Dec. 20, 1966 H. C. PFAFF, JR., ETAL 3,292,322

RETRACTABLE SIGNAL SUPPORT

Filed Feb. 4, 1964 3 Sheets-Sheet 1

FIG. 1

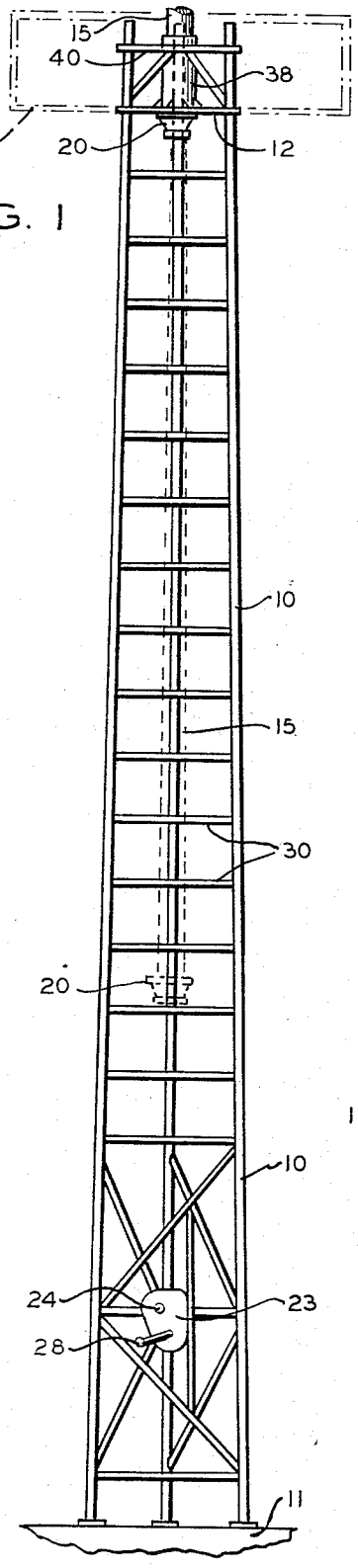
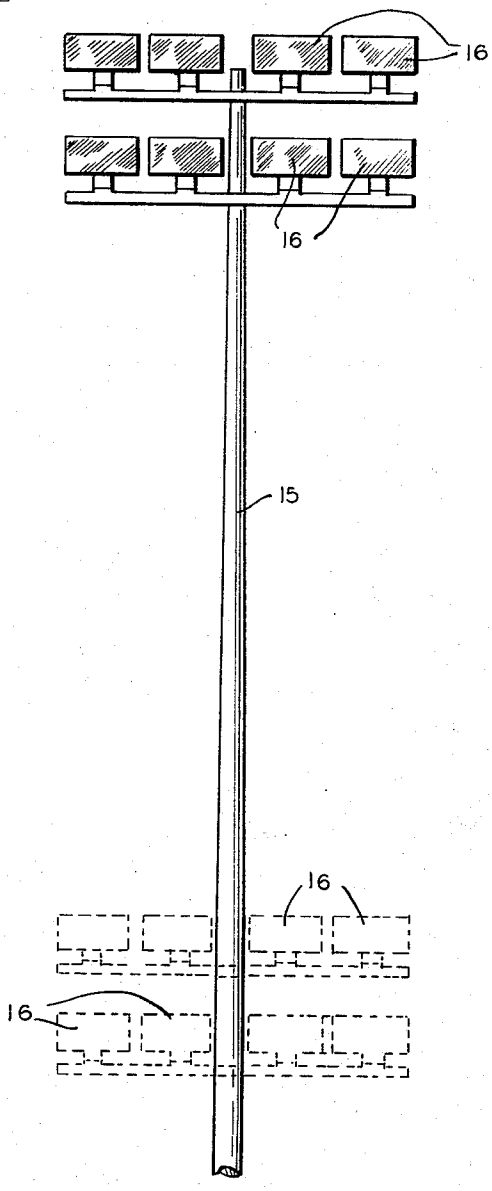


