

Sept. 22, 1925.

1,554,954

J. M. COOTE

BUMPER

Filed Jan. 2, 1924

3 Sheets-Sheet 1

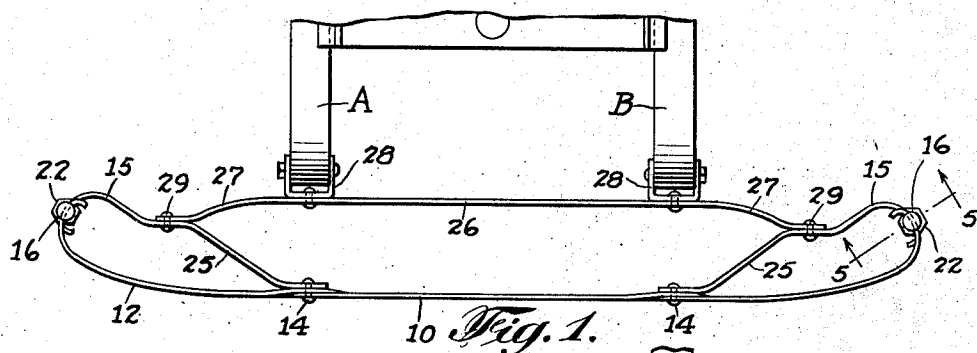


Fig. 1.

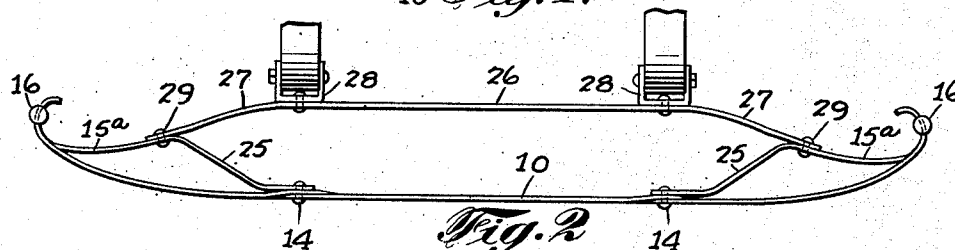


Fig. 2.

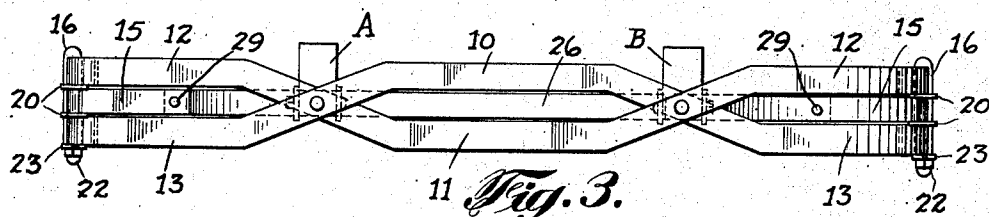


Fig. 3.

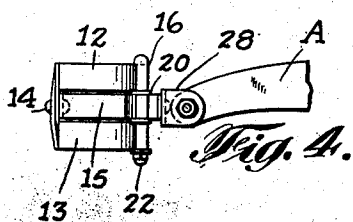


Fig. 4.

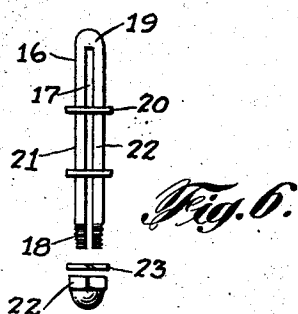


Fig. 6.

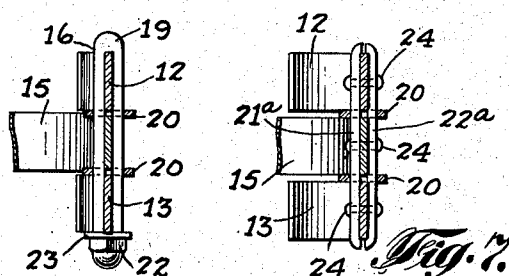


Fig. 5.

