Oct. 17, 1939. W. A. WHITING 2,176,285

VEHICULAR TRAFFIC SIGNAL

Filed June 24, 1937 2 Sheets-Sheet 1

Fig. 1.

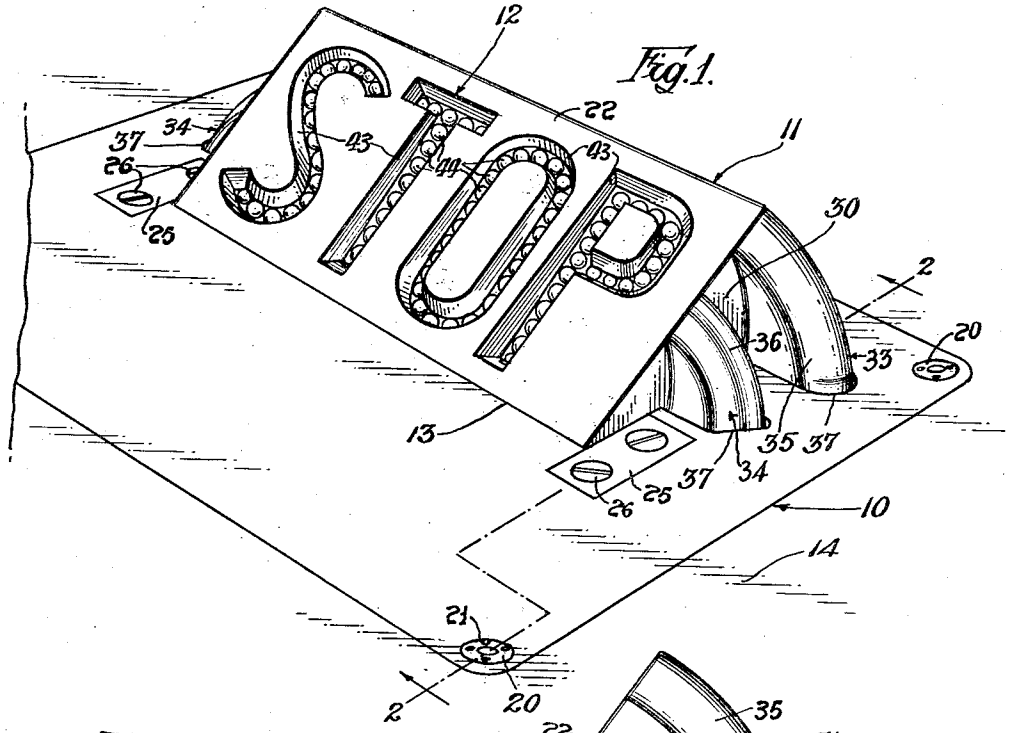
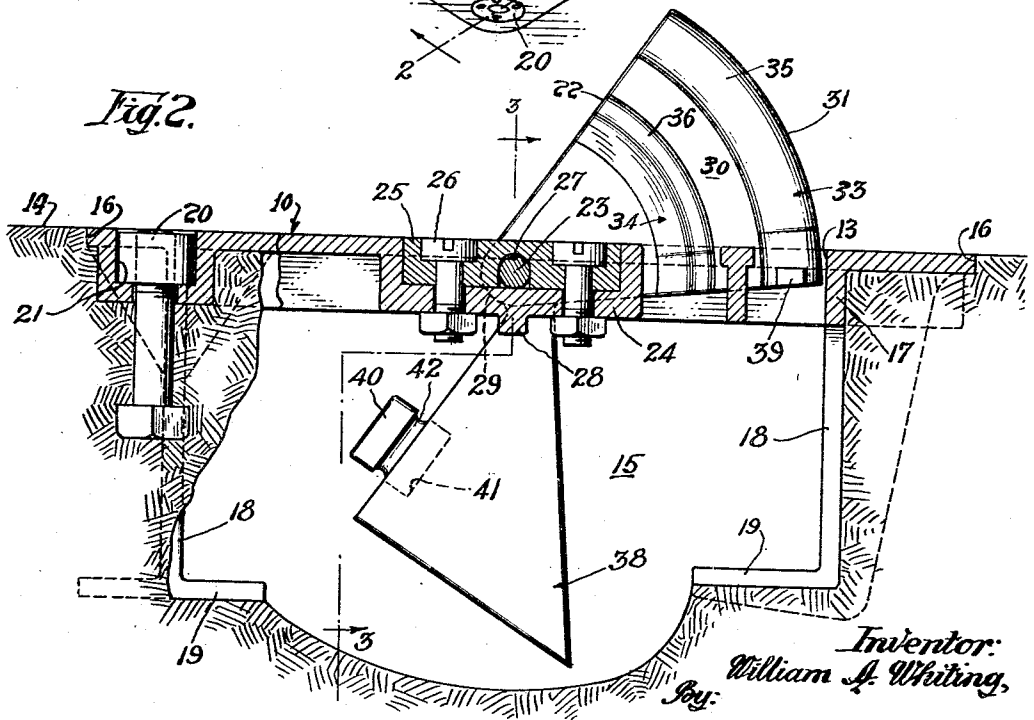


