United States Patent

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[54] **CANOPY MOUNT**
11 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **287/20,** 296/102
[51] **Int. Cl.** **F16b 9/00**
[50] **Field of Search** 296/102; 287/85, 20; 248/10, 43

[56] **References Cited**

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ABSTRACT: A mounting assembly including a canopy post having a hollow lower end portion for attachment to a tractor frame, an upright pedestal having an upper free end adapted to receive the lower end portion of the canopy post therearound and a lower end secured to the tractor frame. The upright pedestal has a horizontal passageway extending therethrough with cushioning means positioned within the passageway and having an elongated opening passing therethrough. A bolt extends through the lower end portion of the canopy post for connecting same to the pedestal with the bolt passing through the elongated opening within the cushioning means. The bolt is in contact with and supported by the cushioning means and maintains the lower end of the canopy post spacedly above the tractor frame.

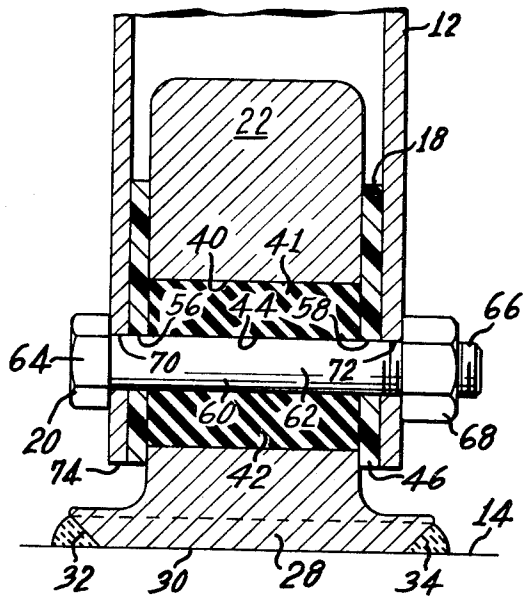


FIG. 1

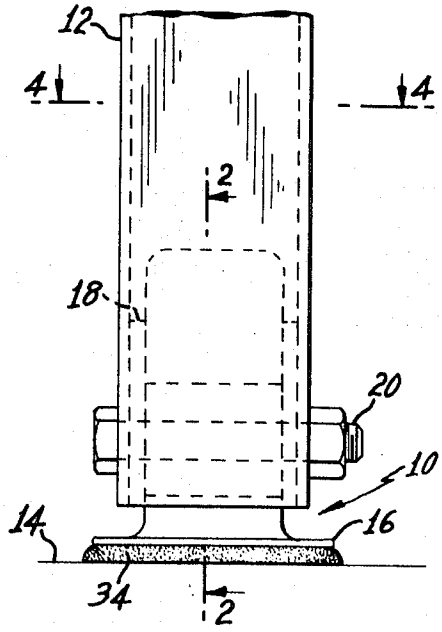


FIG. 2

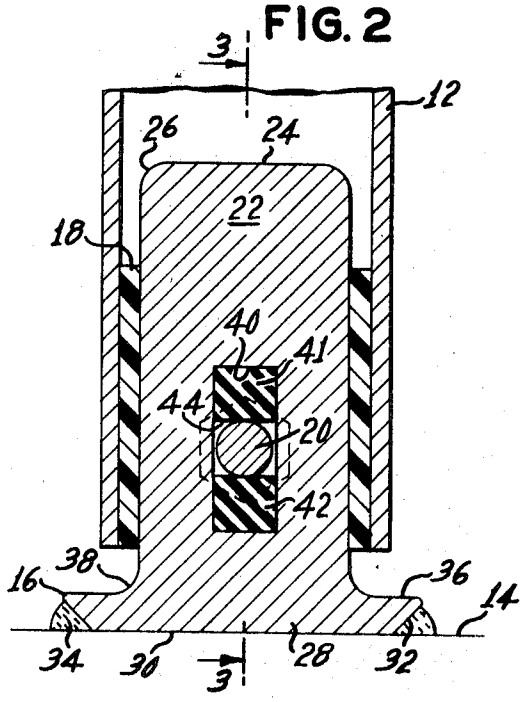


FIG. 3

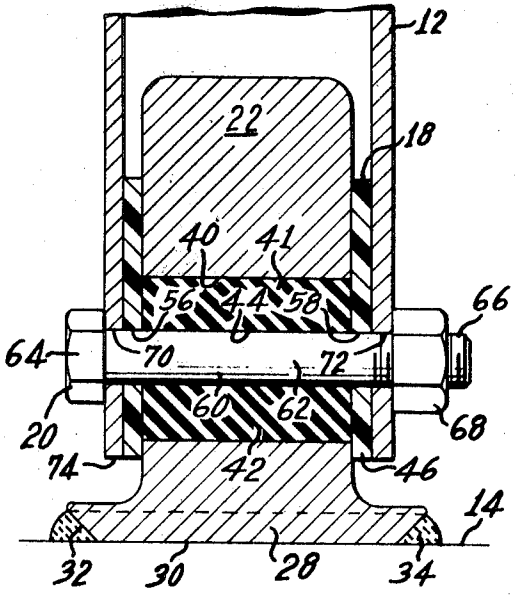
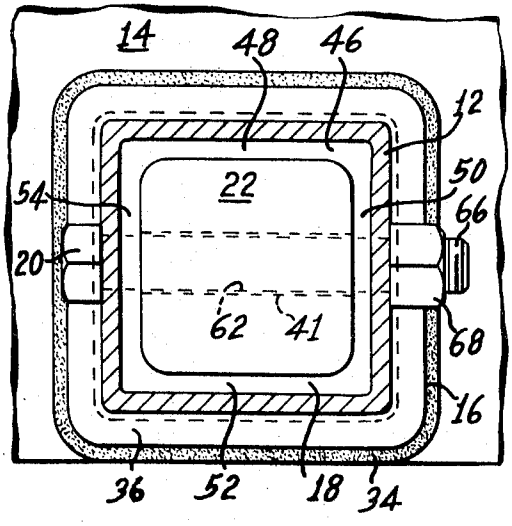


FIG. 4



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CANOPY MOUNT

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention disclosed herein relates generally to tractors, and is more particularly concerned with protective or guard-type canopies for such tractors. In greater specifics and detail, the present invention pertains to an improved means for mounting such type canopies on tractors or the like. Canopies of this type are customarily mounted and installed on tractors, particularly of the track laying type, when the same are employed under such conditions and at such locations that the canopies become a necessity for protecting the operator of the tractor from falling objects, such as trees, timbers and the like, and for providing protection to the operator thereof against injuries resulting from the possible overturning or upsetting of such tractors.

2. Description of the Prior Art

Tractors, particularly of the track type, have been widely employed in the forest and various other industries where considerable damage to the operator exists, for example from falling objects such as trees, timbers and the like, and also in places where such tractors have frequently been known to overturn. Therefore, there has been and is a continuing need for a protective or guard-type canopy for such tractors to protect the operator thereof.

