Aug. 7, 1928. 1,679,623

H. OLSEN

SIGNAL POST STRUCTURE

Filed Oct. 25, 1926 2 Sheets-Sheet 1

Fig. 1.

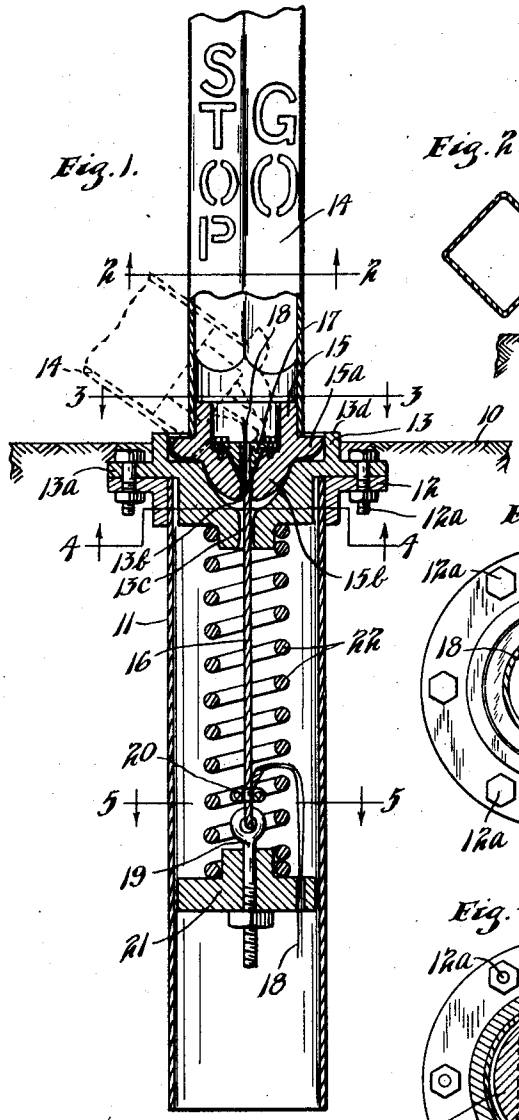


Fig. 2.

Fig. 7.

Fig. 3

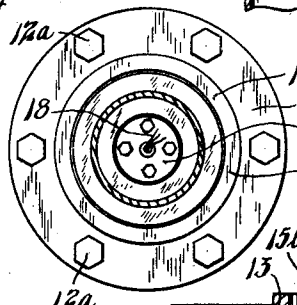


Fig. 6.

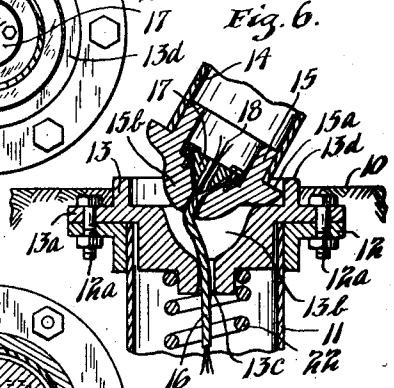


Fig. 4.

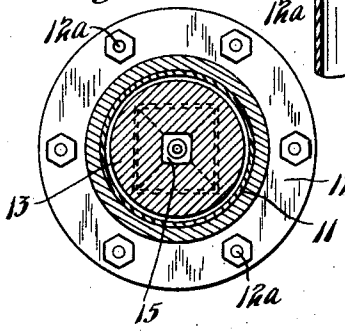


Fig. 8.

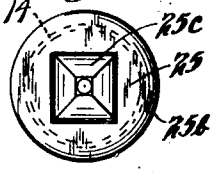
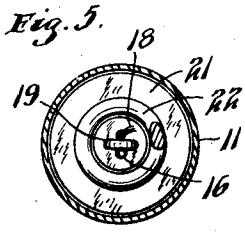


Fig. 5.



INVENTOR.
HENRY OLSEN.
BY HIS ATTORNEYS.

Williamson Reif & Williamson

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Fig. 9.

