Dec. 8, 1953 R. B. RIGGS 2,661,918

MAST MOUNTING BASE

Filed Aug. 7, 1950

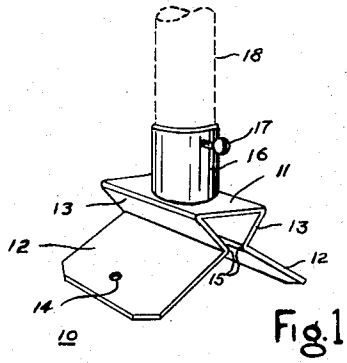


Fig.1

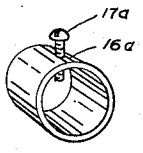


Fig.1A

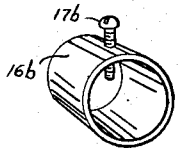


Fig.1B

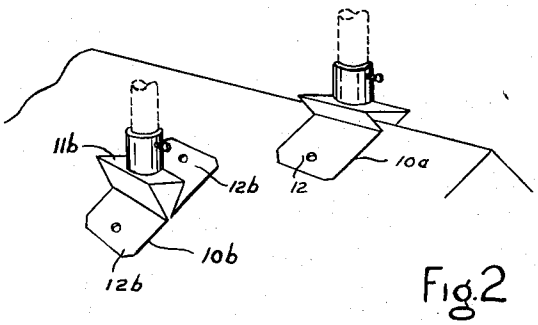


Fig.2

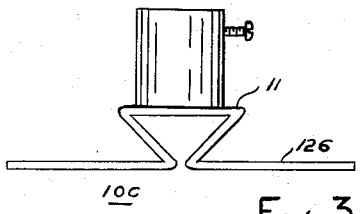
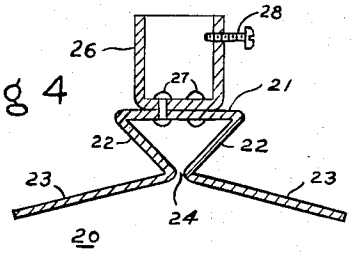


Fig. 3

Fig 4



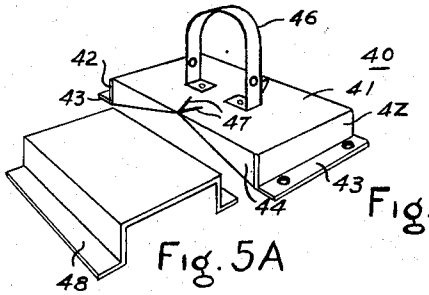


Fig. 5

Fig. 5A

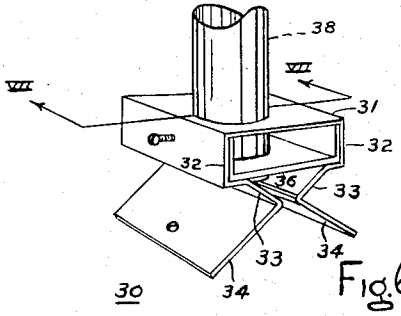


Fig.6

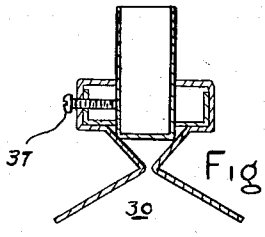


Fig. 7

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MAST MOUNTING BASE

Robert B. Riggs, Santa Barbara, Calif.

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3 Claims. (Cl. 248—43)

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My invention relates to mast supports and has particular reference to a universal type of mast mounting base for use on masts maintained upright by guy wires and the like. It is especially adapted for the reception of the lower end of masts for radio and television receiving antennas.

Various types of mounts have been devised from time to time to support antenna masts and the like, but these have invariably been of complicated design and therefore expensive. For example hinges have been incorporated to present the socket of the base at the proper angle with respect to the portion secured to a structure. Various other articulated designs have been provided that are even more complicated and which have resulted in weak and yielding structures. Further, some support designs have required physical modifications of the roof or other structure to which they are secured. Thus it is necessary to bore holes in roofs and remove shingles. Not only does this require extra labor and therefore additional expense, but also it interferes with the water tight integrity of the structure to which the mast is fastened.

