

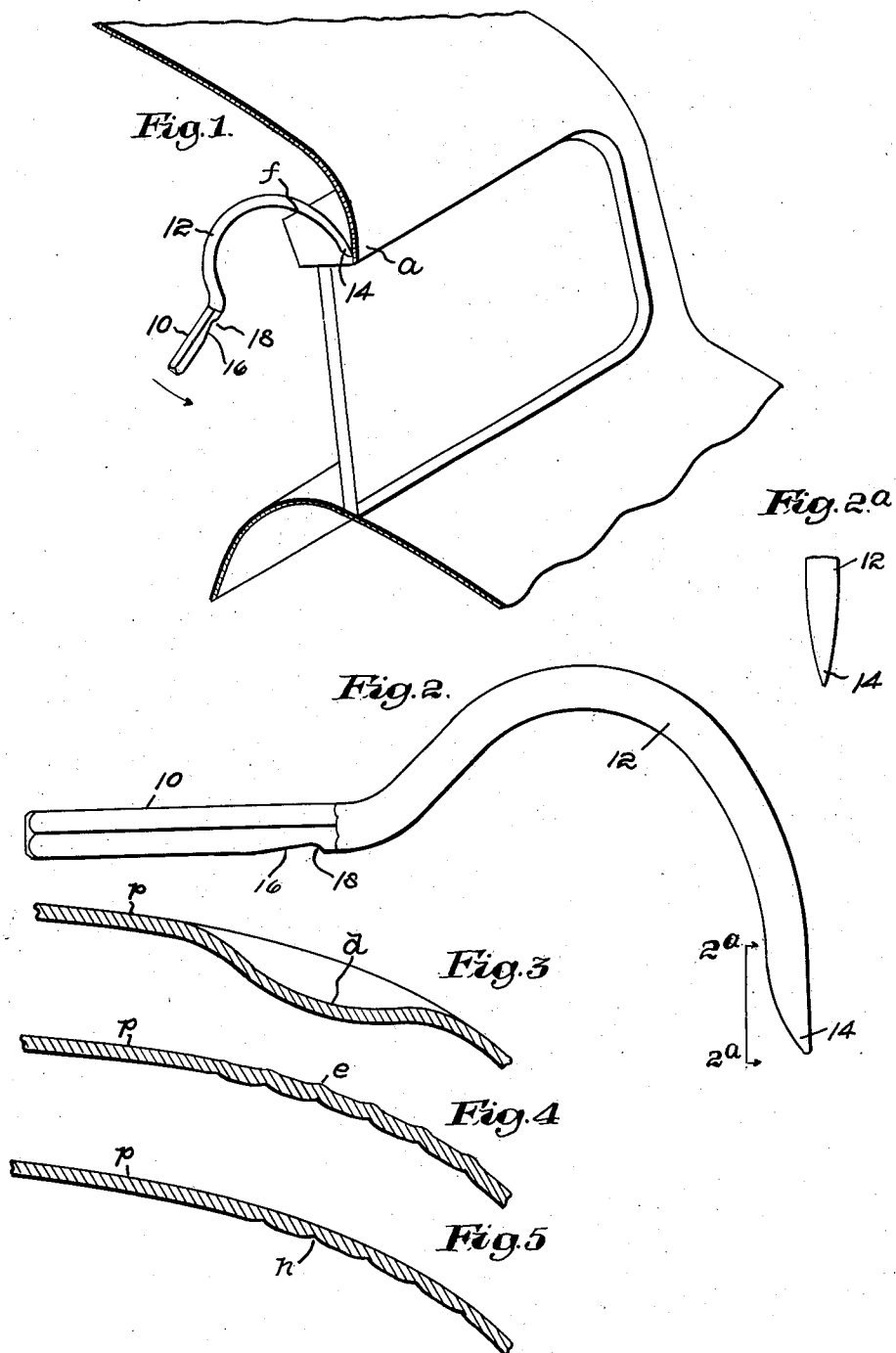
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TOOL FOR RESHAPING AUTOMOBILE PANELS

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TOOL FOR RESHAPING AUTOMOBILE
PANELS

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1 Claim. (Cl. 81—15)

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The invention relates to a tool for reshaping the panels of automobile bodies in removing dents therefrom, more particularly by a series of localized pushing out operations at closely spaced points by means of which the metal of the displaced portion is gradually returned approximately to its original contour. The individual operations are ordinarily prying ones, but the tool herein shown may also be utilized percussively. The tool herein disclosed and other tools devised by me for effecting such operations I term "picking tools."