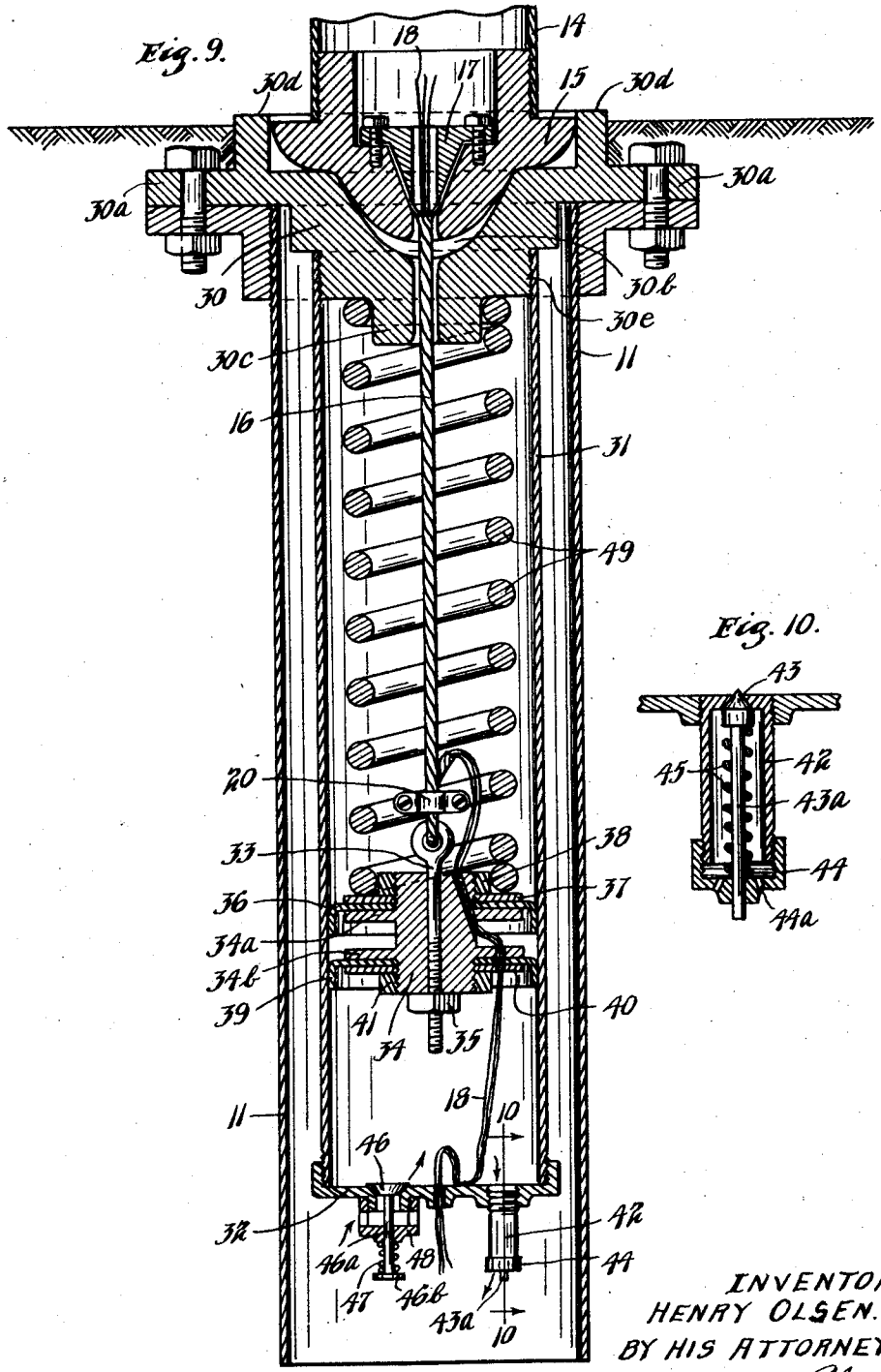


Fig. 10.

INVENTOR.
HENRY OLSEN.
BY HIS ATTORNEYS.

Williamson Reif & Williamson

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UNITED STATES PATENT OFFICE.

HENRY OLSEN, OF MINNEAPOLIS, MINNESOTA.

SIGNAL-POST STRUCTURE.

Application filed October 25, 1926. Serial No. 143,916.

