July 24, 1962 G. E. DANIELS 3,045,783

STANDARD FOR TRAFFIC SIGNALS, STREET LIGHTS AND THE LIKE

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FIG. 1.

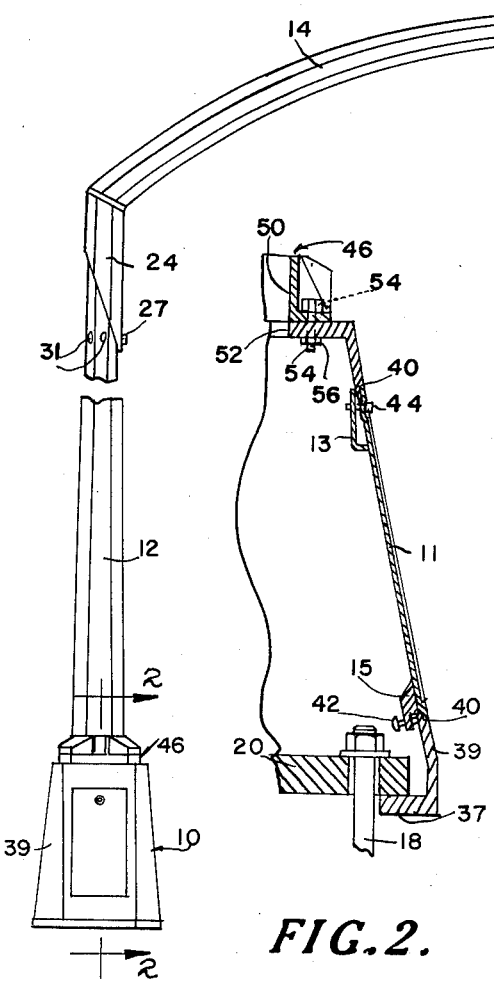

FIG. 2.

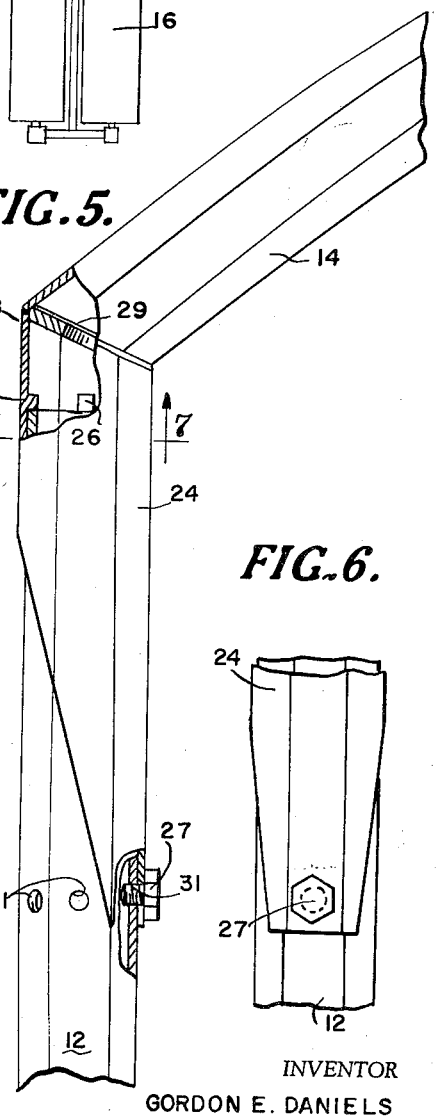

FIG. 5.

FIG. 6.

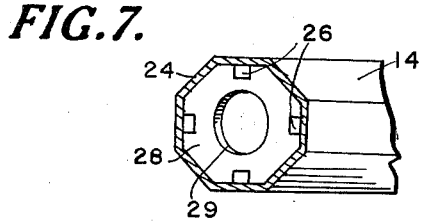

FIG. 7.

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FIG.8.

