July 5, 1960 I. H. BOUCHARD 2,943,832

ANTENNA MOUNTING BASE

Filed Feb. 19, 1958 4 Sheets-Sheet 1

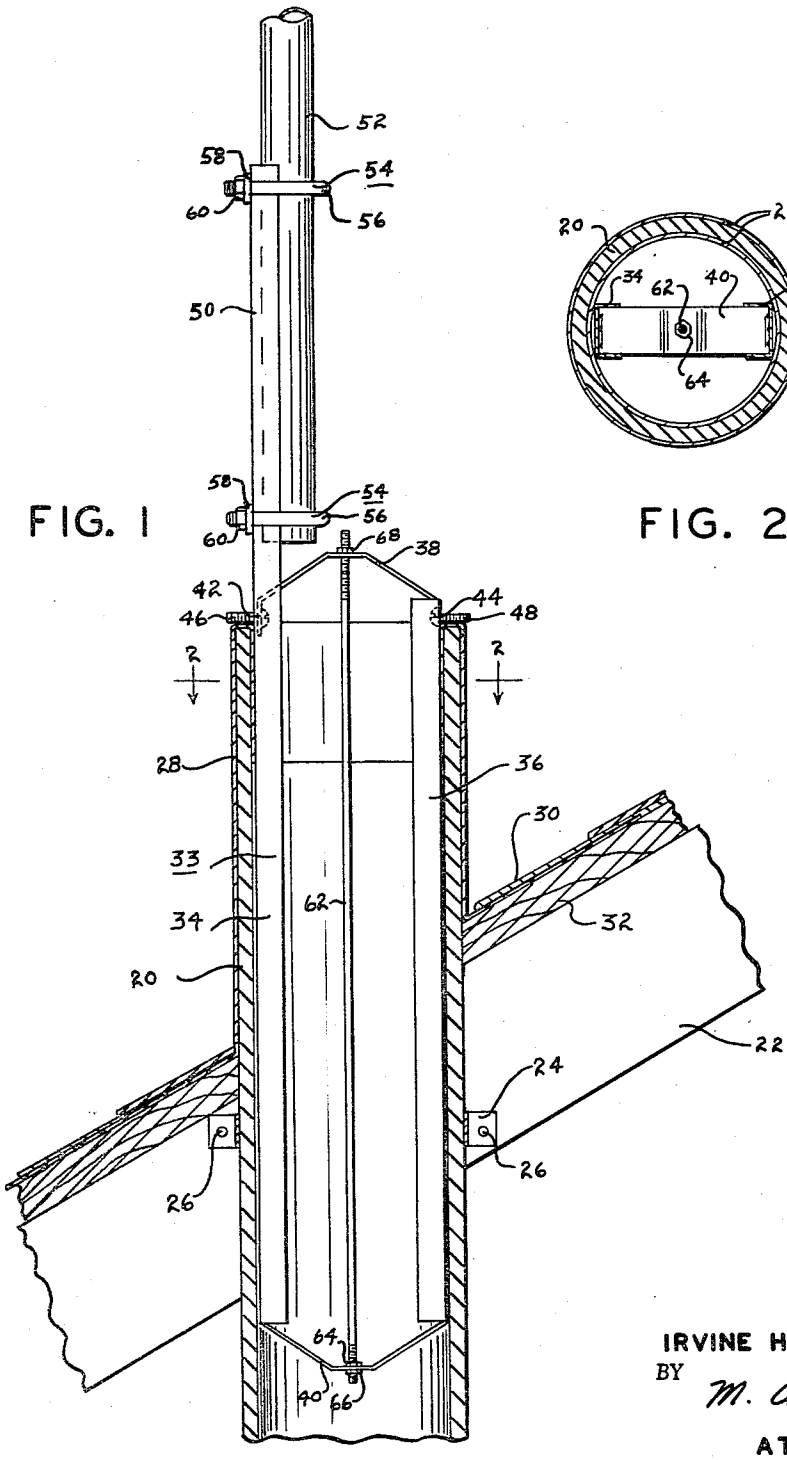


FIG. 1

FIG. 2

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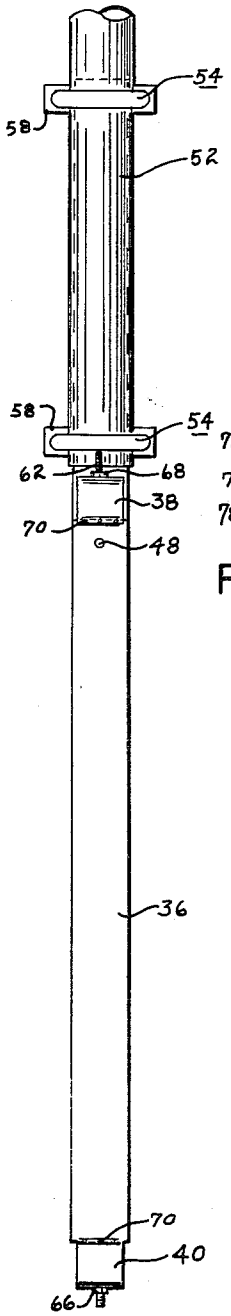


FIG. 3

