Sept. 11, 1928. 1,684,062

S. J. LEACH ET AL

BACK FOR AUTOMOBILE SEATS AND THE LIKE

Filed Dec. 22, 1924

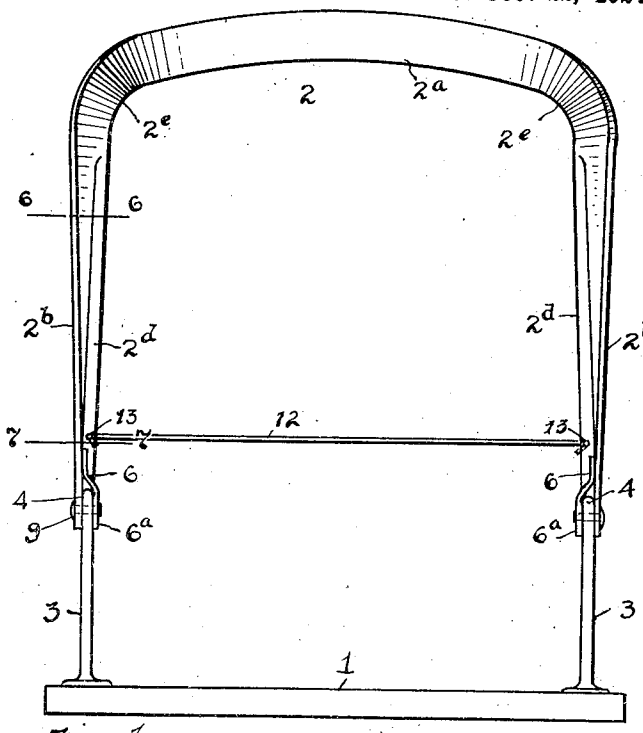


Fig. 1

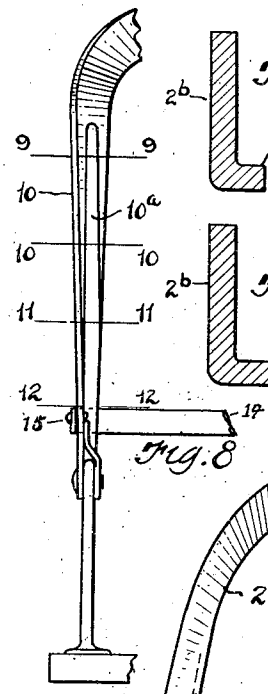


Fig. 8

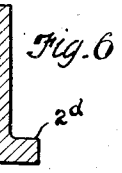


Fig. 6

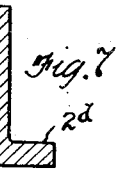


Fig. 7

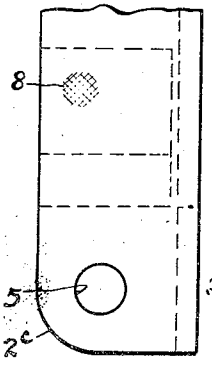


Fig. 3.

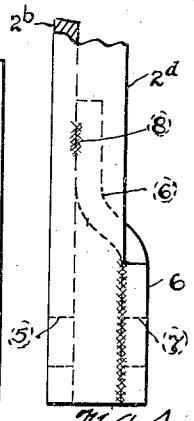


Fig. 4

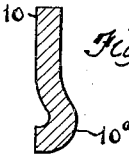


Fig. 9.

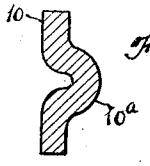


Fig. 10

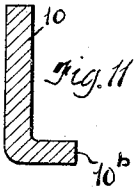


Fig. 11

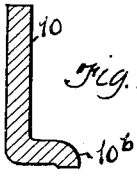


Fig. 12

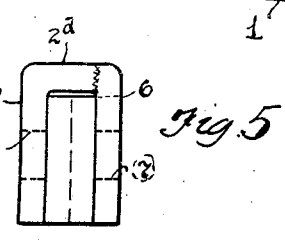


Fig. 5

Fig. 2

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UNITED STATES PATENT OFFICE.

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BACK FOR AUTOMOBILE SEATS AND THE LIKE.

Application filed December 22, 1924. Serial No. 757,374.

