May 6, 1969 D. D. TRIMBLE 3,442,476

ANTENNA GUARD

Filed July 29, 1966

FIG. 1

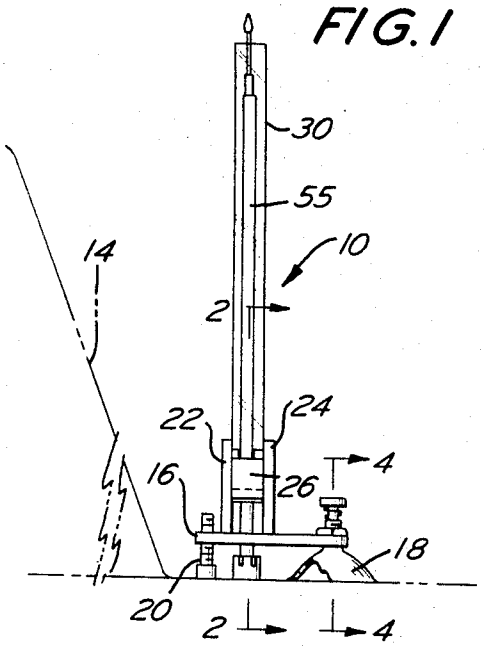


FIG. 2

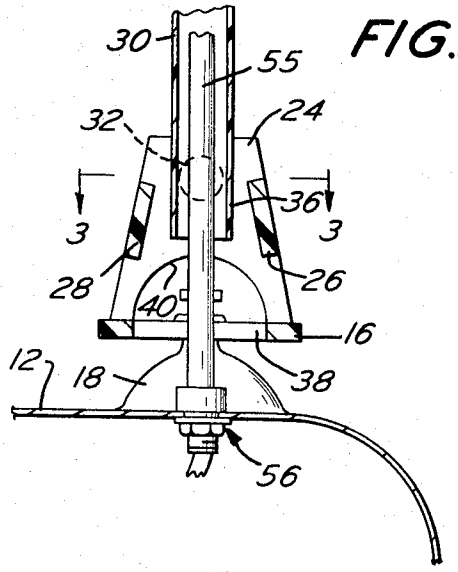


FIG. 4

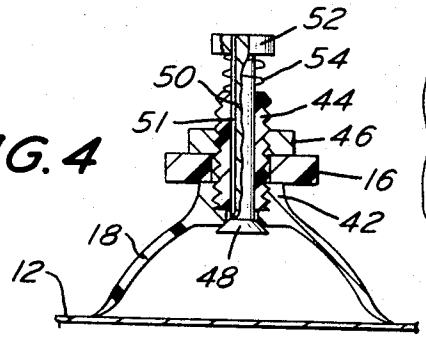


FIG. 3

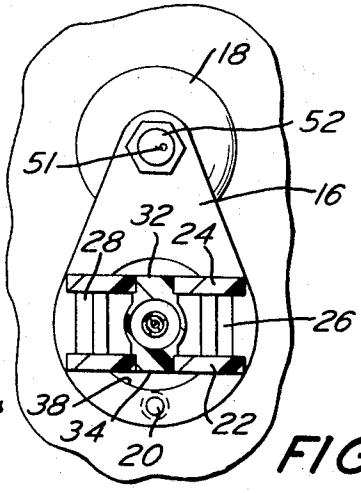
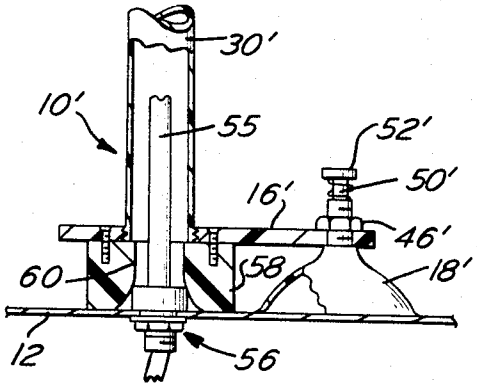


FIG. 5



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United States Patent Office

3,442,476
Patented May 6, 1969

3,442,476

ANTENNA GUARD

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Filed July 29, 1966, Ser. No. 568,956
Int. Cl. H01q 1/18
U.S. Cl. 248—43 8 Claims

ABSTRACT OF THE DISCLOSURE

An antenna guard comprising a hollow tube supported on a base for telescopically fitting over the antenna of a vehicle, a suction cup fixed to the base for attaching the same to the vehicle, and a stabilizer also fixed to the base for opposing bending forces applied to the guard; the guard being pivotable on the base and a valve fixed in said suction cup for releasing the same; the guard being used to protect vehicle antennas by being processed through washing equipment.

