

Oct. 13, 1931.

J. W. HAYWOOD

1,827,289

DIRECTIONAL SIGNAL

Filed March 25, 1930

2 Sheets-Sheet 1

Fig. 1.

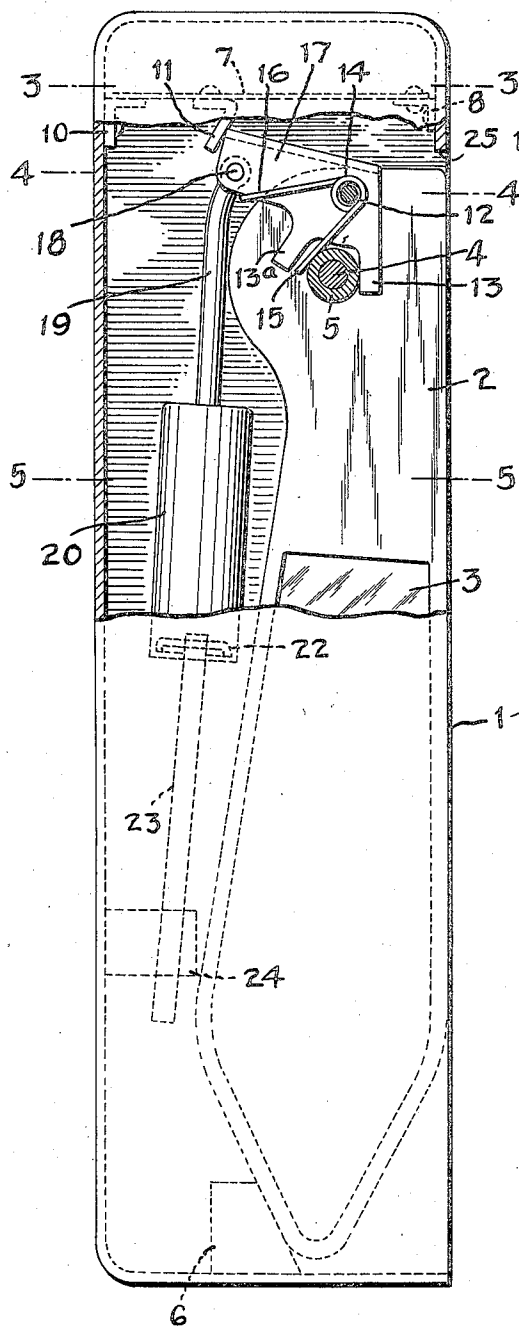
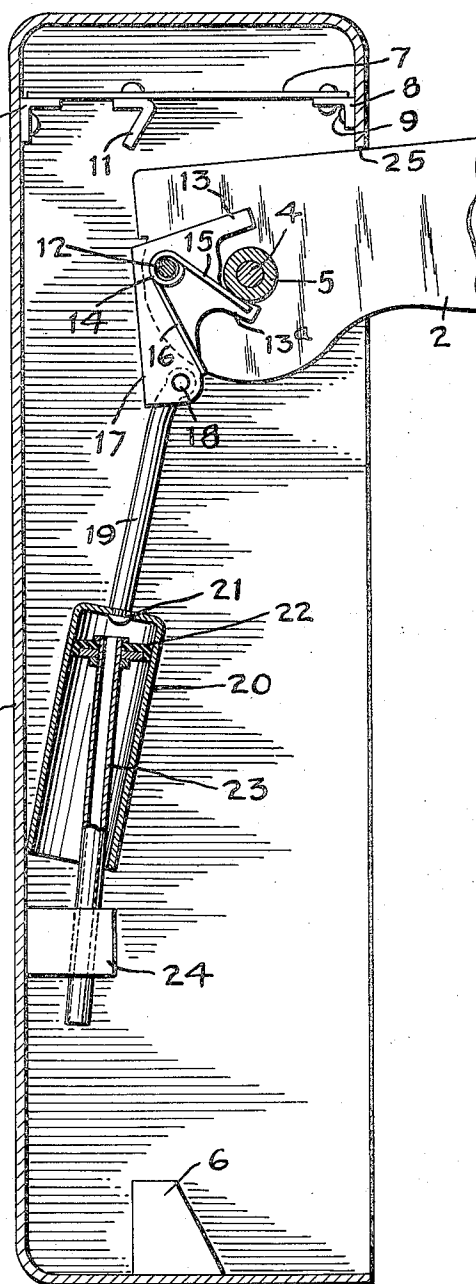


Fig. 2.



