

Aug. 6, 1963

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VEHICULAR ANTENNA BUMPER MOUNT

Filed Aug. 17, 1960

2 Sheets-Sheet 1

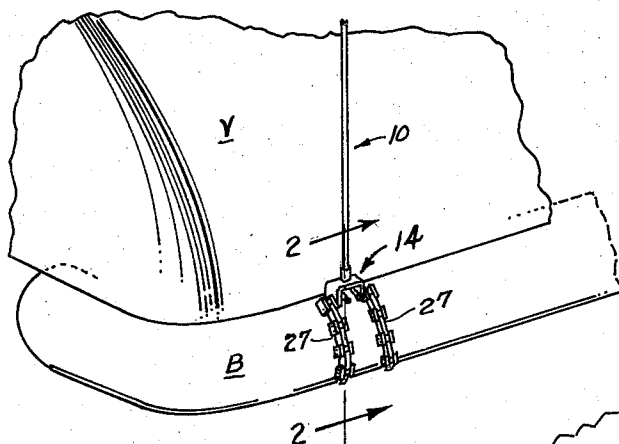


FIG. 1

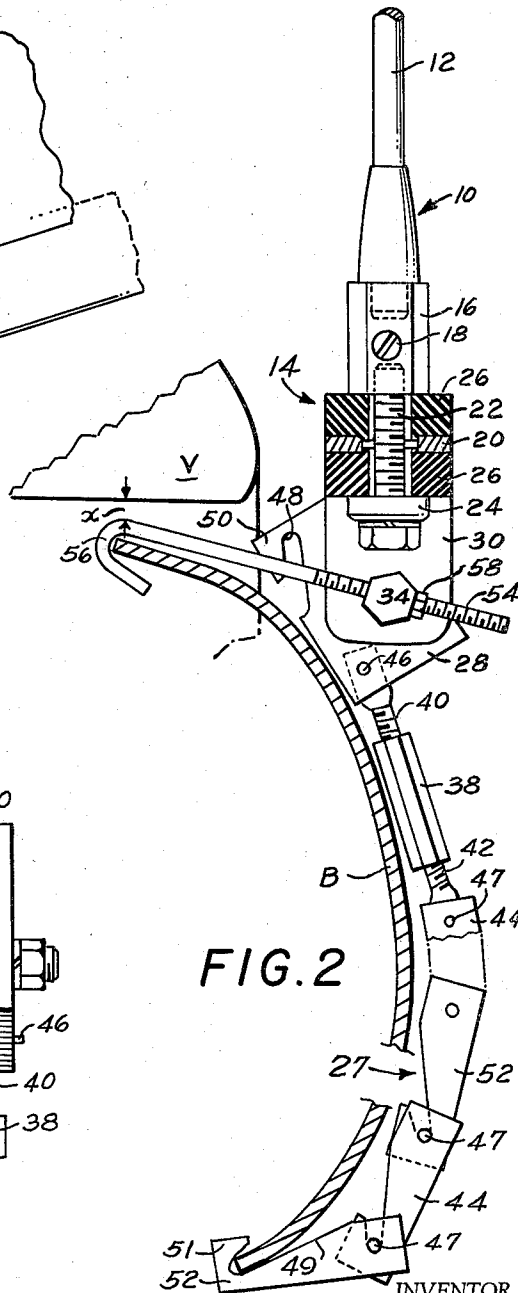


FIG. 2

