Feb. 3, 1953 C. E. JACKSON 2,627,295

FENDER STRAIGHTENING MACHINE

Filed Sept. 13, 1948 3 Sheets-Sheet 1

FIG. 1

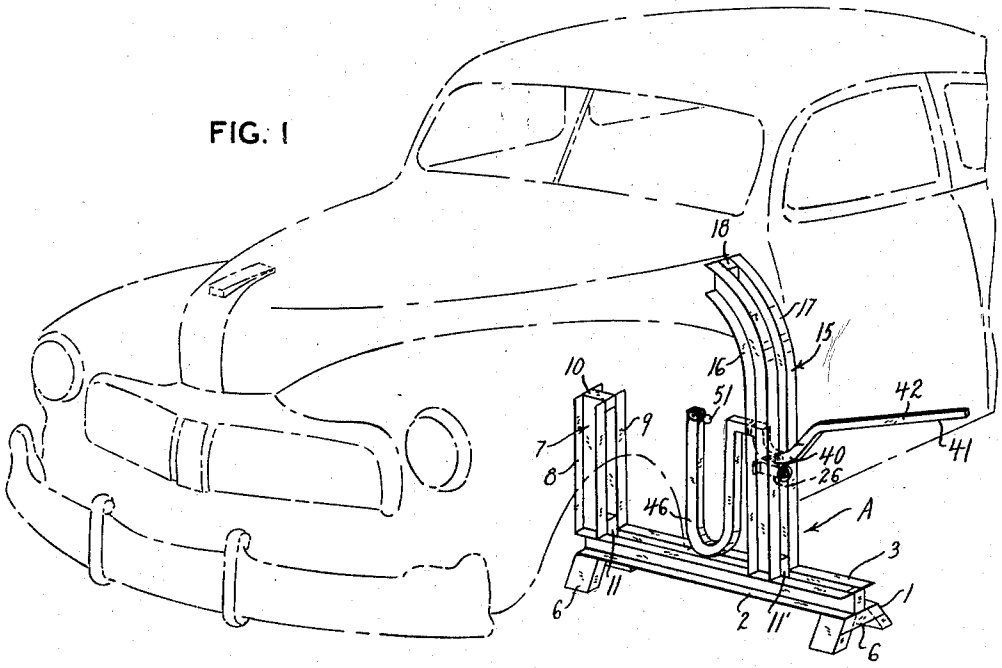


FIG. 2

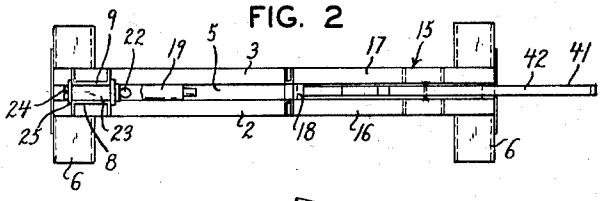


FIG. 3

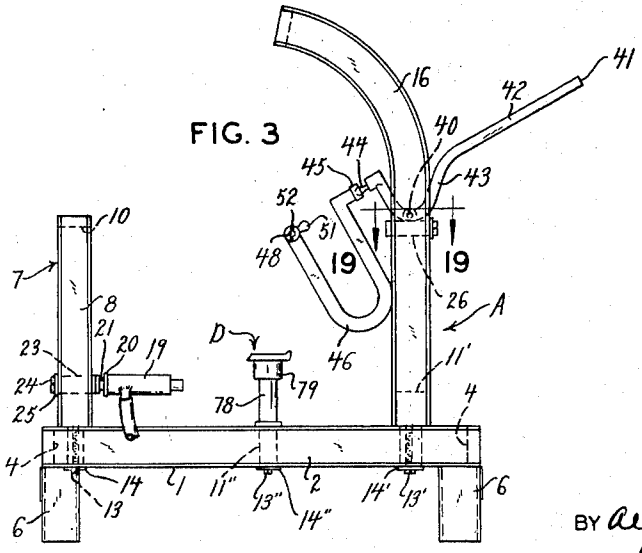
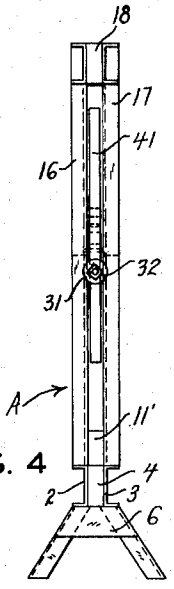