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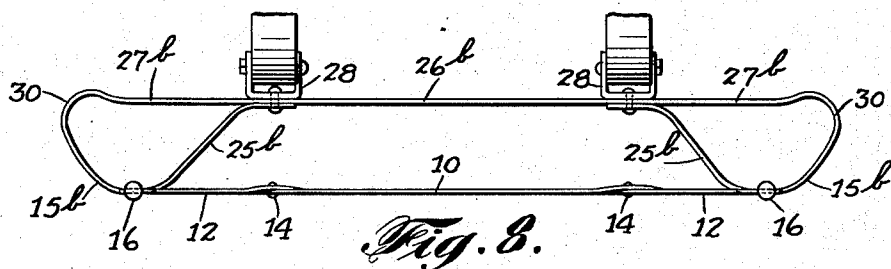


Fig. 8.

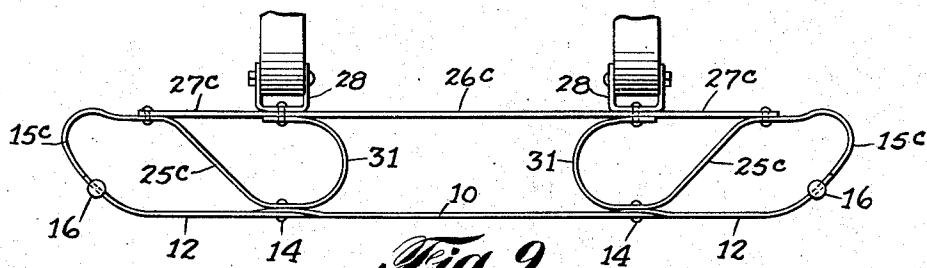


Fig. 9.

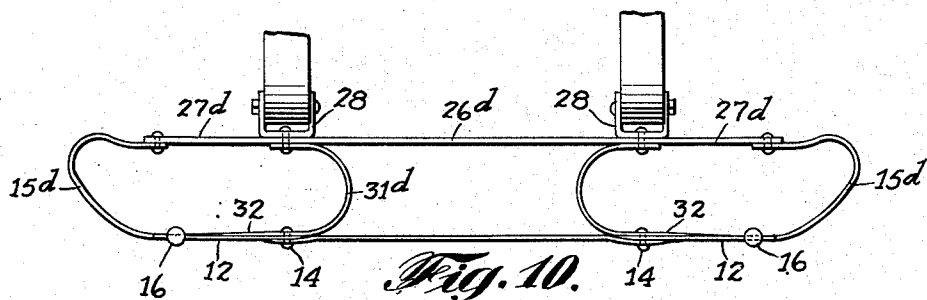


Fig. 10.

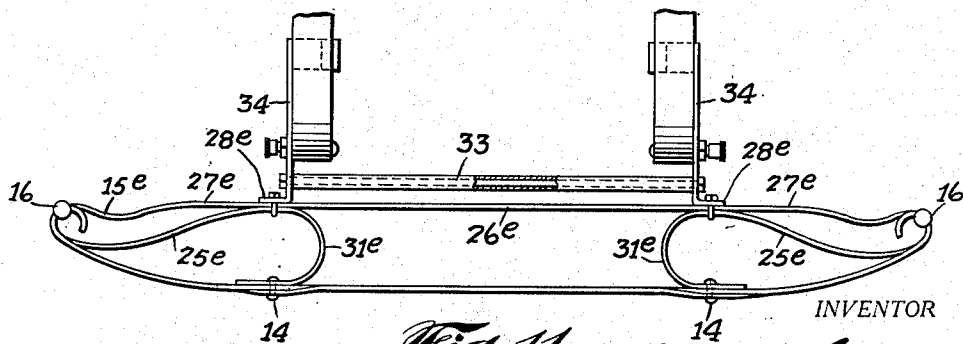


Fig. 11.

