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W. B. WELLS

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ADJUSTABLE SUPPORTING STRUCTURE FOR LIGHT SIGNAL UNITS AND THE LIKE

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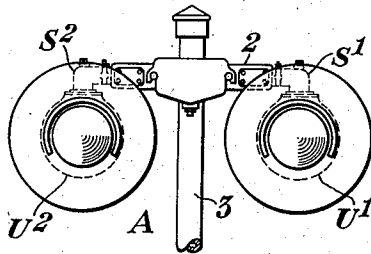


Fig. 1.

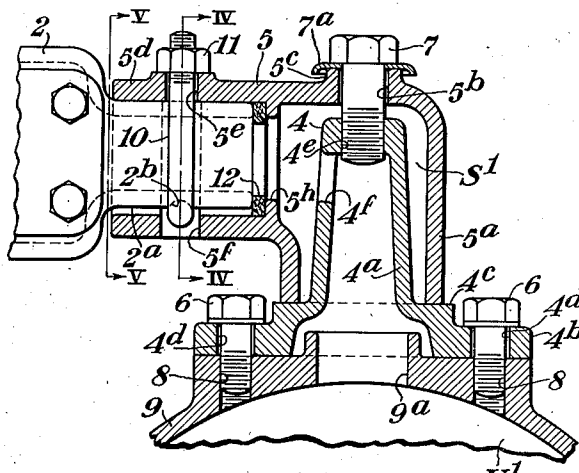


Fig. 2.

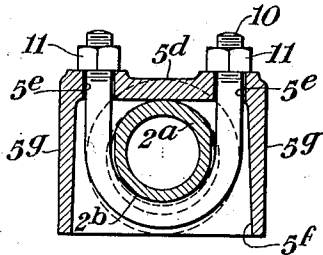


Fig. 4.

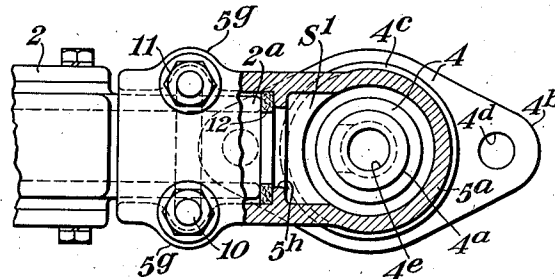


Fig. 3.

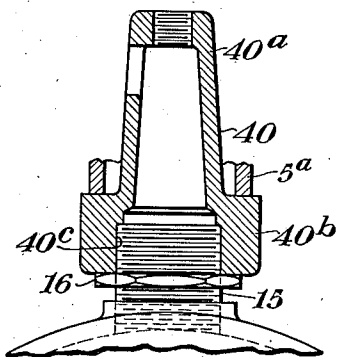


Fig. 6.

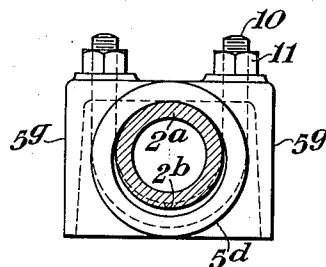


Fig. 5.

INVENTOR
Wesley B. Wells.
BY *Attorney*
HIS ATTORNEY

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ADJUSTABLE SUPPORTING STRUCTURE FOR LIGHT SIGNAL UNITS AND THE LIKE

Wesley B. Wells, Wilkinsburg, Pa., assignor to
The Union Switch & Signal Company, Swiss-
vale, Pa., a corporation of Pennsylvania

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2 Claims. (Cl. 248—230)

My invention relates to adjustable supporting structures for light signal units and the like.

Supporting structures embodying my invention are particularly suitable for, although not limited to, use for securing the light units of a highway crossing signal of the flashing light type to the usual cross arm, and their object is to provide a simple structure which will permit adjustment of the associated light unit relative to the cross arm in all directions.

Another object of my invention is to provide a supporting structure of the type described which will not be affected by previous adjustments, or by long exposure to all kinds of weather conditions.

I will describe two forms of supporting structures embodying my invention, and will then point out the novel features thereof in claims.

In the accompanying drawing, Fig. 1 is a front elevational view showing a highway crossing signal the light units U^1 and U^2 of which are secured to the associated cross arm 2 by means of adjustable supporting structures S^1 and S^2 embodying my present invention. Fig. 2 is an enlarged vertical sectional view of the supporting structure S^1 which secures the light unit U^1 to the cross arm 2. Fig. 3 is a top plan view of Fig. 2, with certain of the parts shown in section to better illustrate the construction. Figs. 4 and 5 are sectional views taken on the lines IV—IV and V—V, respectively, of Fig. 2. Fig. 6 is a detail sectional view showing a modified form of a portion of the supporting structure illustrated in the preceding views.

