Dec. 27, 1938. O. B. HARMON ET AL 2,141,650

AUTOMOBILE FRAME

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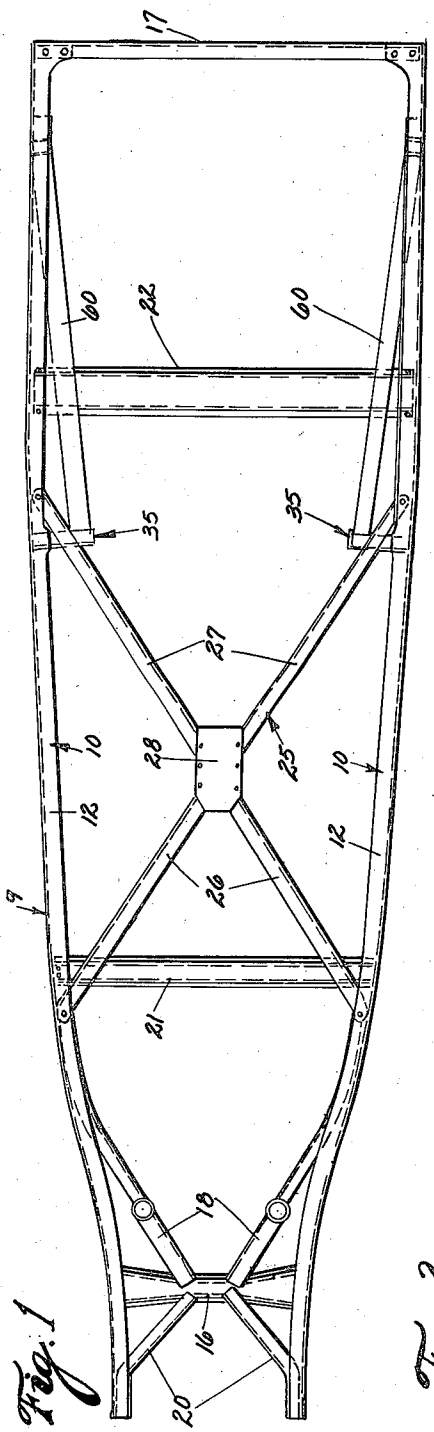