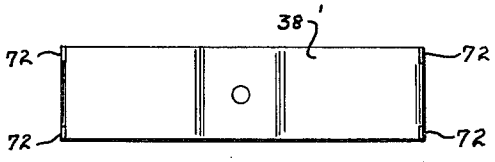


FIG. 4

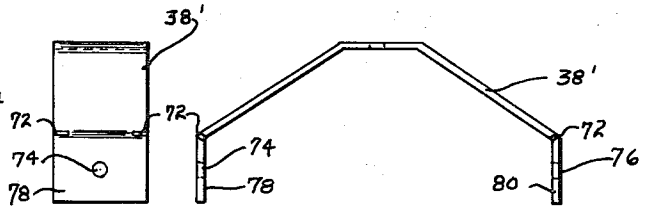


FIG. 6

FIG. 5

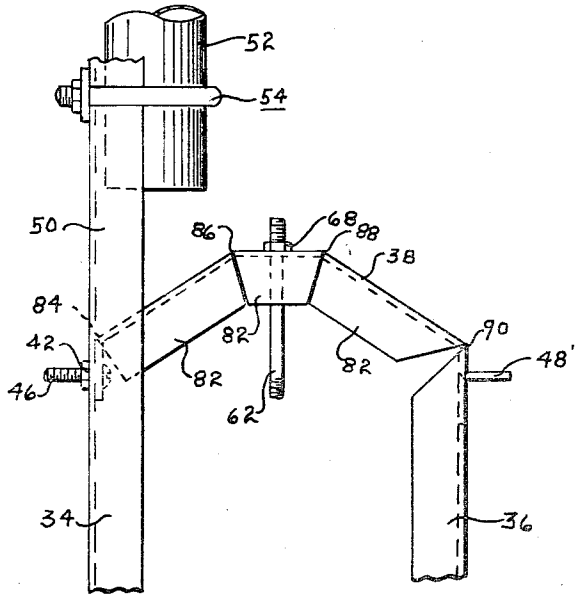


FIG. 7

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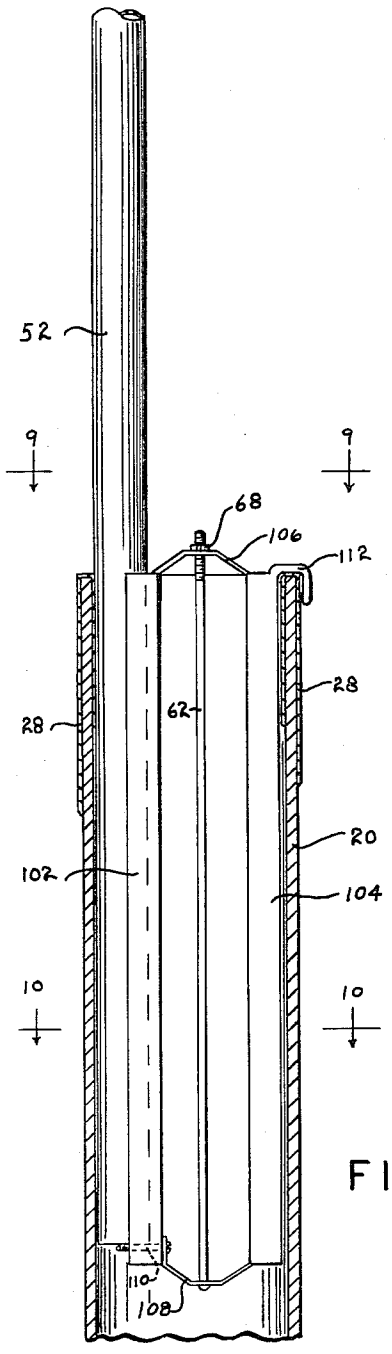


