Dec. 14, 1965 S. M. SWISHER 3,222,915

SHEET METAL PULLER

Filed July 16, 1962

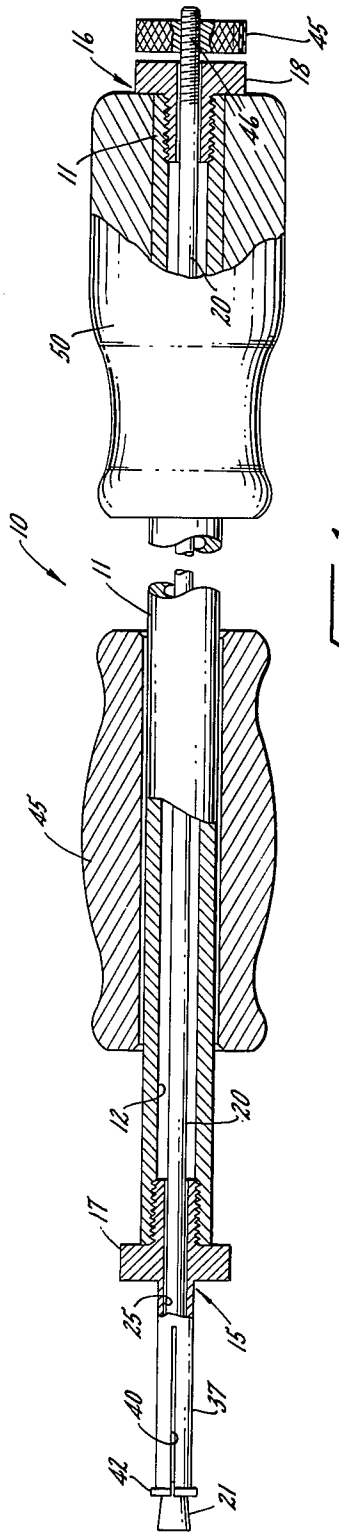


Fig. 1.

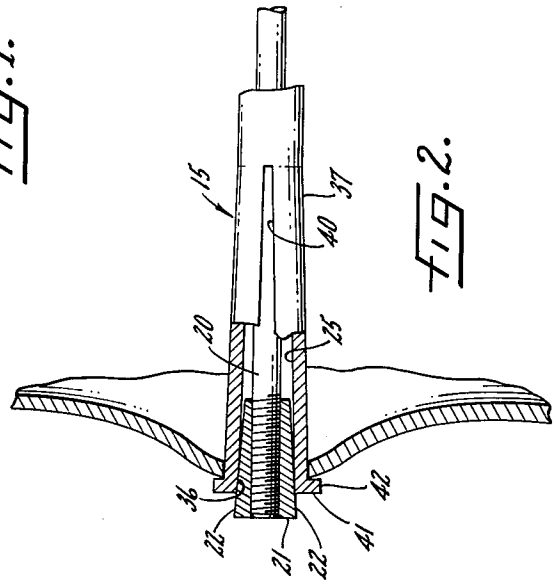


Fig. 2.

INVENTOR.
Samuel M. Swisher,
BY
Lockwood, Woodard, Smith & Weikart
Attorneys.

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SHEET METAL PULLER

Samuel M. Swisher, 16 N. Wallace St.,
Indianapolis, Ind.

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This invention relates generally to an impact instrument and more particularly to a metal working device particularly adapted for use as a fender straightener.

It is known in the field to straighten a dent in a fender by means of a slide hammer. In using such a tool, attachment is made to the dent from the outside and it is removed by impact produced by a slidable handle on the tool. Such a method of removing dents from fenders is particularly useful in the not unusual situation that access from the rear of the dent (to press it out) is prevented. One problem in using such tools, however, is the difficulty of attaching the tool to the fender. A secure attachment should be made or else the tool will pull loose during the impact operation. Also, the location of the attachment of the tool is frequently relatively inaccessible to the user of the tool.

Consequently, it is one object of the invention to provide an improved metal working device.

Still another object of the invention is to provide a slide-hammer metal-working device which can be relatively easily and securely attached to a dent in a fender or the like even though the dent is relatively inaccessible.

Related objects and advantages will become apparent as the description proceeds.

One specific embodiment of the present invention comprises a metal straightening tool including a bar having a stop member on one end, a hammer member slidably mounted on the bar for impact engagement with the stop member and metal engaging means on the opposite end of the bar. The metal engaging means includes a tip member which may be expanded into engagement with the metal by manipulation of the tool at the outward or opposite end of the bar from the tip member.

The full nature of the invention will be understood from the accompanying drawings and the following description and claim.

FIG. 1 is a longitudinal sectional view of a metal straightening tool constructed according to the present invention.

