Nov. 7, 1939. W. E. OSHEI 2,179,344

DIRECTION INDICATOR

Filed April 26, 1935 2 Sheets-Sheet 1

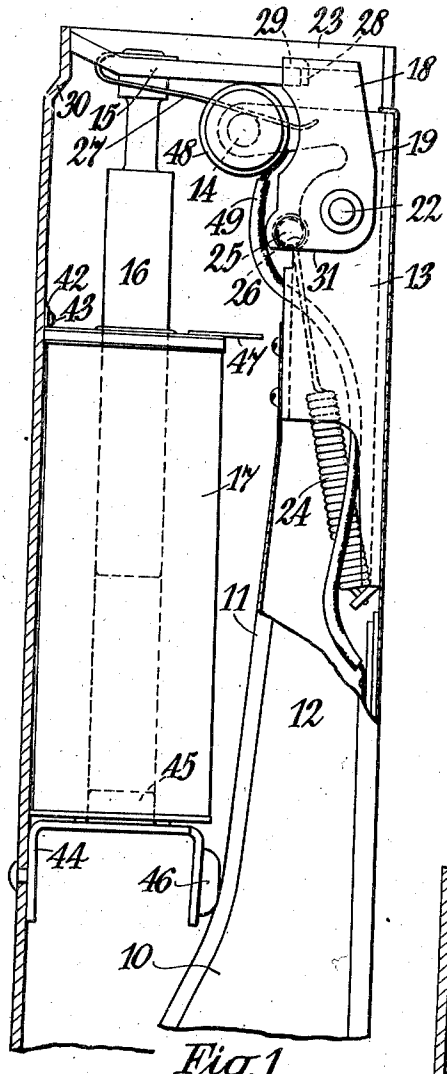


Fig. 1.

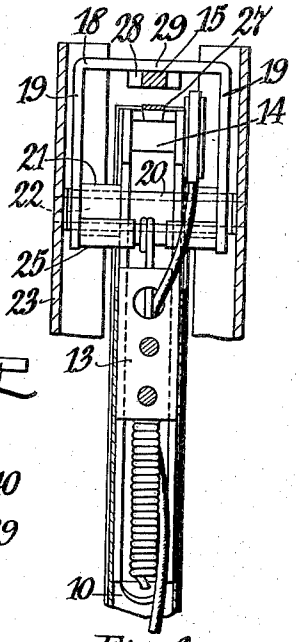


Fig. 2.

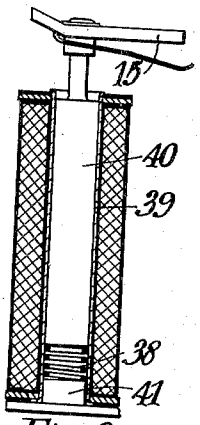


Fig. 8.

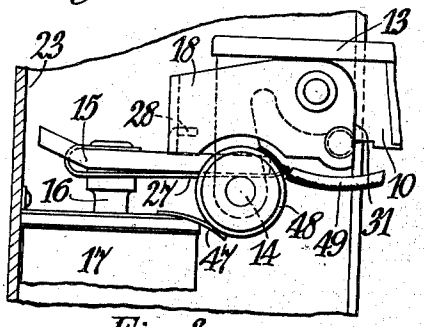


Fig. 3.

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DIRECTION INDICATOR

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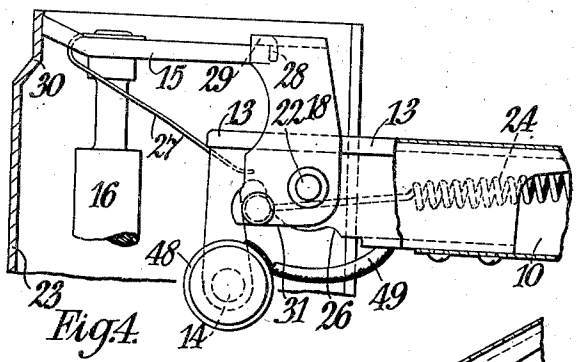


Fig.4.

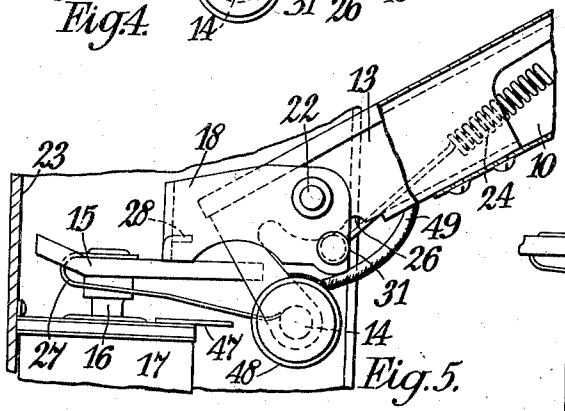


Fig.5.

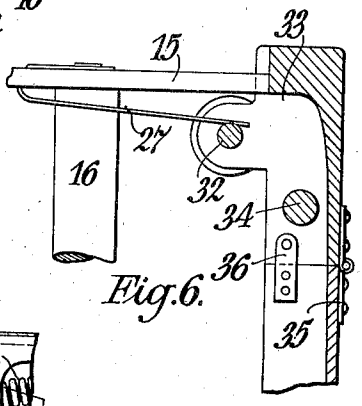


Fig.6.