This invention relates to a signal structure and particularly to a signal of the type adapted to be placed in a thoroughfare where it may be struck by the passing vehicles, said signal being arranged to swing downwardly when struck. Such signals are now commonly used and are customarily placed at or adjacent the center of intersection of the thoroughfares or streets. It is desirable in such a signal, to have a structure which is centered, one which cannot be displaced laterally when struck, and one which will swing down very readily and with a minimum of friction. The device should also be arranged so that it can very quickly and easily be swung back to erect and centered position.

It is an object of this invention, therefore, to provide a signal having a standard normally held in vertical position, but constructed so that it may be very easily and quickly swung down substantially into contact with the street, and when so swung, will quickly return to normal position.

It is another object of the invention to provide a signal comprising a standard having a supporting portion at its lower end with an annular supporting surface convex in radial cross section, a supporting member on which said surface rests, said member and standard preferably having co-operating centering means thereon.

It is a further object of the invention to provide a signal comprising a standard having a projecting flange adjacent its bottom, said flange having a curved surface resting on the supporting member and said supporting member having an upstanding flange surrounding the first mentioned flange to prevent lateral movement of the standard when struck.

It is more specifically an object of the invention to provide a signal comprising a standard having a supporting portion adjacent its bottom with an under surface convex in radial cross section, the supporting member having a flange on which said supporting surface rests, said part and member having co-operating centering means, said supporting member having a flange surrounding said portion, and said standard being held normally in erect position by flexible and resilient means adapted to be flexed when the standard is swung downwardly and to restore the standard to normal position.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawings, in which like reference characters refer to similar parts throughout the several views and in which:—

Fig. 1 is a view in central vertical section through the device showing a part of the standard in side elevation;

Fig. 2 is a horizontal cross section taken on line 2—2 of Fig. 1;

Fig. 3 is a horizontal cross section taken on line 3—3 of Fig. 1;

Fig. 4 is a horizontal cross section taken on line 4—4 of Fig. 1;

Fig. 5 is a horizontal cross section taken on line 5—5 of Fig. 1, said sections being taken as indicated by the arrows;

Fig. 6 is a view similar to Fig. 1, showing the parts in another position;

Fig. 7 is a view similar to Fig. 1, showing a modified form of the invention;

Fig. 8 is a bottom plan view of the standard shown in Fig. 7;

Fig. 9 is a partial view similar to Fig. 1, showing a modified form of the device; and

Fig. 10 is a vertical section through a valve used on line 10—10 of Fig. 9.

Referring to the drawings, the material of a street or other thoroughfare is shown as 10. A casing will be set into the street and while this casing may be variously formed, in the embodiment of the invention illustrated it is shown as a cylinder or pipe 11, which conveniently may be made of standard pipe. The member 11 has a flange 12 secured to its upper end, which may be a regular standard pipe flange. A supporting member 13 is provided, which preferably will be in the form of a casting, and which has a flange 13^a thereon secured by the circumferentially spaced headed and nutted bolts 12^a to the flange 12. The member 13 has a central portion disposed in the pipe 11 formed at its center with a recess 13^b. This recess preferably will be of angular shape in cross section and while it may take various shapes, in the embodiment of the invention illustrated it is shown as substantially square at its top, the sides thereof curving downward substantially in pyramidal form to the central opening 13^c extending through the member 13. The member 13 has an upstanding flange 13^d above the flange 13^a illustrated as extending a short distance above the surface of the

