H. R. KENNEDY.

METAL WORKING TOOL.

APPLICATION FILED SEPT. 4, 1919.

1,367,818.

Patented Feb. 8, 1921.

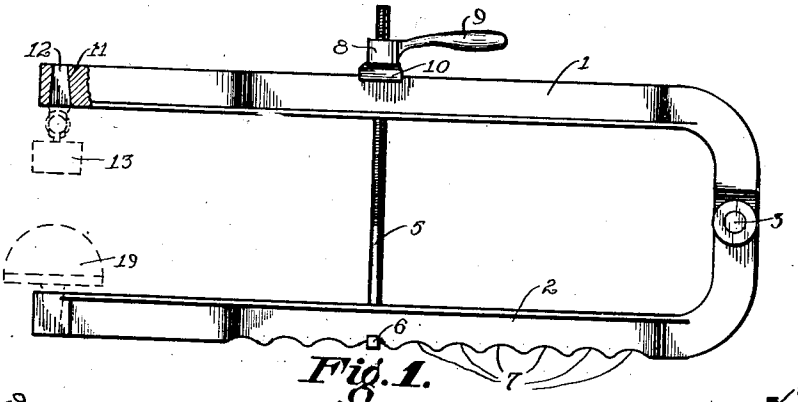


Fig. 1.

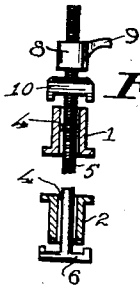


Fig. 4.

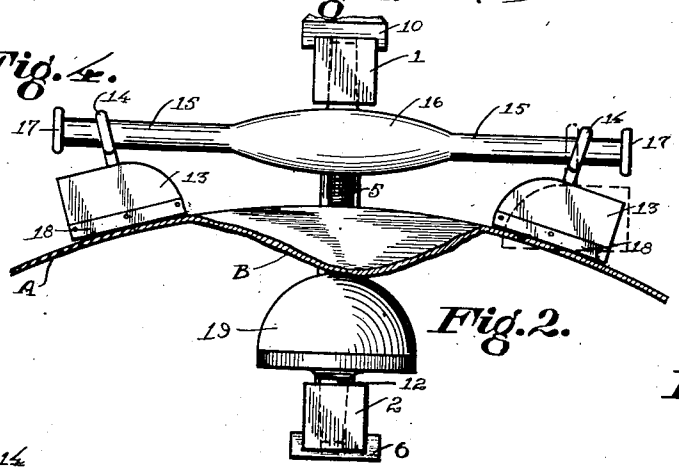


Fig. 2.



Fig. 5.

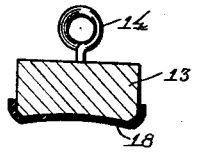


Fig. 6.

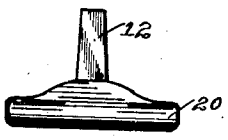


Fig. 7.



Fig. 8.

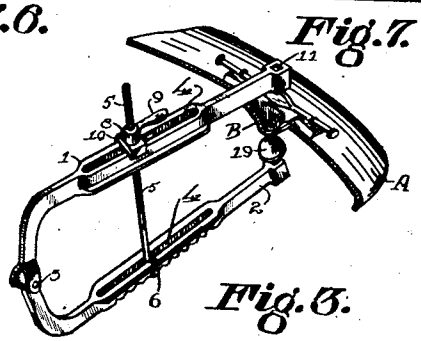


Fig. 3.

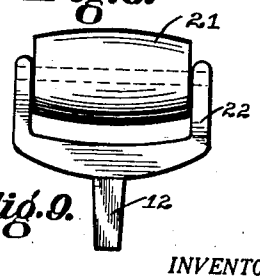


Fig. 9.

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BY

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UNITED STATES PATENT OFFICE.

HOMER R. KENNEDY, OF LOS ANGELES, CALIFORNIA, ASSIGNOR TO GUSSIE M. KENNEDY, OF LOS ANGELES, CALIFORNIA.

METAL-WORKING TOOL.

1,367,818. Specification of Letters Patent. Patented Feb. 8, 1921.

Original application filed March 29, 1919, Serial No. 286,192. Divided and this application filed September 4, 1919. Serial No. 321,544.

To all whom it may concern:

Be it known that I, HOMER R. KENNEDY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Metal-Working Tools, of which the following is a specification.