Fig. 2.



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Filed June 24, 1937 2 Sheets-Sheet 2

Fig. 3.

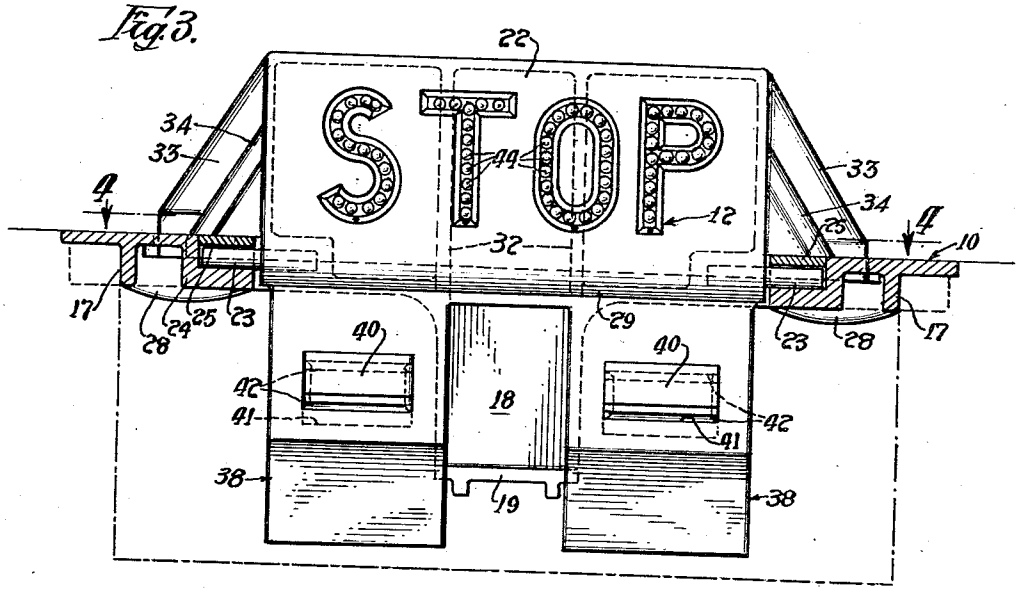


Fig. 4.

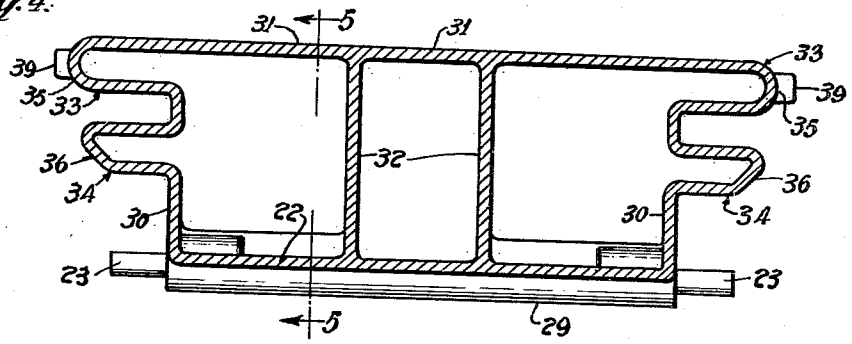


Fig. 5.