street material 10. The signal comprises a standard 14 which preferably will comprise a hollow frame and while this frame may be variously formed, in the embodiment of the invention illustrated it is shown as substantially square in cross section, as shown in Fig. 2. The standard has secured thereto at its lower end a member 15, which member has a projecting portion or flange 15^a of a diameter to fit snugly within the flange 13^d. The side and under-surface of the flange 15^a is convex in radial cross section, as shown in Figs. 1 and 6 and a projection 15^b extends from the under-surface of the flange 15^a which projection is angular in cross section, as clearly shown in Figs. 4 and 8 and constructed to fit into the recess 13^b. It will thus be seen that the member 15 has an annular supporting surface convex in radial cross section, which is supported on the flange of member 13, which surrounds the recess 13^b. The top of the portion 15^a as shown in Fig. 1 is horizontal and disposed slightly below the top of the flange 13^d. A cable 16 extends centrally through the member 15 and has its strands separated and clamped in a central conical recess in the member 15 by a clamping plug 17 having a flange through which pass a plurality of cap screws securing the same to the member 15. The cable 16 will be of special construction and will be hollow so that a plurality of electrical conductors or wires 18 may pass therethrough for operating the lights of the signal. The cable 16 at its lower end is looped through the eye of an eye bolt 19, and has its strands secured by the clip 20. The eye bolt 19 extends through a cylindrical block 21 of slightly smaller diameter than the pipe 11 and is equipped with a nut engaging the under side of the block 21. A compression coil spring 22 engages block 21 at its lower end and the under surface of the member 13 at its upper end being held in position by cylindrical projections extending thereinto respectively from the block 21 and member 13. The standard 14 preferably will be provided with characters adapted simultaneously to direct traffic to proceed on a thoroughfare and to stop on the intersecting thoroughfare, and said standard is shown as having on adjacent sides characters therein forming the words "Stop" and "Go" as shown in Fig. 1.

In operation the signal will be disposed in the street, usually at a street intersection, where the standard 14 will be in position to be struck by traffic vehicles. The signal 14 will normally be in vertical position and will be held in this position by the tension of spring 22. The signal will be centered so as to be properly alined with the streets by the projection 15^b fitting in the recess 13^b. When the standard 14 is in normal vertical position the spring 22 is under very slight tension. The spring 22 pulls downward on the cable 16 and the standard 14 is thus yieldingly held in its normal position. When the standard is struck by a vehicle, the same will swing laterally and downwardly as indicated in Fig. 6. The convex under surface of flange 15^a will move on the supporting surface of member 13 surrounding the recess 13^b. It will be noted that there is really only one line of contact between the surfaces with this movement. As the standard swings farther downward, the side of the standard will contact the top of the flange 13^d and the lower surface of the flange 15^a will be lifted from the supporting surface, the standard at this time swinging about the top of flange 13^d as a fulcrum. As the standard 14 swings downwardly the cable 16 is pulled upwardly and spring 22 is compressed. When the standard is released, the spring will expand and the standard will again be pulled to vertical position by the cable 16. It will be noted that the spring 22 is continuously compressed as the standard is swung down so that the greatest force for bringing the standard to erect position occurs when it is in its lowest position. As above stated, when the standard is in vertical position, there is very little tension on spring 22. The flange 13^d also functions to prevent lateral displacement of the standard when it is struck. Without this flange, the initial impact of the blow would move the standard bodily to one side. This is prevented by the flange 15^a engaging the flange 13^d and the standard thus merely swings downwardly. The tension on spring 22 can be varied by adjustment of the nut on the bolt 19.

In Fig. 8 a modified form of the device is shown in which the pipe 11 and the flange 12 are used as before, but a member 23 replaces the member 13. The member 23 has a flange 23^a bolted to the flange of the member 12 and has an upstanding flange 23^b extending a short distance above the street material 10. Within the flange 23^b is a horizontal surface from which projects upwardly the pyramidal projection 23^c similar to the projection 15^b already described. The member 23 has a projecting cylindrical portion on its lower side extending into spring 22 which is the same as already described. A standard 24 similar to the standard 14 is provided having a member 25 secured thereto at its lower end. The member 25 has a projecting flange 25^a having a horizontal top surface and a convex lateral and under surface 25^b resting on the horizontal surface of the member 23. The member 25 also has a central recess 25^c substantially similar in shape to the projection 23^c which fits thereinto. A cable 26 similar to the cable 16 is provided which

extends through members 23 and 25 and has its strands separated at its upper end and clamped in a conical recess in the member 25 by the plug 27 secured by circumferentially spaced bolts to the member 25.