FIG. 2 is a section of a fender having a dent therein also fragmentarily showing the tool of FIG. 1 enlarged and appropriately attached to the fender.

For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the embodiment illustrated in the drawing and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended, such alterations and further modifications in the illustrated device, and such further applications of the principles of the invention as illustrated therein being contemplated as would normally occur to one skilled in the art to which the invention relates.

Referring more particularly to the drawings, there is illustrated a metal straightening tool **10** including a cylindrical elongated bar **11** having a hollow interior **12**. The cylindrical bar **11** is threaded at its opposite ends to receive a tip member **15** and a bearing member **16**. The bearing member **16** may have an appropriate polygonal shape at its enlarged portion **18** such as a hexagonal shape by which the bearing member is securely threaded into the hollow cylinder **11** by a wrench. The tip member **15** has a portion **17** which is hexagonal and enlarged so as to permit the reception thereon of a wrench in order to thread and tighten the tip member into the cylinder **11**. A rod **20** is slidably received through a concentric opening in the tip member **15** and the bearing member **16**. Rigidly secured to the end of the rod **20** is a frustoconical button **21** which has a converging surface **22** extending into the tip member **15**. The tip member is provided with a concentric aperture **25** therethrough which is normally cylindrical all along its length (when in the position of FIG. 1) except at the extreme end **36** thereof where it is frustoconical and corresponds to the external shape of the surface **22**. The tip member **15** includes an elongated portion **37** which is bifurcated by slots **40** in the opposite sides of the portion **37**, said slots extending the major portion of the length of the portion **37** and opening at the distal end thereof. At the extreme distal end **41** of the tip, the portion **37** is provided with an annular flange **42** which reinforces the tip member and is formed in two half-circular portions.

At the opposite end of the rod **20**, there is received an internally threaded externally knurled knob **45**. The knob **45** is threaded upon the rod **20** at its threaded end **46** and can be rotated to draw the rod rightwardly as viewed in the figures causing the frustoconical button **21** to move into the distal end portion **37** of the tip **15** and to spread the tip. Of course, the knurled nut **45** first bears against the member **16** before producing such longitudinal movement of the rod.

After the tip has been inserted within a suitable hole formed in the dent in a fender, the tip can be expanded to engage the material defining the hole to firmly grip the fender for removal of the dent. The flange **42** insures that this grip is secure and functions to prevent impact withdrawal of the tip from the hole in the fender.

The dent is removed by means of impact member or handle **45** which is slidably received upon the cylindrical bar **11** and is movable between the tip member **15** and a handle **50** fixed to the bar **11** at one end thereof. The dent is withdrawn by repeatedly slamming the member **45** against the handle **50**.

It can be appreciated that the present invention provides an improved device for removing dents from fenders. Still further, the present invention provides a slide hammer metal working device which can be relatively easily attached to an inaccessible dent by expansion of one end of the tool by manipulation at the other end. Also, the particular configuration of the tip of the present invention makes possible relatively secure attachment to the fender as compared to similar such tools.

While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only the preferred embodiment has been shown and described and that all changes and modifications that come within the spirit of the invention and the scope of the claim are also desired to be protected.

The invention claimed is:

In a sheet metal straightening tool comprising an elongated hollow cylindrical bar, a handle received on said bar and fixed to one end thereof, an impact handle slidably mounted on said bar for impact engagement with said fixed handle, and metal engaging means, the improvement which comprises a hollow tip member threaded into the other end of said cylindrical bar and coaxial therewith, said hollow tip member including a hexagonal enlarged proximal portion and a reduced cylindrical slotted elongated projection portion extending away from said bar, both of said portions being coaxial with said bar, said projecting portion having slots therein which are opposed and extended longitudinally and having an enlarged distal end, said distal end having a radially extending surface facing toward said proximal portion, a rod extending through the hollow interior of said bar and tip, a frusto-

conically shaped button received on one end of said rod with its converging surfaces extending into said projecting portion, an externally knurled internally threaded member threadedly received on the other end of said rod whereby rotation of said knurled member draws said frustoconical button into said projecting portion causing spreading thereof.

References Cited by the Examiner

UNITED STATES PATENTS

2,155,542	4/1939	Graham	153—80
2,170,461	8/1939	Pepperdine	29—254
2,380,068	7/1945	Patton	29—254
2,605,658	8/1952	Sanchez	153—32
2,641,831	6/1953	Helton	29—254
2,736,286	2/1956	Britton	153—80
2,791,926	5/1957	Guyton	81—15
2,934,984	5/1960	Woodman	81—15
2,941,429	6/1960	Mason	81—15
3,030,837	4/1962	Chartier	81—15

CHARLES W. LANHAM, *Primary Examiner.*

R. J. HERBST, *Assistant Examiner.*