INVENTOR:
John W. Haywood
Chas. M. C. Chapman
ATTORNEY

Oct. 13, 1931.

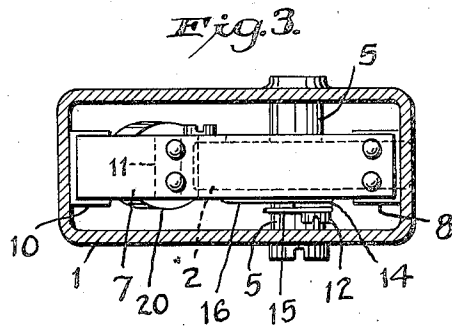
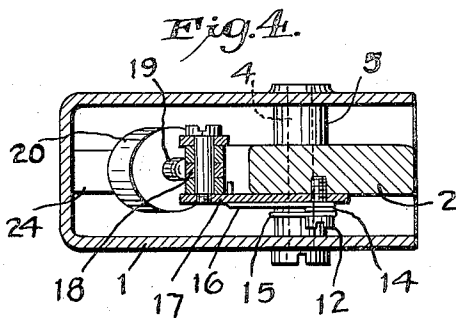
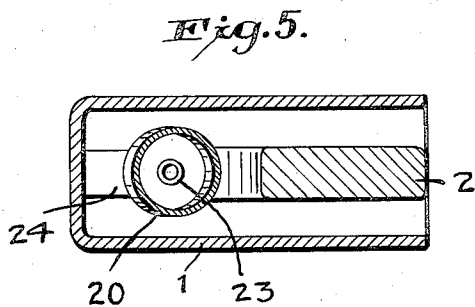
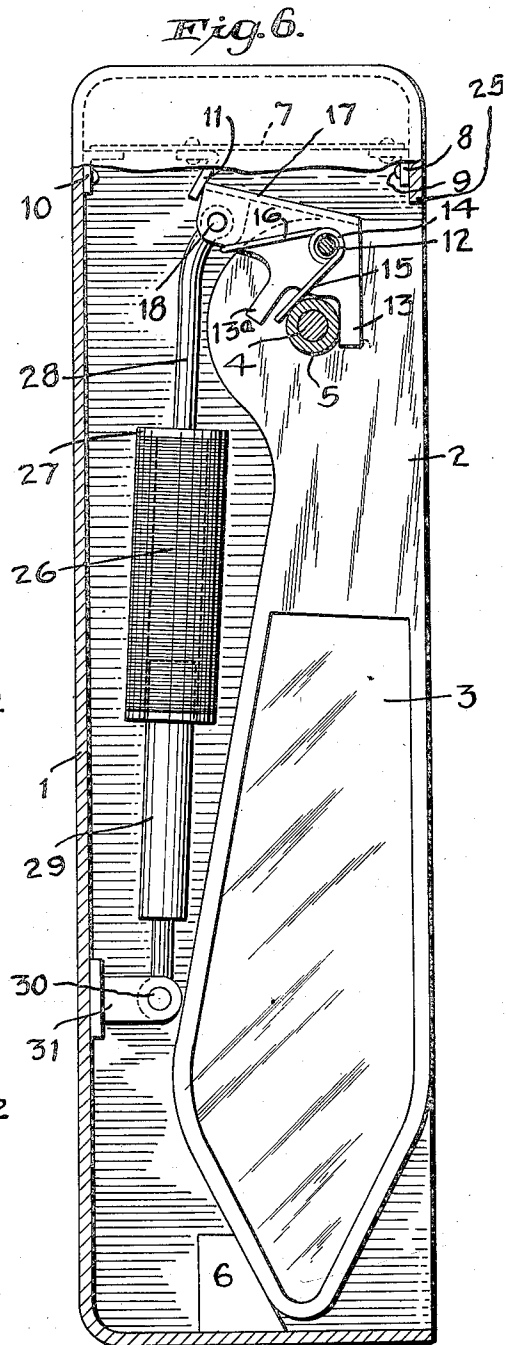
J. W. HAYWOOD

1,827,289

DIRECTIONAL SIGNAL

Filed March 25, 1930

2 Sheets-Sheet 2



INVENTOR:
John W. Haywood
Cha. M. C. Chapman.
ATTORNEY.