In operation of the device shown in Fig. 8, the standard will normally be centered by the recess 25^c fitting over the projection 23^c, the same being held in this position by the slight tension of spring 22 pulling on the cable 26. When the standard is swung downwardly, the convex surface on flange 25^b swings on the annular horizontal surface of member 23 within flange 23^b very much as indicated in Fig. 6. After the standard is swung farther downwardly, the side of the standard will rock or fulcrum on the top of flange 23^b and the cable 26 will be pulled farther upwardly and the spring 22 further compressed. The standard will be returned to normal position when released by the cable 26 actuated by spring 22 as already described. The flange 23^b prevents lateral displacement of the standard by the impact of the vehicle in the same manner as does the flange 13^d.

In Fig. 9 a structure is shown which will be desirable for the signal. In this structure the standard 14 is used and has the member 15 attached thereto as shown and described in connection with Fig. 1. A member 30 is used, having a flange 30^a, a recess 30^b, an opening 30^c and a flange 30^d, the same as parts 13^a, 13^b, 13^c and 13^d already described in connection with Fig. 1, the pipe 11 also being used as shown in Fig. 1. The part 30 in pipe 11 has a threaded cylindrical portion 30^e to which is attached a tube 31 extending downward in pipe 11 and having a closing cap 32 at its bottom. The cable 16 is used secured by the plug 17 as described in connection with Fig. 1, which cable is secured at its lower end to an eye bolt 33 extending through a block 34, a nut 35 being threaded on the lower end of the eye bolt 33 in contact with block 34. The cable 16 is held in place in eye bolt 33 by the clip 20 as described in connection with Fig. 1. The block 34 has a flange 34^a thereon above which is disposed a cup washer 36 of leather or similar material, a washer 37 overlying said washer and being held thereagainst by the nut 38 threaded on block 34. The block 34 has a lower flange 34^b beneath which is also disposed a cup washer 39 of leather or similar material which is held against said flange by a washer 40 engaged by a nut 41 also threaded on block 34. The cap 32 has a pair of valves secured therein, one of which comprises a casing 42 threaded into a boss on said valve and having a frusto-conical opening in its end forming a valve seat with which co-operates the conical or needle valve 43 having a stem 43^a extending through an aperture in the cap 44 threaded on to the casing 42, a compression coil spring 45 surrounding valve stem 43^a engaging cap 44 at its lower end and the valve 43 at its upper end. Cap 44 has air vent holes 44^a therein. Another comparatively large valve 46 is used, co-operating with a frusto-conical valve seat formed in the cap 32, which valve has a valve stem 46^a with a flange 46^b at its lower end. A coil spring 47 surrounds stem 46^a, bearing at its lower end against flange 46^b and at its upper end against a cap 48 threaded onto the boss projecting from cap 32. The conductors 18 which pass through cable 16 extend through openings in block 34 and the parts carried thereby and will be surrounded with cement or other material forming an air-tight opening. The conductors 18 will have considerable slack in the lower part of tube 31 and will pass through an opening in cap 32 where they will also be surrounded with cement or some other material forming an air-tight structure. A coiled spring 49 is disposed in the tube 41 and extends over a projection on the member 30 at its upper end and surrounds nut 38 at its lower end resting on washer 37.

In operation of the device shown in Fig. 9, the standard 14 may be swung down as already described, and will pull upon cable 16. This will compress spring 49 and move upwardly block 34 and the cup washers 36 and 39. The cup washers moving upwardly will draw air into tube 31 as said washers fit closely against the sides of said tube, and this air will pass through valve 46 which will be lifted, the spring 47 being under slight tension. When the spring 14 is released, the spring 49 will expand and pull upon cable 16 to restore said standard to its vertical position. The return movement of block 34 and washers 36 and 39 will be retarded as valve 46 will close and valve 43 will tend to be held to its seat by spring 45. The pressure of air, however, will open valve 43 and the air will thus be gradually expelled from beneath block 34 so that the standard will be brought slowly to a vertical position. The structure described thus forms a retarding means for the standard when it is returned to normal position. Without this retarding means it has been found in practice that when the spring pulling on cable 16 is under slight tension, the standard will vibrate or oscillate repeatedly before coming to rest. With the retarding means, the standard is brought to position without this repeated vibration. The retarding means, however, does not affect the standard when it is moved downwardly, and the same is thus moved downwardly just as easily as without the retarding means. The conductors 18 have enough slack below block 34 to accommodate the movement of the block and cup washers so that said conductors may be tightly fitted in the block

34 and parts carried thereby as well as in the cap 32.