In automobile seats of the type in which the back is foldable forwardly so as to lie flat on the seat when not in use, it has been the practice heretofore to make the frame of such back in the form of a U shaped malleable casting. In order that the back when covered or upholstered may have the proper shape and contour, it is necessary that the upper and central portion of this frame member should not only curve or be rounded in a vertical plane, assuming the back to be raised, but also curve transversely so as to lie to the rear of the respective side members. Accordingly, as indicated, a malleable casting has been employed for such seat back frame principally because of the peculiar conformation such member has had to assume; this despite the fact that the weight of a member thus made from cast iron is excessive and despite the further fact that under the rather hard conditions of use to which automobile seats of the type in question are subjected, the side arms of the frame frequently are broken off.

The object of the present invention, accordingly, is to provide such a seat frame member fashioned from sheet metal that will have not only the required shape but also present the important advantages of greater lightness and superior strength at the points where needed.

To the accomplishment of the foregoing and related ends, the invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a front elevational view showing the skeleton of a seat of the type in question, including the back member of present interest; Fig. 2 is a side elevation of the same; Fig. 3 is a side elevation, Fig. 4 a rear elevation, and Fig. 5 an end elevation of the lower portion of one of the side arms of such frame, shown on a larger scale than the preceding figures; Figs. 6 and 7 are transverse sections of such side arm taken on the planes indicated by the lines 6—6 and 7—7, Fig. 1, such sections being likewise on a larger scale; Fig. 8 is a broken elevational view showing one side of the seat frame as illustrated in Fig. 1, but with certain modifications in construction; and Figs. 9, 10, 11 and 12 are transverse sections of the side arm of such modified frame, the planes of the sections being indicated by the lines 9—9, 10—10, 11—11 and 12—12, Fig. 8.

The base 1 of our improved seat is of usual construction, consisting as shown of a flat wooden frame of general rectangular outline. For the purpose of securing the back frame member 2 to such base, two feet or brackets 3 are suitably secured to said base in properly spaced relation adjacent its rear edge. Each such bracket is formed at its upper end with a transversely apertured ear 4 and with a shoulder 3^a immediately to the rear of such ear, as shown in Fig. 2.

The back frame member 2, as already indicated in the case where said member is made in the form of a malleable casting, comprises an upper central portion 2^a and integral therewith two similar side arms 2^b that extend downwardly and are hingedly attached to the upper ends of the feet or brackets 3. In fashioning this member from sheet metal in accordance with the present invention, we preferably take a strip of sheet steel of the proper gauge and having a uniform width, the same as that which such top central portion 2^a is required to have. Such steel strips are cut into sections that equal the combined lengths of such central portion and the two side arms 2^b of the frame. The lower ends of these side arms have their forward corners 2^c rounded off and a transverse aperture 5 punched therein, as shown in Fig. 3. Thereupon the portions of the strip correspond with such side arms are placed between dies in a suitable press and corresponding edges bent upwardly to form flanges 2^d that extend substantially for the entire length of the respective arms. At the same time the remainder of each strip portion in question is bent at an angle to the intermediate portion of the strip that corresponds with the central or top portion 2^a of the finished frame member.

The angle at which such remainder is thus bent may increase gradually from the upper end of flange 2^d to the lower end thereof which coincides with the lower end of the side arm when finished; or, as shown

in Figs. 6 and 7, such angle may be approximately a right angle throughout its entire extent.

The next step in the operation is to bend the side arms towards each other at the points 2^e where they merge into the central or top portion 2^a and at the same time or else as a separate operation, such side arms are twisted with respect to the plane of the intermediate top portion 2^a so as to bring the flanges 2^d into substantially the same plane with such central or top portion. The remaining portions of the side arms constituting the main body thereof will, as a result of the foregoing bending or twisting operation, be caused to assume at the lower ends of said side arms a forwardly projecting position, the normal plane surface thereof covering or flaring outwardly gradually towards the top of each arm and thence around the corresponding upper corner where it merges into the central or top portion 2^a. Such last mentioned portion is finally bent in its own plane to give it an upwardly curving effect, when viewed in front elevation as shown in Fig. 1, and as a result of this operation, the side arms are brought into approximately parallel relationship.