FIG. 4



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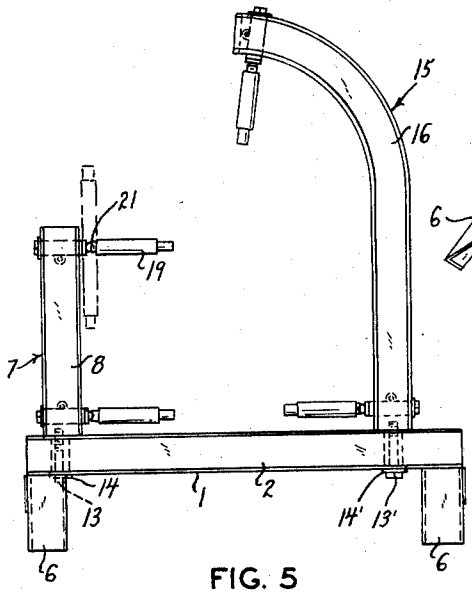


FIG. 5

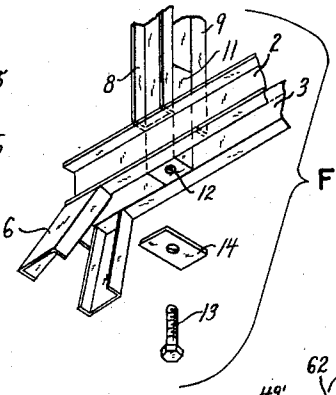


FIG. 6

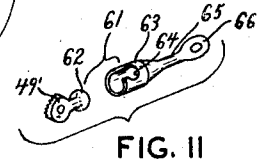


FIG. 11

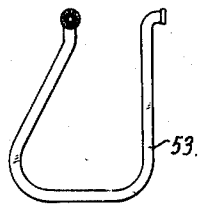


FIG. 7

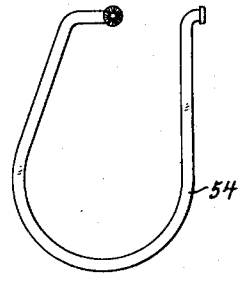


FIG. 8

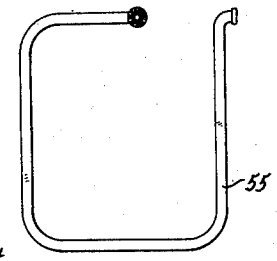


FIG. 9

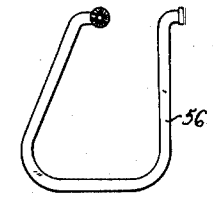


FIG. 10

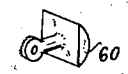


FIG. 15

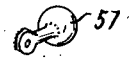


FIG. 12

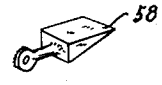


FIG. 13

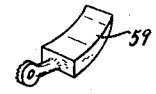


FIG. 14

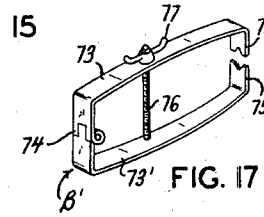


FIG. 17

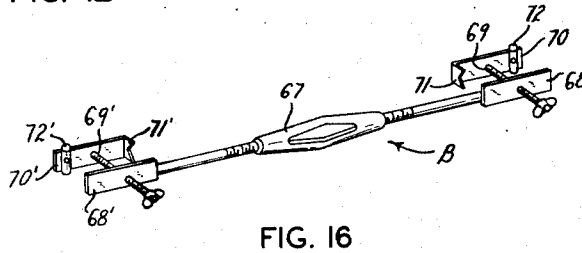


FIG. 16

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FENDER STRAIGHTENING MACHINE

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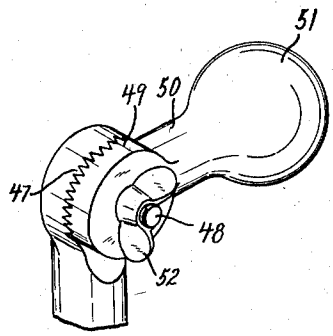