My invention by contrast is simply formed of sheet metal. It is universal in nature in that the sheet metal may be manually deformed to fit the slope of the structure, whether inclined, on a ridge, or flat. In the preferred form I provide an elevated socket platform supported by converging members, and the structure engaging portions are disposed outwardly from the bottom of the converging supports. The elevated platform is provided with a mast receiving socket which may be disposed in the center of the entire mounting so that the securing surfaces projecting therefrom are substantially uniform in size. The same folds in the sheet metal that are employed to form the elevated platform also provide the means for effecting manual bending to fit various surfaces.

It is therefore a general object of my invention to provide a universal mast support that is simple in construction and reliable in use.

Another object is to provide a mast support having manually deformable securing members that permit its mounting on a slope, ridge or flat.

A further object is to provide a sheet metal universal mounting base wherein an elevated platform is folded from the metal to receive the mast.

Still another object is to provide a simple type of mast mounting wherein the mast may be restrained from rotating.

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Another object is to provide a sheet metal type of mast mounting wherein the metal is apertured to form a mast socket.

Other objects and advantages of my invention will be apparent in the following description and claims considered together with the accompanying drawings in which:

Fig. 1 is a perspective view of the presently preferred form of my invention;

Fig. 1A is a perspective view of the tubular mast receiving portion which may be secured to the top of the mounting base of Fig. 1 for masts of different sizes;

Fig. 1B is still a different size of tubular portion which may be secured to the top of the mounting base of Fig. 1;

Fig. 2 is a perspective view of two of my preferred forms of mounting base secured to roofs on different portions, one on the slope and one on the ridge;

Fig. 3 is a side view of a mounting base of the type of Fig. 1 but manually deformed to fit a flat surface;

Fig. 4 is a sectional view of a modified form of my invention wherein a cup member is secured to the rest of the base to receive a mast;

Fig. 5 is a perspective view of still another modified form of my invention;

Fig. 5A is a perspective view of a channel member which may be inserted within the mounting base of Fig. 5;

Fig. 6 is a perspective view of a modified form of my invention wherein sheet metal portions are apertured to form a mast receiving socket; and

Fig. 7 is a sectional view along the line 7—7 of the mast mounting base of Fig. 6.

Referring to Fig. 1 my mast mounting base may be referred to generally by the numeral 10, and is preferably formed of a single sheet of metal which has been folded to form a horizontal platform 11 which is supported by converging side members 13 to which are attached securing plates 12. The plates 12 are attached at folds 15 in the metal and these folds are the point of greatest convergence of the supports 13. These plates 12 may be apertured as at 14 to receive screws or other fasteners for securing the mounting base to a roof or similar structure.

A socket member 16 may be provided for receiving the end of the mast and this may be in the form of a tube which is apertured and tapped to receive a screw 17 which may be threaded to squeeze or pierce a mast 18 inserted in the socket 16. Various sizes of masts will require different

sizes of socket tubes and accordingly there is illustrated in Fig. 1A a tube which is slightly larger than that of Fig. 1 and illustrated in Fig. 1B is a tube slightly larger than that of Fig. 1A.

These tubes may be welded, soldered, or otherwise secured to the platform 11. The set screws 17 are designed to permit angular orientation of the mast 18 which is especially important in television, frequency modulation and other types of antenna masts wherein arrays must be directionalized.

The securing plates 12 of the mounting base 10 may be manually deformed to fit any type of roof structure. Accordingly there is illustrated in Fig. 2 a mounting base 10b wherein the near securing plate 12b has been bent downwardly from the position illustrated in Fig. 1, and the far securing plate 12b has been bent upwardly. Accordingly the mounting base 10b may be secured on the slope of a roof so that the platform thereof 11b will be maintained in a horizontal position. Also if the mounting base is to be secured to the ridge of a roof, both securing plates may be manually bent to a lesser included angle so that they will accurately fit the slopes of the roof, and thereafter fasteners of any suitable type such as screws may be passed through the apertures of the securing plates to hold the mount as a whole to the roof.