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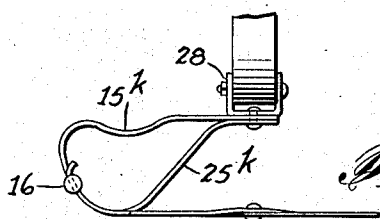
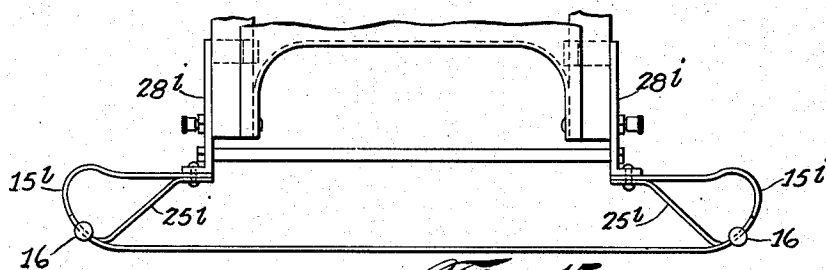
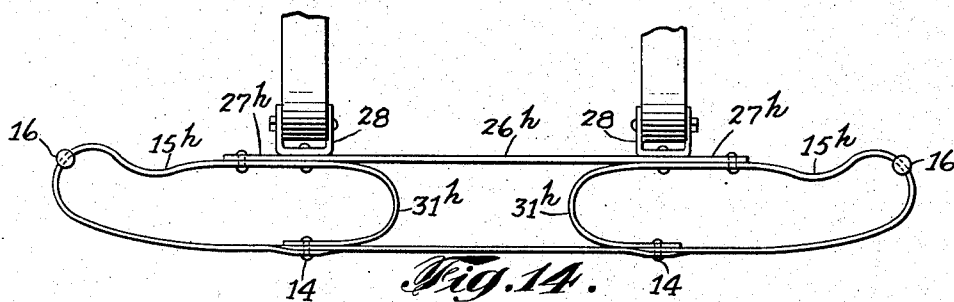
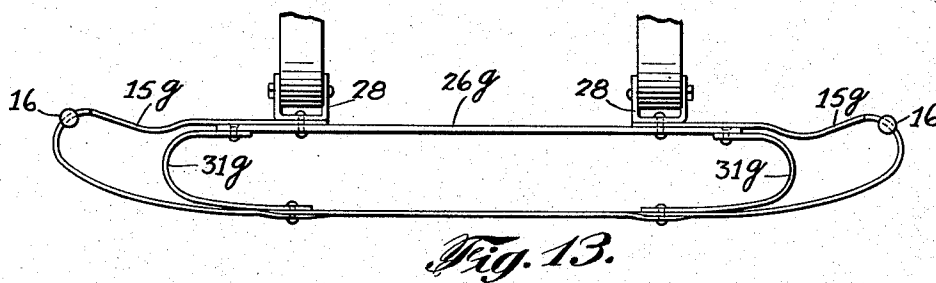
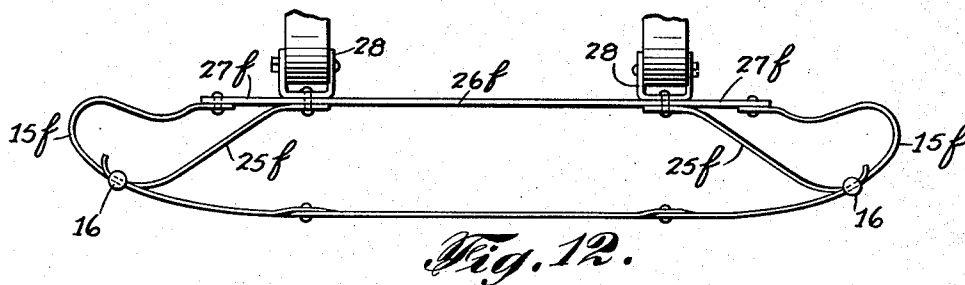
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3 Sheets-Sheet 3



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Patented Sept. 22, 1925.

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UNITED STATES PATENT OFFICE.

JOHN M. COOTE, OF ELIZABETH, NEW JERSEY, ASSIGNOR TO COOTE PRODUCTS CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

BUMPER.

Application filed January 2, 1924. Serial No. 683,876.

To all whom it may concern:

Be it known that I, JOHN M. COOTE, a citizen of the United States, and resident of Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Bumpers, of which the following is a specification.

This invention involves certain improvements in automobile bumpers, and more particularly to that type in which the main structural parts are formed of flat spring steel bars or strips each so mounted as to present its wider face in a vertical plane.

One object of my invention is to provide improved means for connecting a double bar bumper to a resilient support.

A further object is to provide improved means for mounting the general type of impact bar shown in my prior Patent 1,441,400 issued January 9, 1923. Other objects and advantages will be pointed out hereinafter, or will be apparent from a consideration of the various forms hereinafter described.

In the accompanying drawings:

Fig. 1 is a top plan view of a bumper constructed in accordance with my invention.

Fig. 2 is a similar view of a slightly modified form.

Fig. 3 is a front elevation of the bumper shown in Fig. 1.

Fig. 4 is an end view of the construction shown in Fig. 1.