FIG. 18

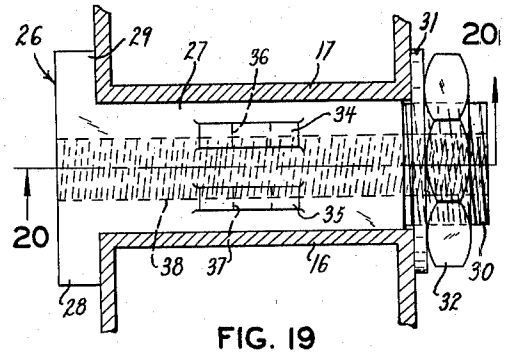


FIG. 19

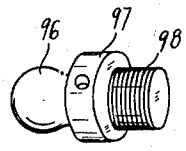


FIG. 21

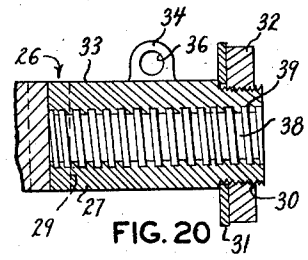


FIG. 20

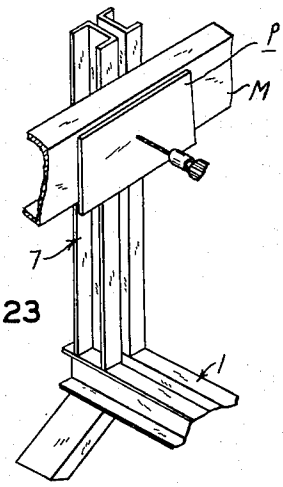


FIG. 23

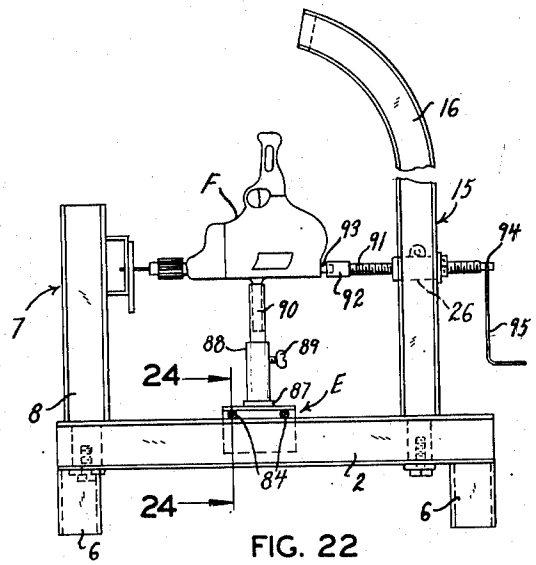


FIG. 22

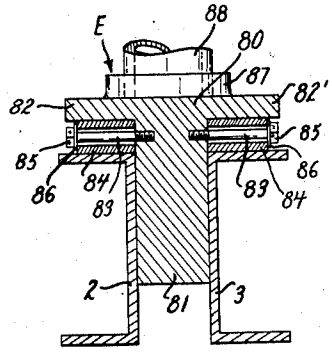


FIG. 24

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Patented Feb. 3, 1953 2,627,295

UNITED STATES PATENT OFFICE

2,627,295

FENDER STRAIGHTENING MACHINE

Carter E. Jackson, Evansville, Ind.; Sallie Jackson administratrix of said Carter E. Jackson, deceased

Application September 13, 1948, Serial No. 49,065

2 Claims. (Cl. 153—32)

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This invention relates in general to certain new and useful improvements in fender straightening machines.

It is the primary object of the present invention to provide a fender straightening machine which is uniquely adapted for the straightening of the modern deep-skirted type of automobile fenders and which is provided with hydraulic means for applying straightening pressure at any point where the fender may be dented or damaged.

It is also an object of the present invention to provide a fender straightening machine which is extremely flexible in adjustability and universal in adaptation to the wide range and variety of fender straightening operations ordinarily encountered in the day-to-day work of an automobile body repair shop.

It is an additional object of the present invention to provide a fender straightening machine capable of receiving a number of different types of fender straightening tools and holding them for manipulation.