FIG. 8

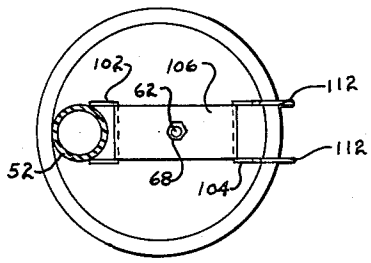


FIG. 9

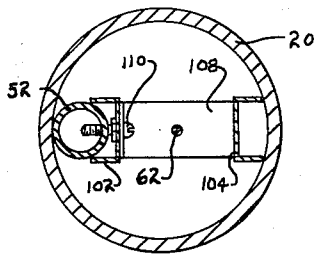


FIG. 10

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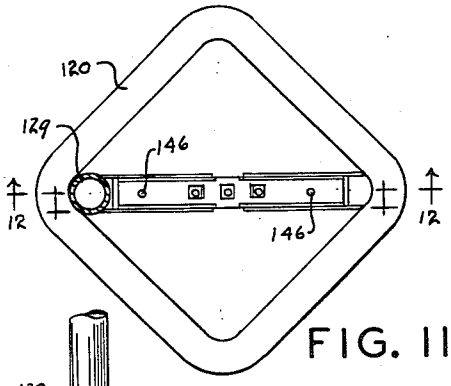


FIG. 11

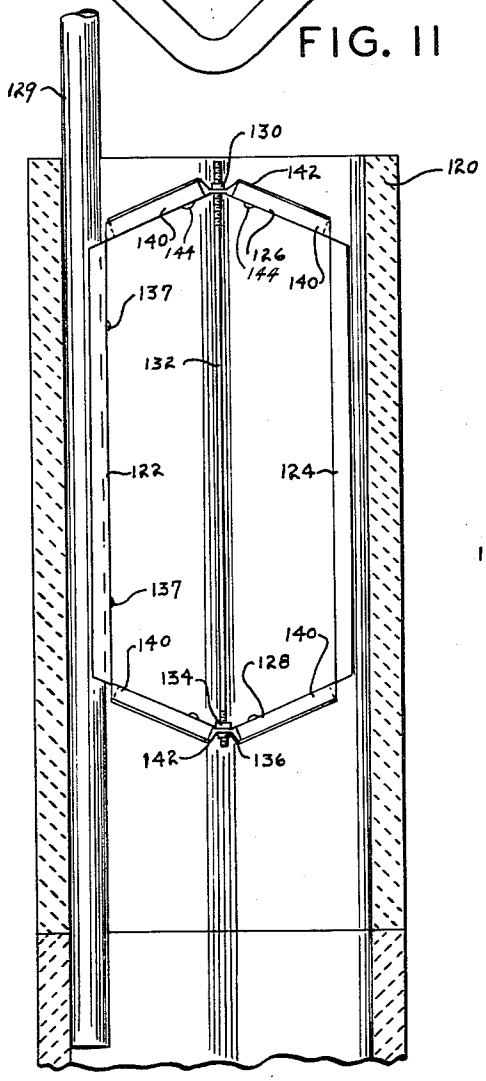


FIG. 12

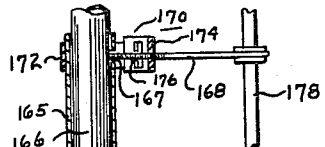


FIG. 13

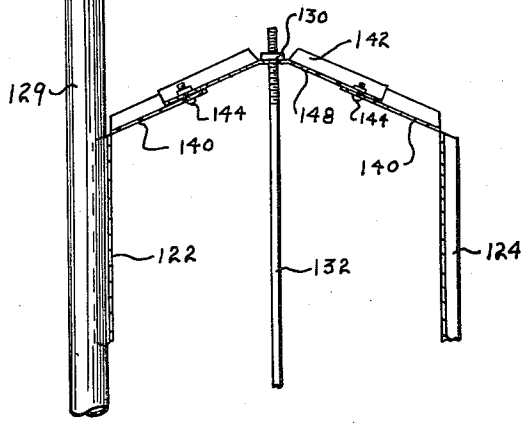
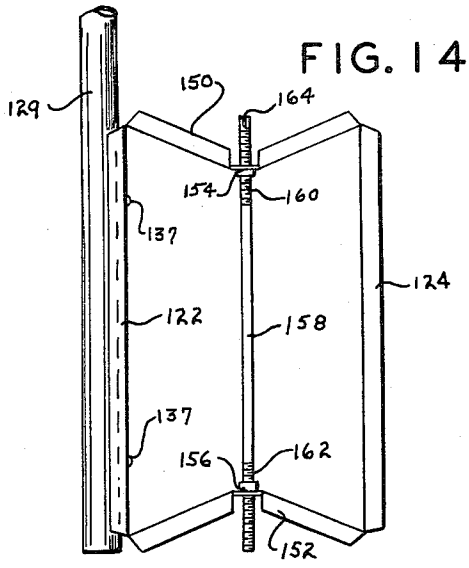