Fig. 5 is a section on the line 5—5 of Fig. 1.

Fig. 6 is an elevation of the clamping member shown in Fig. 5.

Fig. 7 is a section similar to Fig. 4, but showing a modified form of clamp, and

Figs. 8 to 16 inclusive are plan views of other forms of bumpers showing other forms of supporting means for the impact bar.

The impact member shown in Figs. 1, 3 and 4 includes two bars having central portions 10 and 11 in substantially the same vertical plane and spaced apart. The terminal portions 12 of one bar are in the same vertical plane as the terminal portions 13 of the other bar, but the two bars cross each other at two points so that the lower terminal portions 13 are integral with the upper central portions 10, and the upper terminal portions 12 are integral with the lower central portion 11. The two points at

which the bars cross are preferably substantially directly in advance of the spring horns or chassis frame members A and B of the vehicle. The two bars are secured together at the crossing points in any suitable manner, as for instance by clamps or rivets 14.

For supporting this impact member there is provided a supporting structure preferably formed of substantially the same character of flat spring steel stock as is employed in making the two bars of the impact member. The supporting structure includes a bar section 15 at each end which extends between the two superposed terminal portions 12 and 13 of the impact member, and is secured to said terminal portions by a clamping member which forms one important feature of my invention, and two forms of which are shown in Figs. 5, 6 and 7. In the form shown in Figs. 5 and 6 this clamping means includes a bolt 16 having a slot 17 extending lengthwise thereof from the threaded end 18 nearly to the opposite end 19 which may be rounded or provided with any suitable form of head. The slot is of a width substantially equal to the thickness of the bar sections 12, 13 and 15, and the bolt is of such length as to receive these three sections in superposed relationship, and in the same vertical plane. The bar sections 12, 15 and 13 are preferably spaced by washers 20 which encircle the stud bolt and hold the two side sections 21 and 22 from spreading apart. They thus serve as clamping members as well as spacing members. If desired the bar sections may be made slightly narrower at the points where they are clamped together by the bolts 16 so that the total height of the bumper will be substantially equal to the sum of the heights of the three bar sections. As shown in Fig. 5, the center bar section 15 is cut away slightly at its upper and lower edges to receive the washers 20. In assembling the bumper, the bar sections 12, 15 and 13 are inserted in the slot 17 with the spacing washers and the parts clamped or locked in position by means of a nut 22 secured to the threaded end 18. This nut forces all of the parts toward the closed end of the slot and prevents endwise or other movement of the bar sections in the slot. A lock nut or locking washer 23 may be employed to betters insure the retention of the nut 22. By

means of this clamping construction the impact bar may be detached from the supporting means in case of repair or replacement, and it is not necessary to form any eyes, loops or other special bends at the ends of the bars of either the impact member or the supporting structure.

In Fig. 7 I have shown a clamping construction in which the similar sections 21^a and 22^a are employed and spaced by a slot, but instead of having these sections integral and the parts held in place by a nut, I provide rivets 24 for connecting the two sections to each of the bar sections. In this form I have shown the washers 20 encircling the two sections 21^a, 22^a between the bar sections, but these may be omitted in this form.

The two bar sections 15 of the supporting structure may be connected to the vehicle in various different ways, and may if desired be connected to the impact member at another point, as for instance at the point where the two bars of the impact member cross each other. One such construction is shown in Fig. 1. In this form the bar sections 15 are formed integral with bar sections 25 which are secured to the impact member by the same clamp or rivet 14 which connects the two bars at the cross over points. Each of the two bars 15—25 is secured intermediate of its ends to a rear bar 26 which has terminal portions 27 extending laterally beyond the chassis frame. This bar 26 may be secured to the spring horns of the vehicle frame or to any other suitable parts of the vehicle by brackets 28 or any other suitable parts. The terminal portions 27 may be secured to the bars 15—25 by rivets 29 or any other suitable form of clamping or securing means. In case of collision the impact member itself may bend, the terminal portions of the rear bar 26 may bend rearwardly, and the bars 15—25 may bend so that the intermediate portions come nearer to the impact bar. In case the end of the bumper hooks on to an obstruction in backing the car, the parts may move so as to permit the forward movement of such bumper ends. Although the bars 15 and 25 are preferably formed integral, that is, as parts of the same bar, I may in some cases make the bar sections 15 and 27 integral and terminate the bar section 25 at the rivet or other clamping means 29.