My invention will be well understood by reference to the following description of the illustrative embodiment thereof shown by way of example in the accompanying drawings, wherein:

Fig. 1 is a schematic perspective view illustrating, broken away, a portion of an automobile and the tool in use thereon;

Fig. 2 is a side elevation of the tool;

Fig. 2a is a fragmentary view of the tip of the tool as seen from line *a—*a** of Fig. 2; and

Figs. 3, 4 and 5 are diagrammatic views, not to scale or in relative proportion, illustrating successive stages of the picking process preformed.

In reshaping the panels of automobile bodies which have been injured in collisions the major deformations may be brought back to their approximate original position by use of pushing tools of suitable design conveniently powered by a hydraulic jack. Other dents, if easily accessible from both sides, may be hammered into their proper contour by use of a hammer and suitable dolly blocks. In modern automobile practice many parts are not so accessible because covered over by the interior construction through which avenues of access are most restricted. Frequently relatively small dents occur along margins of the panels to which access is most difficult. Even when not of functional importance, such dents are often particularly unsightly, detracting from appearance and from the resale value of the car.

I have found that by the use of suitable tools of which that disclosed in the present application is an example, such dents may be quickly and satisfactorily reformed by a series of prying actions on the interior or convex surface of the dent performed at closely spaced points by means of a rigid, pointed tool formed to permit access from a relatively remote point either through an existing available opening or through an opening of restricted size formed for the purpose and which may thereafter be closed. As distinguished from pressing actions effected by

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means of contoured spoons, the successive pressures are concentrated substantially at single points of the work. While much of the reshaping, as directed by the skill of the operator, will be pressing back of the panel to its original contour, in general smaller reversed bends in the nature of small hollow domes will be formed representing a gathering of the stretched metal into smaller rugosities of sinuosities to permit it to lie in general along its original contour of smaller area. Characteristically the panel when so roughly reformed will show on the exterior minor excrescences or "pimples" at the points where pressure was applied at the interior, which should not be so high that their interior hollows extend outwardly past the contour line of the panel. These may be dressed off by filing or grinding to provide a smoothly contoured outer surface which may be refinished. The repair in some instances may be effected by repeated application of these steps.

Thus, referring to the diagrams Figs. 3, 4 and 5, in Fig. 3 I show, without pretense to dimensional verisimilitude, a contoured panel *p* in which there is an inward dent *d*. Fig. 4 shows the dent brought back approximately to the original contour by prying operations on the side which is lower in the figure, the work leaving the rebent part interrupted by smaller reverse bendings *e*, wherein the metal has been strained in the opposite direction and in part pressed up in such manner as to show small excrescences at the exterior. We may consider that a part of the excess area of metal as seen in Fig. 3 has been redistributed in a series of smaller sinuosities approximating the shorter simple curvature of the original contour. Fig. 5 shows the outer surfaces of these excrescences *e* dressed off to the original contour, the hollows *h* formed thereby at the underside of the figure, which represents the interior surface of the panel which is out of sight, being still present.