This invention relates to an antenna guard, and more particularly, to a guard adapted to be removably coupled to a vehicle in a manner so that a portion of the guard is telescoped over an antenna.

In the car washing industry, recent figures indicate that approxiately five percent of certain model vehicles have their antennas broken or otherwise deformed when processed through car washing equipment. Thus, the location of the vehicle antenna is such on some vehicles that the antennas get caught in the brush bristles and are broken off at the base adjacent the vehicle body after being washed. Heretofore, this problem has been solved by redesigning the car washing equipment or by taking extra precautions with certain vehicles. The former solution is quite expensive since it involves modifications of existing equipment operating in the field. The latter solution substantially slows down the vehicle washing process.

The present invention is directed to a solution to the problem which does not slow down the car washing process nor does it require any redesign of the washing equipment. The present invention is directed to a removable guard telescoped over the antenna and removably coupled to the vehicle before the vehicle is washed. More specifically, the present invention is directed to an antenna guard which includes a tube connected to a base. The base is provided with means for releasably connecting the base to a vehicle with the tube telescoped over the antenna. The base is provided with stabilizer means for assisting and maintaining the base in a predetermined disposition. The guard of the present invention is adapted to be rapidly connected to the vehicle in the desired position before the vehicle is washed, and is capable of being rapidly removed after the vehicle has been washed.

It is an object of the present invention to provide a novel antenna guard.

It is another object of the present invention to provide a solution to a problem concerning broken or damaged antennas on vehicles resulting from the vehicles being processed through automatic vehicle washing equipment.

It is another object of the present invention to provide an antenna guard which is simple, inexpensive, reliable, and capable of being rapidly applied and removed from vehicles to be processed through automatic vehicle washing equipment.

Other objects will appear hereinafter.

For the purpose of illustrating the invention, there are shown in the drawings forms which are presently preferred; it being understood, however, that this invention is not limited to the precise arrangements and instrumentalities shown.

FIGURE 1 is a side elevation view of an antenna guard in accordance with one embodiment of the present invention mounted on a vehicle.

FIGURE 2 is a sectional view taken along the line 2—2 in FIGURE 1.

FIGURE 3 is a sectional view taken along the line 3—3 in FIGURE 2.

FIGURE 4 is a sectional view taken along the line 4—4 in FIGURE 1.

FIGURE 5 is a vertical sectional view similar to FIGURE 1 but illustrating another embodiment of the present invention.

Referring to the drawing in detail, wherein like numerals indicate like elements, there is shown in FIGURE 1 an antenna guard in accordance with one embodiment of the present invention designated generally as **10**. The antenna guard **10** is mounted on a body **12** of a vehicle. For the purpose of illustration, the guard **10** is telescoped over an antenna **55** forwardly of the windshield **14** on the vehicle.

The antenna guard **10** includes a base **16** removably connected to the body **12** by means of a suction cup **18**. Suction cup **18** is disposed at one end of the base **16**. At the opposite end of the base **16**, there is provided a stabilizer means in the form of a bolt **20** threadedly connected to the base **16** and having an enlarged non-scuffing head made from a convenient material such as rubber.

The base is provided with upwardly extending bracket arms **22** and **24** interconnected by struts **26** and **28**. The arms **22** and **24** are parallel to one another and are provided with apertures rotatably supporting a guard tube **30** preferably made of a transparent material. Tube **30** is provided with a boss **32** spaced from its lower end and rotatably received in an aperture in arm **24**. A diametrically opposite boss **34** is rotatably received in an aperture in arm **22**. Tube **30** is provided with an extension **36** below the bosses **32** and **34**. Extension **36** is adapted to contact one of the struts **26** and **28** and thereby limit the range of rotation of the tube **30**.