Tractor canopies, of the type with which we are here concerned, customarily include strong rigid frame structures, and it has been customary to secure the canopy frame to the tractor by rigid securing means. However, due to the fact that some flexing or twisting of the tractor frame occurs as the tractor passing over rough ground and encounters obstacles and in spite of the fact that the tractor frame is substantially rigid, such relative movements between different portions of the tractor frame are transmitted to portions of the canopy through the customarily used rigid and unyielding connections between the canopy and the tractor frame. This is one explanation why failures and breaks in certain parts of the canopy and mounting means therefor are a common occurrence after a period of use with the tractor. Also a major difficulty encountered in providing canopies for tractors resides in the inability to compensate for the vibrations set up during the normal operation of the tractor, these vibrations producing undesirable rattles and noises as well as structural failures of the canopy and the mounting means therefor. These failures and breaks in the canopy and mounting means therefor can necessitate immediate repairing or replacement and involve loss of working time as well as repair expense. The present invention has been developed in order to enable the occurrence of such breaks and failures in the canopies and mountings therefor to be avoided.

While protective or guard-type canopies for tractors and the like and mountings or mounting assemblies therefor have been previously devised, such prior art devices and apparatuses being generally disclosed in U.S. Pat. Nos. 2,805,887; 3,036,858; 3,203,728 and 3,353,852, each has had certain drawbacks and disadvantages. Applicant's invention of an improved mounting assembly for a protective or guard-type canopy for a tractor is an improvement over such prior art devices and apparatuses as shown for example in the above-mentioned patents.

SUMMARY OF THE INVENTION

It has been found that the substitution of special mounting means for securing the protective canopy to the tractor with which a limited amount of flexibility and relative movement between the connected elements is provided will enable the occurrence of breaks or failures in the rigid frame of the canopy and the mounting means therefor to be avoided to a great extent in spite of the most vigorous employment of the tractor and without in any way rendering the protective canopy less effective in protecting the operator and tractor.