Referring now to Fig. 2, the tool herein shown is of the general contour of a sickle and as a whole is organized in a single plane. That is, placed on the table it would lie flat and appear, when viewed from above, as seen in Fig. 2. The tool is of a size to be wielded in one hand as will appear, but is of a section which provides substantial rigidity under manually exerted strains in use. Thus the drawings illustrate an actual tool which was forged from a steel rod of hexagon cross section measuring $\frac{3}{4}$ of an inch across. The construction provides further a tool of substantial mass adapting it to percussive use as

hereinafter explained. At the left of Fig. 2 there appears a proximal straight portion 10 adapted to be encircled by the grasping hand, and thus of a length somewhat greater than a hand's breadth, from which extends the cranked and re-ranked or sickle-shaped portion which provides at the lower side thereof, viewing Fig. 2, a throat for embracing an obstruction between the operator and the work, as will appear, and which terminally extends beyond the axial line of the stock 10 to provide the pointed peen portion 14 located substantially perpendicular to that axial line. Preferably the pointed end of the tool is formed as indicated in Figs. 2 and 2a by shaping the inner and lateral surfaces of the bar to converge toward the outer surface so that the point proper is substantially located in the line of the outer surface.

I have referred to the part 14 as a sharp peen or point. It will be understood that it is not needle sharp, but is to be distinguished from the broad face or peen of ordinary hammers or from chisel-shaped edges.

To facilitate control of the tool and to indicate to the workman the position of the end 14 which in use will ordinarily be hidden from him by intervening portions of the interior structure of an automobile, the inner portion of the grip 10 on the side thereof which faces in the same direction as the point 14 may be formed with a recess 16 the wall of which inclines inwardly of the stock and outwardly from the butt end of the tool to provide a shallow rearwardly facing shoulder 18, the construction as a whole forming a seat for the ball of the thumb when the stock is grasped by the fingers of the hand.

Fig. 1 illustrates a characteristic although simple application of the tool in which we may suppose that there is a dent in the windshield header of the automobile at the point *a*. The interior surface of this panel is not readily accessible because it is at the bottom of a relatively deep and narrow channel as shown. The tool may be inserted as shown in Fig. 1, finding a fulcrum at the point *f* on the rearward flange of this channel. The fulcrum point for various types of work may, of course, occur at various places along the curve of the tool. When the grip 10 of the tool is pulled downwardly in the direction of the arrow, the point will be forced up to operate on the dent in the manner explained in connection with Figs. 3, 4 and 5. In the example shown in Fig. 1 the operator would naturally stand at the exterior of the automobile to permit him to observe the progress of the work, grasping the grip 10 of the tool with his left hand, his thumb resting on the seat 16. The tool and its point 14 is hidden from him but the position of the latter is indicated by the thumb seat and a control of the presentation of the point to work is facilitated by the grasp of the thumb. In the previous description I have pointed out that the

point lies substantially in the line of the outer surface of the re-ranked distal end of the tool. Thus an effective prying action on the metal is at all times assured.

In some instances where, although the dent is at the bottom of a relatively narrow space, the rear of this space is substantially unobstructed to permit the tool to be swung, it may be utilized as a percussive tool instead of a prying tool for the same purposes. Characteristically here the operator would be looking down on the outside of the work and would swing the tool upwardly with an underhanded swing with his thumb on top.

I am aware that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and I therefore desire the present embodiment to be considered in all respects as illustrative and not restrictive, as is in fact clear in several matters from the description itself. Reference is to be had to the appended claim to indicate those principles of the invention exemplified by the particular embodiment described and which I desire to secure by Letters Patent.

I claim:

A combined striking and prying tool for operating on dents in metal panels, the tool having a general contour resembling that of a sickle, the tool being as a whole of substantial mass but wieldable in one hand and formed of a metal rod of a section providing substantial rigidity under manually exerted strain, the rod comprising a portion providing a grip for encirclement by the grasping hand, a cranked and re-ranked portion extending therefrom and providing a throat for embracing an obstruction between the operator and the work, and a peen portion extending from the end of the re-ranked portion beyond the extension of the axial line of the stock portion and substantially perpendicular thereto, the extremity of the peen portion being beveled outwardly from the concave side of the throat and also beveled from the two lateral sides to provide a point at the extreme forward end and outer surface of the peen portion, the tool as a whole being organized in a single plane.

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