Feb. 16, 1943. W. H. FERGUSON 2,311,041

APPLIANCE FOR WORKING ON AUTOMOBILE BODY PANELS

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Fig. 1.

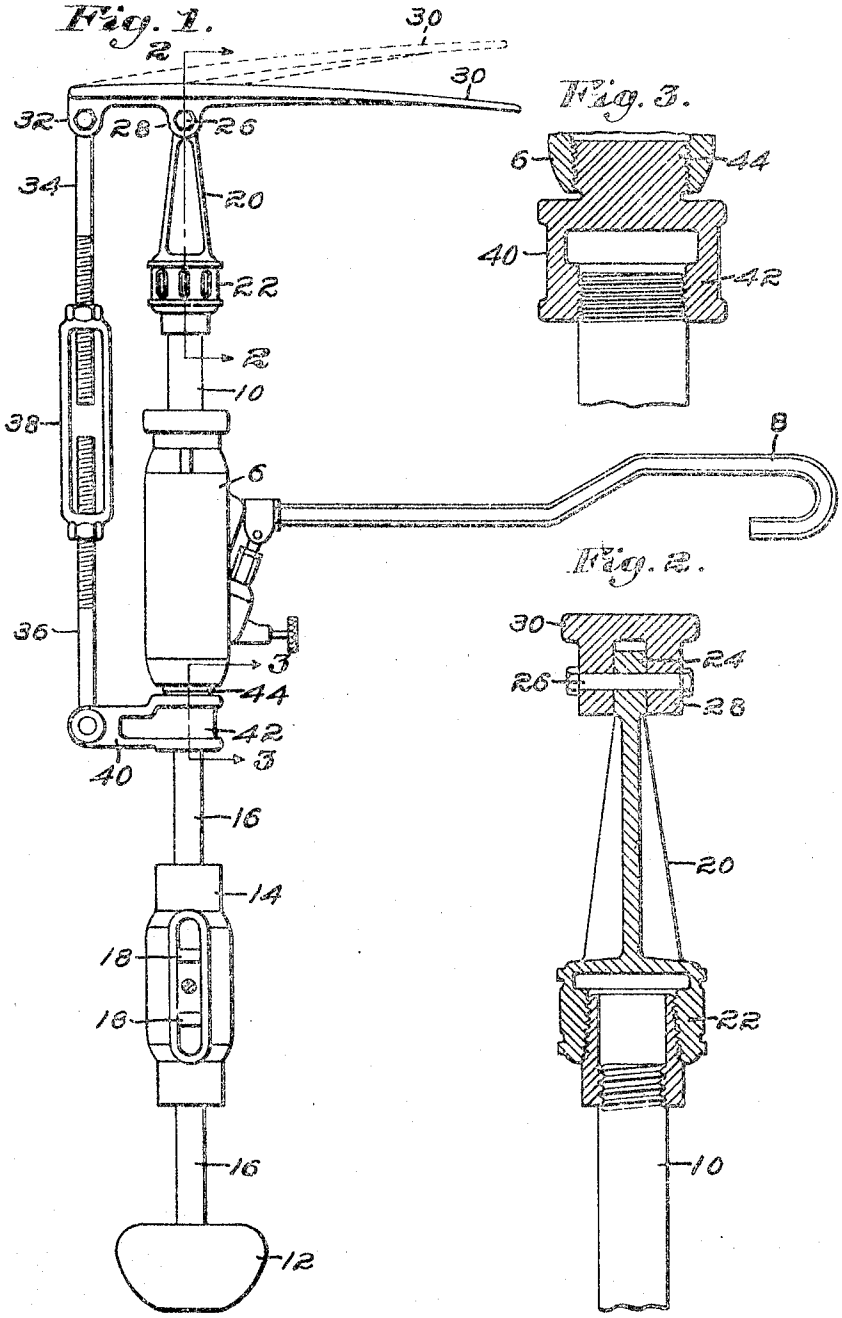


Fig. 3.

