Sept. 16, 1941. R. S. TRACHSEL 2,256,130

METAL RESHAPING TOOL

Filed Feb. 5, 1940

Fig. 1.

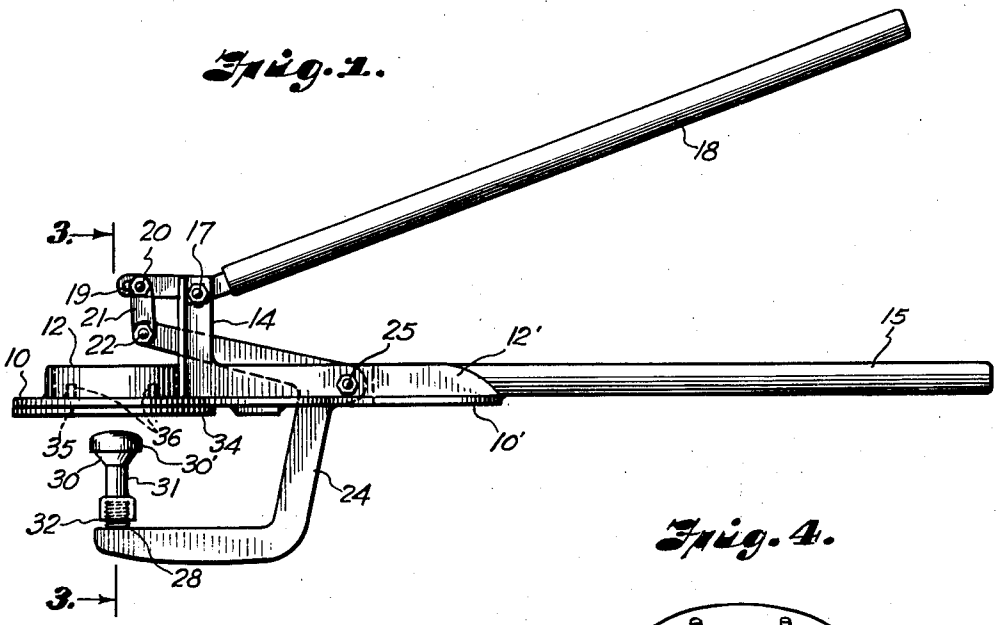


Fig. 4.

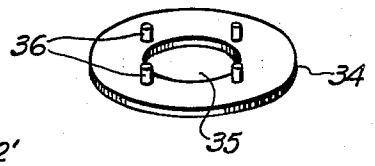


Fig. 2.

Fig. 5.

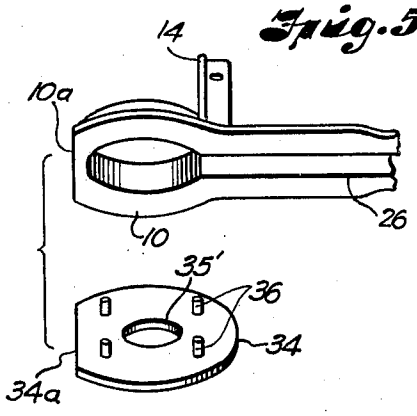
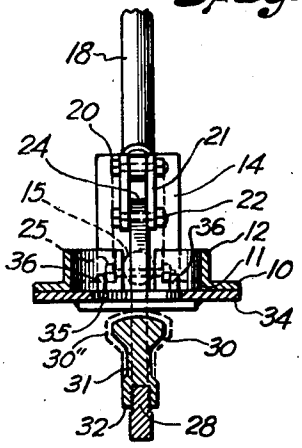


Fig. 3.



INVENTOR
R. S. Trachsel,
BY Chas. W. Grard.
ATTORNEY

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METAL RESHAPING TOOL

Robert S. Trachsel, St. Joseph, Mo.

Application February 5, 1940, Serial No. 317,366

3 Claims. (Cl. 81—15)

The present invention relates to tools or devices for metal shaping purposes, with particular reference to hand-operated tools for use by mechanics in removing dents and the like from damaged sheet metal parts, such as automobile fenders, etc.