From the above description it is seen that applicant has provided a very simple and efficient structure of signal standard and support and one which will operate with a minimum of friction. At the same time, the parts are so arranged that the standard is quickly brought back to correct normal position and centered in this position.

The device is quite simple in construction, the same has been demonstrated in actual practice, and found to be very successful and efficient.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which, generally stated, consists in a device capable of carrying out the objects above set forth, in the novel parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. A signal structure comprising a standard having adjacent its bottom a supporting portion with an annular supporting surface convex in radial cross section, a supporting member having a horizontal surface on which said convex surface rests and having an upstanding flange surrounding said supporting portion and preventing bodily lateral movement thereof, centering means within said flange of angular shape in horizontal cross section for said standard and flexible resilient means holding said standard in vertical position but permitting downward swinging movement thereof and for returning the same to normal position.

2. A signal structure comprising a standard having a supporting portion at its bottom with an annular supporting surface convex in radial cross section at its outer edge, said surface merging into a substantially pyramidal surface at the central portion of said bottom, a member having a flat annular surface on which said first mentioned annular surface rests, and a substantially pyramidal centering means co-operating with said first mentioned pyramidal surface, and a flange upstanding from said last mentioned flat annular surface and surrounding said first mentioned annular supporting surface to prevent lateral movement of the latter, and yielding means for holding said standard erect on said last mentioned member but permitting downward swinging movement thereof.

3. A signal structure comprising a standard having a supporting portion with a flat annular surface on its bottom convex in radial cross section at its outer edge, a supporting member having a supporting portion at its top, one of said portions having a central substantially pyramidal projection and the other having a central substantially pyramidal recess co-operating therewith, said lower portion having a flat annular surface on which said first mentioned annular surfaces rests, said annular surface merging into said recess and projection respectively, said annular surface on said supporting member having an upstanding flange surrounding said first mentioned annular surface and preventing lateral movement thereof, and resilient means pulling downwardly on said standard and normally holding the same in erect and central position, but permitting downward swinging movement thereof.

4. A signal structure comprising a cylindrical conduit adapted to be set into the ground, an angular flange surrounding the upper end of said conduit and secured thereto and having a flange projecting horizontally, a supporting member having an annular horizontal flange bolted to said last mentioned flange, an upstanding flange on said horizontal flange, an annular flat surface within said annular flange, and a substantially pyramidal recess at the center of said flat annular surface, a standard supported on said supporting member having at its bottom a central substantially pyramidal projection fitting in said recess, an annular surface surrounding said projection and merging into the surface thereof resting on said flat annular surface and having a convex outer edge disposed within said upstanding flange, a flexible member secured to said standard and extending downwardly into said conduit through said supporting member, and resilient means pulling downwardly on said flexible member.

5. A signal structure comprising a standsection at its edge, and a central angular supporting surface convex in radial cross section at its edge, and a central annular centering projection into which said annular surface merges, a supporting member having a horizontal annular surface supporting said first mentioned annular surface and having a central centering recess into the surface of which said horizontal surface merges, said recess co-operating with said projection, said supporting member also having a cylindrical flange extending upward from said horizontal surface and surrounding said first mentioned annular surface to prevent lateral movement thereof, and yielding means holding said standard on said supporting member in vertical position with said projection centered in said recess but permitting swinging movement of said standard downwardly to horizontal position and adapted to return the same to normal vertical position.

6. A signal structure comprising a standard having at its bottom a supporting portion with an annular supporting surface convex at its outer edge and a central projection within said surface of angular shape in

cross section, a supporting member having a recess of angular shape in cross section in which said projection substantially fits, and having an annular flat surface surrounding said recess on which said first mentioned annular surface rests, and resilient means pulling downwardly on said standard and holding the same in central vertical position.

7. The structure set forth in claim 6, said first mentioned annular surface at the bottom of said standard having its outer edge convex in radial cross section and said supporting member having a flange upstanding about said flat horizontal surface surrounding said annular surface and preventing lateral movement thereof.

In testimony whereof I affix my signature.

HENRY OLSEN.