FIG. 14



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ANTENNA MOUNTING BASE

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Filed Feb. 19, 1958, Ser. No. 716,168

17 Claims. (Cl. 248—43)

The present invention relates to a mounting base for masts and more particularly to a mounting base for radio and television antenna masts.

In installing antenna masts for radio and television antennas on homes the usual practice is to nail, bolt or otherwise secure a mounting base directly to the roof or to fasten the mast to the chimney of the home with metal bands or clamps. Both of these methods of erecting the the mast have inherent disadvantages which make them undesirable or unsatisfactory. The first method usually requires guy wires spaced considerable distance from the mast and the making of a number of holes through the roof which often permit leakage of water therethrough. Further, the rain water draining from the mast carrying with it dirt and rust from the mast and base, causes unsightly permanent discoloration to the roof. The second method using bands and clamps to attach the mast to the chimney frequently results in damage to the chimney bricks, particularly at the corner over which bands and clamps are bent, and discoloration to the outside surface of the chimney. It is therefore one of the principal objects of the present invention to provide an antenna mast mounting base which is free of all of the foregoing disadvantages and which can be readily installed by one man without the use of any special tools, equipment or skill.

Another object of the invention is to provide a base for mounting radio and television masts which is invisible from the ground and which does not require either guy wires or ground wires for lightning.

Still another object of the invention is to provide a base of the aforesaid type which can be mounted above the roof of the home by merely tightening a single nut or screw after the base, mast and antenna have been assembled on the ground and lifted into place on the roof.

A further object is to provide a relatively simple, inconspicuous antenna mast mounting base for use in conjunction with chimney flues and roof vent pipes of home toilets.

Another object of the present invention is to provide an easily fabricated, assembled and installed antenna mounting base which can readily be removed from the home roof without leaving any holes to be filled or other evidence revealing that an antenna had been mounted on the roof.

Another object is to provide an easily mountable and demountable mast base for UHF, FM and VHF antennas, which permits the antennas and lead connections to be readily and conveniently checked and serviced periodically.

Additional objects and advantages of the present invent will become apparent from the following description and accompanying drawings, wherein:

Figure 1 is a vertical cross sectional view of a vent pipe for a home toilet, showing my antenna mast mounting base and a portion of an antenna mast, in elevation, mounted thereon;

Figure 2 is a horizontal cross sectional view of the vent pipe and mounting base shown in Figure 1, taken on line 2—2;

Figure 3 is a side elevational view of my antenna mast mounting base removed from the vent pipe;

Figure 4 is a top plan view of a member forming a part of a slightly modified construction of the base shown in the preceding figures;

Figure 5 is a side elevational view of the member shown in Figure 4;

Figure 6 is an end elevational view of the member shown in Figures 4 and 5;

Figure 7 is a fragmentary side elevational view of a further modified construction of my mounting base, showing the lower end of a mast attached thereto;

Figure 8 is a vertical cross sectional view of a vent pipe for a home toilet, showing another embodiment of my antenna mounting base and a portion of a mast, in elevation, mounted therein;

Figure 9 is a top plan view of the mounting base and vent pipe shown in Figure 8 and a cross sectional view of the mast taken on line 9—9 of said figure;

Figure 10 is a horizontal cross sectional view of the vent pipe and my mounting base shown in Figure 8, taken on line 10—10;

Figure 11 is a top plan view of still another modified form of the present invention showing the base mounted in the flue of a chimney;

Figure 12 is a vertical cross sectional view of the upper end of a flue taken on line 12—12 of Figure 11, showing my base mounted therein;

Figure 13 is a fragmentary, vertical cross sectional view of the base shown in Figures 11 and 12, adjusted to be mounted in a larger size flue; and

Figure 14 is an elevational view of my mounting base having a modified feature applicable to the embodiments shown in the preceding figures.