FIG. 2



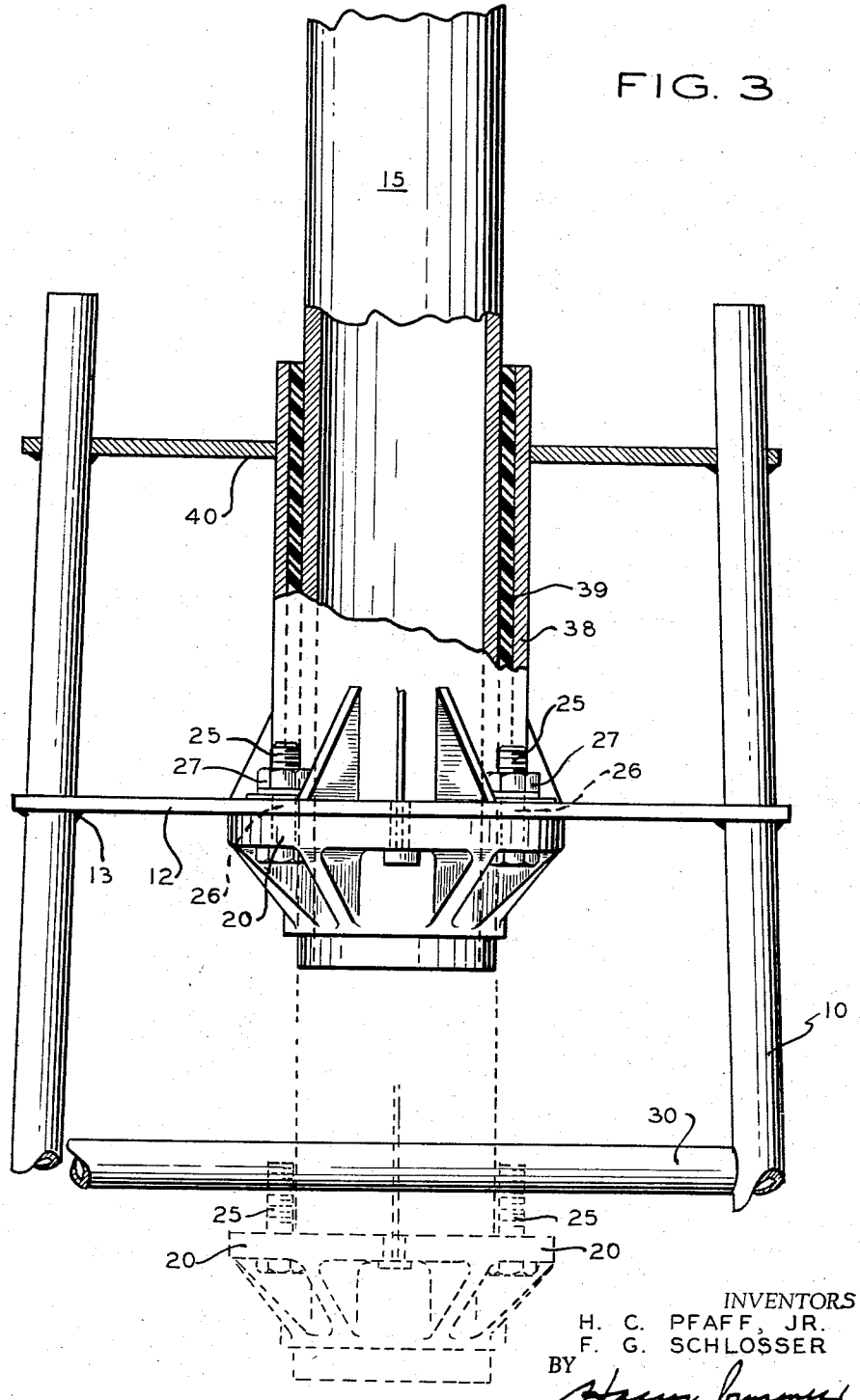
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FIG. 3