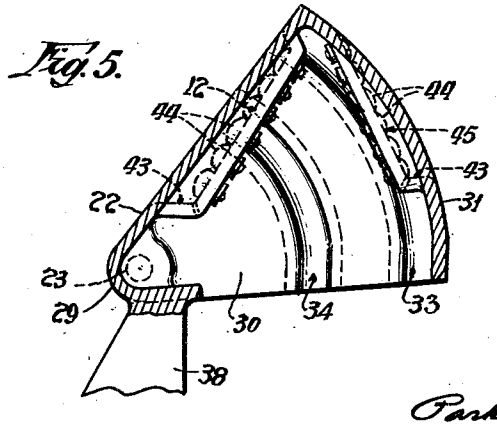
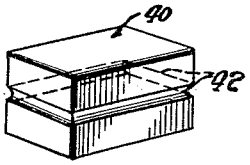


Fig. 6.



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VEHICULAR TRAFFIC SIGNAL

William A. Whiting, Chicago, Ill.

Application June 24, 1937, Serial No. 150,063

6 Claims. (Cl. 40—125)

The present invention relates to improvements in vehicular traffic signals, and has particular reference to mechanically operable signals of the type which is adapted to be mounted in the roadway, and in which the signal element normally assumes an erect position and is movable downwardly to the general level of the roadway upon being engaged by a wheel of a passing vehicle.

Traffic signals of the foregoing type have well recognized advantages, such for example as convenient location directly in the normal line of vision of the driver, and permanency in construction, but to be satisfactory must satisfy exacting requirements as to strength, durability and reliable operation under all street, traffic and weather conditions.

One of the objects of the present invention resides in the provision of a novel traffic signal which is indestructible in use, and which more particularly is of sufficient strength to withstand the heavy impact forces to which it is subjected, and is adapted to be hit from any direction without being damaged or damaging the vehicle.

Another object is to provide a new and improved traffic signal which comprises a minimum of separate parts, and in which none of the parts is subject to objectionable wear or to functional deterioration in use.

A further object is to provide a novel traffic signal in which the relatively movable parts are in substantially interfitting relation in all positions of movement to exclude foreign matter, such as dirt, rocks, ice, etc.

A general object is to provide a new and improved mechanically operable traffic signal which is simple and inexpensive in construction, and which is efficient and reliable in operation.

Other objects and advantages will become apparent as the description proceeds.

In the accompanying drawings, Figure 1 is a perspective view of a traffic signal embodying the features of my invention.

Fig. 2 is a transverse vertical sectional view taken along line 2—2 of Fig. 1.

Fig. 3 is a longitudinal vertical sectional view taken substantially along line 3—3 of Fig. 2 and illustrating the signal element in front elevation.

Fig. 4 is a horizontal sectional view of the signal element taken along line 4—4 of Fig. 3.

Fig. 5 is a fragmentary transverse sectional view of the signal element taken along line 5—5 of Fig. 4.

Fig. 6 is a perspective view of a detail.

While the invention is susceptible of various modifications and alternative constructions, I have shown in the drawings and will herein describe in detail the preferred embodiment, but it is to be understood that I do not thereby intend to limit the invention to the specific form disclosed, but intend to cover all modifications and alternative constructions falling within the spirit and scope of the invention as expressed in the appended claims.