Accordingly the invention aims to provide a convenient and highly efficient tool of this character which may be effectively applied to the damaged area of the sheet metal to be re-shaped, and adequate pressure produced with little effort on the part of the operator for restoring such area to its original smooth condition.

One form of embodiment of the device, as herein shown, comprises a frame piece and handle, together with a yoke or ring element for application to one face of the damaged area of the metal, and also a movable handle in operative relation to a dolly or pressure device which is so positioned as to exert a re-shaping pressure against the opposite face of the metal at the points where said yoke or ring element has been applied. The operative connections for the movable handle are so arranged as to facilitate this required positioning of the working elements at necessary points, even though at some distance from the edge of the sheet metal, as in the case of an automobile fender.

It is also an object of the invention to provide for adjustment or variation of the working parts to accommodate different sizes of damaged areas, as by means of different sizes or shapes of the metal-engaging elements adapted to be mounted in working position on the tool.

With the foregoing general object in view, the invention will now be described by reference to the accompanying drawing showing one form of embodiment of the improvements, after which those features and combinations which are deemed to be novel and patentable will be particularly set forth and claimed.

In the drawing—

Figure 1 is a side elevation showing a metal re-shaping tool constructed in accordance with the present invention;

Figure 2 is a plan view of the same;

Figure 3 is a sectional view, representing a section taken on the line 3—3 of Figure 1;

Figure 4 is a perspective view of the removable ring or yoke plate, which engages one face of the sheet-metal in the re-shaping operation; and

Figure 5 is a perspective detail view of the main body portion of the tool—with its removable ring or yoke plate separated therefrom, and showing also a modified feature hereinafter referred to.

The repair of damaged sheet metal parts—such as the dented and misshapen parts of automobile fenders, due to collisions or other accidents, has been a somewhat awkward and difficult procedure because of the necessity of carrying out the repair operation on a part which can not ordinarily be taken to a workbench or machine for the necessary repair. Usually the mechanic relies on the use of hammers and blocks to iron out the damaged parts of the metal, which is not only tedious and in a measure ineffective, but also rather inaccurate due to the hammering action which makes it difficult to produce a smooth job. The present invention therefore aims to provide a tool whereby the operation can be carried out both effectively and smoothly, in less time and with less laborious effort on the part of the operator.

In the drawing the tool is illustrated as comprising a frame piece consisting of a plate or body portion 10 formed with the extension 10' and also with an opening 11 surrounded by a flange 12 having the parallel extensions 12' provided with the upstanding angular bracket posts 14, as shown in Figures 1 to 3—the frame piece being also provided with a rigid handle extension 15.

At the upper ends of the posts 14 is provided a pivot bolt 17 for the lower end of another handle member 18, said lower end being slightly bent, as shown, into substantially parallel relation to the plate or body portion 10, and also pivotally connected (by means of a slot 19 and a bolt 20) to a pair of short links 21, which in turn are pivoted, at 22, to one of the arms of a U-shaped lever 24. The upper corner of this lever 24 is formed with a short extension for fulcruming the lever upon a bolt 25 mounted in the parallel flanges 12' of the extension 10' of the frame piece,—a slot 26 (see Figure 5) being provided in the latter for accommodating the movements of said lever 24.

The lower arm of the lever 24 carries a threaded stud 28 for the removable attachment of a dolly or pressure element which comprises a knob 30 (of any desired form or shape) on a stem 31 having a threaded socket 32 for screwing on to the stud 28. The dolly or knob 30 is thereby carried below the frame piece and beneath the opening 11.

For cooperation with this dolly or pressure element 30, one or more yoke or ring plates 34 are provided (the openings 35 and 35' of which may be of different sizes—compare Figs. 2, 4 and 5)

for removable attachment against the under face of the frame piece 10 beneath said opening 11, these plates having a set of pins or studs 36 for engagement inside the opening 11 on the frame piece.

