Nov. 13, 1962 S. F. CANNON 3,063,236

SAW CHAIN RIVET PUNCH HAVING PIVOTED JAWS

Filed Feb. 27, 1960 3 Sheets-Sheet 1

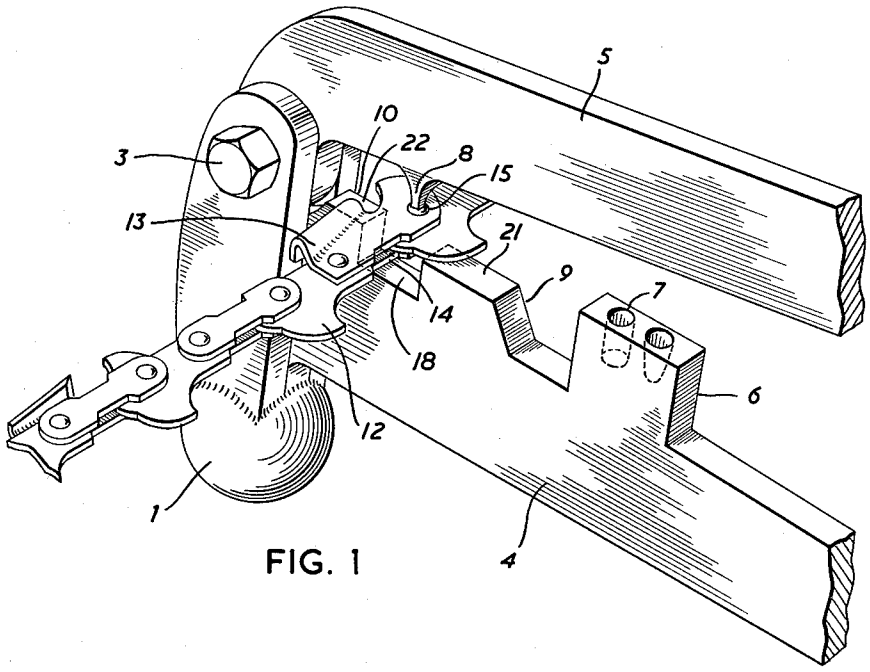


FIG. 1

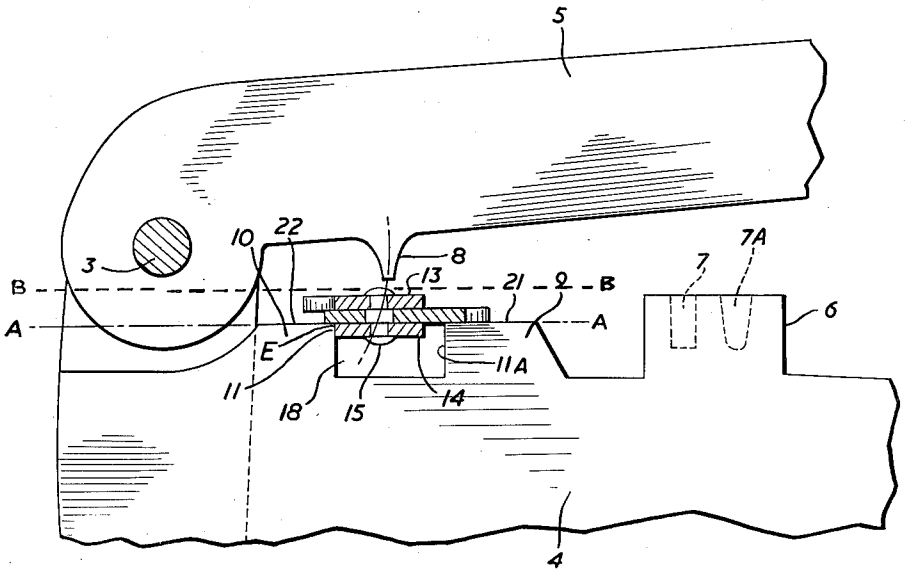


FIG. 2

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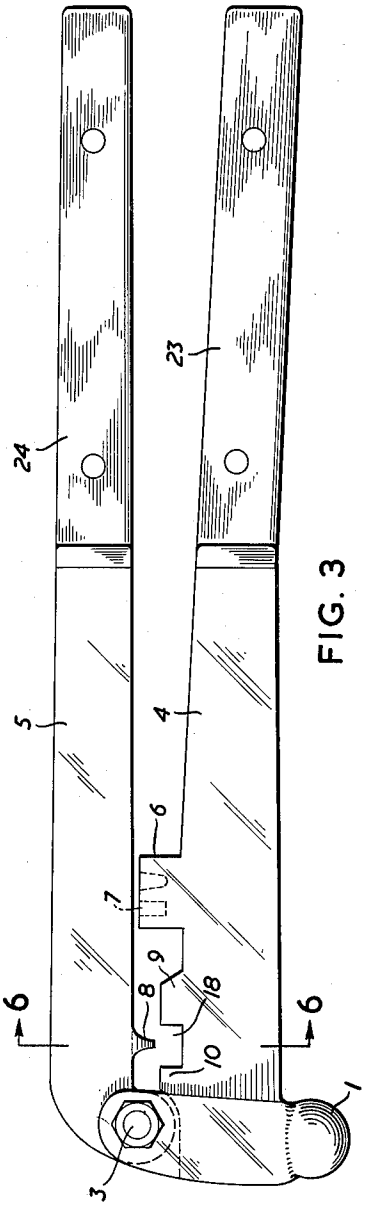