Referring more particularly to the drawings, the traffic signal constituting the exemplary embodiment of the invention comprises generally a supporting base 10 adapted to be mounted in fixed position on a solid support, such as the pavement of a roadway, and a signal element 11 suitably mounted on the base for self-movement into a generally erect position and for movement into a depressed position during engagement with the wheel of a passing vehicle. The signal may be located at any place where a traffic notice, rule or warning is desirable, and is particularly useful at important street intersections. Any desired traffic indicia 12, such as one of the words "Stop", "Slow", "Boulevard", "Danger", may be provided on the signal element 11 for observation by approaching drivers.

The base 10 may be of any suitable form, and in the present instance is shown as a flat rectangular reenforced plate having a central opening 13 for the signal element 11, and adapted to be mounted on a solid street or road pavement 14 and over a space or pit 15 in the latter. Preferably, the surrounding marginal edge of the plate 10 is seated in a notch 16 formed in the upper edges of the vertical walls of the space 15 so that the top of the plate will be substantially flush with the pavement 14. Formed on the underside of the plate 10 and spaced inwardly from the marginal edge is a depending flange 17 adapted to interfit with the top of the space 15. Two ribbed legs 18 are integral respectively with the intermediate portion of the plate 10 at the front and rear, and each has a foot 19 resting on the bottom of the space 15 to provide additional support.

The plate 10 is secured in position by four corner bolts 20. Preferably, the bolts 20 extend through bottom apertures in depressed circular sockets 21 located outside of the flange 17 and receiving the bolt heads.

The signal element 11 may be of any suitable form or shape, but preferably comprises a rectangular front wall or plate 22 which is mounted along one longitudinal edge in the opening 13 for pivotal movement about a horizontal axis normally into an elevated position above the pave-

ment 14 or into a depressed position flush with the pavement upon engagement by a vehicle. In the present instance, the signal plate 22 is provided at opposite ends with sturdy trunnions or pivot pins 23 which are suitably journaled in closed bearings in the base plate 10 at opposite ends of the opening 13. Each bearing comprises a bracket 24 integral with the base plate 10 and defining an upwardly opening rectangular recess on the bottom wall of which the associated pivot pin 23 is seated. A rectangular bearing cap 25 is removably secured in the recess by screw bolts 26, and is formed in the lower side with a transverse groove 27 snugly receiving the pin 23. The bearing cap 25 fully closes the recess, and is flush at the top with the base plate 10. If desired, the underside of the bracket 24 may be reenforced by a strengthening rib 28 extending to the adjacent end section of the flange 17.

The signal plate 22 is rounded at the pivoted edge, as indicated at 29, and is complemental in shape and size to the opening 13. The pivotal axis defined by the pins 23 is spaced below the top surface of the base plate 10 and rearwardly from the front edge of the opening 13 at a distance substantially equal to the radius at 29. Hence, the signal plate 22 when in fully depressed position will closely interfit with the opening 13 and will lie flush with the base plate 10.

Normally, the signal plate 22 is inclined upwardly and rearwardly at a good striking angle. The opening 13 is closed along the front edge in all positions of the plate 22. Provision is also made to close the ends and the rear of the opening 13 at all times against the entry of foreign matter. Hence, the signal plate 22 is formed with an apron comprising depending triangular end walls 30 always extending closely across the end edges of the opening 13, and a depending rear flange 31 arcuate about the axis 23 and always extending closely across the rear longitudinal edge of the opening 13. By reason of its curvature, the flange 31 is disposed at a striking angle to any vehicle passing over the signal from rear to front. It will be evident that the signal element 11, as constituted by the parts 22, 30 and 31, is in the form of a hollow triangular block open at the bottom to the space 15 and fully closing the opening 13 in all positions of movement. Suitable transverse strengthening webs 32 may be provided within the block. The end walls 30 and the flange 31 also serve to strengthen the element 11 against deformation or breakage.

One of the important features of the invention resides in so constructing the signal element 11 that it may be struck from any direction without likelihood of injury to itself or the vehicle. Since the plate 22 and the flange 31 are inclined at suitable striking angles, a vehicle may pass over the signal from front to rear or from rear to front with safety. However, in coming around a street corner or in turning around, a vehicle may strike one or the other of the ends of the plate 22. If these ends are disposed vertically or present sharp vertical corners, serious damage may result. A traffic signal to be practicable must satisfy all possible driving contingencies to which it may be exposed.

