

[54] GAUGE FOR USE IN STRAIGHTENING
AUTOMOTIVE FRAMES

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[56] **References Cited**
UNITED STATES PATENTS

3,057,074 10/1962 Sidwell..... 33/288

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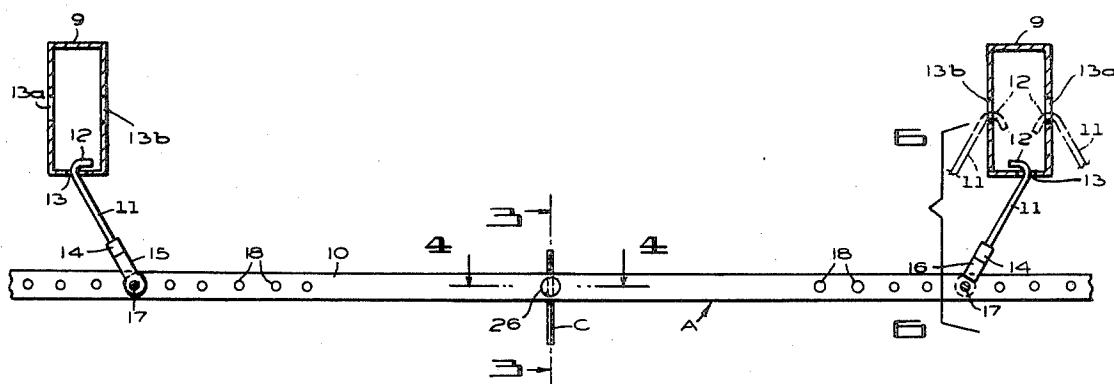
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[57] **ABSTRACT**

A gauge for use in straightening automotive frames wherein an elongated bar is provided with a series of spaced holes in each end section thereof, with pairs of holes in the opposite end sections being located equal distances from the midpoint of the bar. A pair of rigid hangers have their lower end swingably anchored in selected holes in the bar, and each hanger has a hook at its upper end arranged to engage with openings in an automotive frame that is to be straightened. Moreover, a vertical sight pin is located at the midpoint of the bar. When the automotive frame has been straightened, the vertical sight pins on several gauges will coincide with the longitudinal centerline of the chassis frame, thus testing horizontal displacement of the frame members. In event that all bars of the several gauges are disposed in the same horizontal plane, there is no displacement vertically of the frame members.