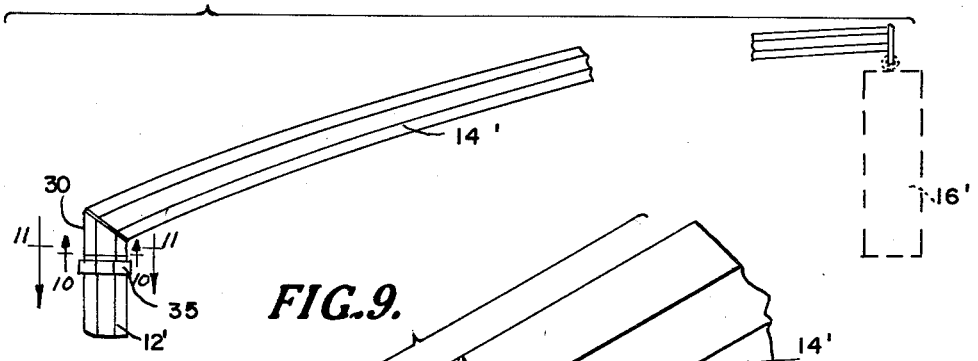

FIG.9.

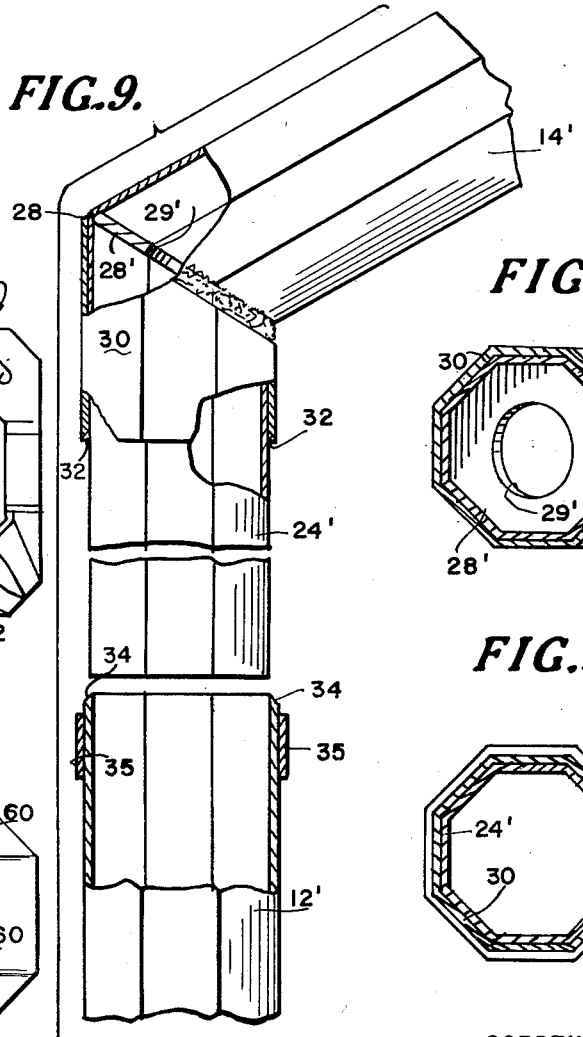

FIG.4.

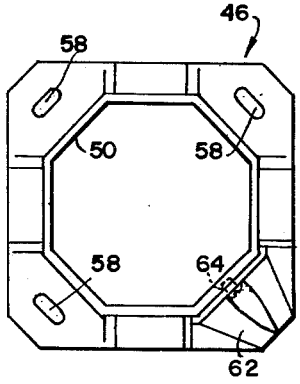

FIG.10.

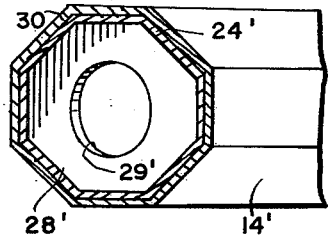

FIG.3.

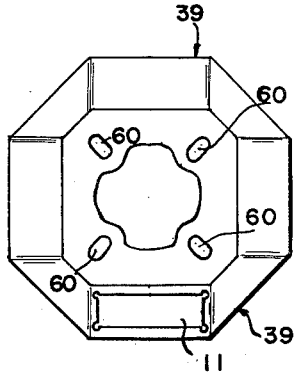

FIG.11.

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3,045,783

STANDARD FOR TRAFFIC SIGNALS, STREET LIGHTS AND THE LIKE

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Filed June 18, 1959, Ser. No. 821,218
3 Claims. (Cl. 189—26)

This invention relates to standards or supports, and more particularly to an improved standard which while capable of wide utilization is especially adapted for supporting street lighting fixtures or traffic signals.

It is an object of this invention to provide a novel, sectioned standard of the type described particularly adapted to be conveniently transported, assembled and disassembled.