To avoid the foregoing difficulty, the signal element 11 is provided at each end with suitable means having striking surfaces shaped and inclined for engagement from any direction, and particularly longitudinally of the pivotal axis. While this means may be provided in various forms without departing from the purpose or spirit of the invention, it preferably comprises one or more longitudinal projections at each end of the signal plate and which are hollow and open at the bottom and inner ends. The projections 33 and 34 have outer end walls 35 and 36 inclined at suitable end striking angles, and preferably arcuate or curved longitudinally of the signal element 11 to merge with the signal plate 22. The end wall 35 is rounded in cross section, and the wall 36 is laterally shaped to face not only in an endwise direction, but also forwardly of the signal element 11.

Suitable notches 37 are formed in the end edges of the opening 13 to receive the projections 33 and 34 so that the interfitting relationship between the base plate 10 and the signal element 11 is substantially maintained at all times. These notches conform closely to the transverse form and dimensions of the projections 33 and 34 in the plane of the base plate 10 when the signal element 11 is in fully elevated position.

The signal element 11 is automatically movable into elevated position, and in the present instance is formed integral with a bifurcated triangular counterweight 38 movable in the space 15 and offset in relation to the axis 23 so as to extend substantially parallel with the underside of the base plate 10 when the signal element 11 is fully depressed. Longitudinally projecting lugs 39 on the relatively large rearmost projections 35 are adapted for engagement with the underside of the base plate 10 to limit the upward movement of the signal element 11.

Downward or inward movement of the signal element 11 is limited by yieldable impact means to prevent excess movement and hammering by reason of momentum. In the present instance, this yieldable impact means comprises two striking pads 40 which may be made of any suitable material, such, for example, as rubber or rubber composition, and which preferably are mounted respectively on the uppermost surfaces of the counterweight arms for engagement with the underside of the base plate 10 when the signal element 11 is depressed into a position flush therewith. Preferably, each of the resilient pads 40 is in the form of an elongated rectangular block secured to project from a recess or socket 41 in the associated arm of the counterweight 38. The pad extends transversely of the arm, and has an outer impact face inclined to lie substantially in a radial plane through the axis 23. To improve the lift of the material, the pad 40 is formed in one or more of the sides, four sides in the present instance, and immediately outside of the associated counterweight arm with suitable relief grooves 42. These grooves afford a relief for the ready deflection of the material under impact compression, and tend to prevent constant and repeated hammering from causing the material to harden and lose or suffer impairment in resiliency.

It will be understood that the traffic indicia 12 are suitably mounted on or formed in the front face of the plate 22. In the present instance, recesses 43 defining the letters of the word "Stop" are depressed in the plate 22. Preferably, the bottom walls of the letters are inclined downwardly and away from the normal plane of the plate to dispose the indicia 12 at a better angle for observation by the approaching driver. As herein shown, the indicia 12 may include a plurality of light reflecting buttons 44 arranged to define the letters and suitably bolted

to the bottom walls of the letter recesses. If desired, suitable traffic indicia 45 may also be mounted on or formed in the rear flange 31 of the signal element 11.

It will be evident that I have provided a new and improved traffic signal which comprises but one movable operating part. The signal element 11 will be depressed upon being struck from any angle, and the traffic signal as a whole is indestructible.

I claim as my invention:

1. A traffic signal comprising, in combination, a supporting base plate adapted to be mounted upon a roadway over a pit in the latter and having a depending marginal flange adapted to interfit with the upper edge of said pit, a rectangular opening in said base plate adapted to be over said pit and to be disposed transversely of said roadway, a normally upwardly and rearwardly inclined signal plate pivotally mounted at its lower forward longitudinal edge in the front of said opening for movement about a horizontal axis either into elevated position or into a depressed position flush with said base plate, a depending arcuate flange on the rear edge of said signal plate extending closely across the rear edge of said opening and into the latter, depending end walls on said plate extending closely across the end edges of said opening and into the latter, a pair of longitudinal projections formed on each of said end walls and defining wheel engagement faces inclined longitudinally of said axis, notches formed in said base plate to receive said projections, a counterweight integral with said signal plate in said pit and tending to urge said signal plate yieldably into elevated position, means on said projections for limiting the upward movement of said signal element, and a yieldable abutment limiting downward movement of said element.

