United States Patent [19]

Gerst

[11] **3,913,423**

[45] **Oct. 21, 1975**

[54] **SPOT WELD REMOVER**

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[52] **U.S. Cl.** ..... **81/3 R;** 81/90 D; 81/177 D

[51] **Int. Cl.²** **B25B 13/48**

[58] **Field of Search** ..... 81/3 R, 71, 90 D, 119, 81/125.1, 177 D; 220/274, 275

[56] **References Cited**

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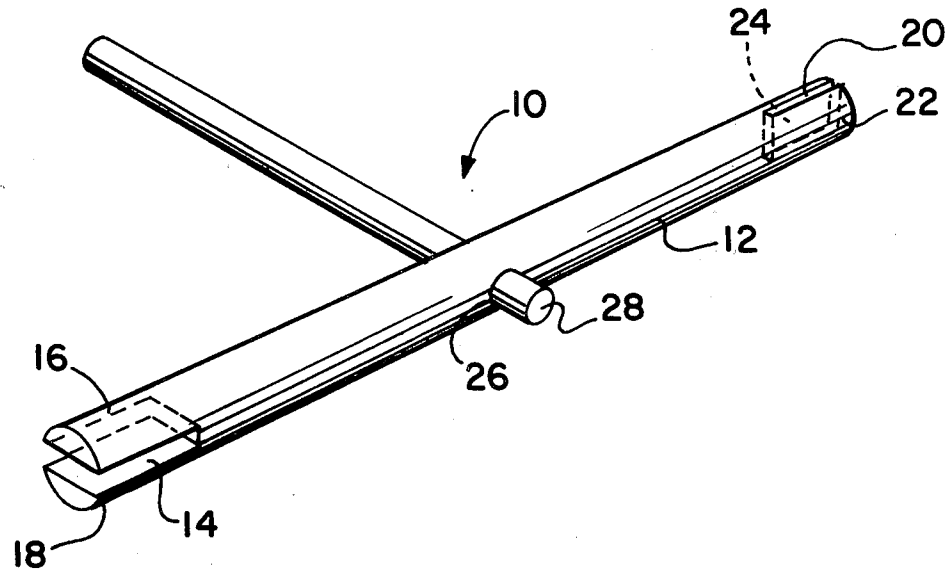
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Assistant Examiner—James G. Smith
Attorney, Agent, or Firm—John F. McClellan, Sr.

[57] **ABSTRACT**

A spotwelded strip remover comprising a circular-section bar having a slot forming a fork in each end and a transverse hole in the middle section; special slotted-end configuration characterizes a separate embodiment.