4 Claims, 7 Drawing Figures



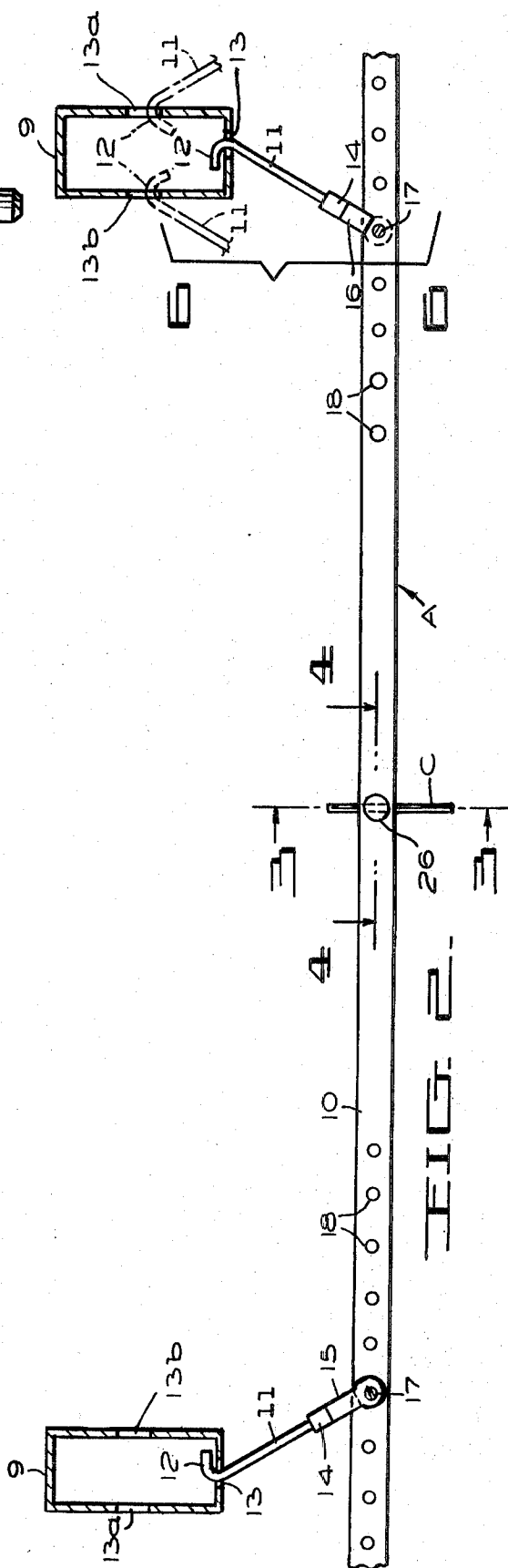
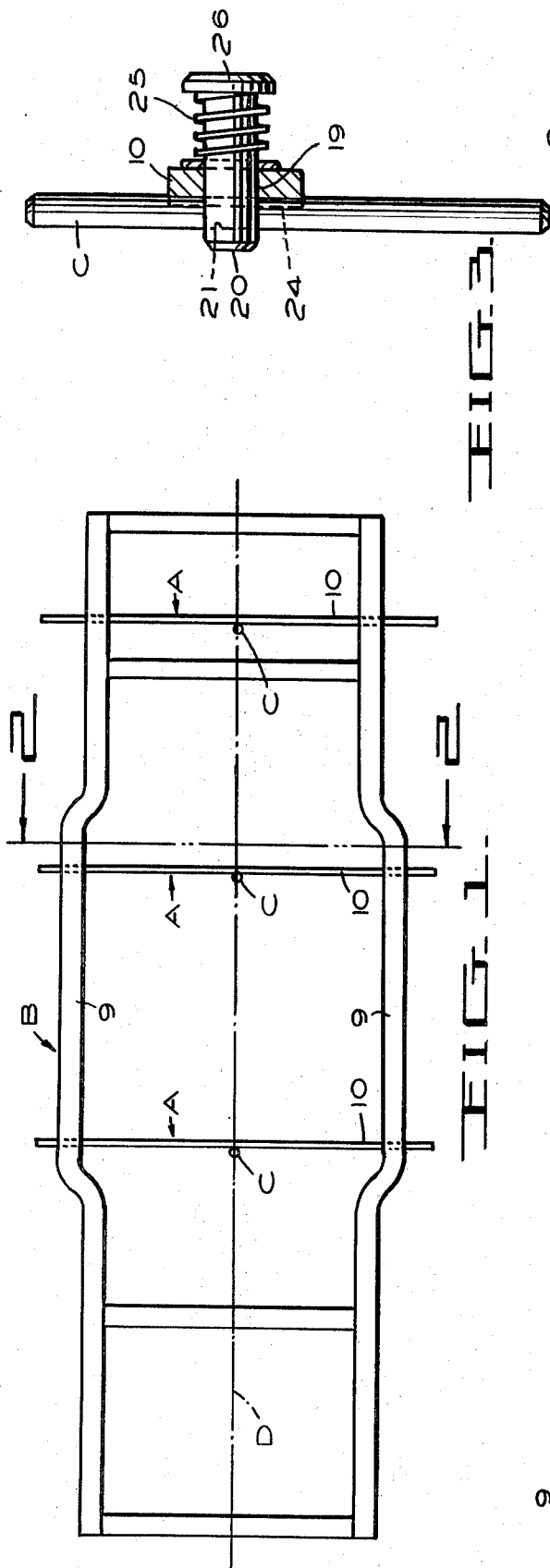
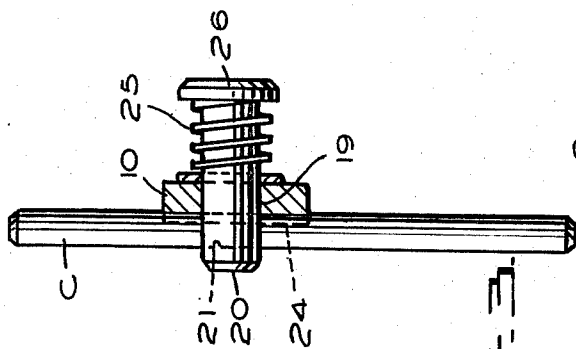