A further object of this invention is to provide a novel standard of the type described adapted to mount a traffic light, street light, or the like in any desired one of a plurality of positions about the vertical mast of the standard. A related and more specific object resides in the provision of novel means, in standards of the type referred to, facilitating connection of the mast arm to the mast, and further providing a detachable joint between the and further providing a detachable joint between the mast arm and mast adapted to enable the mast arm to be conveniently mounted in any of a plurality of angular or radial positions with respect to the mast. In the preferred embodiments of the invention, to be described in more detail hereinafter, the structure constituting this joint is still further characterized by an utmost simplicity in design, while possessing superior mechanical strength capable of satisfactorily withstanding extreme forces, such as those that might be produced by heavy winds.

In carrying out the foregoing objects, it will be seen as the description proceeds that the standards or supports of the invention are of eye-pleasing design, yet are inexpensive to manufacture and of durable character.

Other objects and advantages will be in part evident and in part pointed out hereinafter in the following description of illustrative embodiments of the invention, which should be read in conjunction with the accompanying drawings, in which like numerals indicate like parts throughout, and in which:

FIGURE 1 is a side elevational view of a standard or support embodying the invention;

FIGURE 2 is an enlarged fragmentary sectional view of the standard base, taken generally along line 2—2 of FIGURE 1;

FIGURE 3 is a top plan view of the bottom of the base shown in FIGURE 1;

FIGURE 4 is a top plan view of the plate that fits on the base shown in FIGURE 3;

FIGURE 5 is an enlarged fragmentary elevational view, partially broken away and in section, showing the joint between the vertical mast and mast arm of the standard of FIGURE 1;

FIGURE 6 is an enlarged fragmentary elevational view of the mast and depending leg of the mast arm taken by looking toward the left in FIGURE 5;

FIGURE 7 is a cross-sectional view taken along line 7—7 of FIGURE 5 and with the mast omitted;

FIGURE 8 is a fragmentary and partially broken away side elevational view of a standard constituting another embodiment of the invention;

FIGURE 9 is an exploded and enlarged fragmentary view, partially broken away and in section, showing the joint between the mast arm and mast of the standard in FIGURE 8; and

FIGURES 10 and 11 are cross-sectional views taken respectively along lines 10—10 and 11—11 of FIGURE 8.

Referring more specifically to the drawings, the standard embodying the invention and shown in FIGURE 1 generally comprises a base 10, vertical support or mast 12, and mast arm 14. Attached to the outer end of mast arm 14 in any suitable manner may be a street light, traffic light, or the like, as indicated by numeral 16. Although shown in unitary, assembled form in FIGURE 1, all of the above-mentioned components of the standard are separate and distinct, adapted to be independently manufactured and shipped. With objects of the size presently involved, this sectioned construction greatly facilitates these operations and consequently reduces the cost thereof.

In this embodiment, and as best seen in FIGURES 1, 5, and 6, the vertical support or mast 12 is of tubular construction, being octagonal in cross-section, and preferably is uniformly tapered, decreasing in size as it increases in height. Although mast 12 is shown as being of equilateral octagonal sectional configuration, it will be understood as the description proceeds that it may have other polygonal sectional configurations without departing from the spirit of the invention. Due to its simple construction, support 12 may be readily manufactured by any convenient method in any desired height, area, or thickness, depending upon the requirements therefor.

Adapted to be mounted upon mast 12 is the mast arm 14, which has a gracefully curved configuration. This not only produces a pleasing appearance, but additionally enables the arm to support a greater weight at its outer end due to stress distribution in the arm as will be appreciated.

A leg 24 is shown as depending from the inner end of arm 14. This leg 24 may be suitably secured to the arm, as by welding, and a plate 28 is shown attached into the joint between the leg 24 and arm 14, as by welding. A circular opening 29 in plate 28 provides a guideway for electrical leads (not shown) to fixture 16, thus holding the leads in desired position. If desired, the edges of opening 29 may be covered with a soft material, such as rubber, to prevent abrasion of the leads at this point.

Preferably, both mast arm 14 and leg 24 are of tubular, tapered construction, and octagonal in cross section. The cross section of arm 14 is not critical, but that of leg 24 corresponds to the cross-sectional configuration of the top of mast 12. Leg 24 has a taper complementing that of the upper portion of mast 12, but is of a slightly greater size, so that these two members are adapted to closely fit in the telescoping relationship shown. By telescoping support 12 within leg 24, the latter member shields the interior of the mast and mast arm from the atmosphere, as will be evident.