In Fig. 1 it will be noted that each bar section 15 enters the clamping bolt 16 from the opposite side to that at which the bar sections 12 and 13 enter the clamping bolt. This gives the bumper bar a rounded form with the ends of the bar sections protected and within the outer perimeter of the structure. Although this is preferable, I may, if desired, use bar sections 15^a curved in the

opposite direction, that is, rearwardly instead of forwardly, and have the three bar sections 12, 15^a and 13 extending through the clamping bolts 16 in the same direction as shown in Fig. 2.

In Fig. 8 I have shown a construction in which the impact member is made somewhat shorter and the bars thereof do not have their terminal portions curved rearwardly as in Figs. 1 and 2. In this form the rear bar 26^b is provided with terminal portions 27^b which are folded back to form closed loops 30 constituting the end portions of the bumper. The extremities of this rear bar are secured to the body portion of the rear bar at the supporting brackets 28. The loop includes a section 15^b which lies between the superposed bar portions of the impact member and is secured thereto by the clamping bolt 16. In this construction the impact member is not directly supported at the cross over points but the terminal portions of the impact member at the clamping bolt 16 are connected to the chassis frame by both sides of the closed loop 30. The bar sections 15^b are extended to form the bar sections 25^b so that the bars 27^b, 15^b and 25^b are all integral.

In the construction shown in Fig. 9 the rear bar 26^c is connected to the impact member by a bar having a section 15^c extending into the clamping bolt 16 and secured to the impact bar thereby. A second section 25^c is connected to the clamp 14 and a terminal section 31 connects the cross over clamp 14 with the supporting bracket 28. The rear bar 26^c has extensions 27^c which are secured to the bar sections 15^c—25^c. Thus the construction is similar to that shown in Fig. 1, except for the auxiliary support in the form of the curved bar section 31 which gives greater resistance to the rearward movement of the impact members at the cross over points.

In Fig. 10 I have shown a construction in which the rear bar 26^d is connected to the impact member by a bar including a section 15^d connecting the extension 27^d of the rear bar to the clamping bolt 16, a section 32 extending along the impact member to the cross over, and a section 31^d similar to that shown in Fig. 9, and extending in bowed form from the clamp 14 to the securing bracket 28.

In Fig. 11 I have shown a supporting means for an impact bar of the form and proportions illustrated in Fig. 1. This supporting means includes a rear bar 26^e having an extension 27^e integral with a section 15^e secured to the clamping bolt 16. From this bolt a section 25^e extends to the attaching bracket 28^e and integral with a bowed section or brace 31^e connecting the cross over with the attaching bracket. The bracket 28^e is of somewhat different form

from that shown in the previous figures above referred to, and includes a connecting bar 33 for holding the bracket plates 34 against the sides of the chassis frame.

5 In Fig. 12 I have illustrated a construction similar to that shown in Fig. 8, except that the rear bar 26^t and its extensions 27^t are not integral with the bar section 15^t which leads to the connecting bolt 16. The
10 bar section 25^t which forms the diagonal connection between the attaching bracket 28 and the clamping bolt 16 is integral with the bar section 15^t.

15 In Fig. 13 I have illustrated a construction in which the bar section 15^s connecting the clamping bolt 16 and the supporting bracket 28 is separate from but riveted to the rear bar 26^s and the bar section 31^s from the cross over to the supporting
20 bracket is also separate from the rear bar 26^s and the bar section 15^s.

The construction shown in Fig. 14 is similar to that shown in Fig. 13 except that the bar section 31^h connecting the cross
25 over to the supporting bracket 28 is bowed in the opposite direction, as shown in Figs. 10 and 11, and is integral with the bar section 15^h which connects the clamping bolt 16 to the extension 27^h of the rear bar.

30 In Fig. 15 I have shown a construction similar to that shown in Fig. 12, except that the rear bar is omitted and the two ends of the bar which includes the section 15ⁱ are directly secured to a supporting bracket 28ⁱ
35 of the type shown in Fig. 11.

In Fig. 16 I have shown a form similar to that shown in Fig. 15, except that the bar sections 15^k and 25^k are connected to a supporting bracket 28.