Fig. 2.

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Fig. 5.

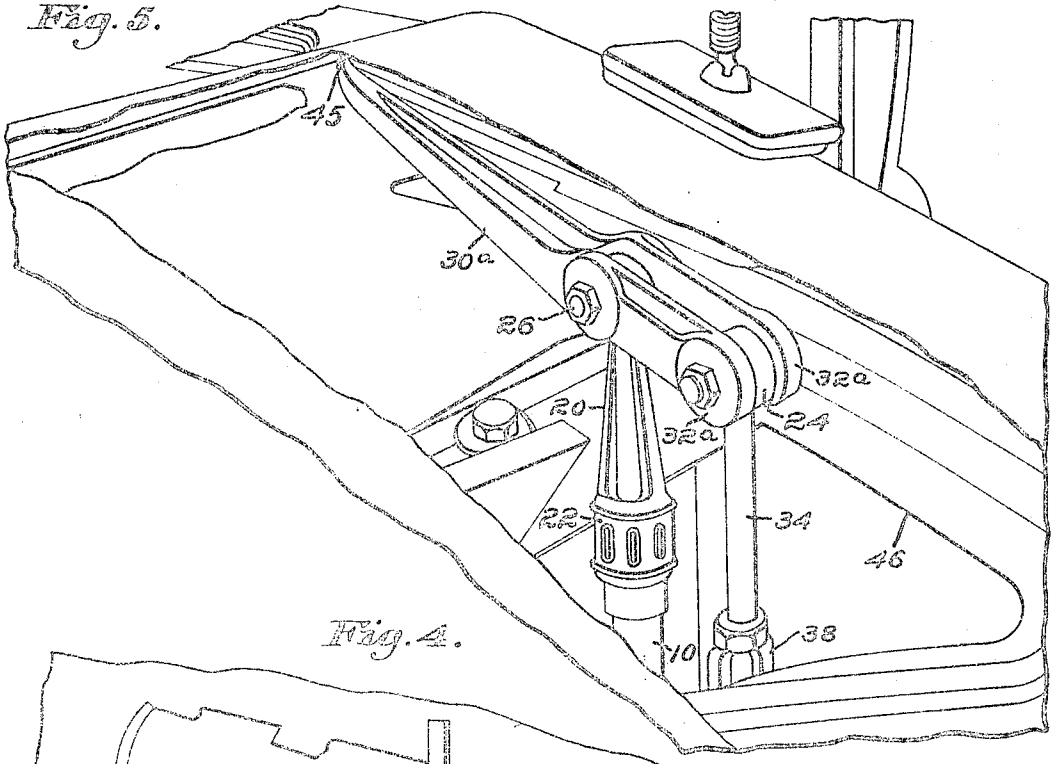
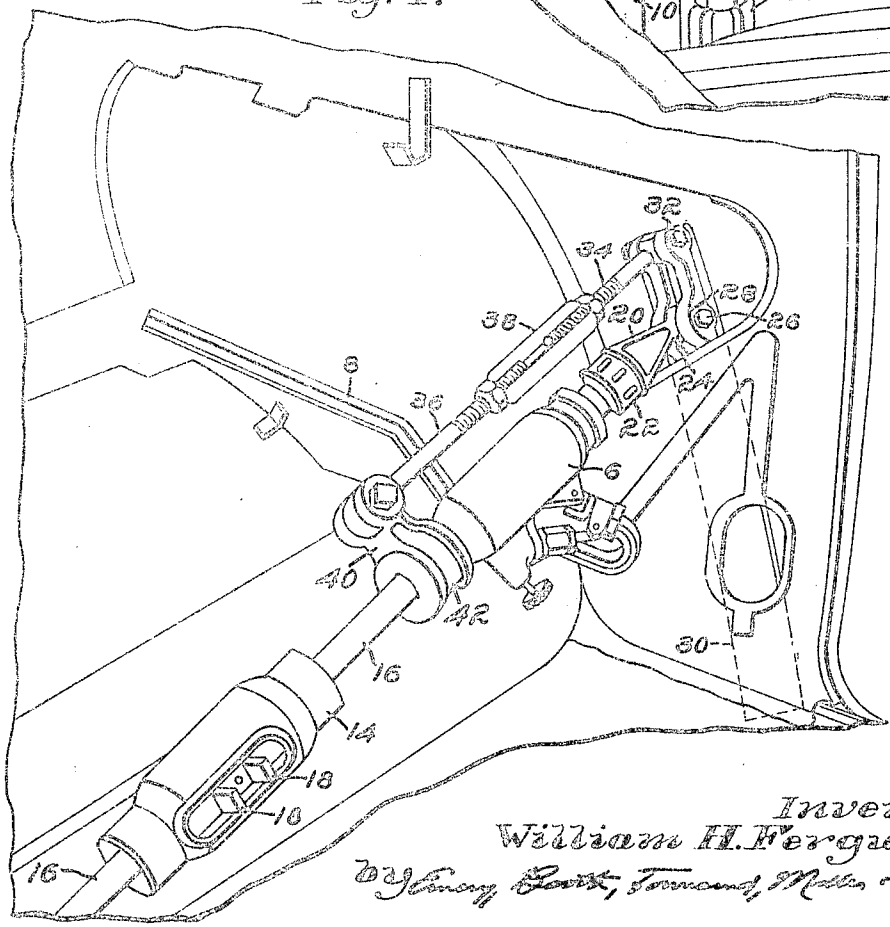