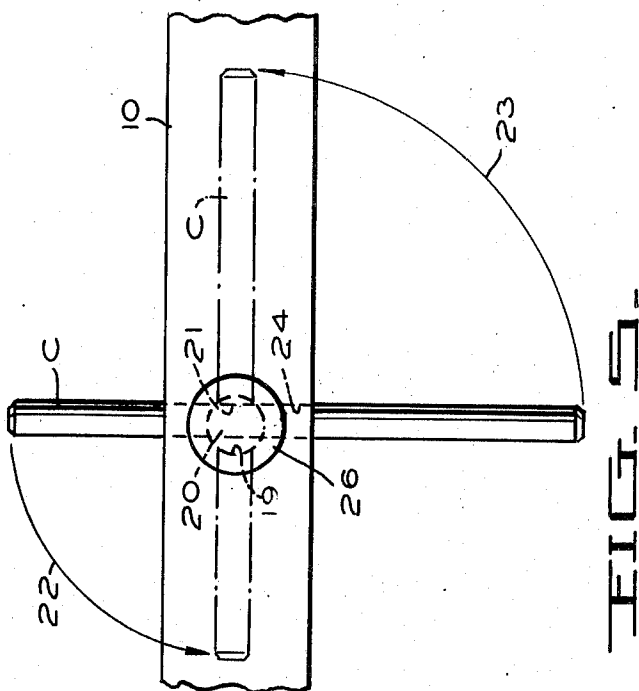
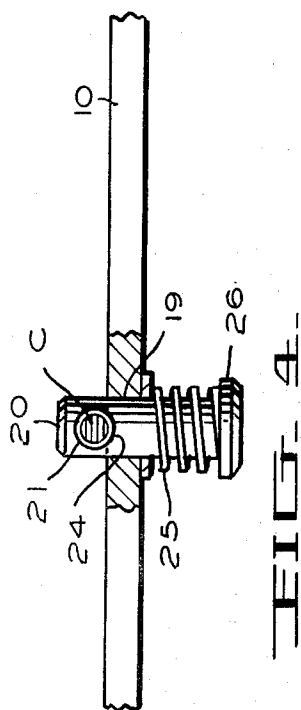
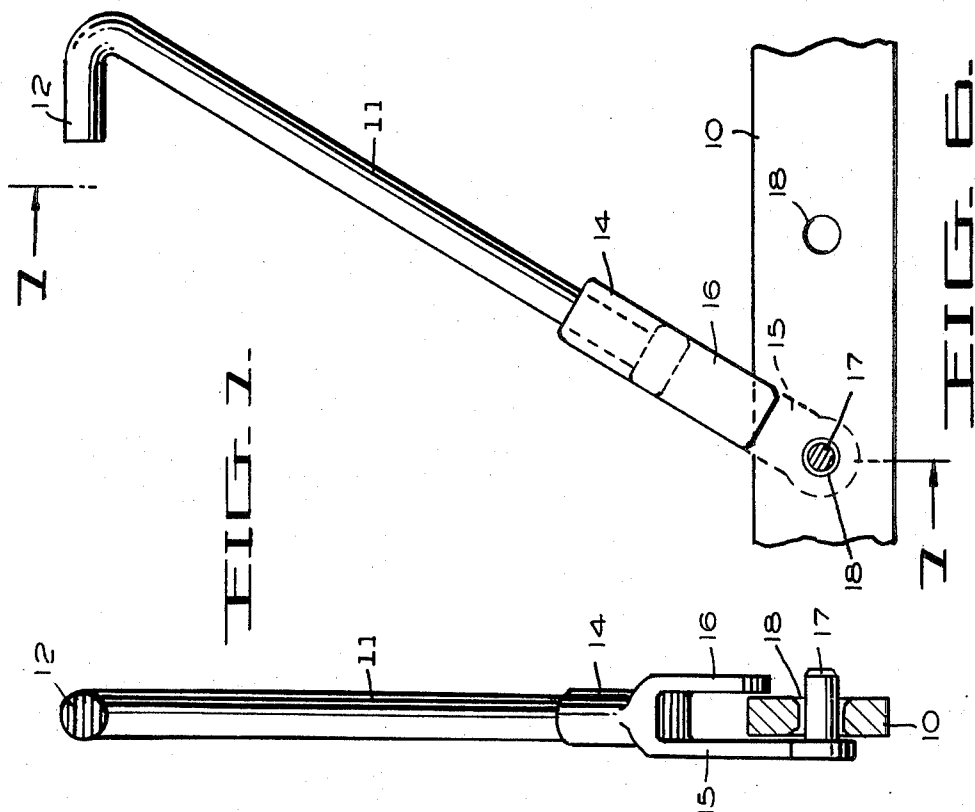