Fig. 1

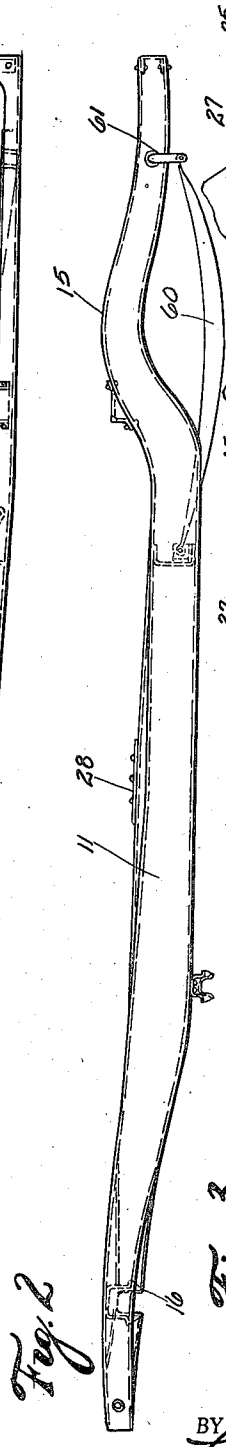


Fig. 2

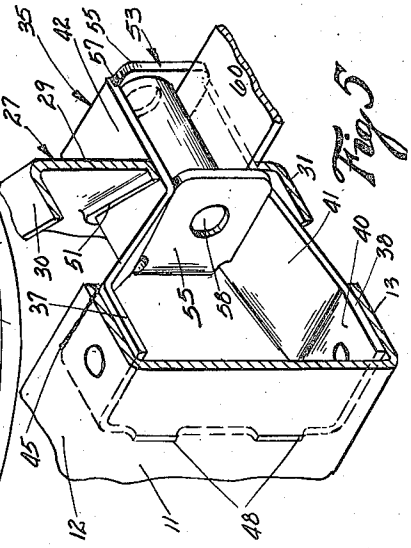


Fig. 5

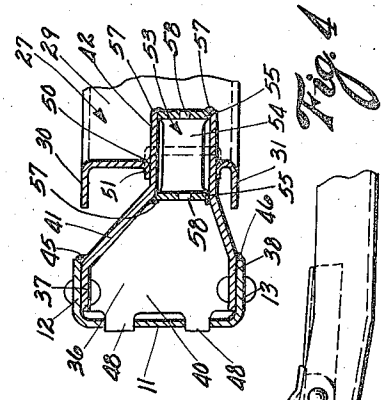


Fig. 4

Fig. 3

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Fig. 6

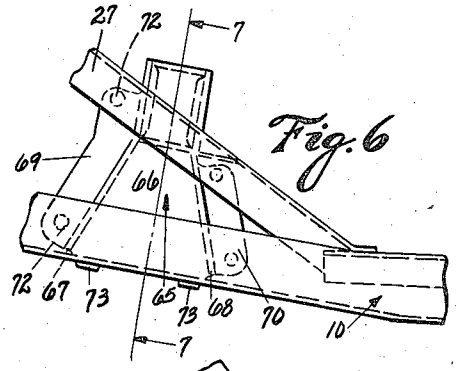
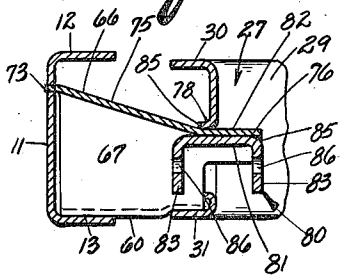


Fig. 7



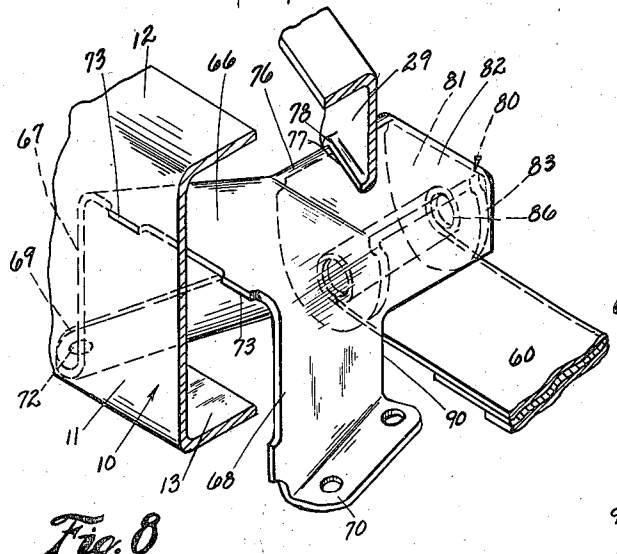


Fig. 8

Fig. 9

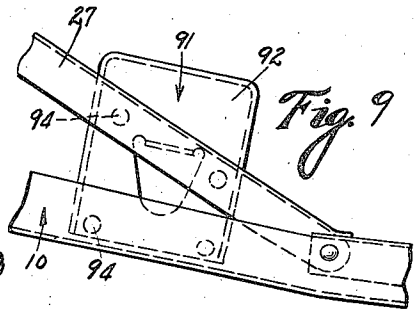
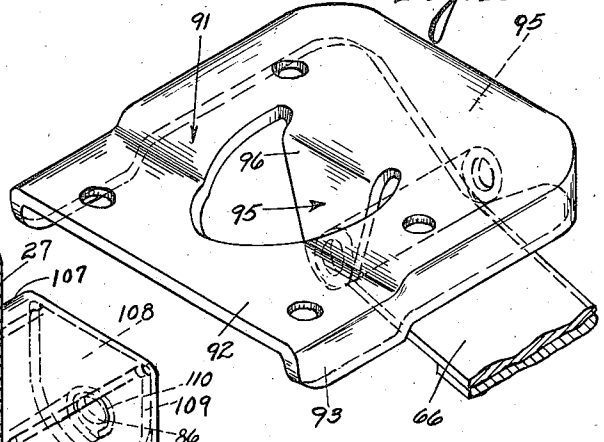