Fig. 4.



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APPLIANCE FOR WORKING ON AUTOMOBILE BODY PANELS

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Application August 2, 1940, Serial No. 349,895

5 Claims. (Cl. 153—32)

This invention relates to an instrumentality for reforming panels of automobile bodies which have been bent out of shape as a result of collisions or the like, and the object is to provide means whereby effective supporting or bending pressures may be applied to the inner sides of such panels at locations not exposed at the rear but on the contrary overlaid by interior construction, without the necessity of removing any of such interior construction.

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 side elevation of my improved device organized as a unit in connection with a hydraulic jack;

Figs. 2 and 3 are sections on lines 2—2 and 3—3 of Fig. 1 respectively on an enlarged scale;

Fig. 4 is a fragmentary perspective view showing the application of the construction shown in Fig. 1 to the repair of a lower wheelhouse panel; and

Fig. 5 is a fragmentary perspective of a door with part of the outer panel broken away to disclose the instrumentality operating on the inner portion of such panel adjacent the belt line of the door.

When as the result of collisions and other casualities modern steel automobile bodies are bent out of shape and dented, automobile repairers can effect almost incredible results in restoring the parts to their original contour and such services are most desirable because of the great expense of installing replacement doors, panels or the like. Without attempting to catalog all the manipulations which may be resorted to, we may consider particularly two major operations. One consists in bending back collapsed or folded over parts bodily to approximately their original position which in most instances may most readily be accomplished by means of suitable power pushing instrumentalities, such as a hydraulic jack. Another is a restoration of the contour of the panels effected by supporting the interior surface by a suitable anvil or spoon corresponding to the original contour of the same which it is desired to restore and by operating on the outside of the panel by means of a dinging hammer. Contrary to what one might at first assume, it is not the blows of the hammer but the reaction thereto of the anvil which effects the reshaping of the panel.

In the case of a fender, for example, a reshaping operation is relatively easy as the parts are quite accessible and the hand of the operator can have access to the interior parts to support a dolly or like hand anvil at the point of operation. In my Patent No. 1,783,078, Nov. 25, 1930, I disclose tools capable of being inserted in an opening in the interior construction of a body to enable the working surface to reach parts of the exterior panel more or less covered by such interior construction while providing for the effective support of the working surface, which support may be given by the hand of the operator or by means of a jack or the like on which the tool is mounted.