FIG. 3





GAUGE FOR USE IN STRAIGHTENING AUTOMOTIVE FRAMES

SUMMARY

An object of this invention is to provide a gauge for use in straightening automotive frames, wherein an elongated bar is suspended from the side members of the automotive frame by means of rigid hangers having their lower ends swingably secured to the bar, and the upper ends of each hanger has a hook for engaging with openings in the side members of the chassis frame. These hangers are reversibly anchored to the bar so that their hooks may project toward the midportion of the bar or project toward the adjacent outer ends of the bar, depending upon the location of the selected openings in the side members of the frame.

A further object of the invention is to provide a vertical sight pin at the midportion of the bar which is yieldingly held in its vertical position, but which may be moved into an inclined position when striking an obstruction. Moreover, the sight pin may be folded into parallel relation with the bar for storage purposes.

Other objects and advantages will appear as the specification proceeds, and the novel features of the invention will be pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a better understanding of the invention, reference should be made to the accompanying drawings, forming part of this specification, in which:

FIG. 1 is a plan view of an automotive chassis frame showing three of the gauges being used during the straightening of the frame;

FIG. 2 is a transverse sectional view taken along the line 2—2 of FIG. 1;

FIG. 3 is a vertical sectional view taken along the line 3—3 of FIG. 2;

FIG. 4 is a horizontal view taken along the line 4—4 of FIG. 2;

FIG. 5 is a front view of the parts of the gauge shown in FIG. 4;

FIG. 6 is a view of those portions of the bar and hanger included by the bracket 6— of FIG. 2; and

FIG. 7 is a sectional view taken along the line 7—7 of FIG. 6, parts being shown in elevation.

While only the preferred embodiment of the invention has been disclosed, it should be understood that various changes, or modifications, may be made within the scope of the annexed claims without departing from the spirit thereof.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail, it will be noted that FIG. 1 shows several of the gauges A being used during straightening of the automotive chassis frame B, and these gauges are spaced at intervals along the length of the latter. After the frame has been properly straightened, vertical sight pins C that form part of the gauges will coincide with the longitudinal centerline D of the frame. This will test horizontal displacement of the frame members 9 (see FIGS. 1 and 2).

Each gauge A has an elongated bar 10 that is suspended by hangers 11 to extend transversely of the chassis frame B and the bars have their top edges disposed horizontally in the same plane when there is no vertical displacement of frame members 9. Each

hanger has a hook 12 at its upper end which is insertable into selected openings 13, 13a or 13b formed in the frame members 9 of the chassis frame B (see FIG. 2).

The lower end of each hanger 11 has a yoke 14 secured thereto (see FIGS. 2, 6 and 7), the yoke defining a pair of spaced legs 15 and 16, the former being longer than the latter, and these legs are arranged to straddle the bar 10. The longer leg 15 has a journal pin 17 fixed thereto for insertion through a selected hole 18, which is formed in the bar.

It will be seen from FIG. 2 that the bar 10 has a series of the holes 18 fashioned in each end section thereof extending transversely through the bar, with pairs of the holes in the opposite end sections being located equal distances from the midpoint of the bar. The hangers 11 are rigid and are made from metal rods and have their lower ends swingably anchored by the journal pins 17 that are inserted into selected holes 18, one hanger 11 being disposed in each end section of the bar 10, with the hangers extending upwardly from the bar.