In Figure 1 of the drawings a conventional home toilet vent pipe construction is shown in detail at the roof, consisting of a pipe 20 of approximately four inches in diameter projecting ten to twelve inches above the roof and rigidly secured to a roof rafter 22 by a metal band or strap 24 extending around the pipe and secured to the side of the rafter by nails or screws 26. The pipe is sealed and rendered leak-proof by a lead flashing 28 extending at the upper end over the top and down into the pipe and at the lower end between the shingles 30 and sheeting 32. The vent pipe is standard equipment for home toilet installations and is usually on the side of the room away from the street or front of the home.

My antenna mounting base 33 is shown mounted in the upper end of pipe 20 and consists of two vertical channel iron members 34 and 36 with the flanges of the channels extending inwardly toward the center of the pipe and with the back of the channel members engaging the internal side walls of the pipe. The upper and lower ends of vertical members 34 and 36 are connected by V-shaped cross members 38 and 40, respectively, cross member 38 projecting upwardly from the upper ends of the vertical members and cross member 40 projecting downwardly from the lower ends of the vertical members. In this embodiment of the present invention cross member 40 is formed integrally at each end with the vertical members and cross member 38 is formed integrally with the shorter of the two vertical members 36 and is secured to the other vertical member by a bolt, rivet or screw 42. Bolt 42 in vertical member 34 and a similar bolt 44 at the top of vertical member 36 project outwardly from the respective members and form lugs 46 and 48 for supporting the base at the upper end of pipe 20 when the base

is initially placed in the pipe during the installation operation, thus assisting in properly locating the base in the pipe and preventing any accidental dropping of the base into the pipe. Vertical member **34** has an extension **50** for receiving and supporting an antenna mast **52**, the lower end of which is seated in the channel portion of the member and secured rigidly thereto by one or more clamps **54** extending around the mast and extension **50**, the clamps shown in Figure 1 consisting of a U-shaped portion **56** held in place by a bar **58** and nuts **60** on the threaded ends of the U-shaped portion. A rod **62** extends vertically through the center part of cross members **38** and **40** and is secured rigidly to member **40** and held against rotation by nuts **64** and **66** on opposite sides of said member. A nut **68** is threaded on the upper end of rod **62** on the top side of member **38** and the threaded portion of the upper end of the rod extends a substantial distance below the under side of member **38**.

In installing the foregoing mounting base, either before or after the mast has been clamped to extension **50**, the base is lowered into the upper end of vent pipe **20** until lugs **46** and **48** come to rest on the upper edge of the pipe, as shown in Figure 1. Nut **68** is then tightened downwardly and as it is tightened, it bears against the upper side of cross member **38**, thereby drawing cross members **38** and **40** toward each other and causing the ends thereof to move outwardly and forcing vertical members **34** and **36** firmly against the internal side walls of the pipe or against the side walls of the pipe and the lip of the lead flashing extending into the upper end of the pipe. As nut **68** is tightened vertical members **34** and **36** automatically adjust themselves to irregularities in the side wall since as soon as either the upper or lower end becomes firmly seated against the wall, the force applied by nut **68** is immediately applied to the other end so that the base effectively engages the pipe at both the top and bottom of the base, rigidly securing the base in place in the pipe. In order to remove the base from the pipe, nut **68** is merely loosened and the base lifted from the pipe. A number of holes **70** are provided at the point of juncture between the vertical members and the cross members to make those places the focal point of the operation when the cross members are pressed toward each other by the tightening of nut **68**.

In the modified construction illustrated in Figures 4, 5 and 6, cross members **38'** and **40'** are formed as separate members and are joined to the vertical members **34** and **36** by screws or bolts, such as bolts **42** and **44** for member **38** and similar bolts with the head facing outwardly, i.e. facing the wall of pipe **20**, for member **40**. Holes **74** and **76** are provided in portions **78** and **80** of the cross members contacting the vertical members for the bolts. In this modification slots **72** rather than holes **70** are employed to concentrate the bending at the sides of the cross members.

The modified construction shown in Figure 7 is similar to the construction shown in Figures 1, 2 and 3 in that the vertical and cross members and extension **50** are formed in one continuous piece resembling a figure "6"; however, in this modification the cross members are provided with stiffening flanges **82**. With this construction the bending which takes place when nut **68** is tightened is concentrated by the flanges at points **84**, **86**, **88** and **90** on cross member **38** and at corresponding points on cross member **40**, thus eliminating the need for holes **70** or slots **72**. Lug **48'** is shown formed by a tongue of metal stamped from the side of vertical member **36**.