Fig. 10



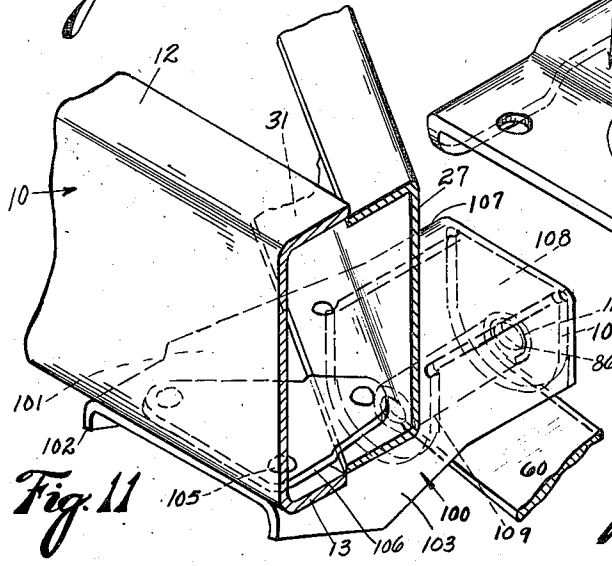


Fig. 11

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Patented Dec. 27, 1938 2,141,650

UNITED STATES PATENT OFFICE

2,141,650

AUTOMOBILE FRAME

Orlin B. Harmon, Lakewood, and Robert H. Maddock, Cleveland Heights, Ohio, assignors to The Midland Steel Products Company, Cleveland, Ohio, a corporation of Ohio

Application November 23, 1936, Serial No. 112,194

5 Claims. (Cl. 280—106.5)

This invention relates to new and useful improvements in automobile frames having an X-shaped member arranged substantially at its mid-section, and an object of the invention is to provide a spring hanger mounted on the frame by attachment to a diagonal of the X-shaped member and to the adjacent side rail and extending beyond the diagonal member to support one end of the spring approximately at a point therebetween and the longitudinal axis of the frame.

Another object of the invention is to provide a spring hanger stamped out of a single piece of sheet metal.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the accompanying drawings forming a part of the application and wherein like numerals are employed to designate like parts throughout the several views:

Fig. 1 is a top plan view of the vehicle frame,

Fig. 2 is a side elevational view of the same,

Fig. 3 is an enlarged top plan view of the spring hanger shown in Fig. 1,

Fig. 4 is a vertical sectional view taken along the line 4—4 of Fig. 3,

Fig. 5 is a perspective view of the spring hanger,

Fig. 6 is a top plan view of a modified form of spring hanger,

Fig. 7 is a vertical sectional view taken along the line 7—7 of Fig. 6,

Fig. 8 is a perspective view of this modified spring hanger,

Fig. 9 is a top plan view of another spring hanger mounted on a frame,

Fig. 10 is a perspective view of this spring hanger, and

Fig. 11 is a perspective view of another type of spring hanger.

Referring to Figs. 1 through 5, the numeral 9 designates a frame having a pair of longitudinally extending side bars or rails 10 which are bowed outwardly from one another adjacent the mid-section of the frame and each is composed of an inwardly facing channel section having a vertical web 11, and upper and lower flanges 12 and 13 respectively. The side rails are provided with rear kickups 15 and are joined together by front and rear cross members 16 and 17 respectively. Combined with the front cross member 16 are motor supporting diagonals 18 of channel-shaped section having their flanges nested within the flanges of the side rails 10, and forming a box section therewith. Extending forwardly from the front cross member 16 are diagonal front braces 20 of channel section having their flanges nested within the flanges of the side rails 10 at the forward end thereof to form the forward ends of the rails into box section. Intermediate the cross members 16 and 17 are additional cross members 21 and 22 secured to the side rails 10.