If the mounting base is to be secured to a flat surface, then the securing plates 12c may be manually bent into alignment as illustrated in Fig. 3. In that figure a mounting base 10c may have securing plates generally planar.

Illustrated in Fig. 4 is a modification of my invention wherein the same type of sheet metal structure is employed as in Fig. 1 but the mast retaining socket is in the form of a cup shape 26. The mounting base as a whole may be referred to by the numeral 20 and may include a sheet metal strip from which is folded a horizontal platform 21 supporting the converging side pieces 22 to which in turn are attached outwardly flaring securing plates 23.

The cup shape 26 may be apertured and tapped to receive a set screw 28 for angular orientation of the mast, or other forms of mast contactors may be employed. The cup 26 may be secured to the sheet metal platform 21 by rivets 27 or other suitable fasteners.

Illustrated in Figs. 6 and 7 is a heavy duty mounting base which acts to support the weight of a mast and also aids in holding it in a desired orientation, usually a vertical position. A sheet metal strip may be folded to form a horizontal platform 31 which is supported by vertical walls 32 connected to converging strip portions or walls 33. Integrally connected securing plates 34 may be attached to the bottom of the converging walls 33. Fitted within the vertical walls 32 may be a channel member 36 which forms with the platform and the side walls 32 a rigid box structure. The channel flanges may be welded, soldered or otherwise secured to the vertical walls 32. One side wall 32 and a flange of the channel 36 may be apertured and tapped to receive a set screw 37 which acts as the set screw for fixing the angular orientation of a mast.

The platform 31 and the channel 36 may be apertured in alignment to receive a mast 38 indicated in broken outline. Thus the mast 38 is held at two points along its lower end, thus giving it vertical rigidity of support. The mounting base of Figs. 6 and 7 may be referred to by the reference numeral 30 and may be secured to a surface in the same manner as the mounting base Fig. 1, by manually deflecting the securing plates 34 to fit the roof in such a fashion as to mount the platform 31 horizontally or in any other desired position with respect to the desired orientation of the mast 38.

Illustrated in Figs. 5 and 5A is a modification of my invention wherein the securing portions of the mounting base may have boxed ends. A mounting base 40 accordingly may be formed of a single sheet of metal to form a top plate 41 having a box end 42 at both ends from which outwardly projects an apertured securing flange 43. The sides of the top plate 41 may be bent over to form box side walls 44 to strengthen the box structure at the end walls 42. The support is designed for tubular masts and accordingly a strip of metal 46 having an inverted U-shape may be secured to the top plate 41. The top plate 41 is designed to fold or bend at its middle and to facilitate this, creases 47 may be formed. Thus if the support 40 is to be placed over a ridge, it is manually bent so that the side walls 44 fit the angle of the ridge and screws are then passed through the apertures of the flanges 43. The inverted U-shape strip 46 accurately bisects the angle so as to maintain its upright position with respect to a mast which may be fitted over it. A mast may be secured in place by passing a bolt through apertures in the mast and through the apertures of the strip 46. If the support 40 is to be used on a flat surface a flanged channel piece 48 of Fig. 5A may be inserted under the plate 41 to prevent it from bending.

It will be appreciated that the versatility of my mount is due to the ability of my structure to be manually bent to a desired shape and position. While various structures lend themselves to such bending, in accordance with my invention, my use of the converging support walls, gives the mount its universal characteristic. If these platform supporting walls were parallel, much bending would be required to obtain a horizontal platform even on roofs of slight slope. Also, if the support walls were diverging, even greater problems would be encountered.