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FIG. 4

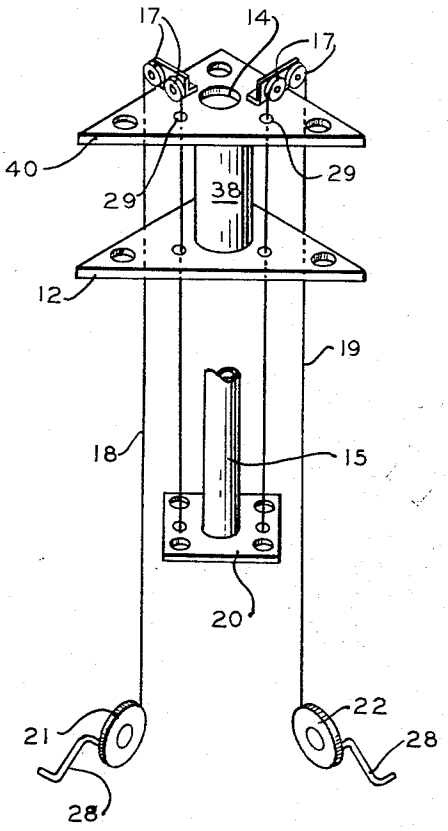


FIG. 5

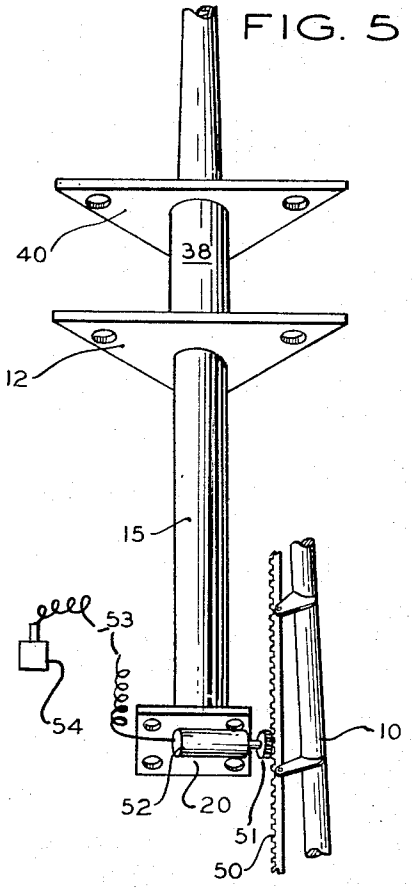
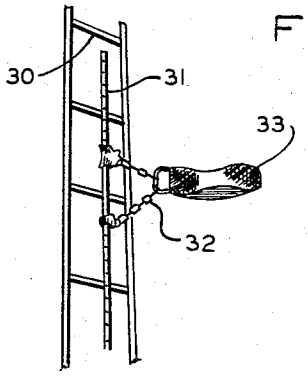


FIG. 6



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RETRACTABLE SIGNAL SUPPORT

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3 Claims. (Cl. 52—122)

This invention relates to a retractable signal support for disposing light, radio or other sensed media at varying heights relative to a fixed support, by the controlled extension of an elognated signal support shaft movably positioned in a base section of the device.

Pursuant to the invention, novel means are provided for stabilizing the signal support shaft in the base section and for assuring the smooth, supported movement thereof relative to the base section; the signal support shaft may be latched at an outer position relative to the base section and readily disengaged therefrom when desired and may be readily retracted partially or fully within the base section for maintenance or other purposes.

The drawings, illustrating procedures and devices useful in carrying out the invention, and the description below, are exemplary only of the invention, which shall be deemed to cover all other devices and procedures coming within the scope and purview of the appended claims.