2. A traffic signal comprising, in combination, a supporting base plate adapted to be mounted upon a roadway over a pit in the latter, a generally rectangular opening in said base plate adapted to be over said pit and to be disposed transversely of said roadway, a normally upwardly and rearwardly inclined signal plate pivotally mounted at its lower forward longitudinal edge in the front of said opening for movement about a horizontal axis either into elevated position or into a depressed position flush with said base plate, a depending arcuate flange on the rear edge of said signal plate extending closely across the rear edge of said opening and into the latter, depending end walls on said plate extending closely across the end edges of said opening and into the latter, longitudinal projections formed on said end walls and defining wheel engagement faces inclined longitudinally of said axis, notches formed in said base plate to receive said projections, means tending to urge said signal plate yieldably into elevated position, and means for limiting the upward movement of said signal element.

3. A traffic signal comprising, in combination, a supporting base plate adapted to be mounted upon a roadway over a pit in the latter, an elongated opening in said base plate adapted to be over said pit and to be disposed transversely of said roadway, a normally upwardly and rearwardly inclined signal plate pivotally mounted at one longitudinal edge closely adjacent one edge of said opening for movement about a horizontal axis either into elevated position or into a depressed position substantially flush with said base plate, an upwardly and forwardly inclined striking surface on the rear of said signal plate, depending end walls on said plate extending closely across the end edges of said opening, external longitudinal projection means on each of said end walls and defining wheel engagement faces inclined longitudinally of said axis, notches formed in said base plate and closely interfitting with said projection means when said signal plate is in elevated position, and means tending to urge said signal plate yieldably into elevated position.

4. A traffic signal comprising, in combination, a supporting base adapted to be mounted upon a roadway, a signal element movably mounted on said base for disposition either in an elevated position or in a lowered position, a counterweight arm rigid with said element and tending to elevate said element, and a resilient pad mounted on said arm for engagement with the underside of said base to limit the downward movement of said element and being formed with relief recesses externally of said arm.

5. A traffic signal comprising, in combination, a supporting base adapted to be mounted upon a roadway and formed with a rectangular opening having slots in the end edges, a signal element pivotally mounted on said base within said opening for movement about a horizontal axis either into an upwardly and rearwardly inclined elevated position or into a lowered position, an upwardly and forwardly inclined depending flange on the rear longitudinal edge of said element, a downwardly and outwardly inclined projection on each end of said element and arcuate about said axis, said projections interfitting closely with said slots, and counterweight means integral with said element and tending to urge said element yieldably toward said elevated position.

6. A traffic signal comprising, in combination, a supporting base adapted to be mounted upon a roadway and formed with a rectangular opening with spaced longitudinal slots in the end edges, a signal element pivotally mounted on said base within said opening for movement about a horizontal axis closely adjacent one longitudinal edge either into an upwardly and rearwardly inclined elevated position or into a lowered position, said longitudinal edge of said element being rounded about said axis to interfit closely with the contiguous longitudinal edge of said opening in all angular positions of adjustment of said element, an upwardly and forwardly inclined depending flange on the rear longitudinal edge of said element and in close interfitting relationship with the rear longitudinal edge of said opening in all positions of angular adjustment of said element, end walls on said element in close interfitting relationship with the end edges of said opening, longitudinally extending projections on said end walls in close interfitting relationship with said slots when said element is in elevated position, said projections being concentrically arranged about said axis and having downwardly and outwardly inclined surfaces adapted for wheel engagement, and means tending to urge said element yieldably toward said elevated position.

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