The embodiment of my invention illustrated in Figures 8, 9 and 10 is shown mounted in a standard vent pipe similar in construction to the one shown in Figure 1 and hence like numerals are used to designate like parts. The base consists of two vertical channel iron members **102** and **104** connected at the top and bottom by cross members **106** and **108**, respectively. In this embodiment the flanges of the two vertical members face outwardly, i.e. toward the wall of the pipe and the flanges of member **104** seat on the internal wall of the pipe and the flanges of member **102** receive the lower end of mast **54** and clamp the mast against the adjacent internal wall of the pipe as cross members **106** and **108** are pulled toward each other and expanded outwardly by the tightening of nut **68** on the upper end of rod **62**. The base is preferably formed as a single unit with cross member **106** being joined integrally at its ends with the vertical members and with cross member **108** being joined integrally at one end with vertical member **104** and at the other end to member **102** by a bolt **110**. Bolt **110** serves the additional function of forming a seat or support for the lower end of the mast to assist positioning the mast in the base when it is being installed. The base is positioned in the pipe during the installing operation by one or more lugs or hooks **112** connected to the upper end of vertical member **104** and projecting outwardly over the top of the pipe to support the base.

In installing the base shown in Figures 8 to 10 the base is first placed in the upper end of pipe **20** supported in place therein by hooks **112** extending outwardly over the top of the pipe. The mast is slipped downwardly between the flanges of vertical member **102** until it seats on bolt **110** and then nut **68** is tightened, drawing cross members **106** and **108** toward each other and expanding them sufficiently to force vertical member **104** firmly against the side of pipe **20** and vertical member **102** firmly against mast **52** and the mast firmly against the internal side wall of the pipe. When this operation has been completed the mast is held rigidly in place in the upper end of the pipe where it will remain until nut **68** has been loosened to remove the mast and base.

The modified form illustrated in Figures 11, 12 and 13 is similar to the embodiment shown in Figures 8, 9 and 10 but has been constructed to make it adaptable to various sizes of chimney flues, the top section of a flue liner being shown at numeral **120** in Figures 11 and 12, with this modified mounting base mounted therein. The base consists of two vertical channel iron members **122** and **124** connected at the top and bottom by cross members **126** and **128**, respectively, the flanges of these members all facing away from the center of the base. The flanges of member **124** seat on the internal wall of the flue liner and, in the rectangular type flue liner of Figures 11 and 12, on the wall adjacent one of the corners. The flanges of member **122** receive the lower end of a mast or mast section **129** and clamp the mast section firmly against the adjacent internal wall of the flue liner, in the corner of the liner in the installation of the one illustrated, as cross members **126** and **128** are pulled toward each other and expanded outwardly by tightening nut **130** on the upper end of rod **132**. Rod **132** extends through both cross members **126** and **128** and is prevented from turning by a pair of nuts **134** and **136** on either side of member **128**. To facilitate mounting of the base in the flue, the lower end of section **129** is preferably secured to vertical member **122** by one or more self-tapping screws **137**. Mast section **129** may be extended downwardly below the base to a point where it will engage the upper end of the second liner section so that a more substantial footing will be obtained, particularly in installations in which the top section may have become loosened.

The mounting base shown in Figures 11, 12 and 13 is provided with adjustable cross members consisting of arms **140** joined integrally at one end with the vertical members and connected at the other end to a modified V-shaped member **142**, the latter member being attached to arms **140** by bolts **144** placed either in holes **146** or **148**. The bolts are placed in holes **146** when the base is to be mounted in an 8½ x 8½ flue liner size and in holes **148** when it is to be mounted in an 8½ x 13 liner size.

The modification in Figure 14 is similar to the mounting bases previously described herein, except the upper cross member 150 extends downwardly and cross member 152 extends upwardly from the points of juncture with the respective ends of the vertical members. Nuts 154 and 156 are held from rotating and rod 158 which is provided with left handed threads 160 and right handed threads 162 is rotated to urge the cross members apart and the ends thereof outwardly to clamp the base in the vent pipe or flue. Nuts 154 and 156 may be held from rotating by welding or soldering them to the respective cross members or by a lug on the cross member mechanically holding them. A slot 164 for receiving a screw driver for rotating rod 158 is provided in the upper end of the rod.