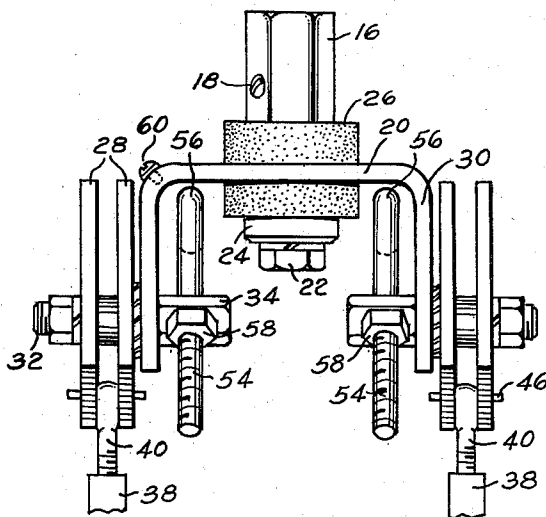


FIG. 3

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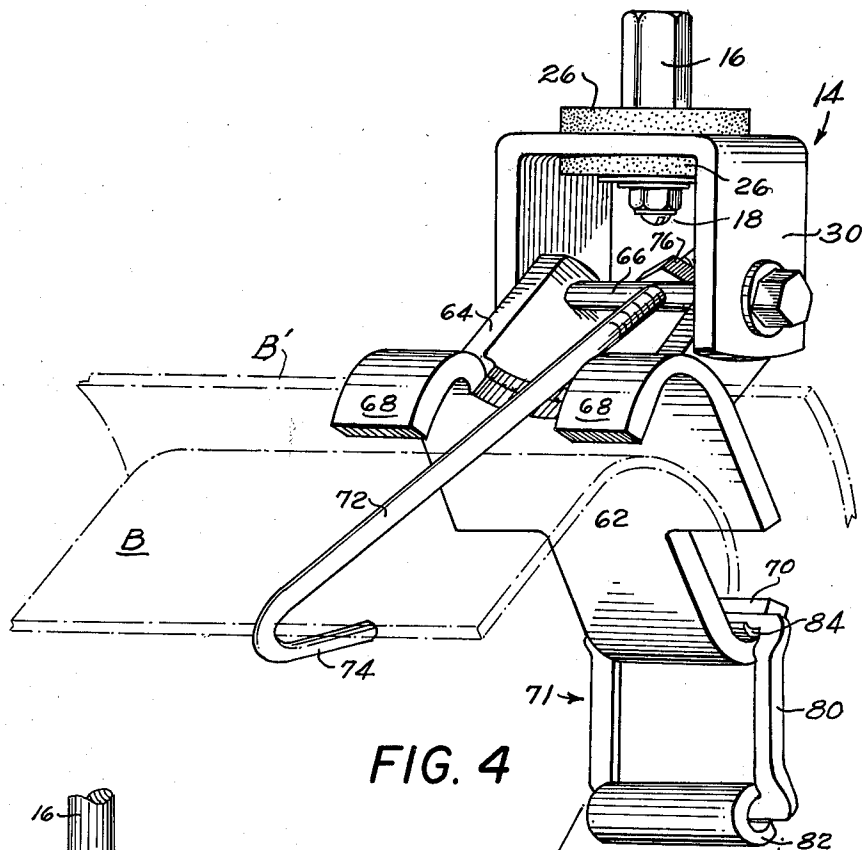


FIG. 4

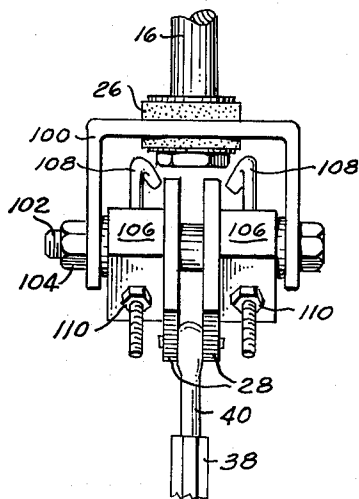
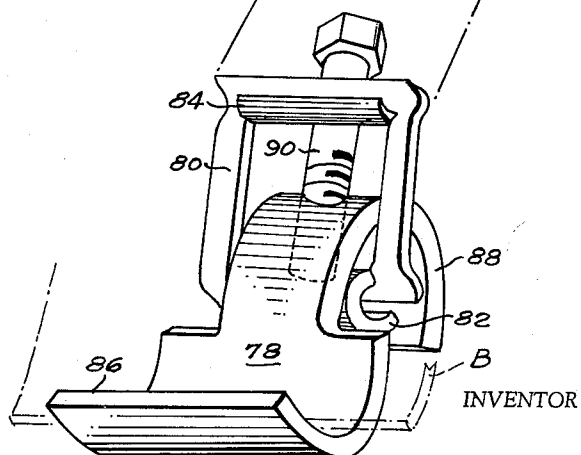