The shorter leg 16 of each yoke 14 overlaps the bar 10 to prevent accidental disengagement of the journal pin 17 from the selected hole 18 when the hanger 11 is inclined relative to vertical as shown in full lines in FIG. 2 and, also, shown in FIG. 6. However, this shorter leg is dimensioned to clear the bar 10 when the yoke 14 is swung into substantially vertical position, whereby the journal pin 17 may be disengaged from the selected hole 18 in the bar. At this time, the hanger 11 may be reversed so that its hook 12 may selectively project toward the midportion of the bar 10 or project toward an adjacent end of the bar. The reason for reversing the hanger will be clear from the disclosure made at the right-hand end of FIG. 2. When the holes 13 or 13a are being used to receive hooks 12, the latter must project toward the midportion of the bar, that is, the hooks point toward one another. However, when the hooks are engaged with holes 13b, they must project toward the adjacent outer ends of the bar, that is, the hooks point away from one another. When reversing a hanger 11 so that its hook 12 will point in the opposite direction from which it presently occupies, the hanger is first moved into substantially vertical position so that its shorter leg 16 will clear the bar; then its journal pin 17 is withdrawn from one side of the bar; thereupon the hanger is rotated 180°; and finally the journal pin is inserted into a selected hole from the opposite side of the bar.

The sight pin C previously mentioned is located at the midportion of bar 10. It will be observed from FIGS. 3, 4 and 5 that a center hole 19 extends horizontally through the midportion of the bar and a pivot bolt 20 is rotatably disposed in this center hole, the pivot bolt having an opening 21 slidably receiving the sight pin, whereby the latter may extend vertically as in FIGS. 2 and 3, or the sight pin may be swung into inclined position when striking an obstruction, this sight pin being further foldable into parallel relation with the bar 10 for storage purposes as disclosed by dot-dash lines in FIG. 5, this movement being indicated by arrows 22 and 23.

Moreover, the sight pin C is located adjacent to one side of the bar 10, this side being provided with a vertical recess 24 into which the sight pin may be moved to hold the latter vertical (see FIGS. 4 and 5). A spring 25 is operable to yieldingly urge the sight pin into recess

24. Pivot bolt 20 has a head 26 disposed on the opposite side of the bar from that of the recess, and spring 25 is coiled around the pivot bolt between the bolt head and the bar.

I claim:

1. In a gauge for use in straightening automotive frames:

- a. an elongated bar having a series of spaced holes fashioned in each end section thereof extending transversely through the bar, with pairs of the holes in the opposite end sections being located equal distances from the midpoint of the bar;
- b. a pair of rigid hangers having their lower ends swingably anchored in selected holes of the bar, one hanger being disposed in each end section of the bar, with the hangers extending upwardly from the bar, and each hanger having a hook projecting from its upper end;
- c. a vertical sight pin located at the midpoint of the bar;
- d. each hanger having a yoke secured to the lower end thereof, the yoke defining a pair of spaced legs arranged to straddle the bar, one of the legs being longer than the other, the longer leg having a journal pin fixed thereto for insertion through a selected hole in the bar;
- e. the shorter leg of each yoke overlapping the bar to prevent accidental disengagement of the journal pin from the selected hole in the bar when the hanger is inclined relative to vertical, and the shorter leg being dimensioned to clear the bar when the yoke is swung into substantially vertical

position, whereby the journal pin may be disengaged from the selected hole in the bar and the hanger reversed so that its hook may selectively project toward the midportion of the bar or project toward the adjacent end of the bar.

2. The gauge for use in straightening automotive frames, as set forth in claim 1;

- f. and in which a center hole extends horizontally through the midportion of the bar, a pivot bolt being rotatably disposed in this center hole, the pivot bolt having an opening extending there-through and the sight pin being slidably mounted in this opening, whereby the sight pin may extend vertically or it may swing into an inclined position when striking an obstruction, the sight pin being further foldable into parallel relation relative to the bar for storage purposes.

3. The gauge for use in straightening automotive frames, as set forth in claim 2;

- g. and in which the sight pin is located adjacent to one side of the bar, and this side of the bar being provided with a vertical recess into which the sight pin may be moved to hold the sight pin vertical;
- h. and a spring operable to yieldingly urge the sight pin into the recess.

4. The gauge for use in straightening automotive frames, as set forth in claim 3;

- i. and in which the pivot bolt has a head disposed on the opposite side of the bar from that of the recess, and the spring being coiled around the pivot bolt and arranged between the bolt head and the bar.

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