Mast section 129 is enlarged at its upper end 165 to receive the lower end of another mast section 166 and contains a hole 167 for receiving the end of a rod 168 of a lead standoff fixture 170, the latter consisting of a band 172 around end 165 having a threaded lug 174 on one end through which rod 168 is threaded. When rod 168, which extends through a hole 176 in band 172 and hole 167, is tightened it clamps mast section 166 in the enlarged end 165 and at the same time locks the fixture 170 rigidly in position on the mast to hold the antenna lead 178.

It is seen from the drawings of the various modifications disclosed therein that my base is completely or almost completely concealed within the pipe. It should also be noted that no holes in the roof or pipe are required to make the installation and only a wrench, a pair of pliers or screw driver is required to fully mount and secure the base in place in the vent pipe or chimney flue. The mast is held rigidly in place by the base without guy wires and since the vent pipe is in itself grounded for lightning, no ground wires are required in connection with an installation employing my base. Rain water draining from the mast and antenna flows into the vent pipe and hence can not cause discoloration to the roof or chimney as is usually the case with conventional home antenna installations.

In the claims, the term "pipe" unless otherwise modified is intended to embrace and include vent pipes, flues and the like.

A number of variations and modifications have been disclosed herein; other changes can be made without departing from the scope of the present invention. For example, the upper and lower cross members may be spaced inwardly from the respective ends of the vertical members even to the point of being close together near the center of the vertical members. The type of cross members shown in Figures 4, 5 and 6 lend themselves to this type of construction.

I claim:

1. A base for mounting an antenna mast on the upper end of a toilet vent pipe, comprising two vertical channel iron members with the flanges of one member facing toward the flanges of the other member, a cross member connecting said vertical members at the top thereof and projecting upwardly and inwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members at the bottom thereof and projecting downwardly and inwardly below the point of juncture between said last mentioned cross member and said vertical members, said cross members having a plurality of incisions at the points of juncture with said vertical members, a rod fixedly secured to said lower cross member and projecting through and above the upper cross member, a nut on said rod above said upper cross member for forcing said cross members toward one another to move said vertical members outwardly against the internal surface of the pipe, an extension on one of said vertical members projecting above the top of the pipe for supporting the mast, and a lug at the top of each of said vertical members for positioning said base in the pipe.

2. A base for mounting an antenna mast on the upper end of a vent pipe, comprising two vertical channel iron members, a cross member connecting said vertical members at the top thereof and projecting upwardly and inwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members at the bottom thereof and projecting downwardly and inwardly below the point of juncture between said last mentioned cross member and said vertical members, a rod secured to said lower cross member and projecting through and above the upper cross member, a nut on said rod above said upper cross member for forcing said cross members toward one another to move said vertical members outwardly against the internal surface of the pipe, an extension on one of said vertical members projecting above the top of the pipe for supporting the mast, and a lug at the top of one of said vertical members for positioning said base in the pipe.

3. A base for mounting an antenna mast on the upper end of an open end pipe, comprising two vertical elongated members, a cross member connecting said vertical members adjacent the top thereof and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members adjacent the bottom thereof and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a rod secured to said lower cross member and projecting through and above the upper cross member, a nut on said rod above said upper cross member for forcing said cross members toward one another to move said vertical members outwardly against the internal surface of the pipe, and an extension on one of said vertical members projecting above the top of the pipe for supporting the mast.

4. A base for mounting a mast on the upper end of an open end pipe, comprising two vertical elongated members, a cross member connecting said vertical members adjacent the top and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members adjacent the bottom and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a means secured to said lower cross member and projecting above the upper cross member, a means on said first mentioned means for forcing said cross members toward one another to move said vertical members outwardly against the internal surface of the pipe, and an extension on one of said vertical members projecting above the top of the pipe for supporting the mast.

5. A base for mounting an antenna mast on the upper end of a toilet vent pipe, comprising two vertical elongated members, a cross member connecting said vertical members adjacent the top and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members adjacent the bottom and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a rod secured to said lower cross member and projecting above the upper cross member, a nut on said rod above said upper cross member for forcing said cross members toward one another to move said vertical members outwardly, and a lug at the top of one of said vertical members for positioning said base in the pipe.

6. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, a cross member connecting said vertical members and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical

members and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a means secured to said lower cross member and projecting above the upper cross member, and a means on said first mentioned means for forcing said cross members toward one another to move said vertical members outwardly.