A lug in the form of a sheet metal stamping 6 is then riveted or preferably welded to the inner face of each side arm 2^b adjacent the lower end thereof, such lug being formed with an aperture 7 that is aligned with aperture 5, the corresponding portion of the lug being offset with respect to the portion of the side arm in which such aperture 5 is formed so as to leave a space between such portions of just the proper width to receive the ear 4 on bracket 3. Such offset apertured portion 6^a of the lug, as shown in Figs. 3 and 4, is formed so as to overlie the adjacent inwardly directed edge of the flange 2^d, the lower edge of such flange being disposed so as to seat upon shoulder 3^a of the bracket when the back frame is in its raised position, as shown in Fig. 2. Where lug 6 is welded to the side arm, such welding is conveniently accomplished by means of a spot weld 8 at the point shown in Figs. 3 and 4 and by welding together the meeting edges of the overlying portion of such lug and of the flange 2^d. A bolt 9 is employed to pivotally secure the lower end of each side arm to the corresponding bracket, as will be readily understood.

In the modified construction illustrated in Figs. 8 to 12, inclusive, instead of forming the inner portions of the respective side arms 10 of the frame into flanges 2^d, a bead 10^a is rolled or pressed into the portions of the strip that enter into such side arm, such bead being relatively shallow at its upper end, as shown in Fig. 9, increasing in depth at an intermediate point, as shown in Fig. 10, and finally running into the edge of the strip and being flattened out to form an angularly related flange 10^b as it nears the lower end of the strip, as shown in Figs. 11 and 12.

The flange 2^a in the first described construction or the corresponding combination bead 10^a and flange 10^b in the second construction, constitute reinforcing elements that serve to impart rigidity to the side arms against strains tending to distort the frame in any direction in the general plane of the seat. The greater strains, of course, are encountered in a direction transverse to such plane, as for example when a passenger is sitting in the seat and leans against the back or is thrown against such back by a jolt or sudden starting movement of the automobile. These strains are effectually resisted by the relatively wider portions of the side arms which, as it has been pointed out, at their lower ends lie at approximately right angles to the general plane of the seat and only flare outwardly and merge into such plane at their upper ends where they join the central or top part of the frame.

As a result of the foregoing construction and the use of steel as the material for the frame, which is thus rendered possible, the weight of the frame may be made considerably less than with the prevailing malleable iron construction and at the same time the breaking strength of such frame is greatly increased. The cost of manufacture, moreover, will, if anything, be lessened and in every way a superior product from the standpoint of the automobile manufacturer and user is obtained.

It will be understood that while our improved seat frame member may be most conveniently and economically fashioned from strip steel, such member may be stamped up from sheet steel of corresponding gauge and the side arms and central portion thereupon fashioned as described from such stamping. It will also be understood that the particular order, in which the several operations involved in thus fashioning such side arms and central and top members have been described, may be varied without affecting the final result.

As shown in Fig. 1, a wire 12 is desirably stretched across the frame being attached to the respective side arms 2^b near their lower ends, suitable holes 13 being provided for the purpose in the corresponding flanges 2^d. Instead of such wire, a flat band or strip 14 of steel may be substituted as shown in Fig. 8, the ends of such strip being bent around the lower ends of the arms and secured thereto by rivets 15. Such wire, or band, as the case may be, assists in preventing side sway and so contributes to the general rigidity of the frame.

Other modes of applying the principle of

our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:—

1. As an article of manufacture, a back frame member for a seat of the type described, said member being fashioned from a unitary flat piece of sheet metal of greater width than thickness and comprising a transversely extending top and two depending side arms continuous therewith and of substantially uniform thickness, and having a longitudinally extending portion lying in a plane approximately parallel with that of said top and a contiguous angularly related portion.

2. As an article of manufacture, a back frame member for a seat of the type described, comprising a transversely extending top presenting a flat forward face, and two depending side arms continuous therewith and of substantially uniform thickness and gradually twisting from the plane of said top to present an edge forwardly at the lower end of each arm, each arm being further formed with a longitudinal flange angularly related to the remaining portion of said arm.

3. As an article of manufacture, a back frame member for a seat of the type described, comprising a transversely extending top presenting a flat forward face, and two depending side arms continuous therewith and gradually twisting from the plane of said top to present an edge forwardly at the lower end of each arm, each arm being further formed with a longitudinal flange angularly related to the remaining portion of said arm, and apertured lugs secured in offset relation to such ends respectively, said lugs partially overlying the edge of the adjacent flange.

Signed by us this 19th day of December, 1924.

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