It is another object of the present invention to provide a fender straightening machine which can be quickly and conveniently adapted for use as a drill-holding fixture in frame reinforcing and repairing operations.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (three sheets)—

Figure 1 is a perspective view of a fender straightening machine showing a portion of an automobile in dotted outline;

Figure 2 is a top plan view of the fender straightening machine;

Figure 3 is a side elevational view of the fender straightening machine;

Figure 4 is a front elevational view of the fender straightening machine;

Figure 5 is a side elevational view of the fender straightening machine showing various different positions in which the hydraulic jack may be operatively located;

Figure 6 is a fragmentary exploded view of the rear upright support member showing the method by which it is adjustably secured to the main horizontal beam of the fender straightening machine;

Figures 7, 8, 9, and 10 are side elevational views of various types of accessory tools which may be

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used in conjunction with, and form a part of, the present invention;

Figures 11, 12, 13, 14, and 15 are perspective views of various types of accessory tools which may be used in conjunction with, and form a part of, the present invention;

Figures 16 and 17 are perspective views of accessory tools for pulling together the margins of torn or ripped fenders and clamping them in position for being welded or otherwise repaired in conjunction with the fender straightening operations performed by and with the fender straightening machine of the present invention;

Figure 18 is an enlarged fragmentary perspective view of the knuckle or connecting joint by which the various fender straightening tools shown in Figures 7 to 15, inclusive, may be adjustably secured together;

Figure 19 is a fragmentary sectional view taken along the line 19—19 of Figure 3;

Figure 20 is a fragmentary sectional view taken along the line 20—20 of Figure 19;

Figure 21 is a perspective view of an accessory tool mounting knuckle adapted for use in cooperation with the fender straightening machine;

Figure 22 is a side elevational view of the fender straightening machine adapted for use as a drill-holding fixture;

Figure 23 is a fragmentary perspective view of the fender straightening machine illustrating in more detail its use in fender reinforcing and repairing operations;

Figure 24 is a fragmentary vertical sectional view taken along the line 24—24 of Figure 22.

Referring now in more detail and by reference characters to the drawings, which illustrate a preferred embodiment of my present invention, A designates a fender straightening machine comprising a horizontal base frame 1 formed of two oppositely presented horizontally extending heavy channel iron members 2, 3, having their web sections juxtaposed and being held in spaced parallel relation by means of end spacer blocks 4 welded in place to form therebetween an elongated slot 5. Welded to the under faces of the flanges of the members 2, 3, at or adjacent to the opposite ends thereof are somewhat V-shaped conventionally formed leg assemblies 6 for supporting the channel members in upwardly spaced horizontal relation upon the floor of the repair shop.

Provided for horizontally shiftable movement along the base frame 1 is a back upright or under-fender bucking post 7 formed of two heavy channel iron members 8, 9, positioned with their

webs in spaced parallel juxtaposition and being held in such position by a spacer block 10 welded in place at the upper ends thereof. Welded between the webs of the members 8, 9, at their lower ends and projecting downwardly therefrom is a tongue block 11 having a width substantially equal to the width of the slot 5 for snug-fitting slidable disposition therein. The tongue block 11 is provided upon its under face with an upwardly extending internally threaded drill hole 12 for receiving a locking bolt 13, which extends through and secures in place a transversely extending locking plate 14, all as best seen in Figure 6.

Also shiftably mounted upon the base frame 1 is a front upright member or exterior bucking post 15 comprising two heavy channel iron members 16, 17, held in spaced parallel relation with their ribs in juxtaposed relation by means of an upper spacer block 18 welded therebetween and by a downwardly projecting tongue block 11', substantially identical in all respects to the previously described tongue block 11, and likewise having a locking bolt 13' and a locking plate 14'.

Provided for vertically adjustable disposition along the members 8, 9, of the under-fender bucking post 7 is a conventional hydraulic ram 19 having a base member 20 provided with a conventional rockable ball-socket joint 21 for co-operable engagement with a complementary ball member 22 formed integrally with an outwardly extending tongue block 23 drilled and tapped in its outer end face for receiving a locking bolt 24 and locking plate 25. The ram 19 may be shifted up and down or mounted on the exterior bucking post 15 in any one of the several positions shown in Figure 5 or in any intermediate positions. The ram 19 may also be swung up and down or to the right and left through arcs of 180°, as shown in dotted lines in Figure 5, affording a maximum degree of universality of adjustment.