It is a general object of this invention to provide an improved mounting assembly for securing a protective or guard type canopy in place on a tractor frame which will permit necessary but a limited amount of flexibility and relative movement between the canopy and the tractor frames.

Another object of the invention is to provide an improved simply constructed mounting means for securing a protective canopy in place on a tractor frame which is readily installed with ordinary and existing tractor protective canopies, in which the noise and rattle is dampened and with which the vibration and structural failure is substantially reduced if not eliminated.

A further and more specific object of the subject invention is to provide an improved mounting means for a tractor canopy which will accommodate and absorb small relative movements in any and all directions between the connected parts of the canopy and tractor frame while still holding the canopy firmly in position on the tractor.

Still a further specific object of the instant invention is to provide an improved canopy mount wherein a major safety factor is provided in that even were the securing means portion thereof to break, the canopy would still not under normal circumstances be disengaged from the tractor.

Yet another object of the invention is to provide an improved mounting assembly which has an extremely long life due to the absence of direct metal-to-metal contact between the relative movable parts thereof, and wherein the normal maintenance thereof is reduced to merely an occasional replacement of certain parts of the mounting assembly which can be quickly slid into place without the necessity of cutting, welding and the like.

In general these objects are obtained by providing a mounting assembly including a canopy post having a hollow lower end portion for attachment to a tractor frame and a generally upright pedestal having an upper free end adapted to receive the lower end portion of the canopy post therearound and a lower end secured to the frame. The pedestal includes a generally horizontal passageway extending therethrough with a pair of cushioning members being vertically spaced in the passageway to define an elongated opening therebetween. A bolt extends through the lower end portion of the canopy post and connects same to the pedestal, the bolt passing through the opening between the cushioning members and being in contact and supported by the lower of the cushioning members to maintain the lower end of the canopy post spacedly above the tractor frame.

BRIEF DESCRIPTION OF THE DRAWING

The novel features which are believed to be characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawing, in which:

FIG. 1 is an elevational view of the improved canopy mount of this invention including adjacent portions of the canopy post and the tractor;

FIG. 2 is an enlarged transverse sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a transverse sectional view taken along line 3—3 of FIG. 2; and

FIG. 4 is an enlarged cross-sectional view taken along line 4—4 of FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing in detail, and in particular to FIG. 1 thereof, the improved canopy mount 10 of this invention is used to mount or connect one of the posts, as at 12, of a protective or guard-type safety canopy to a tractor, tractor frame or other portions of a tractor, as at 14, with and on which the

canopy is used. Canopy post mount **10** includes a base portion **16**, a cushioning portion **18** and a securing means portion **20**, all of which together cooperate and combine to provide an improved and cushioned mount for the posts of a typical protective or guard-type canopy for a tractor.

Base portion **16** includes a generally upright pedestal or member **22** having a generally horizontal upper surface or top **24** with a generally rounded or curved edge **26** extending therearound between the top surface **24** and the generally vertical portions thereof. Pedestal or generally upright member **22** forms into and is terminated by a generally horizontally extending member or base **28** adjacent its lower end. Base or generally horizontally extending member **28** includes a flat generally horizontal bottom surface **30** for resting on and contacting portions of tractor **14**, and a bevelled or downwardly and inwardly inclined outer edge or surface **32** extending therearound forming a pocket or cavity between tractor **14** and outer edge or surface **32** for the securing of the base portion **16** to tractor **14** by appropriate welding or welds as at **34** therearound. If so desired, base portion **16** could be attached to tractor **14** by other appropriate securing means, such as bolts extending through holes therein (not shown). Generally horizontally extending member **28** of base portion **16** further includes a generally horizontal shoulder **36** extending therearound and spaced outwardly from generally upright or pedestal member **22** of the base, the purpose and function of which will be explained more fully hereinafter. A smoothly curved edge or inner surface **38** extends around the lower end portion of pedestal **22** and connects the generally vertical surfaces thereof with the generally horizontally extending shoulder **36** of generally horizontally extending member **28**.