UNITED STATES PATENT OFFICE

JOHN W. HAYWOOD, OF NEW YORK, N. Y., ASSIGNOR TO THOMAS R. BROOKS, OF SCRANTON, PENNSYLVANIA

DIRECTIONAL SIGNAL

Application filed March 25, 1930. Serial No. 438,693.

This invention has reference to the art of signaling, and particularly relates to signals of the semaphore type adapted for use on automobiles and other road vehicles for directional purposes.

It is among the objects of my invention to provide a directional signal for road vehicles which is simple in construction, economical to build, perfect in its functional operations, and proof against breakage under conditions of non-use should attempt be made to pull the signal, tamper with it, or manipulate it while the vehicle is standing. It is another object of my invention to provide a signaling mechanism for road vehicles with a non-break stop device which will yield when the signal is manipulated by hand, and which will operate as a stop or detention means when the signal is in normal inoperative position to prevent vibrations, bumping and jarring of the machine to which it is attached from causing wear upon the parts of the signaling mechanism. It is also an object of my invention to provide a means for holding the signal arm from rattling or jarring loose while the vehicle is in motion and the arm is not in operation; but, which will yield and avoid breakage of any of the parts of the mechanism when the signal is manipulated by hand or tampered with under any conditions.

With the foregoing objects in view and others which will be detailed during the course of this description, my invention consists in the parts, features, elements and combinations thereof hereinafter described and claimed.

In order that my invention may be clearly understood, I have provided drawings wherein:

Figure 1 is a view in side elevation of a directional signal device embodying my invention, a portion of the casing being broken out to display the parts in full;

Figure 2 is a view in vertical section, some of the parts being shown in elevation, the arm being broken off due to the limitations of the sheet, and the mechanism being shown in the extreme position for signaling purposes;

Figure 3 is a view in cross-section on the line 3—3 of Figure 1;

Figure 4 is a view in cross-section on the line 4—4 of Figure 1;

Figure 5 is a view in cross-section on the line 5—5 of Figure 1; and

Figure 6 is a view similar to Figure 1 showing another activating means.

In the drawings, the numeral 1 indicates a sheath or casing for housing the signaling arm, the casing being closed on all sides and top and bottom, except the front side through which the signaling arm operates, as shown in Figures 1, 2, 4 and 5. The signaling arm is of the semaphore type and is indicated at 2, and has a large portion thereof provided with a transparency or an opaque member of contrasting color readily visible when the arm is shifted to signaling position. Usually, the arm carries an electric light, not shown to avoid complications. The arm 2 is journaled on a transverse stud or shaft 4 which may be surrounded by a sleeve or anti-frictional device 5, and the arrangement of the parts is such that the arm will gravitally assume the position shown in Figure 1 with its outer end in contact with a stop lug 6 secured to the bottom of the casing. In this position the arm will be held from rattling, vibration or movement by the non-break stop device shown at the top of Figures 1, 2 and 6 consisting of a flexible spring bar 7 fixed to an angular bracket 8 secured to the top of the casing, as by riveting, indicated at 9. The bar 7 is free at its opposite end and normally rests upon an angular member 10 secured to the upper part of the casing directly opposite the bracket 8. On its under side, the bar 7 has a stop member 11 secured thereto, said member being acute angular in form, inverted and secured by its horizontal member to the bar 7. The stop member is secured to the bar 7 in a position such as to be normally in contact with the activating member for the arm, as shown in Figure 1. In this position the stop member 11 is at rest upon the member 10; but, can yield vertically should the signaling arm 2 be manipulated by hand with a tendency to raise it to the position shown in Figure 2. The stop, therefore, will be herein-

after referred to as a yielding stop and its supporting member as resilient.