Similar reference characters refer to similar parts in each of the several views.

Referring first to Fig. 1, the reference character A designates a highway crossing signal which, in the form here shown, comprises two light units U^1 and U^2 secured, by means of adjustable supporting structures S^1 and S^2 , respectively, to the opposite ends of a cross arm 2, which cross arm, in turn, is secured to the usual vertical supporting pole 3 by any suitable means forming no part of my present invention and therefore not shown in the drawing. The light units U^1 and U^2 may have any preferred construction, and may, for example, be similar to the light unit shown and described in Letters Patent of the United States No. 1,878,273, granted to A. W. Fisher and W. B. Wells on September 20, 1932.

The supporting structures S^1 and S^2 , which supporting structures form the subject matter of my present invention, are similar, and a description of one will therefore suffice for both. Referring particularly to the supporting structure S^1 shown in Figs. 2 to 5, inclusive, this supporting structure in the form here illustrated comprises a casting 4 provided with a hollow frusto-conical portion 4^a which terminates at its lower end in a

flange 4^b , and an elbow-shaped casting 5, one end 5^a of which fits over the frusto-conical portion 4^a of the casting 4 with considerable clearance and cooperates with an annular shoulder 4^c which is formed on the upper side of the flange 4^b . The casting 4 is secured to the light unit U^1 by means of studs 6, and to the casting 5 by means of a stud 7. The studs 6 extend through clearance holes 4^d formed in the flange 4^b of the casting 4 and are screwed into tapped holes 8 provided in the casing 9 of the light unit U^1 . The stud 7 extends through a clearance hole 5^b formed in the elbow casting 5, and is screwed into a tapped hole 4^e provided in the upper end of the frusto-conical portion 4^a of the casting 4. The axis of the hole 5^b aligns with the axis of the opening in the end 5^a of the casting 5, and the axis of the hole 4^e aligns with the axis of the frusto-conical portion 4^a of the casting 4. It will be apparent, therefore, that when the stud 7 is loosened, the casting 4 is free to rotate relative to the casting 5 about the vertical axis of the frusto-conical portion 4^a , but that, when the stud 7 is tightened, the two castings 4 and 5 are securely clamped together. To prevent water from entering the casting 5 around the stud 7, the stud is provided adjacent its head with a washer 7^a having a downwardly inclined skirt portion which partly incloses a boss 5^c that surrounds the upper part of the hole 5^b .

The end 5^a of the casting 5 fits loosely over a tubular extension 2^a which is provided on the right-hand end of the cross arm 2, and is secured to the tubular extension by means of a U-bolt 10. The lower part of the U-bolt 10 engages the extension 2^a within a groove 2^b formed therein, while the upper ends of the U-bolt project upwardly through clearance holes 5^e formed in the casting 5 (see Fig. 4) and carry nuts 11. An opening 5^f is provided in the under side of the casting 5 directly below the U-bolt 10 to permit the assembly of the U-bolt, and the sides of the casting directly opposite the U-bolt are formed with rounded bulges 5^g (see Figs. 3, 4 and 5) to provide clearance for the U-bolt, and to shield the opening 5^b from the weather. Disposed on the inside of the casting 5 adjacent the inner end of the extension 2^a of the arm 2 is an inwardly extending annular flange 5^h , and interposed between this flange and the extension 2^a is a gasket 12 of suitable water-proofing material such as rubber. The flange 5^h prevents water which may seep in around the extension 2^a of the cross arm 2 from entering the end 5^a of the casting 5, and the combination of the flange 5^h and the gasket 12 prevents water or dirt from being forced into the unit during a severe storm, thus rendering the parts as nearly weather-proof as it is possible to make them.

With the supporting structure S^1 constructed

in the manner described, it will be seen that horizontal adjustments of the light unit U^1 may be quickly and conveniently accomplished by merely loosening the stud 7, rotating the light unit 5 to the desired position, and then again tightening the stud. It will also be seen that vertical adjustments of the light unit may likewise be quickly and conveniently made by merely loosening the nuts 11 on the U-bolt 10 just enough to permit the casting 5 to rotate about the tubular extension 2^a on the cross arm 2, rotating the casting to the desired position, and then again tightening the nuts 11. It should be noted that when the vertical adjustment is made in this manner, the U-bolt 10 will cooperate with the groove 2^b in the tubular extension 2^a of the cross arm 2 to retain the casting 5 in its proper longitudinal position on the tubular extension.