FIG. 5



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VEHICULAR ANTENNA BUMPER MOUNT

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This invention relates generally to vehicular radio antennas, and more particularly to an improved and novel structure by which an antenna of the vertical mast type can be mounted upon a bumper structure of a vehicle.

Vehicle antennas for mounting upon vehicle bodies are not unknown, many such having been developed for mounting in or through drilled holes in the body metal or fenders of the vehicle. These arrangements are quite unsatisfactory, because they permanently mar the body and in addition do not provide adequate strength and stiffness, especially for the longer antennas of the vertical mast type.

An obvious alternative to the sheet-metal panel mounted antennas of the kind mentioned, and one which commends itself for numerous reasons, is the mounting of the device upon a car bumper. The bumper is always of heavy and rigid construction, and provides upper and lower edges which can be engaged by a compression clamp applicable in various locations along the length of the bumper, to suit the needs of the user. Such a clamp also facilitates removal and replacement of the mount, and can easily be made adjustable so as to cooperate with nearly any commercial style and size of bumper.

A particularly attractive type of mount clamp is one which connects an upper and a lower bumper-edge engaging bracket or clasp by a flexible and inextensible chain, such as a link chain, with provision for pulling the chain tight after the parts have been adjusted approximately to size; the latter, for example, by adding or removing links to the chain. Where the upper clasp is connected to means, such as a stirrup, providing the desired flat mounting surface for the antenna mast base, an angular adjustment is used, so that the mast can be set upright regardless of the bumper construction.

However, many modern cars have bumpers in which the upper edge is turned forwardly so as to lie beneath, and be substantially concealed by, a body portion such as an apron or the like. In such cases, the solution as outlined above is a difficult one, because there is insufficient clearance between the bumper's top edge and the body panels to enable the edge to be grasped by a clasp; certainly insufficient to pass the kind of clasp on which a stirrup is mounted.

According to the invention, this problem is solved by a bumper mount for antennas of the mast type, in which a chain is employed to give easy adjustability and great strength, the support stirrup being again connected pivotally to a terminal chain element formed as a clasp (for use with totally exposed bumper edges), but with the addition of one or more relatively long and thin hook-like elements connected to the chain end, or to the stirrup pivot axle, and so shaped as to be capable of passing through the limited space between the car body and the top edge of a partially concealed bumper. This combination, together with subsidiary but useful details to be described, provides a complete and universal solution of the defects of prior art mounts of this general type.

An important aspect of the novel constructions is the manner of connecting the auxiliary hooks mentioned above to the stirrup, its bracket or the chain, such that the angular (vertical) position of the hooks, as dictated by the car construction, does not limit the ability to adjust the mast to its desired vertical or other orientation. Also, the arrangement is such that this auxiliary hook

connection does not in any way impede the swinging of the mast in a vertical fore-and-aft plane, in case the mast should encounter an obstruction during forward motion of the vehicle. Normally, of course, the pivoting of the mast is frictionally constrained so that it remains upright unless such an encounter occurs.

The invention itself will best be understood by referring now to the following detailed specification of certain preferred embodiments thereof, taken in connection with the appended drawings, in which:

FIG. 1 is a fragmentary perspective view of the rear portion of a vehicle and its rear bumper, showing the general manner of mounting the antenna according to the invention.

FIG. 2 is a vertical sectional view of part of FIG. 1, taken along the line 2—2 of that figure.

FIG. 3 is a view in elevation of the structure of a part of FIG. 2.