FIG. 3

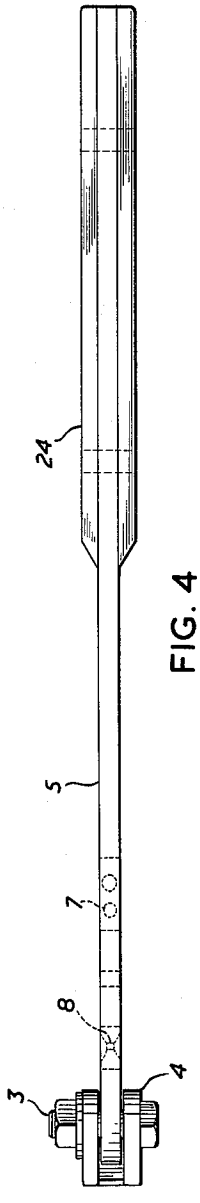


FIG. 4

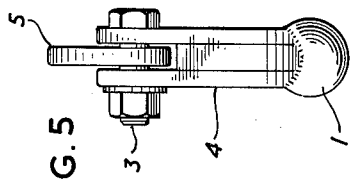


FIG. 5

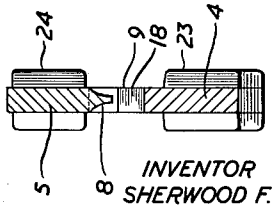


FIG. 6

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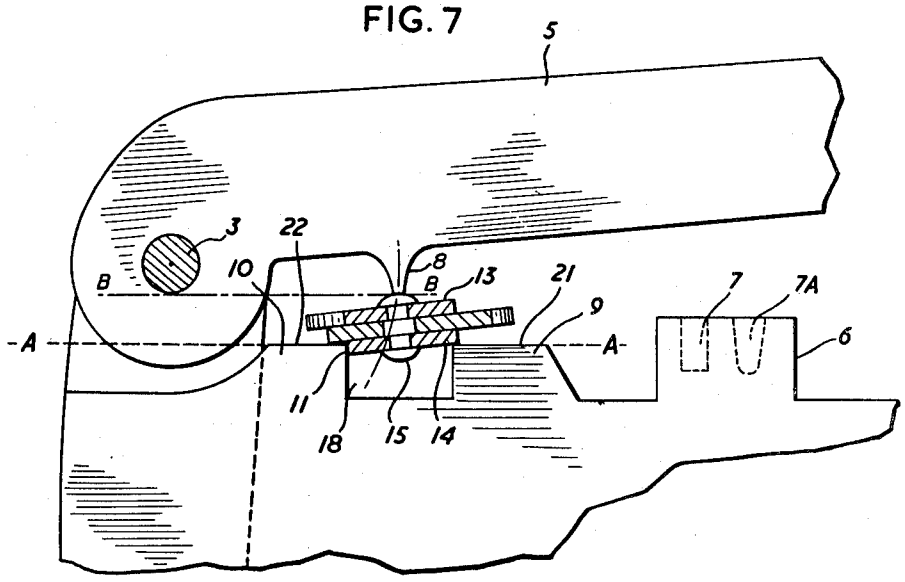
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FIG. 7



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United States Patent Office 3,063,236 Patented Nov. 13, 1962

3,063,236 SAW CHAIN RIVET PUNCH HAVING PIVOTED JAWS

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Filed July 27, 1960, Ser. No. 45,628
2 Claims. (Cl. 59—7)

This invention relates to a tool for dismantling saw chains.

This application is a continuation-in-part of application Serial No. 844,294, filed October 5, 1959 (now abandoned).

Present rivet removing devices comprise an anvil or positioner for the chain saw link exactly shaped to receive the particular make of chain from which the rivet is to be removed. A punch is applied to the rivet, so positioned and a hammer used to strike the punch and effect removal of the rivet.