In modern automobile practice the tendency is to reduce the number of openings in the inner construction through which access may be had to the inner surface of the exterior panels. The parts are welded together and it is expensive to cut out any of this inner construction to gain access to the back of the panel and thereafter to put it back again. Damages to side panels due to collisions from the side present particularly difficult problems to the worker.

In accordance with my invention I provide for operation by means of a jack or like power-transmitting device a tool which presents a long overhang which may be introduced through an opening in the interior construction and permits a panel reforming surface adjacent the distal end of the overhang to be positioned adjacent the inner surface of a panel which is distant from the opening while effective positioning of said surface and the application of outward supporting or pushing pressures thereto from the location of the opening is made possible.

Referring to Fig. 1, I there show such a mechanism organized as an operative unit with a hydraulic jack of well known construction constituting an example of a power translating device. The jack proper herein comprises the body 6 housing suitable mechanism for operating by the lever handle 8 for moving the ram 10. Various attachments may be utilized in connection with a jack of this type to support and position it as required by the work at hand. A typical arrangement is illustrated in the drawing wherein the jack is supported from a suitable abutment surface by means of the heavy rubber pad 12 engaging the same between which and the jack body 6 is interposed a so-called length adjuster 14, that is to say, a column of variable length comprising a body in which telescope the legs 16 adapted to be held in adjusted position by means of the grips or pawls 18. Alternatively tubular sections in various combinations may be utilized to suit the work at hand either to support the body of the

jack from an abutment or to extend the ram. These arrangements are well understood and I have considered it unnecessary to illustrate all such accessories.

Herein I provide a member 20 having a threaded socket 22 (see Fig. 2) forming a coupling when it may be attached to the end of the ram 10 and a perforated ear 24 receiving the removable pivot pin 26 on which is journalled the spaced ears 28 projecting from the back of a lever-like spoon 30. The spoon 30 projects to the right in the figure for a considerable distance to provide a long overhang as illustrated. The outer surface of the spoon, at least at the distal part thereof toward the right in Fig. 1, is contoured to provide a body reforming surface and as such may resemble the surfaces formed on hand-supported spoons as now known. The opposite end of the lever is provided with ears 32 to which is pivoted by means of a removable bolt a link of adjustable length, herein formed from threaded rods 34 and 36 formed with right and left hand threads respectively and connected by the turnbuckle 38 The end of rod 36 may be pivoted between laterally projecting ears on a member 40 which may be provided at one side with a threaded socket 42 and on the other with a threaded stud 44 (see Fig. 3) forming couplings adapted to be interposed between two or more elements of the jack and its supporting accessories, as, for instance, in the combination shown between the stationary body of the jack and the upper end of the length adjuster 14.

It will be understood that the spoon 30 is interchangeable with others of generally similar construction but varying in length and in contour of surface to suit various jobs encountered in practice. Thus one may have a so-called high-crown surface and the other a low-crown surface for work on panels of those contours respectively.

Referring to Fig. 1, with the parts in the full line position shown, if the jack is operated so as to exert a translative force upwardly on the ram thereof, the spoon will rock to the dotted line position shown and thus the portion thereof adjacent the right-hand of the figure will exert a pressure in an upward direction viewing the figure. By turning the turnbuckle 38 the initial angular position of the spoon may be adjusted to a nicety. Also by such turning of the turnbuckle as the jack is being operated the angular rocking movement may be compensated for or the point where the resultant pressure acts may be moved in or out along the length of the spoon surface.

In Fig. 4 I have shown such an arrangement as is illustrated in Fig. 1 applied to a typical piece of work. It is desired to operate on the panel of the lower wheel house to take out a bump at the extreme lower end of that panel where it extends below the rocker panel. The jack being supported at a suitable point on the other side of the body, the spoon 30 is inserted as shown at an angle through the available opening in the inner construction of the wheel house, which opening is at a considerable elevation above the sill as illustrated, so that the end of the spoon is opposite the bump. By manipulation of the jack and of the turnbuckle the spoon is brought to proper initial position, and if the jack then is moved still further it will be apparent that the lower end of the spoon will move outwardly, that is, away from the observer viewing Fig. 4, to press the bump out where the lower end of the spoon appears in dotted lines in that figure.