It is desirable to have the wires which conduct energy to the light unit pass from the cross arm to the light unit through the supporting structure to provide a closed wire inlet, and to permit this to be done, the casting 4 is secured to the light unit in such a position that the frusto-conical portion 4^a will align with a wire opening 9^a which is provided in the casting 9 of the light unit, and the frusto-conical portion 4^a is provided in its side wall near its upper end with a hole 4^f.

Referring now to Fig. 6, I have here shown a modified form of casting 40, which casting is adapted to be used in place of the casting 4 in supporting structures embodying my invention when the supporting structures are to be used in connection with light units of the type which are provided at their upper ends with a screw threaded pipe coupling 15 for cooperation with the supporting structure. The casting 40 is similar in all respects to the casting 4 shown in Fig. 1 with the exception that the flange 40^b which surrounds the lower end of the frusto-conical portion 40^a of the casting 40 is shaped somewhat differently from the flange 4^b of the casting 4, as will be obvious from an inspection of the drawing, and has formed therein a screw threaded hole 40^c which is adapted to receive the screw threaded pipe coupling 15 of the light unit. The casting 40 is prevented from becoming unscrewed by means of a jam nut 13 in an obvious manner. The operation of the coupling when provided with the casting 40 in place of the casting 4 is similar to that previously described and will be apparent from an inspection of the drawing without further description.

One advantage of supporting structures embodying my invention is that since the structures are practically water-proof, there will be no danger of the parts rusting together, and any desired adjustment can therefore be quickly and conveniently made regardless of how long the coupling has been in service.

Although I have herein shown and described only two forms of supporting structures embodying my invention, it is understood that various changes and modifications may be made therein within the scope of the appended claims without departing from the spirit and scope of my invention.

Having thus described my invention, what I claim is:

1. An adjustable supporting structure for securing a light signal unit to a supporting arm one end of which is provided with a tubular portion having an annular groove formed therein,

said supporting structure comprising a first casting secured to said unit and provided with a hollow frusto-conical portion having a screw-threaded hole formed in the upper end thereof and with a shoulder which surrounds the base of said frusto-conical portion, an elbow-shaped casting having one end fitting over the tubular portion of said supporting member and clamped thereto by means of a clamping bolt which engages said tubular portion at said annular groove and having the other end fitting over the frusto-conical portion of said first casting and clamped into engagement with said shoulder by means of a stud which extends through said elbow-shaped casting and is screwed into said screw-threaded hole in said frusto-conical portion, a flange formed in said elbow-shaped casting adjacent the inner end of said tubular portion of said supporting member, a water-proofing gasket interposed between said flange and said tubular portion to prevent moisture from entering said elbow-shaped casting around said tubular portion, and a washer secured to said stud adjacent the head thereof and provided with a depending skirt portion to prevent moisture from entering said elbow-shaped casting around said stud.

2. An adjustable supporting structure for securing a light signal unit to a supporting arm one end of which is provided with a tubular portion having an annular groove formed therein, said supporting structure comprising a first casting secured at its lower end to the light unit and provided with an upwardly extending frusto-conical portion having a hole formed in one side thereof and an axially disposed screw-threaded hole formed in the top thereof, said first casting also being provided with an annular shoulder which surrounds the lower part of said frusto-conical portion, a U-shaped clamping bolt, an elbow-shaped casting having one end fitting over the tubular portion of said supporting arm and having the other end fitting over the frusto-conical portion of said first casting and engaging said shoulder, said elbow-shaped casting having holes formed in the upper side of said one end for the reception of the ends of said U-shaped bolt and having a slot formed in the underside of said one end to permit said U-shaped bolt to be assembled and having bulges formed in the sides of said one end opposite said bolt to provide clearance for said bolt and to shield said slot from the weather, nuts screwed onto the upper ends of said U-bolt to clamp said elbow-shaped casting to said arm, a flange formed in said elbow-shaped casting adjacent the inner end of the tubular portion of said supporting arm, a water-proofing gasket interposed between said flange and the inner end of the tubular portion of said arm in such manner that when said U-bolt is engaging the tubular portion of said arm at said annular groove the tightening of said nuts will compress said gasket, a stud extending through said elbow-shaped casting and screwed into the screw-threaded hole in said frusto-conical portion of said first casting, and a washer secured to said stud adjacent the head thereof and provided with a depending skirt portion to prevent moisture from entering said elbow-shaped casting around said stud, the hole in the side of said frusto-conical portion being provided to permit wires to be carried from said arm to said light unit through said castings.

WESLEY B. WELLS.