The pedestal or generally upright member **22** of base portion **16** includes a rectangular shaped passageway **40** extending therethrough adjacent its lower end portion. Passageway **40** is provided with a pair **41** and **42** of yieldable hard rubber or rubberlike cushioning members which substantially fill passageway **40** between its sidewalls and its top and bottom walls, with the exception of a central elongated opening or passageway **44** extending between the spaced cushioning members **41** and **42**. Passageway or elongated opening **44** is provided for the reception of securing means portion **20** therein and therethrough between cushioning members **41** and **42**. Substantially identical cushioning members **41** and **42**, which are firm but yieldable, cushion securing means portion **20** within passageway **44** therebetween and permit limited vertical movement of the securing means portion **20** within opening **44** and passageway **40**. It has been found advantageous to employ a laminated reinforced rubber material in lower cushioning member **42**, such as that marketed under the trademark FABREEKA by the Fabreeka Products Company, Incorporated.

The height of opening **44** between members **41** and **42** is of a size sufficiently large to readily accommodate securing means portion **20** therein, but not overly large to cause unnecessary play. The width of opening **44** is of sufficient size such that a small amount of space exists between each side of securing means portion **20** and the adjacent respective sidewall of passageway **40**, thereby preventing metal to metal contact between securing means portion **20** and pedestal **22** of base portion **16**.

The cushioning portion **18** of assembly **10** includes a hard rubber rectangular sleeve **46** having sides **48**, **50**, **52** and **54** which are joined at their corners and which fits snugly around the pedestal or generally upright member **22** of base portion **16**. Sleeve **46** is positioned about pedestal **22** adjacently above shoulder **36** and extends upward therefrom to a point adjacently downward of the top surface **24** of pedestal **22**. Side portions **50** and **54** of sleeve **46** have respective passageways **56** and **58** extending therethrough to permit securing means portion **20** to pass through sleeve **46** and into opening **44** between members **41** and **42**, and then outwards therefrom through sleeve **46**. Sleeve **46** is fabricated of a hard rubberlike material such as neoprene, to cushion the sideways or horizontal movement and prevent contact between the inner surface of canopy post **12** and generally upright pedestal **22**, thereby reducing the noise, vibration, wear and fatigue between these two surfaces of the canopy post and mounting means therefor.

Securing means portion **20** includes a bolt **60** having an elongated shank or body portion **62**, an enlarged bolthead **64** at and secured to one end thereof, while the other end of shank **62** is provided with a threaded portion **66**. Securing means portion **20** is completed by a locking-type nut **68** threaded and secured on threaded portion **66** of elongated shank **62** of bolt **60**.

Corner post **12** of the tractor canopy is provided with respective aligned circular openings **70** and **72** on its opposite side portions adjacent its lower end portion **74** through which the elongated shank portion **62** of bolt **60** extends in securing corner post **12** to canopy mount **10**, and more in particular to generally upright pedestal **22** of base portion **16** thereof. Elongated shank portion **62** of threaded bolt **60** also extends through openings **56** and **58** of respective sides **54** and **50** of sleeve **46** and through opening **44** between members **41** and **42** in securing all portions of canopy mount **10** and canopy post **12** together.

When the canopy post **12** is secured to canopy mount **10**, the shank portion **62** of bolt **60** extending through opening **44** between cushioning members **41** and **42** is permitted limited general vertical movement within passageway **40** between members **41** and **42**, thus permitting small amounts of relative movement between the pedestal **22** of base portion **16** and corner post **12** to be absorbed by cushioning members **41** and **42**. In this manner, there is no metal-to-metal contact between corner post **12** and pedestal **22** of base portion **16** or between the bolt **60** and pedestal **22** of base portion **16**, thus eliminating much of the noise, vibration, wear and failure experienced in prior art canopy post mounting arrangements.

In using the improved canopy mount **10** of this invention, the base portion **16** thereof is first secured to tractor **14** at appropriate places thereon by welds, such as at **34**. Next cushioning members **41** and **42** are placed within opening **40**, or the same may have already been accomplished before the securing of base portion **16** to the tractor, and then sleeve **46** is fitted in place over generally upright pedestal **22** with the openings **56** and **58** thereof in alignment with elongated opening **44** between members **41** and **42**. Now canopy post **12** is positioned over pedestal **22** of base portion **16** and sleeve **46** positioned thereon. Finally canopy post **12** is secured to mount **10** by means of the securing means portion **20**, which is accomplished by positioning bolt **60** through the appropriate openings in post **12**, sleeve **46** between members **41** and **42** and securing locknut **68** on threaded end portion **66** thereof. If in use, cushioning members **41** and **42** or sleeve **46** of canopy mount **10** should become excessively worn they may be readily replaced by disconnecting canopy post **12** from mount **10** by operation of securing means portion **20**. Furthermore should bolt **60** of securing means portion **20** fail or shear for some unknown reason, canopy post **12** will fall by gravity to the point where lower end portion **74** comes to rest on shoulder **36** of base portion **16** whereby canopy post **12** remains attached and secured to mount **10** until a later time and when appropriate repairs can be conveniently made.