Appropriate means are provided to limit the telescoping action of the leg 24 and mast 12. For example, one or more lugs 26 (see FIGURES 5 and 7) may be provided about the inner periphery of leg 24 at some point slightly below plate 28. Alternatively, lugs 26 might be omitted, in which case telescoping could be limited by abutment of the upper end of support 12 with plate 28. When this latter procedure is employed, the upper end of support 12 should be angled, rather than horizontal as shown, complementary to the angle of plate 28 to provide more uniform contact between these two members.

The lower portion of leg 24 preferably is obliquely formed, as shown, the shorter or cut-away portion being on the essentially non load-bearing side thereof. The oblique formation and the tapered construction of leg 24 and support 12 greatly facilitate placement of these members in telescoping relationship, during both initial assembly of the standard and any desired subsequent adjustment of the angular position of arm 14. Thus, in

this placement, a relatively large opening is provided in leg 24 for reception of the relatively small upper end of mast 12. When in final telescoped relation, however, contact between the two telescoping members is quite close throughout their contiguous portions to provide a tight and firm, mechanically strong joint therebetween. Arm 14 therefore is able to withstand winds of extremely high velocity without tending to rotate; each of the eight vertices and surfaces of the vertical support 12 exerts a force of reaction upon the vertices and surfaces they contact, resisting such rotative movement.

By reason of the construction and arrangement of the joint connecting arm 14 to mast 12, it will be apparent that the arm 14 may be connected to the mast in any of a plurality of angular positions relative to the mast. That is to say, once the mast has been positioned, the mast arm can be attached thereto, in the manner described, so as to extend radially from the mast in any of eight different direction, in the embodiment under consideration. Moreover, subsequent relocation of the arm 14 relative to the mast 12 may likewise be conveniently effected throughout these various positions, as should be evident. In any event, there will be no need for any special tools in forming the joint between the mast arm and mast, or disconnecting same.

Although not deemed necessary, additional locking action may be provided for the joint between the mast and mast arm. For example, a hole may be provided in the leg 24 and in each of the eight faces of the mast 12, as shown in FIGURES 1 and 5. By registering one of these holes 31 in the mast with the corresponding one provided in the lower portion of leg 24, a bolt 27 may be threadedly engaged in hole 31 and extend through leg 24, as indicated.

Another embodiment of the invention is illustrated in FIGURES 8 through 11. This embodiment is somewhat similar to that just described, hence, similar reference characters have been used to designate similar parts. Referring to these figures, it will be seen that arm 14', leg 24', and mast 12', are again shown as being of tubular construction, and octagonal in cross section. In this embodiment, however, mast 12' and leg 24' are shown as being of uniform width or cross-sectional configuration throughout; that is, they are not tapered. Also, leg 24' is of slightly smaller, rather than greater, width than mast 12', so as to be telescopically received within the latter when joining these parts together. To strengthen leg 24' and limit its telescoping action with the mast, a collar 30 is shown as being secured thereto, as by a press-fit or welding. Similarly, a second collar 35 is shown as being secured about the upper portion of mast 12', to provide additional strength and reinforcement.

The lower edge of collar 30 is shown as being formed with a downwardly angled or flaring lip 22. This lip is adapted to matingly engage an upwardly angled lip 34 provided at the open upper end of support 12. Thus, this engagement of these lips 32, 34 serves to delimit the telescoping action, and, at the same time, it provides a seal against the entry of moisture, etc. into the standard.

The procedure for adjusting the angular position of arm 14' in the FIGURES 8–11 embodiment of the invention is essentially the same as that previously described; again the arm may be readily secured in any one of eight possible positions.

As will be apparent, by varying the polygonal shape of the standards of the invention; the number of possible positions of adjustment of the mast arm could be increased or decreased. The octagonal shape illustrated herein, however, has been found to be most satisfactory, considering both the number of positions of adjustments provided, the cost of manufacture, etc.

In both of the heretofore described embodiments of the invention, the mast may be supported in its substantially vertical position by the base 10, best shown in FIGURES 1–4. Base 10 may be anchored in place by means of bolts 18 (see FIGURE 2) extending through anchor plates 20 and into the underlying earth or pavement. These anchor plates 20 as is conventional, extend across an inturned, peripheral lip or flange 37 at the bottom of the base housing 39.

