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METHOD OF LOCATING AND HOLDING METAL MEMBERS IN PLACE

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METHOD OF LOCATING AND HOLDING METAL MEMBERS IN PLACE

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This invention relates generally to a method of locating and holding in place, one metal member in relation to a second metal member. Specifically, the invention relates to a method of locating and holding in place one metal member in relation to a second metal member so that both members will become for all intents and purposes a temporary unitary structure which may be handled or moved about for subsequent fabricating operations without danger of the members shifting their relative positions prior to permanently securing the two together.

The object of the invention is to provide a method of locating a reinforcing metal member whereby the reinforcing member is located and held in place in relation to the reinforced member for subsequent fabricating operations whereby the two members are held together until subsequently permanently secured together, a method in which an additional operation of either welding or riveting becomes unnecessary to pin the members together, and a method which is relatively inexpensive to practice.

A preferred embodiment of the invention will be described as it may be carried out in relation to reinforcing a critical area of a side bar for a passenger car or truck.

In the drawing:

Figure 1 is a perspective view of a portion of a side bar for an automotive vehicle reinforced in accordance with method of the invention;

Fig. 2 is a transverse sectional view of the reinforcing member and the reinforced member prior to performing one step of the method of the invention; and

Fig. 3 is a transverse sectional view of the joined members after completion of the method.

In accordance with the invention side bar 1 is provided with a plurality of spaced elongated apertures 2 which may be made, for example, as by piercing a flat metal blank of a width suitable to be formed into a side bar. It will be noted that the width of the apertures, as seen in Fig. 1, is just sufficient to accommodate a tab of the reinforcing member as will be explained later.

Reinforcing member 3 is provided with a plurality of tabs or projections 4 which may be formed from member 3 as by partially piercing the member so that the projections 4 extend therefrom. In the event that the stock of the reinforcing member 3 is sufficiently light the projections may be formed by extrusion.

Tabs 4 are spaced according to the spacing of apertures 2 so that they may register with the latter. In forming the tabs it is preferable that the metal of the reinforcing member 3 be deformed so that the inner edges of the tabs and the inner edges of the apertures with which they register about one another. It is feasible, however, to dispose the tabs in their respective apertures 2 so that they do not necessarily about the ends of the apertures but are disposed fairly loosely therein. Likewise, the tabs are of a width just sufficient to permit the tabs to fit within the apertures.

After the flat metal stock of the side bar has been pierced to provide the requisite number of apertures 2, and the metal stock of the reinforcing member has been provided with properly spaced and located tabs 4, the two members are placed in relationship to one another as shown in Fig. 3, in other words member 3 is placed on the member 1 with tabs 4 bearing against or adjacent the inner edge of apertures 2. They may then be placed in a forming machine such as a press having a mandrel 5 and a die 6. As the mandrel 5 descends progressively into the die 6 the outer member 1 will be made to travel a greater distance into the die cavity than member 2. This will cause the position of the tabs 4 to shift in the apertures 2 so that at the completion of the stroke of the mandrel the tabs 4 will have shifted from one edge of the apertures 2 to the opposite edges of the apertures where they will be held tightly thereagainst, thereby resulting in a unitary structure in that neither member will be able to shift its position relative to the other while being moved about for subsequent fabricating operation.

The above described invention provides a relatively quick and inexpensive method for positively locating and holding reinforcing members adjacent members that are to be reinforced so that the members may be positively positioned relative to one another during any subsequent fabricating steps.

Various embodiments of the invention may be employed within the scope of the following claims.

I claim:

1. The method of positioning and holding one metal member with respect to a second metal member which comprises providing one member with a plurality of spaced elongated apertures, providing the second member with a plurality of depending tab members formed from said second member and spaced to conform with said aper-
tures, said tab members having a lesser longitudinal dimension than said elongated apertures, disposing one member in relation to the second member and spaced to conform with said apertures, disposing the tabs in said apertures so that the inner edges of the tabs and the apertures about one another.

2. The method of positioning and holding one metal member with respect to a second metal member which comprises providing one member with a plurality of spaced elongated apertures, providing the second member with a plurality of depending tab members formed from said second member and spaced to conform with said apertures, disposing said tabs in said apertures so that the inner edges of the tabs and the apertures about one another, and deforming said members to cause a shifting of said tabs in said apertures so that the outer edges of the tabs and the apertures abut.

3. The method of positioning and holding one metal member with respect to a second metal member for subsequent fabrication operations which comprises providing a plurality of spaced elongated apertures in one member, deforming the second member to provide a plurality of tabs projecting from one surface of said member and spaced to conform with the apertures of the other member, said tabs having lesser longitudinal breadth than said apertures, disposing the tabs in said apertures so that the inner edges of the tabs and apertures abut, and deforming said members simultaneously in a manner to cause greater deformation of one member than the other member to thereby permit said tabs to shift longitudinally of said apertures to a position opposite their initial disposition to cause said members to interlock.

4. The method of positioning and holding one metal member with respect to a second metal member for subsequent fabrication operations which comprises providing a plurality of spaced elongated apertures in one member, deforming the second member to provide a plurality of tabs projecting from one surface of said member and spaced to conform with the apertures of the other member, said tabs having a lesser longitudinal dimension than said elongated apertures, disposing the tabs in said apertures so that the inner edges of the tabs and apertures abut, and causing the center portions of said members to be deformed simultaneously in the same direction to thereby shift the tabs longitudinally of said apertures to the opposite edges thereof and interlock said members.

5. The method of positioning and holding one metal member with respect to a second metal member for subsequent fabrication operations which comprises providing a plurality of spaced elongated apertures in one member, deforming the second member to provide a plurality of tabs projecting from one surface of said member and spaced to conform with the apertures of the other member, said tabs having a lesser longitudinal breadth than said elongated apertures, disposing the tabs in said apertures so that the inner edges of the tabs and apertures are disposed adjacent one another, and causing relative movement between said members to cause the tabs to move longitudinally of said apertures until the outer edges of the tabs and apertures abut to thereby prevent shifting of one member relative to the other.

6. The method of positioning and holding one metal member with respect to a second metal member for subsequent fabrication operations which comprises providing a plurality of spaced elongated apertures in one member, deforming the second member to provide a plurality of tabs projecting from one surface of said member and spaced to conform with the apertures of the other member, said tabs having a lesser longitudinal breadth than said elongated apertures, disposing the tabs in said apertures so that the inner edges of the tabs and apertures are disposed adjacent one another, and deforming the members simultaneously into channel shape in which the webs thereof are disposed normal to the body whereby said tabs shift longitudinally of said apertures to a position opposite their initial disposition to cause said members to become interlocked.

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