Provided for vertically adjustable disposition between the members 16, 17, of the exterior bucking post 15 is a swivel fixture 26 integrally including a rectangular body portion 27 provided at one end with laterally extending flanges 28, 29, and being at its opposite end turned down and externally threaded in the provision of a tail piece 30 adapted to receive a washer 31 and a clamping nut 32, which can be drawn up tightly against the flange faces of the bucking post members 16, 17, as shown in Figure 19. Formed integrally with, and projecting upwardly from, the upper flat face 33 of the swivel fixture 26 is a pair of spaced parallel ears 34, 35, provided with horizontally extending aligned apertures 36, 37. The swivel fixture 26 is finally provided with an axial bore 38 which is provided internally with a heavy thread 39, such as a Square thread or Acme thread, for example, all as best seen in Figure 20 and for purposes presently more fully appearing.

Rockably mounted between the ears 34, 35, by means of a slip pin 40, which is manually inserted through the apertures 36, 37, is a manually operable lever 41 having a straight handle portion 42 merging into a gooseneck portion 43 and terminating at its inner end in an integrally formed ball member 44. Removably and adjustably mounted on the ball member 44 by means of a conventional ball engaging socket collar 45 is a U-shaped bucking tool 46 provided at its free end with a serrated end disk 47 having a concentric laterally projecting threaded stud 48 for disposition through a complementarily serrated end disk 49 formed integrally upon the rod-like end 50 of a dent pressing ball 51. The threaded stud 48 is furthermore provided with a wing nut 52 for drawing the serrated portions 47, 49, into tightly clamped engagement with each other, as shown in Figure 18. It will, of course, be obvious in this connection that the dent pressing ball 51 may be adjusted to any angular position with reference to the bucking tool 46 and the latter may, in turn, be adjusted to any position in reference to the lever 41.

It has been found convenient to provide a series of differently shaped bucking tools, such as the bucking tools 53, 54, 55, and 56 shown in Figures 7, 8, 9, and 10, respectively. These latter bucking tools are substantially identical in structure with the bucking tool 46 except that the shape is slightly modified to provide for clearance of the depending skirt portions of various different types of automobile fenders.

It has also been found convenient to provide various different types and shapes of dent pressing tools, such as the dent pressing tools 57, 58, 59, and 60, shown respectively in Figures 12, 13, 14, and 15. These latter dent pressing tools are substantially identical in construction to the dent pressing ball 51, except that the shape is modified to conveniently press out dents of various different types and kinds.

Also provided for co-operation with the various bucking tools 46, 53, 54, 55, and 56 is a fender pulling tool 61 comprising a ball member 62 having a serrated clamping plate 49', the latter being substantially identical in all respects to the clamping plate 49 previously described. Adapted for clipwise mounting upon the ball member 62 is a socket 63 provided in its side wall with a keyhole slot 64 by which it can be snapped over the ball member 62. Formed integrally with, and projecting axially downwardly from, the socket 63 is a rod-like element 65 terminating in a loop or eye 66, which can be hooked over in suitable projection, so that, upon manipulation of the lever 41, a pulling rather than a pushing force can be exerted against the fender wherever needed.

Also provided for fender repair work in co-operation with the fender straightening machine and forming a part of the present invention is a tear-puller B comprising a central turnbuckle rod 67. Formed integrally upon opposite ends of the turnbuckle rod 67 are clamping plates 68, 68', bored and tapped for receiving threaded clamping rods 69, 69', which are swiveled at their ends in secondary clamping plates 70, 70'. The secondary clamping plates 70, 70', are bent over at their inner ends and provided with prongs 71, 71', for fulcrum-forming engagement on with the turnbuckle rod 67. Swivelly mounted the outer ends of the clamping plates 70, 70', are rod-like clamping bars 72, 72', for tight gripping engagement with the peripheral bead of the fenders on opposite sides of the split. Because the rod-like bars 72, 72', are swivelled they can readily accomodate themselves to the different curves and shapes of various fenders and will not crush or deform the fender bead. The clamping plates 68–70 and 68'–70' may be tightly clamped to the skirt or marginal portions of the fender on opposite sides of a split or tear and the turnbuckle rod 67 lengthened or shortened as may be required to straighten out the parts

of the fender or pull them together. When properly straightened out and pulled together, the tear may be welded while the parts are still held in proper position by the clamp B.