FIG. 4 is a fragmentary perspective view of the invention as applied to a different type of chain mount for bumpers.

FIG. 5 is a view in rear elevation of a portion of a further modification.

Referring first to FIGS. 1 to 3 of the drawings, FIG. 1 shows the invention applied to the bumper B of a vehicle V having body portions which approach closely to the top edge of the bumper, so that a conventional chain terminal fitting, capable of mounting the mast base, could not pass between the body and bumper for engagement with the top edge of the bumper. The typical antenna mast is indicated at numeral 10, its base stirrup or bracket as a whole by numeral 14, and a typical pair of mounting chains at 27, all as shown in FIG. 1. FIG. 2 shows the arrangement in more detail and to a larger scale, the antenna mast proper being marked 12, its end connector being threaded to engage in the fitting 16 of conductive material, there being a binding screw 18 threaded therein for attachment of the antenna wire.

The base stirrup has a central web 20 connecting the side flanges 30 to form an inverted U element, and fitting 16 has threaded connection with a bolt 22 whose head presses against a rigid collar 24 to clamp the antenna firmly upon web 20 by pressure exerted between the insulating washers 26, the body of bolt 22 passing through an enlarged hole in web 20. In the form being described, the opposite flanges 30 of the stirrup are connected to a pair of spaced-apart flexible chains 27, whose large upper terminal links 28 are actually spaced duplicates (see FIG. 3) holding pivoted between them the connectors 40 which, with connectors 42 and double nut 38, form turnbuckles for pulling the chain tight during installation.

Preferably, in this form of the invention, the chains are formed of links which can be removed and replaced without removal of connecting parts or pivots, all the links being multi-layer and shaped to provide open hooks for engagement with cross-pins such as at 47. Alternate two-ply links 52 will alternate with alternate three-ply links 44 in a well known manner. The uppermost link 28 is of larger pattern, providing for the pivot connection of flanges 30, and including a hook portion 50 defined by a slot 43 to enable this member to be hooked over the top edge of a bumper when clearance for such an installation is available. The lowermost link 52 provides a similar bumper hook as at 51, formed by a slot merging into the slanted edge 49.

When, as shown in FIG. 2, a portion of the vehicle body or sheet metal work approaches closely above a forwardly-turned bumper edge, with only a minimal clearance of $\frac{1}{8}$ or $\frac{1}{4}$ of an inch, as indicated at "x," it is apparent that the hook 50 cannot be employed. The invention therefore provides an auxiliary hook or hooks

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56, here shown as two in number. Since it is necessary to provide for angulation of the stirrup 14 with reference to the hook chain terminals 28, axles are formed by two pivot and clamp screws or bolts 32 (FIG. 3) passing through suitable holes in the flanges 30 and the links parts 28, with lock washers as indicated. It would be objectionable to connect the auxiliary hooks 56 to the flanges 30 in a rigid manner, as this would make the antenna mast orientation depend upon the adjustment as to effective length of such hooks. Accordingly, the hooks 56 are preferably threaded for a portion of their length, and passed through holes in respective elongated head portions (hexagonal) of the bolts 32, these head portions being indicated at 34. A nut 58 on each threaded hook enables them to be pulled up tight after the hook ends have been passed through the available clearance space "x" and then turned to hooking position as in FIG. 2.

It will be clear from the foregoing that the invention provides a solution to the problems mentioned earlier herein, in a truly universal way in that hooks 56 can easily be removed where not needed, yet are available when required and may be installed with no difficulty. When used, they do not in any way interfere with the pivotal adjustment of the stirrup flanges 30, and do not preclude the emergency tilting of the mast when the car passes beneath a low tree limb, building part or the like.