The activating member is in the form of a bell-crank lever, or lever of the first order, and is fulcrumed on a stud 12 adjacent the angle thereof projecting from the side of the signal arm above its fulcrum 4. The shorter arm of the bell-crank lever is bifurcated, and the prong 13 thereof is normally held in contact with the sleeve 5 by the expansive force of the spring 14 coiled about the stud 12 and having two arms, one of which 15 engages the sleeve 5 and the other arm 16 of which engages the under side of the long arm 17 of the bell-crank, the latter extending into contact with the stop member 11. The long arm of the bell-crank lever supports pivotally at 18 the upper end of a rod 19 formed integral with the cylinder 20, the bottom only of which is open; or, as shown in Figure 2, the rod 19 may be riveted, as at 21, to the cylinder 20. Working within the cylinder 20 is a piston 22 provided with a flexible member which may be turned over to engage snugly the interior of the cylinder to prevent either ingress or egress of air. The piston is mounted upon the inner end of a tubular rod 23, the outer end of which is fixed at 24 upon the support fixed to the back of the casing. The rod 23 is connected by a flexible tube (not shown) to the intake manifold of the engine in which suction is produced, the effect of which is utilized to operate the signal. That is to say, with the signaling devices installed, for example, on the opposite verticals of the windshield frame of an automobile, and the tubular piston rod 23 being connected as suggested, and a controlling member as usual inserted between the tubular piston rod 23 and the intake manifold, manipulation of the controller enables the arm to be manipulated as required. With the parts in the position shown in Figure 1, the prong 13 of the bell-crank lever will, as stated, engage the sleeve 5, and the long arm of the bell-crank lever will engage the yielding stop 11 while the outer end of the signal arm will engage the stop 6. The arm will thus be held against vibration; but, may, nevertheless, be shifted outwardly of the casing by hand manipulation. In the position of the parts shown in Figure 2, the prong 13^a will engage the sleeve 5, thus limiting the vertical movement approximately of the signal arm, while the casing at the point 25 will operate as a fixed stop for the movement of said arm. In this position the spring 14 will be compressed to its limit with power stored therein to operate the bell-crank independently of the signal arm.

From the foregoing description, the following mode of operation will be readily understood:

As previously stated, Figure 1 shows the parts in normal inactive position and held

from vibration. In Figure 2, the arm has been shifted to signaling position with all parts in their opposite extreme. In moving from the position of Figure 1 to Figure 2, the suction effect of the engine manifested in the cylinder 20 through the tubular piston rod 23 causes the cylinder 20 to shift position relatively to the piston 22. In other words, the tubular piston rod being fixed and the effects of suction being manifested in the chamber of the cylinder 20, the latter will be drawn downwardly over the piston to the position shown in Figure 2. The first effect of the movement of the cylinder 20 is to draw upon the long arm of the bell-crank lever at the pivotal point 18 thereof with the rod 19 turning the bell-crank about its fulcrum stud 12. This causes the extreme outer end of the long arm of the bell-crank to glide against the inclined arm of the stop member 11 without materially shifting or affecting the same, the proportion of the parts being such that the bell-crank, from its normal position shown in Figure 1, under suction effect of the engine, may move approximately freely around its axis without shifting the position of the stop member 11. Continued movement of the bell-crank activating lever will cause its arm 13^a to engage the sleeve 5 of the journal 4, thus rendering the bell-crank and the signal arm 2 rigidly associated, and the spring 14 will become compressed, as shown in Figure 2, and this relation of the parts will continue as long as the suction effect of the engine is manifested upon the lever. With the lever and the arm in rigid association, the lever up to that point having turned about its own axis 12, the cylinder 20 will draw upon the said associated members and shift the signal arm 2 from the position of Figure 1 to the position of Figure 2. Under the adjustment of the controlling means, the suction effect of the engine will be cut out, whereupon the cylinder 20 will be released with all connected parts, the weight of the arm 2 together with air entering the cylinder 20 allowing the parts to return to their normal position; that is to say, the bell-crank lever will begin to turn about its axis, its prong 13^a will shift from contact with the sleeve 5, the arm 2 will gravitally return to normal position thus lifting the lever by its fulcrum 12, and the parts will, under the influence of the spring 14, return to the position of Figure 1, the outer end of the bell-crank lever gliding back past the inclined arm of the stop member 11. Should one desire to shift the arm 2 manually, or should a meddler grasp the arm 2 and endeavor to raise it, there being no suction effect in the cylinder 20, the bell-crank lever will be held in its normal position, as in Figure 1, and the shifting of the arm 2 about its fulcrum will drive the bell-crank lever in approximately a straight line against the stop

member 11, causing it to yield vertically and push the flexible bar 7 vertically until the outer end of the long arm of the bell-crank escapes from the outer end of the stop member 11, whereupon the latter, under the influence of the flexible bar 7, will snap back into position with a clearly audible crash giving to the operator the impression that something has broken or snapped. This is the desired impression to impart and will cause the meddler to desist. One who is initiated, however, can manipulate the arm 2 manually for inspection or other purposes without breaking any parts because of the yielding stop, and also because the arm 2 may move about its fulcrum and force the bell-crank with it without damage of any kind.