To permit access to bolts 18 and to the various electrical units and components within base 10, an opening is provided in housing 39 and closed by a detachable cover plate 11. This plate 11 is shown as being held in position by clamps 13 and 15, located centrally thereof, and with set screws 42, 44 engaged to the clamps. As will be understood, rotation of set screw 44 will spread clamp 13 farther away from plate 11, or closer thereto, in connection with the insertion or removel of the plate.

The illustrated connection between mast 12 and base 10 includes an annular base-plate 46 (see FIGURES 2 and 4), having an octagonal opening 50 therein, as indicated. The side walls defining opening 50 may be tapered so as to be complementary to the outer surface of the bottom of mast 12, or the mast 12 may be straight and untapered at its lower portion to fit into complementary opening 50 in engagement with the side walls thereof. In any event, it is preferred that the mast be secured in position in the plate 46, as by welding. The mast may also project below plate 46, and through an opening 52 in the top of base housing 39, as shown in FIGURES 2 and 3.

Base-plate 46 is shown as being attached to housing 39 by means of bolts 54 and nuts 56, arranged at the four corners of the base plate, and extending through the aligned holes 58, 60 in the base-plate and housing, respectively. A cover or cap 62 may be provided for each bolt 54, engaged as by screw 64 to wall 50, as best seen in FIGURE 4. Caps 62 may be attached to plate 46, as by screws 64, to cover the bolts 54, as indicated in FIGURE 4.

In lieu of the above-described connection between base 10 and mast 12, it will be appreciated that a joint such as those described above for connecting the mast and the mast arm might be employed at this point.

It will be seen that the standards or supports of this invention have an improved and simplified design and appearance while possessing superior strength to withstand severe winds. This is of considerable significance since, in recent years, all state highway departments and city utilities have become more aware of the importance for all such structures to be capable of withstanding winds of tornado and hurricane velocities. Furthermore, by virtue of the present invention, the novel structure of the detachable joint between the mast and mast arm enables the mast arm to be easily detached from the mast and interchanged with arms of other lengths. The mast arm may be placed at any desired location corresponding to a face of polygonal mast 12, throughout 360°, by reason of this joint, as discussed above. Also since the position of the base-plate 46 with the mast attached thereto may be selectively positioned adjusted on the top of housing 39, the mast arm may be mounted according to the selected alignment of holes 58, 60, as should be understood.

Inasmuch as various modifications of this invention not described herein will become apparent to those having ordinary skill in the art, it is intended that the matter contained in the foregoing description and the accompanying drawings be interpreted as illustrative, and not limitative, the scope of the invention being defined in the appended claims.

What is claimed is:

1. In a lighting standard composed of a base member, a tubular mast of polygonal cross sectional configuration open at its top, and a tubular arm member extending from said tubular mast, the improvements comprising a leg portion on said tubular arm member at an angular position thereto and of a cross sectional configuration corresponding to that of the upper portion of said tubular

mast but of slightly different diameter than said upper portion of said tubular mast and telescopically attached thereto, and cooperating abutment means on said leg portion and said upper portion of said tubular mast limiting telescoping engagement between said portions to a predetermined distance longitudinally thereof, said tubular arm member and said leg portion providing a closure for the open top of said tubular mast so as to effectively prevent in cooperation with said telescopic attachment entry of fluid into said tubular mast.

2. In the lighting standard defined in claim 1, said upper portion of said tubular mast and said leg portion being tapered correspondingly and said abutment means comprising a number of lugs about the inner periphery of said leg portion adapted to abut the upper edge of said tubular mast when telescopically assembled thereto to prevent excessive pressure contact between said tapered members due to friction so that said tubular mast and said leg portion may be easily assembled or disassembled.

3. In the lighting standard defined in claim 1, said leg portion being of smaller diameter than said upper portion

of said tubular mast, said abutment means comprising a first collar externally attached to said leg portion remote from its end cooperating with a second collar also externally attached to said upper portion of said tubular mast adjacent the upper edge thereof, the lower edge of said first collar being radially flared inwardly and the edge of said upper portion of said tubular mast being chamfered accordingly so that upon telescopic assembly of said leg portion within said upper portion of said tubular mast and in cooperation with said first and second collars a fluid tight seal is effected between said leg portion and said tubular mast.

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