I have just described the use of the appliance for exerting bending pressure by means of the jack. By a similar operation we may fit the spoon to the inner contour of the panel in a desired position to firmly support it there by pressure of the jack to form an anvil to receive the blows of a hammer or the like at the exterior of the panel.

In Fig. 5 I have shown another type of tool 30a comprising a similar lever-like body having openings to receive pivot bolt 26 on the end of member 20 and ears 32a on which is pivoted the rod 36 forming a part of the adjustable link. The distal end of this tool is upturned to form a picking point 45. In this figure I have shown a door removed from the body and supported in a horizontal position as by means of such a holding and supporting mechanism as is described in my copending application, Serial No. 326,299, filed March 27, 1940. The tool is inserted through the opening 46 in the interior construction of the door adjacent the bottom thereof and the pick portion extends behind the interior construction depending from the sill and may be operated as shown at a point of the inner panel closely adjacent the belt line or sill of the window opening at points normally covered by the interior construction. It will be understood that in the drawing the outer panel under repair is broken away in order to show the operating tool. In an arrangement such as there illustrated operation of the jack permits a localized picking pressure to be exerted upon low spots at such remote parts of the inner panel as that illustrated without the need of cutting out any of the interior construction.

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; reference being had to the appended claims rather than to the foregoing description to indicate the scope of the invention.

I claim:

1. An instrumentality for reshaping automobile panels comprising a spoon member having a pivotal mounting providing for attachment to a movable member of a jack and defining an overhanging portion for entry within the interior structure of an automobile body, at least the distal part of said portion being contoured as a panel reforming tool, and a connection extending from said member at a location remote from the end and from said pivotal mounting providing for anchorage to a relatively stationary member of the jack and including a screw device for adjusting the length of the connection, which device has an operating portion exposed rearwardly of the spoon for grasp by the hand.

2. In an instrumentality for reshaping automobile panels a member comprising a coupling providing for its connection to the movable member of a jack and also having one element of a pivotal joint, a spoon having a cooperating pivotal element and contoured at a location remote from said element as a panel reforming tool, a turnbuckle pivoted to the spoon and a member to which the opposite end of the turnbuckle is pivoted provided with coupling portions at opposite sides thereof.

3. An instrumentality for reshaping automobile panels comprising a spoon member having a pivotal mounting providing for attachment to a movable member of a jack and defining an overhanging portion for entry within the interior

structure of an automobile body, at least the distal part of said portion being contoured as a panel reforming tool, and a connection capable of transmitting thrust or pull extending from said member at a location remote from the end and from said pivotal mounting and providing for anchorage to a relatively stationary member of the jack, said connection including a pair of members relatively adjustable without disassembly thereof to provide for alteration of the effective length of the connection.

4. An instrumentality for reshaping automobile panels comprising an elongated spoon member having an end portion for entry within the interior structure of an automobile body, one face of said portion being contoured as a panel-reforming tool, said member having at its opposite face at spaced points, both remote from said end, elements of pivotal points providing for the attachment of links thereto, a relatively fixed abutment and means, including links detachably pivoted to said elements, to provide for exerting pushing forces independently or simultaneously on said spoon member at said points, one of said means being also reversibly actuable to apply pull.

5. An instrumentality for reshaping automobile panels comprising an elongated spoon member having an end portion for entry within the interior structure of an automobile body, one face of said portion being contoured as a panel-reforming tool, said member having at its opposite face at spaced points, both remote from said end, elements of pivotal points, a relatively fixed abutment and an extensible jack and a rigid strut extending from said abutment and provided at their opposite ends with means for detachably coupling them to said elements.

WILLIAM H. FERGUSON.