While only a certain preferred embodiment of this invention has been shown and described by way of illustration, many modifications will occur to those skilled in the art and it is intended that all such modifications be included within the true spirit and scope of this invention.

What is claimed as new and what is desired to secure by Letters Patent of the United States is:

1. A mounting assembly comprising a canopy post having a hollow lower end portion for attachment to a tractor frame, a generally upright pedestal, said pedestal having an upper free end adapted to receive therearound said lower end portion of said canopy post and a lower end secured to the frame, a generally horizontal passageway extending through said pedestal between said ends thereof, cushioning means posi-

tioned in said horizontal passageway and having an elongated opening passing therethrough, a bolt extending generally horizontally through and in supporting engagement with said lower end portion of said post for connecting same to said pedestal, said bolt passing through said elongated opening within said cushioning means and being in contact with and supported by said cushioning means and maintaining the lower end of said canopy post spacedly above the frame, means contacting and positioned between said pedestal and said lower end portion of said canopy post adjacent the ends of said horizontal passageway and across each end of said passageway for maintaining said cushioning means within said passageway, said canopy post having a free hollow interior extending upwardly therein axially from the lower end thereof a distance sufficiently beyond said upper free end of said pedestal to allow said cushioning means to absorb full axial thrust of said post upon said pedestal whereby the weight of said canopy is supported through the lateral forces of said bolt on said cushioning means within said opening.

2. The mounting assembly as defined in claim 1 wherein said means for maintaining comprises a sleeve engagingly surrounding said upright pedestal and being nested between said pedestal and said hollow lower end portion of said canopy post, said sleeve having transverse aligned openings therein through which said bolt nestingly extends.

3. A mounting assembly comprising a canopy post having a hollow lower end portion for attachment to a tractor frame, a generally upright pedestal, said pedestal having an upper free end adapted to receive therearound said lower end portion of said canopy post and a lower end secured to the frame, a generally horizontal passageway extending through said pedestal between said ends thereof, a pair of cushioning members being vertically spaced apart in said horizontal passageway to define an elongated opening therebetween, a bolt extending through said lower end portion of said post for connecting same to said pedestal, said bolt passing through said opening between said cushioning members and being in contact and supported by the lower of said cushioning members and maintaining the lower end of said canopy post spacedly above the frame.

4. The mounting assembly as defined in claim 3 wherein said pair of cushioning members are longitudinally movable within said horizontal passageway whereby said pair of members may be readily replaced.

5. The mounting assembly as defined in claim 3 wherein said pedestal further includes a generally horizontally extending flange positioned adjacent its lower end, said flange providing a shoulder extending generally horizontally outward of said pedestal for contact by said lower end of said canopy post upon failure of said bolt whereby support of said lower end portion of said canopy post by said pedestal is maintained.

6. The mounting assembly as defined in claim 3 wherein said lower member of said pair of cushioning members comprises a laminated reinforced rubber member.

7. The mounting assembly as defined in claim 3 further comprising means positioned between said pedestal and said lower end portion of said canopy post adjacent the ends of said horizontal passageway for maintaining said cushioning members within said passageway.

8. The mounting assembly as defined in claim 7 wherein said means for maintaining comprises a sleeve engagingly surrounding said upright pedestal, said sleeve being nested between said pedestal and said hollow lower end portion of said canopy post.

9. The mounting assembly as defined in claim 8 wherein said sleeve maintains said bolt substantially horizontally centered within said opening whereby said bolt is generally spaced from the sidewalls of said passageway.

10. The mounting assembly as defined in claim 8 wherein said sleeve includes a pair of aligned openings each of which is respectively positioned on opposite sides thereof, said sleeve openings being in registry with said opening between said cushioning members and said bolt passing through said sleeve openings.

11. The mounting assembly as defined in claim 10 wherein said sleeve maintains said bolt substantially horizontally centered within said opening whereby said bolt is generally spaced from the sidewalls of said passageway.