2 Claims, 4 Drawing Figures



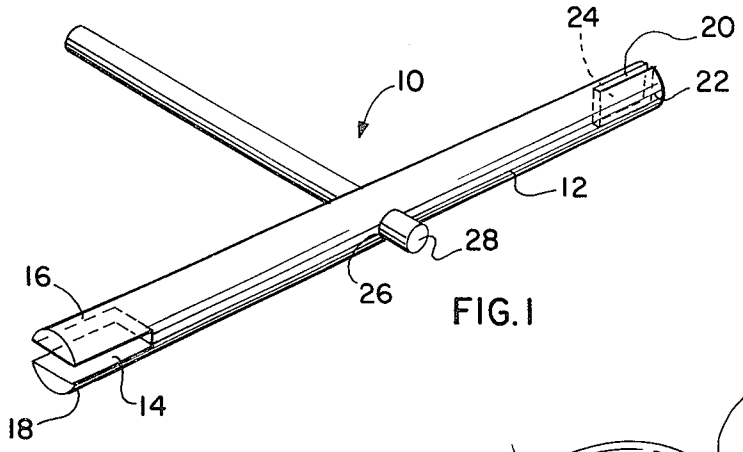


FIG. 1

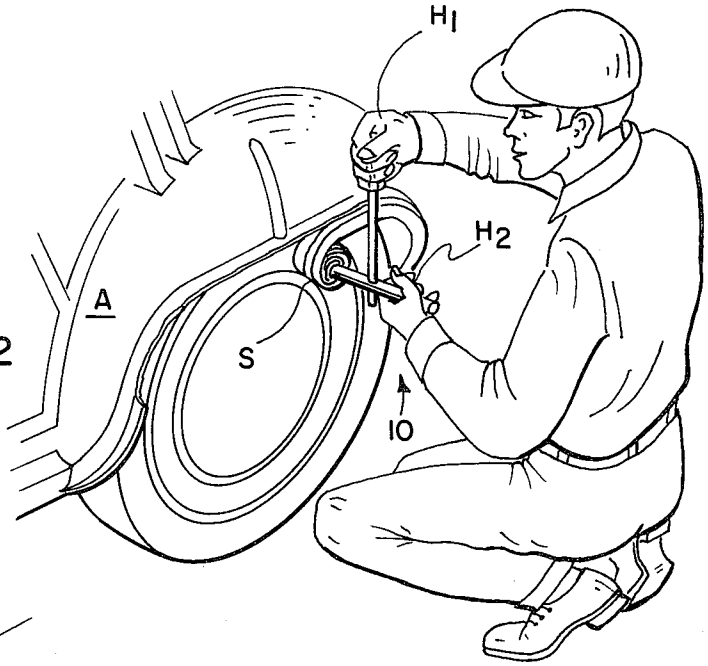


FIG. 2

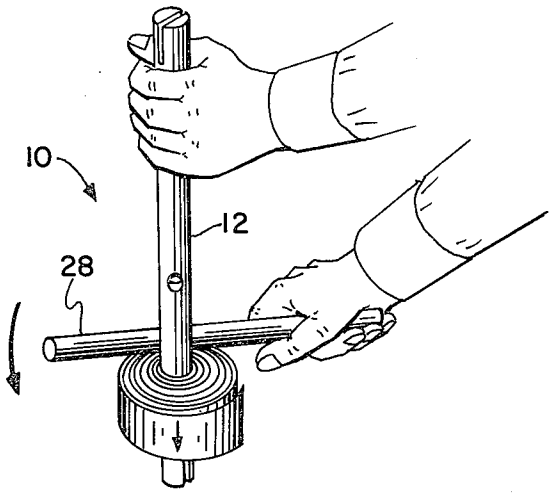


FIG. 3

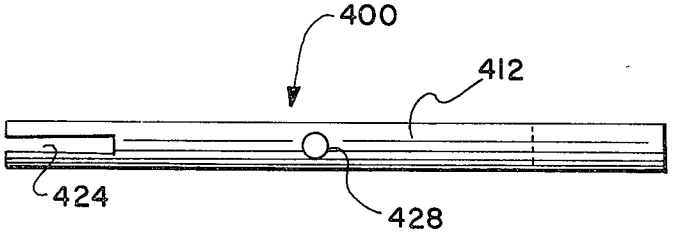


FIG. 4

SPOT WELD REMOVER

This invention relates generally to hand tools and specifically to fixed-jaw wrenches.

In the prior art a number of tools of related form have been described, including those of the following U.S. Pats.:

U.S. Pat. No. 1,336,794 issued to S. Stephanian on Apr. 13, 1920 discloses a tubular wrench with splayed, forked jaws at each end;

U.S. Pat. No. 2,719,358 issued to H. G. Lassen on Dec. 4, 1955 discloses a tapered-end strap-cutter with a slotted tapered end and a fixed cross-handle at the opposite end;

U.S. Pat. No. 2,780,387, issued to A. C. Hertzfeldt on Feb. 5, 1957, discloses a mounted rotary tool with one end split and the other having a crank; and

U.S. Pat. No. **3,380,089** issued to A. Schober on Apr. 30, 1968, discloses a solid tool having one end shaped like a clothes pin, with a slot flaring outward at the free end, and the other end having a pivotal handle.

However, to the present, it is believed that no tool has been disclosed which has the advantages of the present invention for the specialized function of removing spotwelded strips and the like from underlying structure.

Particularly in modern automobile body and fender repair it is frequently necessary to separate and discard one sheetmetal structure secured by a row of spotwelds to another structure. An example is the need to remove a badly damaged fender from a vehicle having a usable fender-liner connected to the fender by a sequence of spotwelds around the wheel well opening. Typically, the first step is to cut or burn along a line permitting the larger portion of the fender to be removed, leaving a 2 or a 3 inch wide strip along the spotwelded junction of the two structures. Next, the usual practice is to separate the two structures by inserting a chisel and hammering to release each spotweld in turn. This method is time consuming, is noisy, can unnecessarily distort the remaining usable structure, can cause flying metal chips, and can injure the hands of the operator. Therefore, principal objects of the present invention are to provide a spotweld removing tool which is fast, quiet, non-distorting of the remaining usable structure, causes no flying chips, and is not likely to injure the hands of the operator.