40 Although my improved bar supporting means is intended primarily for use with an impact member having a double cross over, as shown in Fig. 3, it may be employed in connection with a double bar bumper in
15 which there is no cross over. This is particularly true in such forms as those shown in Figs. 8, 12, 15 and 16, where the only support of the impact member is at the clamping bolt 16. In Fig. 15 I have indicated
50 such an impact member without the double cross over feature. Even with such forms as those shown in Figs. 1, 2, 9, 10, 11, 13 and 14 where there is a double support for each end portion of the impact member, the
55 support at the point directly in front of the chassis frame members may be to a cleat connecting the two parallel bars which do not cross over.

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

1. A bumper including an impact member comprising two bars having their center portions spaced apart vertically and their
65 end portions spaced apart vertically, the

two bars crossing each other and being secured together at points between said center portions and each end, a support including bar portions extending between said bars at each end portion, and a pair of connecting
70 members each having two sections with a slot between receiving both bars of the impact member and the bar portion of the support in superposed edge to edge relationship.
75

2. A bumper including an impact member comprising two bars having their end portions spaced apart vertically, a support including bar portions extending between said
80 bars at each end portion, a pair of connecting members each having two sections with a slot between receiving both bars of the impact member and the bar portion of the support in superposed edge to edge
85 relationship, and washers encircling the two sections and spacing said bar portions from said impact bar ends in said slot.

3. A bumper including an impact member comprising two bars having their center portions spaced apart vertically and
90 their end portions spaced apart vertically, the two bars crossing each other and being secured together at points between said center portions and each end, a support including bar portions extending between said
95 bars at each end portion, a pair of connecting members each having two sections with a slot between receiving both parts of the impact member and the bar portion of the support in superposed edge to edge relationship, and washers encircling the two sections and spacing said bar portions from
100 said impact bar ends in said slot.

4. A bumper including an impact member comprising two bars of flat spring steel
105 stock having their end portions spaced apart vertically, a support including bar portions extending between said bars at each end portion, and a pair of clamping bolts each having a slot lengthwise thereof and receiving
110 said supporting bar portions and the end portions of the impact member, and a nut on each of said bolts for holding the bars rigid in respect to each other within said
115 slot.

5. A bumper including an impact member comprising two bars of flat spring steel
120 stock having their end portions spaced apart vertically, a support including bar portions extending between said bars at each end portion, and a pair of clamping bolts each having a slot lengthwise thereof and receiving said supporting bar portions and the end portions of the impact member, a
125 nut on each of said bolts for holding the bars rigid in respect to each other within said slot, and washers encircling said clamping bolts above and below said supporting bar portions.

6. A bumper including an impact mem- 130

ber comprising two bars of spring steel stock having their end portions spaced apart vertically, a pair of supporting brackets and connections between said brackets and said impact member, a rear bar connected to said supporting brackets and two bar portions connecting said rear bar and said impact member and engaging with the ends of the impact member and with points on said impact member directly in advance of said supporting brackets.

7. A bumper including an impact member comprising two bars of flat spring steel stock having their center portions spaced apart vertically and their end portions spaced apart vertically, the two bars crossing each other and being secured together at points between said center portion and each end, a pair of supporting brackets for attachment to the vehicle frame, and connections between said brackets and said impact member including bar portions secured between the two bars at each end of the impact member, and bar portions secured to the two bars of the impact member at the cross over points.

8. A bumper including an impact bar, a pair of supporting brackets, a rear bar secured to said brackets and having its ends projecting laterally beyond said brackets, and a pair of supplementary bars each having its intermediate portion secured to the end of said rear bar and having its opposite ends secured to said impact member.

9. A bumper including an impact bar, a

pair of supporting brackets, a rear bar secured to said brackets and having its ends projecting laterally beyond said brackets, and a pair of supplementary bars each having its intermediate portion secured to the end of said rear bar, one end secured to the end of the impact member and the other end secured to the impact member directly in front of and spaced from its corresponding supporting bracket.

10. A bumper including an impact bar, a pair of supporting brackets, a pair of supporting bars each having one end secured to one end of the impact member and the other end secured to the impact member directly in front of the corresponding bracket, and means connecting each bracket with its corresponding supporting bar intermediate of the ends of the latter and independent means for connecting said brackets.

11. A bumper including an impact member having rearwardly curved terminal portions, a pair of supporting brackets, and means connecting each supporting bracket with the impact member, said means including three connected bar sections, one section being secured to the supporting bracket, a second section connected to the impact member in front of the supporting bracket, and the third section being secured to the end of the impact member.

Signed at New York in the county of New York and State of New York this 26th day of December A. D. 1923.

JOHN M. COOTE.