In the drawings, wherein similar reference characters indicate like parts:

FIG. 1 is a horizontal partly fragmentary, elevational view of a retractable signal support embodying the invention,

FIG. 2 is a side elevational partly fragmentary, view of the elongated shaft,

FIG. 3 is an enlarged elevational, partly sectional view of the upper end of the base section, the lower end of the elongated shaft as shown in full lines being latched and in its upper position, and being shown in dotted lines retracted,

FIG. 4 is a schematic view of a cable means which may be used for movement of the elongated shaft in the base section,

FIG. 5 is a similar view of a gear means for movement of the shaft, and

FIG. 6 is a fragmentary perspective view of a section of the ladder side of the base section, showing a safety rail means which may be used by one climbing the ladder.

As shown in the drawings, the device of this invention comprises a retractable signal support having a base section **10** to be secured at one end to a supporting surface **11** by any suitable means and extending upwardly therefrom.

A first brace plate **12** is secured to the base section transversely thereof by any suitable means, such as by welding the same thereto (as at **13**, FIG. 3), said brace plate having an opening therein (FIG. 4) to slidably receive an elongated signal support shaft **15** carrying signal generating, reflecting sensed or other media such as batteries of lights **16**. Means are provided for controlled movement of the shaft through the brace plate opening toward or to its uppermost position (full lines, FIG. 3) to thereby dispose the signal means **16** beyond the upper end of the base section **10** or to retract the shaft **15** as indicated in dotted lines (FIGS. 3 and 1). The FIG. 1 dotted line showing may represent a fully retracted position of the signal support shaft.

Thus the support shaft may be fully retracted within the base section, as, for example, to repair or replace parts safely and without the necessity for use of special equipment. The elongated shaft **15** may be retracted, for example, during periods of non-use of the signal unit **16**, thereby reducing stresses and strains on the parts.

In FIG. 4 by way of example, a pulley means **17** cooperating with cables **18, 19** is shown for movement of the elongated shaft **15** through the brace plate opening; it will be appreciated from the disclosure herein that other actuating means may be utilized. As shown in FIG. 4 the pulley and cable means comprise pulleys **17** rotatably mounted on a second brace plate **40**, and cable **18, 19** entrained over the pulleys and fixed at one end to the lower end of elongated shaft **15** or preferably to a foot **20** secured to and defining the lower end of the elongated shaft **15**. The other ends of the cables **18, 19** are entrained over actuator pulleys **21, 22** which may be conveniently housed in ratchet housings **23** (FIG. 1) fixed to the base section **10** and controlled as by use of ratchet setting knobs **24** set so that the pulleys may have ratchet controlled clockwise or counterclockwise rotation as desired. The ratchet means just described may comprise any suitable means known in the art. Foot **20** at the lower end of shaft **15** may be provided with means such as pins or bolts **25** (FIG. 3) passing through openings **26** in the brace plate **12** when the shaft **15** is uppermost, the foot **20** then abutting the first brace plate and the pins registering with the openings **26** of the first brace plate and aligning and further stabilizing the parts, for further registration and stability. The pins **25** may be engaged by nuts or other means **27** to thereby lock the shaft **15** in its uppermost, FIG. 3, position until it is desired to lower the same, as indicated in dotted lines, whereupon it is only necessary to remove the latching nuts **27** and lower the shaft **15** by appropriate rotation of pulleys **21, 22** which may be conveniently provided with operating handles or levers **28** (FIG. 4). As shown in FIG. 4, a pair of cables **18, 19** are secured at one end to the foot **20** symmetrically with respect to the axis of shaft **15** to avoid binding action of the shaft during its movement and at their opposite ends to pulleys **21, 22** entrained over pulleys **17**. The latter are shown in FIG. 4 arranged in tandem for each cable. The number of pulleys **17** for each cable may be increased or decreased as desired. Also, as shown in said figure, the cables pass through apertures in the brace plates and return along the sides of the base section **10** outwardly of the brace plates. This arrangement may be altered if desired. The base section **10**, as shown in FIGS. 1 and 6 may have a maintenance platform **55** at its top and may be formed at one side thereof as a ladder **30** and a safety rail **31** (FIG. 6) or other safety features may be incorporated in the ladder. In the FIG. 6 example, of one of many forms of safety features which may be incorporated in such ladder, the rail **31** cooperates with a safety sleeve **32** which may be of the form shown, for example in Patents 2,538,904, 2,616,609, or of other form known in the art or adaptable to for such use; the safety sleeve **32** is engaged by safety belt **33**, worn by the user, the arrangement being such as to enable movement of the safety sleeve **32** on the rail **31** only while the wearer's body is disposed in its normal position close to the ladder and locking on the rail if the user slips and his body moves away from the rail.