In the operation of the device for re-shaping dents or depressions in sheet metal, it will be understood that the handles 15 and 18 are spread apart sufficiently to permit the tool to be inserted upon opposite sides of the metal being operated upon, i. e., the working portion 10 being applied to one face of the sheet metal and the dolly or pressure element being applied to the opposite face of the same. In this operation, the U-shape form of the lever 24 permits manipulation of the tool so as to operate on dents or depressions in the metal, regardless of their location, either near the edge or more distant from the edge, as in the case of working on an auto fender. The lever 24 may obviously be made in any size required for such operations.

After properly positioning the working parts, i. e., the dolly or knob 30 and the opening 35 of the yoke or ring plate 34, in correct relation to the dent or depression in the sheet metal, the handle 18 is operated to produce the necessary pressure of the dolly to re-shape the damaged part and smooth out the metal to its original or normal condition; and obviously, the arrangement of the handle and its connections is adapted to produce all the leverage necessary to effect this result with little effort on the part of the operator.

In the case of finished surfaces, such as automobile fenders, the working elements may be either or both provided with padded surfaces as represented at 30' in the case of the dolly or knob 30, to protect the enamel from any marring or other damage in the re-shaping process. It is of course obvious that for different sizes of dents or depressions in the metal, the ring plates 34 may be interchanged, as well as different sizes and shapes of dollies 30 used (as represented by dotted lines 30'' in Fig. 3), to modify the working action and pressure according to the character of the damaged portion or area of the sheet metal which is being repaired. Accordingly, the knob portions 30 of the dollies may also be provided in any desired shape or size to meet the requirements of the re-shaping operation.

In Figure 5 is shown a bottom perspective view of the main body or frame piece of the tool and its yoke or ring plate element, in which view is clearly illustrated the pins 36 for the removable attachment of said plate element, and also the slot opening 26 for the lever 24. The only feature of modification illustrated is the cutting away of a portion of each of the parts 10 and 34 (as indicated at 10a and 34a, respectively) for permitting the tool to be operated in corners or as closely as possible against obstructions, as where a fender meets the body of the car.

It will therefore be apparent that I have devised a practical and efficient construction for carrying out the proposed features of improvement and comprising an assembly of parts which is devoid of complications and adapted to be operated with a minimum of effort for producing a neater and smoother reshaping job and in much less time than by the usual hammering methods.

While I have shown and described what I now regard as the preferred form of construction for the new and improved tool, I desire to be understood as reserving the right to make such changes or modifications as may fairly fall within the spirit and scope of the appended claims.

Having described my invention, what I claim and desire to secure by Letters Patent is:

1. A metal re-shaping tool comprising a main frame member provided with a rigid handle extension and also with a ring element for engagement with one face of the metal, a U-shaped frame having one corner portion thereof fulcrumed in said main frame member, a dolly or pressure element carried by one arm of said U-shaped frame for movement into engagement with the opposite face of the metal opposite to said ring element, a lever also fulcrumed on said main frame member intermediate said ring element and the fulcrum point of said U-shaped frame, and pivotal operative connections between said lever and the other arm of said U-shaped frame.

2. A metal re-shaping tool comprising a main frame member provided with a rigid handle extension and also having ring-shaped metal shaping means for engagement with one face of the metal, said frame member being formed with a longitudinal slot intermediate said handle extension and said metal shaping means, a U-shaped frame having one corner thereof fulcrumed to said main frame member and operating within said slot, a pressure element carried by one arm of said U-shaped frame for engagement with the opposite face of the metal opposite to said metal shaping means, and a lever fulcrumed to said main frame member intermediate said metal shaping means and the fulcrum of said U-shaped frame and provided with pivotal operative connections with the other arm of said U-shaped frame.

3. A metal re-shaping tool comprising a main frame member provided with a ring-shaped portion for accommodating apertured pressure plates for engagement with one face of the metal, lever-operated means fulcrumed on said main frame member and including a pressure element movable into engagement with the opposite face of the metal opposite to said ring-shaped portion of the main frame member, and an apertured pressure plate provided with a set of symmetrically arranged positioning studs adapted for engagement inside said ring-shaped portion of the main frame member for removably retaining said plate in operative position with relation to said ring-shaped portion.

ROBERT S. TRACHSEL.