Where only small tears or splits are encountered, it is possible to employ a modified form of clamp B', as shown in Figure 17, comprising upper and lower clamp members 73, 73', hingedly connected together at one end, as at 74, and bent over at their opposite ends, as at 75, 75', in the formation of prongs for retentively gripping the metal of the fender on opposite sides of the split or tear. Intermediate its ends, the clamp member 73' is provided with an upwardly extending screw 76, which extends loosely at its free end through the other clamp member 73 for receiving a wing nut 77 whereby the clamp members 73, 73', may be tightened together.

Also provided for use with the fender straightening machine A is an adjustable seat D comprising an upright main bar 78 provided at its upper end with an enlarged seat casting 79 and at its lower end with a tongue block 11'', locking screw 13'', and locking plate 14'', all substantially identical with the previously described tongue block 11, locking screw 13, and locking plate 14, respectively, and adapted for engagement in the slot 5. The adjustable seat can thus be shifted horizontally along the base frame 1 and locked in any desired position for use by the mechanics as a seat or body-rest to relieve the fatigue heretofore encountered during fender repair work as a result of constant kneeling and squatting.

Finally provided for freely shifting movement along the base frame 1 is a dolly E comprising a base member 89 having a tongue block 81 projecting snugly but slidably between the members 2, 3, and horizontal flanges 82, 82', projecting laterally from its upper end. Threaded into the tongue block 81 in downwardly spaced parallel relation to the under faces of the flanges 82, 82', are studs 83 each provided with a freely rotatable roller sleeve 84 held in place behind the stud head 85 by a washer 86. As may be seen in Figure 24, the under faces of the flanges 82, 82', bear upon the upper surfaces of the rollers 84 and the latter, in turn, bear upon the upper flanges of the base members 2, 3, so that the dolly E may roll to-and-fro along the base frame 1 with more or less freedom.

Upon its upper face, the base member 89 of the dolly E is provided with a boss 87 and stepped into this boss 87 is an upstanding tubular sleeve 88 having a radially projecting set screw 89 for height-adjusting engagement with a tubular support member 90 telescopically fitted within the sleeve 88. At its upper end, the tubular support member 90 is open and internally sized for snugly receiving the rod-like handle of a conventional type of portable electric drill F. Preparatory for use of the machine A as a drill fixture, the handle 41 is removed from the swivel fixture 26 and a jack-screw 91 threaded through the bore 38 thereof. On its inner end, the jack-screw 91 is provided with a cup-like fitting 92 for engagement with the spud 93 of the drill F. At its other end, the jack-screw 91 is diametrally reduced and transversely bored, as at 94, for receiving a removable crank handle 95 by which the jack-screw 91 may be manually rotated.

In frame-reinforcement work, the post 7 of the machine A is positioned against the back face of the chassis-frame member M in the region of the area to be reinforced and the reinforcement plate p clamped or otherwise suitably held in place, as best seen in Figure 23. The drill F is set up in the machine A, as previously described and as shown in Figure 22, so that the plate p and chassis-frame member M may be simultaneously drilled. As will be readily understood, the drill F is fed into the work easily and accurately by turning the handle 95 and the dolly E will roll easily along the base frame 1, holding the drill F in true horizontal position, thereby preventing accidental breakage of drill-bits.

Provided for disposition upon the exterior bucking post 15 is an auxiliary ball member 96 integrally including a stop collar 97 and a stud 98 externally threaded with a Square or Acme thread to match and fit with the bore 38 of the swivel fixture 26 instead of the jack-screw 91.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the fender straightening machine may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. For use with a fender straightening machine, a tear-repairing tool comprising a turnbuckle rod and screw clamps rigidly secured on opposite ends thereof each of said clamps comprising a first flat plate rigidly attached to the turnbuckle rod, a screw threadedly mounted in the first plate, and a second plate swivelly mounted on one end of the screw and being provided on its inner face adjacent its outer end with a jaw-forming cross bar and on its other end with a pair of prongs for rocking engagement against the opposing face of the first plate.

2. For use with a fender straightening machine, a tear-repairing tool comprising a round turnbuckle rod and screw clamps rigidly secured on opposite ends thereof each of said clamps comprising a first flat plate rigidly attached to the turnbuckle rod, a screw threadedly mounted in the first plate, and a second plate swivelly mounted on one end of the screw and being provided on its inner face adjacent its outer end with a jaw-forming cross bar and on its other end with a pair of prongs for rocking engagement against the opposing face of the first plate straddle-wise of the turnbuckle rod to prevent lateral turning of the second plate while being tightened.

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