7. A base for mounting a mast on the upper end of a pipe, comprising two vertical channel iron members with the flanges of one member facing away from the flanges of the other member, a cross member connecting said vertical members adjacent the top thereof and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members adjacent the bottom thereof and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a rod secured to said lower cross member and projecting above the upper cross member, a nut on said rod above said upper cross member for focusing said cross members toward one another to move said vertical members outwardly, and a lug at the top of one of said vertical members for positioning said base in the pipe.

8. A base for mounting an antenna mast on the upper end of a vent pipe, comprising two vertical channel iron members with the flanges of one member facing away from the flanges of the other member, one of said members being adapted to receive the lower end of the mast, a cross member connecting said vertical members adjacent the top thereof and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members adjacent the bottom thereof and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a rod secured to said lower cross member and projecting above the upper cross member, a nut on said rod above said upper cross member for forcing said cross members toward one another to move said vertical members outwardly, one of said vertical members being forced against the internal surface of the pipe and the other vertical member against the lower end of the mast to clamp the mast in the upper end of the pipe, a lug at the top of one of said vertical members for positioning said base in the pipe, and a member near the bottom of the vertical member contacting the mast for supporting and positioning said mast in the pipe.

9. A base for mounting an antenna mast on the upper end of an open end pipe, comprising two vertical elongated members, one of said members being adapted to receive the lower end of the mast, a cross member connecting said vertical members and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a rod secured to said lower cross member and projecting above the upper cross member, a nut on said rod above said upper cross member for forcing said cross members toward one another to move said vertical members outwardly, one of said vertical members being urged against the internal surface of the pipe and the other vertical member against the lower end of the mast to clamp the mast in the upper end of the pipe, and a lug at the top of one of said vertical members for positioning said base in the pipe.

10. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, one of said members being adapted to receive the lower end of the mast, a cross member connecting said vertical members and projecting upwardly above the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members and projecting downwardly below the point of juncture between said last mentioned cross member and said vertical members, a means secured to said lower cross member and projecting above the upper cross member, and a means on said first mentioned means for forcing said cross members toward one another to move said vertical members outwardly, one of said vertical members being urged against the internal surface of the pipe and the other vertical member against the lower end of the mast to clamp the mast in the upper end of the pipe.

11. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, a V-shaped cross member connecting said vertical members adjacent the top thereof, a V-shaped cross member connecting said vertical members adjacent the bottom thereof, a rod connecting said cross members, and a means cooperating with said rod for expanding both of said V-shaped members to move said vertical members outwardly.

12. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, a V-shaped cross member connecting said vertical members adjacent the top thereof, a V-shaped cross member connecting said vertical members adjacent the bottom thereof, said V-shaped members facing in opposite directions, a rod connecting said cross members, and a means cooperating with said rod for expanding both of said V-shaped members to move said vertical members outwardly.

13. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, two V-shaped cross members connecting said vertical members, said V-shaped members facing in opposite directions, a rod connecting said V-shaped members, and a means cooperating with said rod for expanding both of said V-shaped members to move said vertical members outwardly toward the internal walls of the pipe.

14. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, two V-shaped cross members connecting said vertical members, said V-shaped members facing in opposite directions, and a means connecting said V-shaped members for expanding both of said V-shaped members to move said vertical members outwardly.

15. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, one of said members being adapted to receive the lower end of the mast, a V-shaped cross member connecting said vertical members at the top thereof, a V-shaped cross member connecting said vertical members at the bottom thereof, a rod connecting said cross members and projecting above the upper cross member, and a means on said rod for expanding both of said V-shaped members to move said vertical members outwardly, one of said vertical members against the internal surface of the pipe and the other vertical member against the lower end of the mast to clamp the mast in the upper end of the pipe.

16. A base for mounting a mast on the upper end of an open end pipe and the like, comprising two vertical elongated members, a cross member connecting said vertical members and projecting downward below the point of juncture between said cross member and said vertical members, a cross member connecting said vertical members below said first mentioned cross member and projecting upwardly above the point of juncture between said last mentioned cross member and said vertical members, a means connecting said cross members near the centers thereof, and means cooperating with said first mentioned means for forcing said cross members away from one another to move said vertical members outwardly.

17. A base for mounting an antenna mast on the up-

per end of an open end pipe and the like, comprising two vertical elongated members, a V-shaped cross member connecting said vertical members at the top thereof, a V-shaped cross member connecting said vertical members at the bottom thereof, a rod connecting said cross members and projecting above the upper cross member, and a means on said rod for expanding said cross members to move said vertical members outwardly against the internal surface of the pipe.

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