The base **16** is provided with the aperture **38** which is substantially larger than the diameter of tube **30**. A notch **40** is provided on the lower end of arm **24**. The radius of notch **40** is substantially equal to the radius of aperture **38**. A similar notch is provided at the lower end of arm **22**. Tube **30** is open at both ends.

As shown more clearly in FIGURE 4, the suction cup **18** is made of flexible polymeric material such as rubber and provided with a thick base **42**. A nipple **44** provided with exterior threads has one end connected to the base **42**. Nipple **44** extends through a hole in base **16** and a lock nut **46** is threaded to nipple **44** above the base **16**. These elements assist in firmly securing the base **42** to the base **16**.

An aperture is provided in the base **42** of the suction cup **18**. A valve seat is provided at the lower end of the aperture. A valve head **48** closes the aperture in the base **42** which is in line with the longitudinal axis of nipple **44**. The valve head **48** is provided with a stem **50** having a groove **51** on its outer peripheral surface. Stem **50** is reciprocally disposed within nipple **44**. A spring **54** biases the enlarged head **52** on the stem **50** upwardly, thereby seating the valve head **48**.

Antenna **55** is supported by the body **12** and attached thereto by a connecting means designated generally as **56**. Connecting means **56** may be any one of a wide variety of devices being commercially used. For purposes of illustration, antenna **55** is of the telescoping type and is illustrated in FIGURE 1 in its telescoped position.

The antenna guard **10** is utilized in the following manner.

Before the vehicle is processed through an automatic washing device, the stabilizer bolt **20** is adjusted to a position wherein it will assist in maintaining the base **16** horizontally disposed or in any other predetermined position. The guard tube **30** is telescoped over the antenna and radially spaced therefrom. The suction cup **18** is attached to the body **12**. A line extending from suction cup **18** to stabilizer bolt **20** is generally parallel to the longitudinal axis of the vehicle. Hence, tube **30** can rotate through an arc transversely across the vehicle so as to facilitate application of the antenna guard. The transverse angular motion of the tube **30** is limited by the struts **26** and **28**. No external loads from the brushes are applied to cause such transverse motion. That is, the brushes exert a force on the tube **30** in a direction corresponding to the longitudinal axis of the vehicle and these forces are opposed by the suction cup **18** and bolt **20**.

The vehicle is then processed. The brush bristles never contact the antenna **55**, except for minor protruding portions if any.

Any forces applied to the tube **30** tending to unseat the cup **18** are opposed by the bolt **20** which stabilized the base **16** in its disposition illustrated in FIGURE 1, or any other desired disposition depending upon the shape of the body **12** in the area of the antenna **55**. The washing liquid is permitted to pass through the tube **30** and wash the antenna. Such liquid will flow out through the notches **40** or the aperture **38**.

As soon as the vehicle has been processed through the washing equipment, the guard **10** is capable of being rapidly removed due to means for rapidly venting the suction cup **18**. Thus, by pushing down on the head **52** of the stem **50**, the interior of the suction cup **18** is vented to the atmosphere by way of groove **51** on stem **50**. Thereafter, the guard **10** may be raised upwardly for removal.

The guard **10** should be made from a material which is non-corrosive and will not be attacked by the detergents and other chemicals in the washing liquid. It is preferred to make the tube **30**, base **16** and arms **22** and **24** from a commercially available plastic Lexan. Lexan was chosen due to the desired properties of high strength, toughness, inexpensiveness, non-corrosiveness, and is capable of being easily machined. Other materials having similar properties may be utilized.

In FIGURE 5, there is illustrated another embodiment of the present invention designated generally by **10'**. The antenna guard **10'** is identical with the antenna guard **10**, except as will be made clear hereinafter. Hence, the guard **10'** is illustrated with corresponding primed numerals and need not be described in detail in view of the above description.