An X-shaped member 25 is disposed approximately at the mid-section of the frame and is composed of a pair of front diagonals 26 and a pair of rear diagonals 27 of channel section secured together at their meeting point by upper and lower plates 28. The forward ends of the front diagonals 26 have their flanges nested between the flanges of the side rails 10 and extend away from the webs 11 of the side rails, and the rear ends of the rear diagonals 27 have a vertical web 29 and flanges 30 and 31 which are nested between the flanges 12 and 13 of the side rails 10 and extend toward the webs 11 of the side rails. The foregoing parts may be suitably welded or riveted together.

Figs. 3 through 5 illustrate a spring hanger 35 stamped out of a single piece of sheet metal and comprises a substantially U-shaped member having a vertical web 36 and upper and lower flanges 37 and 38 which extend toward the rear of the frame. The spring hanger has an enlarged section 40, a tapered section 41 and a reduced section 42. The enlarged section 40 is of such height that the flanges 37 and 38 thereof nest snugly within the flanges 12 and 13 of the side rails 10 and are riveted or welded to the flanges 12 and 13 as indicated at 45 and 46. Spaced lugs 48 are provided along the webs 36 of the spring hangers and extend through suitable openings in the webs 11 of the side rails 10 to be welded to the latter.

The major portion of the reduced section 42 of the spring hanger is disposed below the horizontal center line of the enlarged section 40 due to the fact that the upper flange 37 is downwardly inclined at a greater angle than the upward inclination of the lower flange 38. Each reduced portion 42 projects through an opening 50 in the web 29 of the rear diagonal 27 and is welded along its flanges 37 and 38 and web 36 to a flange 51 surrounding the opening 50 in the web 29 of the rear diagonal 27.

Nested within the U-shaped reduced portion 42 of the spring hanger is a spring hanger bearing 53 of substantially U-shape having a vertical web 54 disposed parallel to and engaging the vertical web 36 of the spring hanger, and has vertical flanges 55 disposed at right angles to the flanges

37 and 38 of the reduced portion 42 and extend therebeyond toward the rear of the frame as shown at 56. The flanges of the spring hanger bearing 53 are welded to the flanges of the reduced section 42 as shown at 57. The spring hanger bearings are provided with holes 58 in their flanges 55 to accommodate a bolt supporting a spring 60. It will be noted that the major portion of the reduced sections 42 of the spring hangers and the spring hanger bearings 53 extend beyond the webs 29 of the diagonals 27, whereby the spring hanger bearings 53 support the front end of the rear spring 60 at a point between the rear diagonals 27 and the longitudinal axis of the frame. The rear end of the rear spring 60 is supported by a hanger 61 attached to the side rails 10.

Figs. 6 through 8 relate to a modified form of spring hanger 65 stamped out of a single piece of sheet metal and comprises a substantially U-shaped member having a web 66 and depending flanges 67 and 68 terminating in marginal shoulders 69 and 70 which span the space between the lower flange 13 of the side rail 10 and the lower flange 31 of the rear diagonal 27, and are suitably welded or riveted thereto as shown at 72. Spaced lugs 73 are provided along the web 66 of the spring hangers and extend through suitable openings in the web 11 of the side rails 10 to be welded to the latter.

The spring hanger 65 has a portion 75 of the web 66 downwardly inclined and merges into a reduced section 76 which projects through an opening 77 in the web 29 of the rear diagonal 27 and is welded along its web to a flange 78 defining the opening 77.

Nested within the U-shaped reduced portion 76 of the spring hanger is a spring hanger bearing 80 also of substantial U-shape having a horizontal web 81 engaging the horizontal portion 82 of the web 66 of the spring hanger and has vertical flanges 83 disposed at right angles to the vertical flanges 67 and 68 of the spring hanger. The spring hanger bearing is secured to the spring hanger by welding the adjacent surfaces of the flanges of the bearing and of the hanger as indicated at 85. Each spring hanger bearing is provided with aligned holes 86 in the flanges thereof to receive a bolt for supporting the spring 60. The flanges 68 of the reduced portion 76 of the spring hanger are cut away as shown at 90 to accommodate the end of the spring 60.