The present invention relates to a sheet metal working tool, and has for its object to provide a device of this character which embodies novel features of construction whereby it can be used in a most effective manner for removing bumps or indentations from the fenders, door panels, tonneaus, cowls or other sheet metal parts of vehicles and the like, without injury to the paint or enamel.

The subject-matter of this application has been divided out from my co-pending application for improvements in metal working tools, filed March 29, 1919, Serial No. 286,192, patent issued September 16, 1919, No. 1,316,451.

According to the present practice whenever a fender or other sheet metal part of an automobile is bent or damaged in any manner, the indentation is removed by a process known as hand-peening. This process consists in placing a templet under the damaged part of the sheet metal and pounding upon the other surface thereof with a hammer. This cracks the enamel, and, while the surface may be entirely smooth when the job is finished, yet this hand-peening is a long and laborious task. Usually the damaged fender or other sheet metal part of an automobile is removed and the work done in the shop, with the result that several hours of time is required and the owner is put to a considerable amount of expense. According to the present invention, the bumps or indentations can be bent back into place without hand-peening and an approximately smooth surface obtained, after which the ironing or shaping rollers disclosed in my co-pending application can be used, if necessary, to remove the unevenness that may still remain and produce an absolutely smooth and finished surface. Repairs of this kind can be readily made without any considerable loss of time and at a minimum expense.

With these and other objects in view, the invention consists in certain novel combinations and arrangements of the parts as will more fully appear as the description proceeds, the novel features thereof being pointed out in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawing, in which:

Figure 1 is a side elevation of the tongs or U-shaped frame which is provided for carrying the sheet metal shaping elements, one set of the said elements being indicated by dotted lines, and a portion of the tongs being broken away to show one of the slips in the arms thereof;

Fig. 2 is an end view of the tool with a set of shaping elements carried thereby, said tool being shown as applied to an indented sheet metal article and in the position assumed preparatory to manipulating the tool to bend the dented portion of the sheet metal article back into shape, said sheet metal article being shown in section;

Fig. 3 is a perspective view showing the tool as applied to an indented portion of an automobile fender, the said fender being shown in section;

Fig. 4 is a sectional view through the two arms of the U-shaped frame or tongs, showing the T-headed clamping bolt which is used for swinging the arms of the frame toward each other, a portion of the bolt being broken away;

Fig. 5 is an end view of the U-shaped frame or tongs, showing the hinge structure at the closed end thereof;

Fig. 6 is a detail view of one of the pressure feet which is used in connection with the transverse pressure bar shown by Fig. 2;

Figs. 7 and 8 are detail views showing another form of stake head which is of an elongated formation; and,

Fig. 9 is a detail view of a roller attachment which may be substituted for one of the stake heads, if desired.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

In the particular embodiment of the invention illustrated by the drawing, the main frame has a substantially U-shaped formation and includes two corresponding and

opposed arms 1 and 2 which are hingedly connected to each other at the curved or closed end of the U-shaped frame, as indicated at 3. The two frame elements or arms 1 and 2 are each longitudinally slotted, as indicated at 4, to receive a clamping bolt 5. This bolt has a T-shaped head 6 which is adapted to engage any selected one of a series of notches or serrations 7 in the frame member 2, and which will move freely through the slot 4 of the frame member 2 when it is disengaged from the said notches and turned into alinement with the slot. The free end of the clamping bolt 5 is threaded to receive a nut 8, said nut being formed with a lateral handle 9 by means of which it can be readily rotated. A flanged washer 10 is fitted upon the clamping bolt 5 under the nut 8 and rests upon the frame member or arm 2 when in operative position. It will be obvious that this T headed clamping bolt can be quickly placed in position or removed therefrom and that it can be readily adjusted in the slots 4 and positioned at any desired point upon the U-shaped frame. After the bolt has thus been properly positioned the arms 1 and 2 of the U-shaped frame can be swung forcibly toward each other by manipulating the handle 9 and screwing the nut 8 downwardly upon the bolt.