Further objects are to provide a tool as described which is economical to manufacture, easy to learn to use, convenient, and durable, and which will become the standard tool of commerce used for the purposes described.

In brief summary, given for purposes of cursive description only, the invention includes provision of a split-end single-lever rotary tool with a variable position actuator handle and a handgrip beyond the actuator handle position from the split end.

The above and other objects and advantages of the invention will become more apparent on examination of the following description, including the drawings, in which like reference numerals refer to like parts:

FIG. 1 is an isometric view of the tool of this invention in one embodiment;

FIG. 2 is an isometric view of the tool in use removing a spotwelded strip;

FIG. 3 is an isometric view of the tool being freed of a coiled spotwelded strip after removal; and

FIG. 4 is a side elevation of a second embodiment of the tool.

FIG. 1 referred to in detail, shows the invention **10** in the form of an elongate member or cylindrical bar **12** having squared ends with a substantially uniform thickness diametral slot **14** dividing the near end into equal fork-members **16, 18.** The far end is divided by slot **20** into equal fork-members **22, 24,** the two slots being at right angles to each other as viewed axially along the bar, and one of the slots preferably forming a larger space between the forks than the other.

A cylindrical aperture **26** passes transversely through the midlength portion of the bar, and a preferably uniform diameter cylindrical lever **28** of a size to make a light sliding fit passes through the aperture. A heavy screwdriver of proper size can be used instead.

Material of the parts of the invention may be mild steel and the slots may be milled or even smoothly sawcut and dressed or tumbled.

FIG. 2 shows the invention **10** in use rolling up and successively popping the spotwelds of a spotwelded strip S of fender of an automobile A. To start, the end with the proper size slot for the work is selected, and one end of the spot-welded strip is caught in the slot. The tool is then rotated by the lever at the midpoint of the tool in one hand H1 of the operator while the grip of the other hand H2 of the operator safely stabilizes the other end of the tool against the wrenching forces.

It can be seen that the hands of the operator are away from the danger zone of the sharp metal of the work, that the work is clearly visible at all times, that the cylindrical shape of the tool provides for a smooth, nonslip, reliably uniform force to be exerted and that the versatile positionability of the lever adapts the tool for work in close quarters and around curves, sliding it in the aperture when necessary to reduce length, and rotating the lever in the aperture for ease in positioning the grip. Rocking the handle helps break welds.

FIG. 3. shows how, when the strip is completely coiled on the tool with the last spotweld broken free, the lever can be used to tap the coil off the end of the tool, freeing the tool for further work.

FIG. 4 shows a modified embodiment **400** of the tool in which the slot **424** is slightly tapered from a smaller spacing at the free end to a larger spacing at the junction of the fork-members and the shank of the tool. The resulting convergent shape of the fork member inner portions helps retain the work in the slot, and counters springing-open of the fork-members under load. The square ends help retention also.

Also noticeable in FIG. 4 is the convenient feature that no matter how the tool is laid aside, at least one slot is always visible because of the angled relation of the two slots, so that the tool can be quickly picked up and oriented for use at any time. And further, the slot on the end in hand provides a grip helping to prevent slips, and a means of orienting the tool by feel under low-illumination conditions.

Obviously many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

What is claimed and desired to be secured by U.S. Letters Patent is:

1. A spot weld remover for removing a spot welded strip of metal from a substrate to which spot welded,

comprising: a solid, straight elongate member of substantially uniform circular cross-section, having first and second ends, with a slot longitudinally in the first end for engaging a strip of sheet metal and winding same about said circular cross-section, said slot dividing said first end into equal substantially parallel fork members, and said elongate member having an aperture transversely therein passing therethrough midway the length of said elongate member, a handle slidably received in said aperture and freely removable therefrom for use in hammering-loose sheet metal wound about said circular cross-section the elongate member having a second slot longitudinally in said second end, dividing the second end into equal fork-members for engaging a strip of sheet metal and winding same about said circular cross-section, the fork members in the first end of the elongate member having a different spacing from the fork-members in the second end of the elongate member, and the plane of the slot in the first end of the elongate member being at right angles to the plane of the slot in the second end of the elongate member.

2. A spot weld remover as recited in claim **1,** wherein the fork-members in at least one end of the elongate member are convergent.

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