AUTOMOBILE FRAME STRAIGHTENING DEVICE


This invention relates to a vehicle frame straightener.

In overhauling and repairing automobiles, and particularly after they have been in collision, it is usually found that the side frame members have been bent or warped out of line, both as to their individual lengths and their parallel relation to each other. In order to insure that the wheels of the vehicle will be properly aligned, both as to camber and toe it is essential that the frame members be straightened, and it is the principal object of the present invention to provide relatively simple means which may be placed in operative relation to the longitudinal frame member of an automobile, and which may be readily adapted to exert pressure upon a bend or out of line portion of the frame whereby the frame will be pulled into line throughout its length and will thus be straightened, the structure having the particular advantage of being easily adapted to correct the individual out of line conditions of a frame member, and to make it possible to easily straighten it whether or not it is bowed toward or away from the straightening element.

The present invention contemplates the provision of a rigid body member adapted to extend parallel to a vehicle frame element to be straightened, and which member carries a pressure unit longitudinally adjustable with relation to the body member, and a plurality of gripping jaws likewise longitudinally adjustable with relation to the body member and capable of being readily adjusted as to the length so that they may accommodate frame members of different dimensions.

The invention is illustrated by way of example in the accompanying drawing in which:

Fig. 1 is a view showing a vehicle frame member with the present invention applied thereto.

Fig. 2 is a view in perspective showing the frame straightening device disassociated from the frame being straightened.

Fig. 3 is a view in transverse section through the device as shown on the line 3–3 of Fig. 1.

Fig. 4 is a view in transverse section through the device as seen on the line 4–4 of Fig. 1.

Referring more particularly to the drawing, 10 indicates a vehicle frame which has been bent or warped at some point in its length. 11 indicates the body member of a frame straightening device. It is to be understood that the straightening device may be used to act upon a frame member upon any of its sides and to straighten the frame member by exerting pressure upon a bend in the frame which is bowed toward or away from the straightening device. The body member 11 of the straightening device is here shown as being formed by a pair of structural elements 12 and 13 indicated as channel members.

These channel members are placed with their legs spaced apart to form an intermediate slot 14 which will act as a guide for a pressure unit 15. The channels are held in their spaced relation by spacer blocks 16 secured by bolts 17. Fitted between the channel bars 12 and 13 and adapted to slide therealong is a sliding carriage 18 which forms a part of the pressure unit. This carriage accommodates a pressure screw 19 which passes transversely through it and extends outwardly through the slot 14 upon the opposite sides of the body member 11. The carriage 18 has a threaded opening through which the screw 19 extends. At the outer end of the screw 19 is a nut 20. On the inner end of the screw is an enlarged head portion 21 by which pressure may be exerted directly against the frame member to be straightened, as more particularly shown in Fig. 3. Operating in conjunction with the pressure unit 15 are jaws 22 which are formed of bar material having turned gripping ends 23. At points throughout the length of the jaws are slotted openings 24 through which the arms 25 of sliding blocks 26 extend. The sliding blocks are each provided with a central screw 27, the shank of which passes through the slot 14 between the legs of the channels 12 and 13, and holds the sliding block while permitting it to have movement longitudinal of the body member.
It will thus be evident that when the hooked ends of the pulling jaws 22 embrace the opposite sides of a frame member to be straightened and the pressure is exerted upon an out of line portion of the frame member by the screw 19 at a point intermediate the points of engagement by the sets of puller jaws 22 the frame may be drawn to its original line position, and if properly manipulated will retain permanent set as thus lined.

In some instances it may be necessary to draw the misaligned frame member toward the body member 11 in order to straighten it, and for that purpose a collar 28 is mounted upon the screw 19 at a point between the body member 11 and the head of the screw. This collar has side arms 29 which extend laterally and pass through slotted openings 30 in puller jaws 31 in which instance the jaws will embrace the channel member to be straightened and draw this member to the body member 11.

In operation of the present invention the misaligned frame member is prepared for straightening by stripping from it any parts which would be in the way of the pulling jaws or the pressure screw, after which the pulling jaws may be adjusted with relation to the members 25 so that they will be of a proper length to embrace and engage the frame member upon opposite sides from that upon which pressure is to be applied. It will be apparent that these jaws with their sliding blocks may be moved longitudinally of the body member 11 so that they will be properly positioned with relation to the bend in the frame. The pressure screw 19 with its carriage 18 may then be moved to a point midway the length of the bend, after which the screw may be rotated to exert a thrust upon the bent portion tending to force the frame to a straightened position. In the event that the frame is bowed in an opposite direction from the straightening device the pulling jaws 31 may be applied to the member 30 and hooked over the bend in the frame so that when the screw 19 is operated in a reverse direction it will draw the frame member toward the body member 11 and straighten it.

It will thus be seen that the device here disclosed may be readily adapted to meet varying conditions in automobile frame construction and may be easily adjustable to frames which are bent after which pressure may be applied to straighten the frame without difficulty.

While I have shown the preferred form of my invention, as now known to me, it will be understood that various changes may be made in combination, construction, and arrangement of parts by those skilled in the art without departing from the spirit of my invention as claimed.

Having thus described my invention, what