Brace plate **12** may be provided with a collar **38** (FIG. 3) fixed thereto in line with a central opening in the brace plate, the collar **38** being disposed parallel to the longitudinal axis of the base section **10** and proportioned to slidably receive the elongated signal support shaft **15**. The latter may have the upper end section thereof proportioned to be snugly received in the collar **38** on registration therewith as shown in FIG. 3. As shown in said figure, collar **38** may be provided with an inner liner sleeve **39** which may be of plastic material such as "Teflon" (tetrafluoroethylene) to enhance a smooth sliding contact of the signal shaft **15** therein.

The second brace plate **40** (FIGS. 4 and 5) may be

secured to the base section **10** in parallel relation to the first brace plate **12**, the collar **38** being also fixed thereto (FIG. 3), providing further stability and further reinforcement of the assembly.

Other means for elevating and lowering the elongated shaft **15** may be used; as exemplarily shown in FIG. 5; such means may comprise a rack **50** carried by the sides of the base section **10** and a pinion **51** meshing with said rack and keyed to the armature shaft of motor **52** which is fixed to the base of the signal support shaft **15**. The motor may be energized through a cable **53** connected to a switch **54**, which may be conveniently mounted on the base section **10**. The cable **53** may be of the coiled, expanding type, if desired, as shown in FIG. 5.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A retractable signal support comprising a base section to be secured at one end to a supporting surface and extending upwardly therefrom, a first brace plate remote from the lower end of the base section and secured to the base section, said first plate having an opening therein, an elongated support shaft which, above the plate, carries a signal, said support shaft being movably positioned in the opening of said first plate, a second brace plate secured to the base section below said first plate and provided with an opening therein aligned with the opening in the first plate, a collar having an inner liner sleeve of plastic material, said collar being affixed to the plates in alignment with the openings therein, and shaft shifting means comprising a cable means engaging a portion movable with the shaft and extending about the first plate and thence to the bottom of the base section for controlled displacement of the shaft through said openings to thereby shift said signal with respect to the base section.

2. A retractable signal support comprising a base section to be secured at one end to a supporting surface and extending upwardly therefrom, a brace plate remote from the lower end of the base section and secured to the base section, said plate having an opening therein, an elongated support shaft which, above the plate, carries a signal, said support shaft being movably positioned in the opening of said plate, and shaft shifting means comprising a plurality of strands whose one ends are attached to the lower end of said shaft symmetrically of the axis of the shaft, the other ends being attached to a part of the base section.

3. A retractable signal support comprising a base section to be secured at one end to a supporting surface and extending upwardly therefrom, a first brace plate remote from the lower end of the base section and secured to the base section, said first plate having an opening therein, an elongated support shaft which, above the plate, carries a signal, said support shaft being movably positioned in the opening of said first plate, a second brace plate secured to the base section below said first plate and provided with an opening therein aligned with the opening in the first plate, said shaft being provided with a foot provided with means for fastening together said foot and said second plate to retain the shaft in extended position with relation to the base section.

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