Figs. 9 and 10 relate to another type of spring hanger 91 stamped out of a single piece of metal and having a rectangular web 92 and a depending flange 93 extending along three sides of the web. The web 92 bridges the space between the side rail 10 and the rear diagonal 27 and extends beyond the latter toward the longitudinal axis of the frame. The web portion 92 is riveted or otherwise secured as indicated at 94 to the bottom surface of the lower flanges of the side rail 10 and of the diagonal 27. A pair of depending ears 95 are provided for connection with the spring 60. One of the ears is formed by cutting out a portion 96 of the web and turning it downwardly and the other ear is formed as a downward extension of the flange 93. It will be seen that the spring hanger 91 supports the spring 60 at a point below the plane of the lower flanges of the side rail and the rear diagonal and that the spring is suspended at a point between the rear diagonal 27 and the longitudinal axis of the frame.

Fig. 11 illustrates another type of spring hanger 100 comprising an inverted substantially U-shaped piece of sheet metal having a flat web portion or platform 101 and depending flanges 102 and 103. The spring hanger spans the space between the side rail 10 and the diagonal 27 and extends beyond the latter toward the longitudinal axis of the frame. The web portion 101 is riveted as indicated at 105 to the lower surface of the flanges 13 and 31 of the side rail 10 and diagonal 27, and may be further reinforced by a gusset plate 106 above these flanges. The spring hanger has a reduced section 107 in which is nested and welded thereto an inverted substantially U-shaped spring hanger bearing 108 having depending flanges 109 provided with aligned holes 110 to receive a bolt to support the front end of the spring 60.

It is to be understood that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the appended claims.

We claim:

1. In an automobile frame, a pair of side rails of channel configuration having a web terminating in flanges, a cross member extending at an acute angle thereto for connecting the same, and a spring hanger spanning the space between one of said side rails and said cross member, said spring hanger having an enlarged portion nested within the flanges of said one side rail and welded to said side rail, and having a reduced portion extending through and beyond said cross member toward the longitudinal axis of said frame and welded to said cross member, and means in said reduced portion for connection with one end of a spring to suspend said spring end between said angularly disposed cross member and the longitudinal axis of said frame.

2. In an automobile frame, a pair of side rails, a cross member extending at an acute angle thereto for connecting the same and forming a crotch therewith, a spring hanger bracket comprising a body portion secured to one of said side rails and said cross member, said body portion extending across said crotch and projecting through said cross member toward the longitudinal axis of the frame, said body portion having a pair of flanges, spring hanger means disposed between said flanges and secured to the projecting portion of said body portion and having spring supporting flanges to accommodate one end of a spring substantially between said cross member and the longitudinal axis of the frame.

3. In an automobile frame, a pair of side rails, a cross member extending at an acute angle thereto for connecting the same and forming a crotch therewith, a spring hanger bracket comprising a body portion secured to one of said side rails and said cross member, said body portion extending across the crotch and projecting beyond said cross member toward the longitudinal axis of the frame, said body portion having a pair of flanges, one of which is stamped out of the body portion and bent at an angle thereto and the other is formed upon the end of the body portion, and spring hanger means disposed between said flanges and secured to the end flange of said body portion and having spring supporting means to fasten one end of a spring substantially between said cross member and the longitudinal axis of the frame.

4. In an automobile frame, a pair of side rails,

of channel configuration having a web terminating in flanges, a cross member extending at an acute angle thereto for connecting the same, a spring hanger spanning the space between one of said side rails and said cross member, said spring hanger having an enlarged portion arranged between the flanges of one side rail, and having a channel shaped reduced portion extending through and beyond said cross member towards the longitudinal axis of said frame, and a bracket mounted in said channel-shaped reduced end and provided with a pair of ears for a connection with one end of a spring to suspend said spring end between said angularly disposed cross member and the longitudinal axis of said frame.

5. In an automobile frame, a pair of side rails of channel configuration having a web terminating in flanges, a cross member extending at an acute angle thereto for connecting the same, a spring hanger spanning the space between one of said side rails and said cross member, said spring hanger having an enlarged portion of inverted channel shape with lateral flanges secured to the lower flanges of one of the side rails, and having a reduced portion extending through and beyond said cross member toward the longitudinal axis of said frame, and means in said reduced portion for connection with one end of a spring to suspend said spring end between said angularly disposed cross member and the longitudinal axis of said frame.

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