing them each time a cross chain is renewed, but tools heretofore devised for opening the hooks and permitting disconnection thereof from the side chains, have not been such as to also permit detachment of the hooks from the worn cross chain and application of said hooks to a new length of chain, said tools being designed only for opening and closing the hooks without spreading the hook-carrying arms and thus permitting disconnection of the cross chain hooks from the worn cross chain. It is the object of my invention to provide a new and improved chain tool which will, at a single operation, not only open the hooks to permit disconnection thereof from the side chains, but will also spread the hook-carrying arms sufficiently to permit removal of the hooks from the ends of the worn cross chain and application of said hooks to the ends of a new length of chain, so that the same hooks may be used for connecting this new chain length, with the side chains. Thus, a great number of cross chains may be cut from a long chain of the proper construction and as the old hooks may be used in connecting these cross chains with the side chains, quite a saving may be effected.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Figure 1 is a side elevation showing the tool engaged with a cross chain hook, in readiness for opening the hooks and spreading the hook-carrying arms.

Fig. 2 is a perspective view illustrating the hooks opened and the hook-carrying arms spread apart.

Fig. 3 is a transverse sectional view on line 3—3 of Fig. 1.

The drawings above briefly described, illustrate the preferred form of construction and while this construction will be hereinafter specifically described, it is to be understood at the outset, that within the scope of the invention as claimed, variations may be made.

On the drawings, the numeral 4 designates a cross chain and 5 has reference to one of the usual hooks at an end of said cross chain, connecting it with one of the side chains 6. The hook 5 is of the conventional shape and it is formed of a single length of wire whose ends constitute the hooks 7 and 7ª at the free ends of the usual hook-carrying arms 8 and 8ª. In order to disconnect the hooks 7 and 7ª from the side chain 6, it is necessary to open said hooks, and in order to disconnect the hook 5 from the cross chain 4, the arms 8 and 8ª must be spread a distance at least equivalent to the cross section of the cross chain links. The improved tool performs both functions at a single operation.

The numerals 9 and 9ª designate two crossed levers fulcrumed to each other at their crossing points, as indicated at 10, said levers having short front ends 11 and relatively long rear or handle portions 12, the latter being partly broken away in the drawing. At their front extremities, the end portions 11 of the levers are provided with integral, inwardly projecting elongated wedges 13 and 13ª which have their thin ends disposed inwardly toward each other, said wedges being adapted to move into overlapping relation as seen in Fig. 2, when the handles 12 are forced toward each other. Both wedges have flat front and rear surfaces which are preferably disposed in planes substantially at right angles to the length of the levers. The flat front surfaces of the wedges are assigned the reference characters 14 and 14ª while the flat rear sides of the wedges are designated 15 and 15ª. The inner end of the surface 14 is preferably curved inwardly to the surface 15, providing a curved nose 16 for the jaw 13. Similarly, the surface 15ª of the jaw 13ª curves outwardly to the surface 14ª, providing a rounded nose 16ª for said wedge 13ª.

In using the tool, it is engaged with a hook 5 as seen in Fig. 1 and the handles 12 are forced together. When this is done, the wedge 13ª passes through the hook 7ª and abuts a portion of the hook 7 as seen in this view. Similarly, the wedge 13 passes

through the hook 7 and abuts the bill of the hook 7^a. When the two handles 12 are now further forced together, the wedges 13 and 13^a move into the overlapping relation shown in Fig. 2, and as they assume this relation, the nose 16 forces the hook 7^a toward the wide end of the wedge 13^a. Similarly, the nose 16^a forces the hook 7 toward the wide or thick end of the wedge 13. Thus, as clearly shown in Fig. 2, the arms 8 and 8^a are spread and the hooks 7—7^a, are opened at the single operation of the tool. This permits the hook 5 to be disconnected both from the worn cross chain 4 and from the side chain 6, so that said hook may again be used for connecting the new length of cross chain to the side chain.

After bending the hook 5 into the shape shown in Fig. 2 and engaging it with the new length of cross chain, the arms 8 and 8^a may be bent back together if desired, and after re-engagement of the hooks 7—7^a with the side chain 6, said hooks are again closed. To permit these two bending operations to be performed by the tool, I provide the inner edges of the lever ends 11, with appropriate teeth 17 which permit said ends to be antislippingly used in performing the bending operations referred to, the tool being then used as a pair of pliers.

It will be seen from the foregoing that while the invention is simple and inexpensive, it will be highly efficient and easy to operate. Excellent results have been obtained from the details disclosed and they are therefore preferably followed. However, within the scope of the invention as claimed, modifications may be made and hence it will be understood that I am not restricted to the exact details which I have disclosed.

I claim:

A tire chain tool comprising two elongated wedges constituting means for simultaneously opening the hooks and spreading the hook-carrying arms of a cross chain hook sufficiently to permit detachment of the latter from both a cross chain and a side chain, and operating means for said wedges.

In testimony whereof I have hereunto affixed my signature.

SAMUEL K. TIBBENS.