The extremities of the hinged frame or tongue members 1 and 2 are formed with tapered sockets 11 which detachably receive correspondingly formed tenons 12 of the pressure and shaping elements. The tapered formation of the tenons enables different sizes and forms of pressure and shaping elements to be used interchangeably with each other, and to be easily detached from the frame by tapping thereon. In Figs. 2 and 3 the tool is illustrated as applied to a sheet metal fender A for the purpose of pressing out a large dent B therein. A pair of pressure feet 13 engage the fender A on opposite sides of the indented portion B thereof, said pressure feet being provided with eyes 14 which are loosely received by the arms or reduced ends 15 of a transversely disposed pressure bar 16. The middle portion of the pressure bar is shown as slightly enlarged and provided with a tenon 12 which is received within the socket 11 of the upper frame member or arm 1 of the U-shaped frame. The eyes 14 are loose upon the arms 15 of the transverse pressure bar so that the pressure feet 13 can be moved toward or away from each other, as may be desired, and are free to have the limited tilting or rocking movement which may be necessary to seat themselves properly upon the curved surface of a sheet metal article such as an automobile fender. Heads 17 at the ends of the arms 15 retain the eyes 14 upon the transverse pressure bar and prevent the pressure feet 13 from becoming disengaged therefrom. The lower faces of the pressure feet 13 may be slightly concave so as to conform to the curvature of a crown fender or like article, and may have a protective covering 18 of rubber or like material applied thereto so that there will be no danger of scratching or marring the paint or enamel by the application of the pressure feet thereto.

The lower arm or frame member 2 is provided with a suitable shaping element such as the large stake head 19. As shown by Figs. 2 and 3 this large stake head is substantially semi-spherical in shape, although it will be obvious that different sizes and shapes of stake heads may be used interchangeably, depending upon the size of the indentation B in the fender, and also upon the character of the article being worked upon. The base of the stake head is formed with a tenon 12 which is removably received within the socket 11 of the lower frame member 2. This stake head 19 is brought into engagement with the convex side of the indentation B, as indicated by Fig. 3, after which the handle 9 is manipulated to screw the nut 8 down upon the clamping bolt and forcibly move the members 1 and 2 of the U-shaped frame toward each other. The stake head will then operate to press out the dent B, and the U-shaped supporting frame can be manually manipulated in all directions to assist in bending and straightening out the sheet metal in the necessary and proper manner. This manual manipulation of the U-shaped supporting frame in varying directions enables the pressure to be distributed in the desired manner so that the indented portion of the metal can be bent approximately back into its original shape without difficulty and the tool maintained under proper control, as the clamping bolt is tightened and the operation proceeds. With the arrangement of shaping elements shown by Figs. 2 and 3 the concave side of the indentation B is straddled by the pressure feet 13 and the convex side of the indentation engaged by the stake head 19, the frame being manually manipulated in an up and down direction, or oscillated upwardly and downwardly as the clamping bolt is tightened to bring the stake head into a forcible engagement with the indentation and bend the sheet metal back to its original shape.

Many other sizes and forms of stake heads may be substituted for that shown by Figs. 2 and 3, and in Figs. 7 and 8 I have illustrated a stake head 20 which has an elongated formation, and which may be used to advantage under certain conditions, different types of shaping and forming elements being necessary for work upon different styles of fenders and other sheet metal automobile parts. Under similar conditions,

it may be also desirable to substitute a forming element such as the roller 21 for one of the stake heads. This roller 21, which is shown by Fig. 9, is journaled between the arms of a forked frame 22, said frame being formed with a tenon 12 which will fit in either one of the sockets 11. This roller could be substituted for the stake head 19 in the arrangement illustrated by Fig. 2.

In the operation of the tool, if it is desired to remove a dent from an automobile fender or other sheet metal article, the parts may be assembled in the manner indicated by Figs. 2 and 3. The stake head or other forming element corresponding to the stake head is brought forcibly into engagement with the convex side of the indentation B and the tool manipulated in an up and down direction or upwardly and downwardly oscillated as the nut 8 is screwed down on the clamping bolt 5, thereby bending the indented portion of the sheet metal fender back to approximately its original shape. If it is desired to completely iron out all of the minute irregularities in the sheet metal article and leave an absolutely smooth and finished surface, the operation may be completed by using the shaping and forming rollers which are disclosed in my before-mentioned co-pending application, Serial Number 286,192, patent issued September 16, 1919, No. 1,316,451.

While I have specifically described my invention with reference to the particular embodiments thereof which are illustrated by the drawing, it will be understood that the principle of the invention is susceptible of being used for removing indentations or unevenness from any sheet metal surface, and that the details of the invention can be modified in various manners within the scope of the appended claims, without departing from the spirit of the invention or sacrificing the advantages thereof.