FIGURE 4 shows the invention applied to a different type of bumper connecting chain, herein of the removable one-piece link type. Parts which are identical to those already described are given the same numbers and not further described. The stirrup flanges 30 are pivoted to opposite arms 64 of a bracket welded to an upper single hook member 62 having spaced bumper-edge engaging hooks 68 and a lower chain-engaging hook 70. The links 80 each have a turned-out curved rocker portion 84 adapted to slide edgewise into engagement with a rolled-out partial journal portion 82 of the next link, and so on. The lowermost link is engaged by a hook part 88 of an end fitting 78 providing a lower bumper-edge engaging clasp 86. The bolt 90 threaded in fitting 78 enables residual slack to be taken up, after the proper number of chain links have been assembled.

A single auxiliary hook formed of a long thin body 72 and a terminal hook part 74 passes through a hole in the transverse pivot bolt 66 which also adjustably clamps the stirrup flanges 30 to the arms 64. A nut 76 threaded onto the hook body enables the effective length of the latter to be adjusted as desired. If the bumper is of the inadequate clearance type, as at B, the hook will be employed as shown, while the hook portions 68 will be utilized for the type of bumper indicated at B'. As in the previous form of the invention, the usage of the auxiliary hooks does not interfere with the normal adjustability of the stirrup flanges 30, nor does it impede the emergency relief of the pivot action when an obstruction is encountered by the mast.

Still a third modification is illustrated in FIG. 5, which is generally similar to the form of FIGS. 1 to 3, but uses a single chain of the multi-ply hook type, and spaced auxiliary hooks. Thus, the stirrup 100 has its side flanges pivotally clamped to the top chain fitting 28 by bolt 102 which passes entirely through the structure and is clamped by nut 104. The bolt also passes through a pair of blocks 106 which are drilled to receive the hooks 108 symmetrically spaced on opposite sides of fitting 28,

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while nuts 110 on the hooks provide adjustment for their effective lengths.

It will be seen from the foregoing that the various forms of my invention accomplish all the aims of the invention in a robust yet simple way, and it will be understood that various changes in the details can be made by those familiar with the art, without departing from the true scope of the invention as defined in the appended claims.

What is claimed is:

1. For use with a vehicular radio antenna of the vertical mast type, a mounting comprising a support bracket for the antenna, a first chain link having a pivotal connection with said bracket and having an extensible hook portion to engage the upper edge of a bumper, a plurality of other chain links pivotally connected to said first link and to one another and terminating in a second hook portion to engage the bottom edge of the bumper, an antenna socket mounted on said bracket, and threaded retroacting means for adjusting in situ the effective length of said extensible hook portion.

2. A device in accordance with claim 1, in which said extensible hook portion comprises a relatively long and thin one piece hook element having a threaded shank and in which the pivotal connection between said first link and said bracket includes a pivot axle; said threaded shank passing through a hole in said axle.

3. A universal bumper mounting for a vehicular radio antenna of the vertical mast type, comprising a flexible but inextensible chain including means at respective ends thereof for grasping the exposed upper and lower edges of a vehicle bumper, a transverse pivot axle connected to said chain at its upper end, in the position of use; a bracket carried by said axle for swinging motion in a vertical plane perpendicular to the length of the bumper, an antenna mounting fixture extending from said bracket and electrically insulated therefrom, friction means for establishing the desired vertical orientation of the bracket and fixture on said axle, and at least one elongated thin hook member adjustably secured to said pivot axle, and adapted to hook about an upper edge of a bumper which is turned closely beneath a portion of the vehicle body.

4. A universal bumper mounting for a vehicular radio antenna of the vertical mast type, comprising a U-shaped mast supporting bracket, axle means pivoted in both side flanges of said bracket, spaced chain terminal connecting means pivoted on said axle means, a bumper edge clasp, chain means connecting said clasp to said terminal connecting means, a second bumper edge clasp pivoted on said axle means, and means for adjusting the effective distance between the clasp part of said second clasp and the position of said axle means.

5. A bumper mounting in accordance with claim 4, in which said second bumper edge clasp includes an elongated hook passing substantially through said axle means, and an adjusting nut threaded on the shank of said hook.

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