This apparatus and method has disadvantages. The anvil construction and the method of rivet removal requires that there be as many types of anvil as there are saw chains, since, under the impact blows on the punch, the anvil must exactly fit the chain link resting on it. Moreover, the anvil, exactly shaped for the chain, may be ineffective with the chain for which it is specially designed, if the chain is worn or broken. It will also be noted that a number of different anvil sizes are required for use with the many types of chain.

A further disadvantage accrues from the use of an impact method of rivet extraction. The blows used to remove the rivet often cause chain links to be bent or broken.

It is an object of this invention to provide a rivet extraction tool adapted to handle saw chains of all makes.

It is an object of this invention to provide a rivet extraction tool wherein the anvil and punch and impelling mechanism for the punch are part of a single mechanism.

It is an object of this invention to provide a rivet extraction tool with a means for operation which allows the steady application of pressure to the rivet rather than the impact of sharp blows.

It is a further object of this invention to provide a rivet tool which includes a single unit: means for extracting a rivet and means for resizing, resetting and upsetting a rivet.

There is thus provided a tool for repairing saw chains which provides, in bush areas, remote from shop facilities, means for removing the rivets from saw chains, and repairing the rivets, and using the old rivets to reassemble the saw chain.

In drawings which illustrate an embodiment of the invention:

FIGURE 1 shows a perspective view of the tool.

FIGURE 2 shows a side view of the tool applied to the saw chain.

FIGURE 3 shows a side view of the tool without the saw chain.

FIGURE 4 shows a top view of the tool.

FIGURE 5 is an end view of the tool.

FIGURE 6 is a vertical cross-section of the tool along the lines 6—6 of FIGURE 3; and

FIGURE 7 is a view of the tool applied to a saw chain of larger size than normal.

In the drawings is shown a first shank 4 and a second shank 5 pivotally connected to one another adjacent their respective ends by a pivot 3. Shanks 5 and 4 are adapted to lie approximately parallel to one another as shown.

Shank 4 is provided, adjacent pivot 3 with a pair of projections 10 and 9 defining between them a recess 18 of a size greater than the width of the bottom chain tie strap of most chains. The projections 9 and 10 and recess 18 are oriented to face the adjacent shank 5 and have upper surfaces 21 and 22 forming the anvil. It is preferable if the line A—A being the projection of the line joining the surfaces 21 and 22 passes the axis of pivot 3 on the side of shank 4 and is spaced from the pivot a distance greater than the height of the longest rivet to be extracted by the tool above the bottom surface of the drive link. If this is the case the line B—B being parallel to the line A—A will pass the axis of pivot 3 on the side of shank 4 and will move the links in toward shoulder 11.

Shank 5 is provided with a punch projection 8 adapted, when shanks 4 and 5 are side by side, to face the recess 18. The cross section of the effective part of punch 8 is less than the diameter of the smallest rivet shank on which the punch is used.

Shank 4 is provided radially outwardly from the anvil with a projection 6 extending toward shank 5 and adapted to form a stop to set a limit for the approach of shank 5 toward shank 4.

Projection 6 is further provided with a circular bore 7 opening out of the projection in the direction of shank 4. This provides in the same tool a convenient rivet setting location.

Projection 6 is also provided, adjacent bore 7 with a tapering bore 7A where the headless shank of a damaged rivet may be placed. When the shank is placed projecting into bore 7A and the shank 5 closed thereon, the shank, if "spread" or damaged will be compressed into a neat tip for insertion through an aperture. In this way a damaged rivet may be prepared in the field for re-use and re-entry into the link apertures.

The method of improving the shank of a rivet by exerting force to move it into a tapered bore is believed novel and will be found to be useful independently of the use of the pivoted shanks.

Shank 4 is provided below pivot 3 with a ball peen head 1 for upsetting a rivet.

Shanks 4 and 5 are provided with handle portions 23 and 24 at the ends remote from the pivot 3 and are so arranged that both handle portions 23 and 24 may be grasped in one hand.

The operation of the tool as far as rivet extraction is concerned is as follows:

A chain saw including top tie strap 13, drive link 12, bottom tie strap 14 and rivet 15 to be extracted, is placed between shanks 4 and 5 and extends approximately transversely thereto with bottom tie strap 14 lying between projections 10 and 9 and the projecting ends of drive link 12, resting on the projection surfaces 21 and 22.