Having thus disclosed my invention, I claim and desire to secure by Letters Patent:

1. A tool for removing indentations from sheet metal articles, including a manually operable frame movable in an up and down direction and having opposed arms adapted to span the damaged portion of the sheet metal, spaced pressure feet loosely carried by one of the arms and adapted to engage the sheet metal on opposite sides of the indentation, coöperating shaping means carried by the opposite arm of the frame and having an opposed relation to the pressure feet for engaging the convex side of the indentation, and means for forcibly moving the coöperating shaping means toward the pressure feet to press out the indentation.

2. A tool for removing indentations from sheet metal articles, including a manually operable frame which is movable in an up and down direction and has opposed arms adapted to span the damaged portion of the sheet metal, spaced pressure feet loosely carried by one of the arms and adapted to engage the sheet metal on opposite sides of the indentation, a stake head carried by the opposite arm of the frame and having an opposed relation to the pressure feet for engaging the convex side of the indentation, and means for forcibly moving the stake head toward the pressure feet to press out the indentation.

3. A tool for removing indentations from sheet metal articles, including a manually operable frame which is movable freely in an up and down direction and is formed with opposed arms adapted to span the damaged portion of the sheet metal, a transverse pressure bar carried by one of the arms, pressure feet adjustable upon the pressure bar and adapted to engage the sheet metal article on opposite sides of the indentation, coöperating shaping means carried by the opposite arm of the frame and having an opposed relation to the pressure feet for engaging the convex side of the indentation, and means for forcibly moving the said shaping means toward the pressure feet to press out the indentation.

4. A tool for removing indentations from sheet metal articles, including a manually operable frame movable in an up and down direction and having opposed arms adapted to span the damaged portion of the sheet metal, a pair of pressure feet mounted upon the pressure bar to have both a sliding and rocking movement whereby they can be moved toward and away from each other and can rock into different angular positions, said pressure feet being adapted to engage the sheet metal article on opposite sides of the indentation, a coöperating shaping member carried by the opposite arm of the frame and having an opposed relation to the pressure feet for engaging the convex side of the indentation, and means for forcibly moving the said shaping member toward the pressure feet to press out the indentation.

5. A tool for removing indentations from sheet metal articles, including a manually operable frame movable in an up and down direction and having opposed arms adapted to span the damaged portion of the sheet metal, a transverse pressure bar carried by one of the arms and formed at the ends thereof with reduced stem portions, a pair of pressure feet, eves carried by the pressure feet and loosely received upon the reduced stem portions of the pressure bar to admit of the pressure feet being moved toward and away from each other and rocked into different angular positions, the pressure feet being adapted to span the concave side of the indentation and engage the sheet metal article on opposite sides thereof, a

coöperating shaping member carried by the opposite arm of the frame and having an opposed relation to the pressure feet for engaging the convex side of the indentation, and means for forcibly moving the said shaping member toward the pressure feet to press out the indentation.

6. A tool for removing indentations from sheet metal articles, including a manually operable frame movable in an up and down direction and formed with opposed arms adapted to span the damaged portion of the sheet metal, said arms being provided with sockets, a transverse pressure bar formed with a tenon which is removably received within one of the sockets, a pair of pressure feet adjustably mounted upon the pressure bar and adapted to engage the sheet metal article on opposite sides of the indentation, a stake head provided with a tenon adapted to enter the socket of the other arm, said stake head being adapted to engage the convex side of the indentation, and means for forcibly moving the stake head toward the pressure feet to press out the indentation.

7. A tool for removing indentations from sheet metal articles, including a manually operable frame member movable in an up and down direction and formed with opposed arms adapted to span the damaged portion of the sheet metal, said arms being movable toward and away from each other and provided with sockets, a transverse pressure bar formed with a tenon which is removably received within one of the sockets, a pair of pressure feet adjustably mounted upon end portions of the pressure bar and adapted to engage the sheet metal article on opposite sides of the concave face of the indentation, a stake head provided with a tenon adapted to enter the socket of the other arm, said stake head being adapted to engage the convex side of the indentation, and means for forcibly moving the arms of the frame toward each other to cause the head to press out the indentation.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HOMER R. KENNEDY.

Witnesses:

HUGH S. HILL,

J. CALVIN BROWN.