In Figure 6, I have shown an alternative means for causing the operation of the signaling arm, the same consisting of a solenoid coil 26 mounted upon a spool the upper end 27 of which is solid and has connected thereto the bar 28 pivotally connected at its outer end to the long arm of the bell-crank lever, the same as in the other form of my invention, similar parts being indicated by like reference characters. Working loosely or freely within the spool of the coil 26 is the armature 29, the outer end of which is pivotally mounted at 30 to the bracket 31 fixed to the back of the casing. In this instance, the armature is pivoted to the bracket 31, while in the other form of my invention, due to the flexible contact of the piston 22 with the cylinder 20, the tubular piston rod is fixed at an angle relatively to the casing. This provides for the lateral vibration of the cylinder 20 with reference to the piston rod and piston. In the form of my invention of Figure 6, the pivotal connection at 30 takes care of the shifting relation of the parts shown in Figure 2 of the drawings. In Figure 6 I have omitted the wiring as being unnecessary, since the operation of a solenoid is well understood. In the operation of the form of my invention shown in Figure 6, air will enter and be emitted from the spool due to the loose fit of the core 29 therein. In all other respects the operation of this form of my invention is the same as that of Figures 1 and 2.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In combination with the circularly moving arm of a semaphore signal, means for activating the arm comprising a bell-crank lever fulcrumed to the arm, means for limiting the movement of the lever on the arm, and means for actuating the bell-crank lever to the limit of its independent movement and through the latter actuating the arm including two relatively movable parts for applying power to the bell-crank lever.

2. In combination with the circularly moving arm of a directional signal, means for

activating the arm comprising a bell-crank lever fulcrumed to the arm and circularly movable relative to the latter to a limited extent, means for holding the bell-crank yieldingly in normal position, and means whereby the bell-crank lever may be turned about its fulcrum to said limited extent and the arm may be then turned about its fulcrum by the bell-crank lever.

3. In combination with a directional signal comprising a lever of the first order having its fulcrum near one end, activating means for the signaling lever including a bell-crank lever journaled to the shorter arm of the signaling lever and having means for limiting its movement on said arm, and means for actuating the two levers to cause one to drive the other, including two relatively sliding parts connected to the bell-crank lever.

4. In combination with a directional signal comprising a lever of the first order having its fulcrum near one end, activating means for the signaling lever including a yieldingly operating bell-crank lever journaled to the shorter arm of the signaling lever, and means for activating the bell-crank lever to cause it to drive the other lever but to give the bell-crank lever an initial independent movement.

5. In combination with a directional signal comprising a lever of the first order, activating means for the signaling lever, including a bell-crank lever journaled near one end of the signaling lever, and having one of its ends bifurcated with the prongs thereof embracing the fulcrum of the signaling lever, and activating means for the two levers, initially connected to drive the bell-crank lever for a short distance independently and then to drive the signaling lever and the bell-crank lever together.

6. In combination with a directional signal comprising a lever of the first order, means for activating the said lever, and means for yieldingly holding the said lever from vibratory movement in its normal position of inactivity, said means including a resilient stop and a bell-crank lever mounted upon the signaling lever and adapted to move against the stop when the signaling lever is manually operated.

7. In combination with the directional signal of the semaphore type, a yielding stop mechanism associated therewith comprising a bell-crank lever mounted upon the signal, and a yieldingly mounted stop arranged in the path of movement of the bell-crank lever whereby when the signal is manually operated the lever may be caused to move against and snap by the stop with an audible sound.

8. In combination with a directional signal of the semaphore type, means for actuating the latter including a fixed piston rod and a reciprocating cylinder caused to move relatively to the said rod.

9. In combination with a directional sig-

nal of the semaphore type, means for actuating the latter, including a lever mounted upon the signal, and means for actuating the lever comprising two relatively movable power imparting members.

5 10. In combination with a directional signal of the semaphore type, means for actuating the latter, including a spring-controlled lever mounted upon the signal, and means for actuating the lever comprising two relatively
10 movable power imparting members.

11. In combination with a directional signal of the semaphore type, means for actuating the latter, and means for holding the signal in normal position against vibration comprising a yielding stop having an inclined arm, and a pivotally mounted member for engaging said arm.
15

JOHN W. HAYWOOD.

20

25

30

35

40

45

50

55

60

65