The converging support walls gives rise to a line or strip of bending whereby the triangular cross section of platform and converging walls may be pivoted, in effect, to any desired position with respect to the securing plates. The closer the walls converge, the freer is this pivoting action. Thus the space 24 of Fig. 4 should be as small as possible so that the bending of the securing plates will be as unified as possible for slopes and flats where these plates should be planar. Unavoidable spread is encountered in adapting the mount to a flat surface as shown in Fig. 3, but this is of little moment.

In manually deforming the securing plates, the bending occurs primarily in the region of attachment of the plates to the converging supports. This is true even though the initial bending causes cold working and stiffening in that region. The manual bending takes place there because of the construction of my mount. To bend a securing plate 12 toward its converging wall, a manual force is applied toward that wall, which crushes the attachment bend between the two. For a bend away from its converging wall, a force is applied in the opposite direction, causing the converging wall to yield until the bend strikes the opposite bend which then acts as an anvil for effecting yielding of the first bend. This is an additional reason for keeping the space at a

minimum at the point of convergence. The additional cold working of the metal due to manual bending aids in stiffening the entire mount.

I have illustrated a presently preferred universal mount wherein the angle of the converging walls with respect to the mounting platform is about 45°. This mount is suitable for nearly all roofs. For roofs of gentle slope, the angle may be less, but for roofs of very great pitch, the angle may be much greater. In this latter case the converging walls must be longer to effect convergence, giving a considerable elevation to the platform.

While various materials may be employed, I have found that ordinary galvanized sheet steel is very satisfactory. Manual bending and great rigidity can both be obtained with 18 gauge galvanized steel, and the cup, tube, box or other structure may be welded thereto. Also aluminum, stainless steel or other corrosive resistant materials could be used, as well as some of the tougher plastics. The mount shape may be easily formed on ordinary sheet metal brakes or special dies may be employed for high scale production.

Various modifications will be obvious to those skilled in the art and the disclosure of Fig. 3 illustrates the basic nature of my manually deformable mount. For example, for mountings designed only for ridges, the supporting walls employed may be a pivoted type for easier angular orientation of the mast. The angles of convergence of the support walls may be different. For these and other reasons, I do not limit myself to the precise embodiments illustrated but claim all such modifications as come within the true spirit and scope of my invention.

I claim:

1. A mast mounting base comprising; a platform; parallel side walls projecting downwardly from opposite sides thereof; converging supports connected to the lower ends of the sidewalls; securing means yieldingly connected to the supports at the most converged parts; and a flat member disposed between the lower ends of the sidewalls parallel to the platform, said platform and flat member having registered apertures to act as a mast receiving socket.

2. A mast mounting base formed of sheet metal comprising a platform apertured to receive a mast; parallel sidewalls projecting downwardly from opposite sides of the platform; fixed supports connected to the lower ends of the sidewalls and converging until they substantially touch each other; securing plates yieldingly connected to the supports at the most converged portions thereof; and a fastener mounted on one of said parallel sidewalls and adapted to engage a mast inserted in the aperture, each of said supports and its associated securing plate being formed of a single piece of sheet metal, said yielding connection being a bend in said sheet metal.

3. A mast mounting base formed of sheet metal comprising a platform apertured to receive a mast; parallel sidewalls projecting downwardly from opposite sides of the platform; fixed supports connected to the lower ends of the sidewalls and converging until they substantially touch each other; securing plates yieldingly connected to the supports at the most converged portions thereof, each of said supports and its associated securing plate being formed of a single piece of sheet metal, said yielding connection being a bend in said sheet metal.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,090,573	Shaner	Mar. 17, 1914
1,140,582	Dodd	May 25, 1915
1,349,921	Short	Aug. 17, 1920
1,716,220	Ferguson	June 4, 1929
1,821,305	Hauenstein	Sept. 1, 1931
2,431,164	Borgolte	Nov. 18, 1947
2,439,061	Shur	Apr. 6, 1948
2,439,062	Shur	Apr. 6, 1948
2,439,063	Shur	Apr. 6, 1948