Handles 23 and 24 are then used or "squeezed" to bring shank 5 toward shank 4 and punch 8 into contact with rivet 15. At this point it should be noted that since the shanks 4 and 5 are designed so that the line A—A joining top surfaces 21 and 22 is spaced from pivot 3 by a distance greater than the height of the top of rivet 15, so that line B—B is on the same side of the axis of pivot 3 as shank 4, then punch 8 will not only bear downwardly on the rivet but at the same time will press it inwardly toward the surface 11. Thus the chain including drive link 12 and bottom link 14 will be moved inwardly until the pivot facing edge of link 14 meets the recess defining surface 11 of projection 10. The manual pressure on shanks 4 and 5 is then continued until punch 8 has removed rivet 15. Since the link 14 will always be driven against surface 11 by the radially inward component of movement of punch 8, the recess 18 may be made larger than the links to be placed therein so as to accommodate chains of different make. Moreover, wear of the chain links will not affect the operation of the device since a worn bottom link 14 will still be

moved by the punch, over against surface 11. It will be obvious that instead of being driven against surface 11 the link may be driven outwardly by the punch 8 against the recess defining surface 11A of projection 9. In this event the pivot point 3 will be located substantially below instead of substantially above the line parallel to line A—A through the point of contact of punch 8, and the top of the rivet 15 or its equivalent. The latter alternative is considered within the scope of the invention.

Preferably, the ledge defining surfac against which the chain is to be driven, surface 11 in the embodiment shown, is sloped downwardly away from the opposed surface to provide an acute edge E for better retention of the chain during the punching action.

Because of the function of surface 11 it is preferably made either perpendicular to the line forming surfaces 21 and 22 or sloping downwardly away from projection 9 to provide an acute edge. In this way a right angled or an acute edge is always presented to the approaching edge of link 14.

It will further be noted that the extraction of rivet 15 is achieved by continual, even, mechanical pressure having no tendency to damage the chain as a whole as opposed to the impact shocks applied to the chain by prior art methods.

In FIGURE 7 is shown the tool applied to a chain whose bottom link 14 is wider than the recess 18. To remove a rivet from such a chain, the pivot facing extension of drive link 12 is laid on projection surface 22 while the pivot facing edge of bottom link 14 is placed bearing on the recess-defining surface 11 of projection 10. Since the bottom link 12 is wider than the recess 18 the pivot remote side thereof rests on the corner of projection surface 22. It will be seen that, if the line A—A is located sufficiently below the pivot point 3, the line B—B through the point of contact of punch 8 and the top of rivet 15 (parallel to line A—A) is also below pivot point 3 the arc of movement of punch 8 just above line B—B is up and away from the recess-defining surface 11 of projection 10. Thus the punch 8 will tend to be aligned with the rivet 15 even though the chain is thicker and wider than normal. It can be seen that the direction of the arc of movement of punch 8 will tend to bring it into contact with rivets of varying size. It will be understood that the same phenomena of compensating for varying sizes will take place in a punch designed to move the saw chain outwardly against projection 9 since in that event the arc of punch 8 will slope inwardly upwardly at the line A—A.

I claim:

1. A tool for removing the rivets from chains having driving links riveted between tie strap links, said tool comprising a pair of shanks pivotally joined at a pivot point and adapted to be rotated toward one another to an orientation where their ends remote from said pivot point may be grasped in a hand, one of said shanks being provided with a pair of projections extending toward the direction of approach of the other shank, said projections defining between them a recess, each of said projections having a surface arranged to face the direction of approach of said other of said shanks and one of said projections being provided with a recess defining wall facing the other projection, and forming an edge with the facing surface on said projection, the angle forming said edge being not more than 90 degrees, a punch projecting from the other shank toward the said recess when said shanks are adjacent one another, said punch being of a cross-sectional area less than the chain rivet to be extracted and located to contact said rivet when said shanks are adjacent one another and a driving link is resting with one side on said projections with one edge of an associated tie strap link resting against said recess defining wall; wherein the projected line joining the surfaces of said projections facing said second shank is spaced from said pivot point a distance greater than the distance from an extreme end of said rivet to that side of the associated drive link which is more remote from said end, and wherein said line is spaced from said pivot point in a direction to cause said punch to tend to move said link toward said recess defining wall when said punch is bearing on said link.

2. A tool for removing the rivets from chains having driving links riveted between tie strap links, said tool comprising: a pair of shanks pivotally joined, at a pivot point, the first of said shanks being provided with a pair of projections extending toward the intended direction of approach of the second of said shanks, said projections defining between them a recess, a punch projecting from the said second shank adapted to project toward said recess when said shanks are adjacent one another, each of said projections having a surface arranged to face the direction of approach of said other of said shanks and one of said projections being provided with a recess defining wall facing the other projection and forming an edge with said facing surface on said one projection, said recess defining wall at said edge making an interior angle of not more than 90 degrees with said surface; wherein the projected line joining said surfaces of said projections facing said second shank is spaced from said pivot point a distance greater than the distance from an extreme end of said rivet to that side of the associated drive link which is more remote from said end, and wherein said line is spaced from said pivot point in a direction to cause said punch to tend to move said link toward said recess defining wall when said punch is bearing on said link.

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