Guard **10'** differs from guard **10** by utilizing a stabilizer means **58** which is concentric with the tube **30'**. The stabilizer means **58** is a block of hard rubber connected to the base **16'** in any convenient manner such as by screws. The block **58** is provided with a bore **60** which surrounds the antenna **55**. The lower end of the bore **60** is preferably tapered as illustrated so that it may contact the connecting means **56**. The tube **30'** is connected to the base **16** in any convenient manner such as by threads. Thus, tube **30'** is rigid with respect to base **16'**. In all other respects, the guard **10'** is identical with guard **10**.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof.

It is claimed:

1. A removable vehicle antenna guard comprising a base, a hollow tube supported in an upright position on the base, said hollow tube being open at its lowermost end and accessible for the insertion of an antenna, a releasable connector on the base for releasably connecting the base to a vehicle so that the hollow tube surrounds at least a portion of a vehicle antenna, said releasable connector including a suction cup connected to the lower surface of the base with the open end of the suction cup remote from the base, and a stabilizer for supporting the base in a predetermined disposition.

2. A guard in accordance with claim **1** including a movable valve member in said suction cup for releasably venting the suction cup to facilitate rapid removal of the guard from attachment to a vehicle.

3. A removable vehicle antenna guard comprising a base, a hollow tube supported in an upright position on the base, said hollow tube being open at its lowermost end and accessible for the insertion of an antenna, a releasable connector on the base for releasably connecting the base to a vehicle so that the hollow tube surrounds at least a portion of the vehicle antenna, a stabilizer for supporting the base in a predetermined disposition, pivot means for pivotably connecting the lower end of the tube to the base, limit means on the base positioned to limit the arc of pivot of said tube relative to the base, said pivot means including upstanding brackets on the base, and members perpendicularly disposed with respect to the longitudinal axis of said tube interconnecting the tube with the brackets at a location spaced from the lower ends of the tube.

4. A removable vehicle antenna guard comprising a base, a hollow tube supported in an upright position on the base, said hollow tube being open at its lowermost end and accessible for the insertion of an antenna, a releasable connector on the base for releasably connecting the base to a vehicle so that the hollow tube surrounds at least a portion of a vehicle antenna, a stabilizer for supporting the base in a predetermined disposition, said stabilizer underlying the lowermost end of the tube and being provided with a central bore which is generally concentric with the longitudinal axis of the tube.

5. A removable vehicle antenna guard comprising a base, a hollow tube supported in an upright position on the base, said hollow tube being open at its lowermost end and accessible for the insertion of an antenna, a releasable connector on the base for releasably connecting the base to a vehicle so that the hollow tube surrounds at least a portion of a vehicle antenna, a stabilizer for supporting the base in a predetermined disposition, said releasable connector comprising a suction cup fixed to the lower surface of the base with the open end of the suction cup remote from the base, a valve in said suction cup for selectively venting the suction cup to facilitate rapid removal of the guard from attachment to a vehicle, said valve comprising an aperture in said suction cup, a stem extending through said aperture, a valve head on said stem, and resilient means for biasing said stem whereby said valve head normally seats across said aperture.

6. A guard in accordance with claim **5** wherein said stabilizer includes a bolt having a non-scuff head, said bolt being threadedly coupled to the base with the non-scuff head positioned below the base.

7. A guard in accordance with claim **5** wherein said stabilizer is fixed to a lower surface of said base and underlies the lower end of the tube, said stabilizer being provided with a central bore which is generally concentric with the longitudinal axis of the tube.

8. A motor vehicle, an antenna mounted on said vehicle and projecting therefrom, a removable vehicle antenna guard for protecting said antenna, said vehicle antenna

guard comprising a base, a hollow tube supported in an upright position on said base and telescopically fitted over said antenna, said hollow tube being open at its lowermost end, a releasable connector on the base for releasably connecting the base to the motor vehicle, the hollow tube surrounding at least a portion of the antenna, and a stabilizer for supporting the base in a predetermined disposition, said stabilizer being mounted on the base and engaging said vehicle.

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U.S. Cl. X.R.

248—206; 343—878