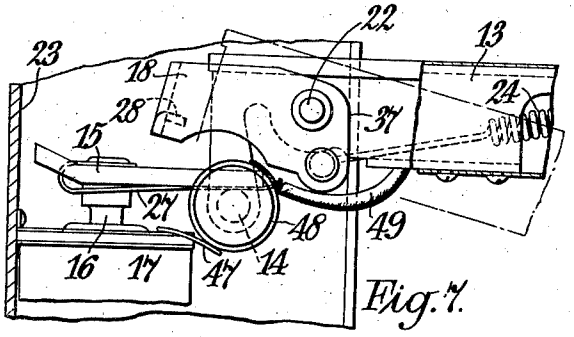


Fig.7.

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UNITED STATES PATENT OFFICE

2,179,344

DIRECTION INDICATOR

William Edward Oshei, Brentford, England

Application April 26, 1935, Serial No. 18,417
In Great Britain August 27, 1934

8 Claims. (Cl. 177—329)

This invention relates to direction indicators more particularly for motor road vehicles of the type comprising pivotally mounted semaphore arms adapted normally to lie vertically and to be raised into the indicating position by actuating means.

In such direction indicators, means are provided for locking or holding the arm against vibration when in the normal closed or non-indicating position, such holding means being automatically released by the actuating means when operated for raising the arm to indicating position.

It is also desirable that the arm should be movable independently of the operation of the actuating means and for this purpose it has been proposed to provide means whereby the holding means are separately releasable whereby operation of the indicating arm may be effected.

An object of the present invention is to provide an improved and simplified construction of the arm and the holding means whereby the raising of the arm independently of the holding means or movement of the actuating means is facilitated and whereby straining and damage or distortion of the parts is avoided or impossible under normal usage.

A further object is to provide an improved construction of indicator arm or its actuating means whereby when the arm is raised a force (other than gravity) is set up tending to return the arm to its normal position whereby sticking of the arm in the raised position is overcome.

The invention consists in a vehicle direction indicator having locking means for holding the arm against vibration when in the normal position and adapted to be released by the actuating means for raising the arm, and wherein means are provided whereby the arm may be raised manually without releasing the locking means.

According to the invention, in vehicle direction indicators comprising arm actuating means, anti-vibrating or holding means are provided which are adapted to be released by the actuating means when actuated for raising the arm, and means are provided adapted to permit the swinging of the arm while maintaining the locking or holding means in their normal locking position.

According to a feature of the invention the semaphore arm is formed in two parts, hingedly connected together, one part being adapted to be engaged by the locking means, and spring means are provided adapted to permit the swinging of the other part while the first part is maintained locked.

During normal action by the actuating means the spring means maintain the parts in alignment or at their normal angle one to the other.

The parts of the arm may hinge about the pivotal axis of the arm.

The invention also comprises a vehicle direction indicator having a pivoted semaphore arm wherein means are provided adapted during the final movement of the arm to its indicating position to set up a force (other than gravity) tending to return the arm to its normal position.

Further features of the invention will be hereinafter described.

On the accompanying drawings—

Figure 1 is a side view partly in section of a semaphore arm indicator according to the invention, the parts being shown in the normal closed position.

Figure 2 is an end view partly in section.

Figure 3 is a partial view showing the parts in the indicating position.

Figure 4 is a partial view showing the arm raised manually while maintaining the lock in position.

Figure 5 is a partial view with the lock released and the arm raised manually beyond the normal indicating position.

Figure 6 is a detail view of a modified form of arm.

Figure 7 is a partial view showing a modified arrangement for setting up a returning force.

Figure 8 is a detail of another mode of setting up a returning force.

In carrying the invention into effect according to one convenient mode by way of example, the arm is formed in two parts hinged together, the lower part 10 forming the indicating arm proper. The arm part 10 may be hollow for containing a lamp (not shown) and may also have suitable coloured sides. This part of the arm is formed mainly of a light metal frame 11 enclosing the coloured sides 12 as usual and is mounted at its upper end upon a channelled portion 13 which carries a cross bar or pin 14 located above and laterally of the pivotal axis of the arm and adapted to be engaged by the cross piece or actuator 15 of suitable actuating means herein depicted as comprising the armature 16 of the electromagnet or solenoid 17.

The upper part of the two part arm is in the nature of a stirrup 18, the legs 19 of which lie outside the channelled portion 13 of the lower arm.

The stirrup 18 is pivotally mounted upon the channel 13 by a tube 20 which passes through the side walls of the channel, spacing sleeves 21 being provided to centralise the parts.

The parts are mounted upon a spindle 22 which passes through the tube 20 and engages by reduced ends in apertures in the indicator case 23 or other mounting for the arm.

The two parts of the arm 13 and 19 are maintained in their normal relation by means of a spring 24 located within the arm, one end being connected to a spindle or bar 25 carried by the

stirrup while the other end is connected to the channel member 13 of the lower arm portion. Shoulders 26 on the lower arm portion, against which the spindle 25 abuts, limit the normal relative position of the parts.

The locking plate or finger 15 carried by the armature of the electro-magnet is adapted normally to lie in a position in which it engages the stirrup 13 whereby vibratory movements of the arm when in the normal position are prevented.

The locking plate 15 is raised to this locking position by a sensitive spring 27 carried by the armature and engaging the cross bar or pin 14 carried by the lower arm portion.

The shape of the stirrup where engaged by the locking plate is preferably such that it also forms a stop limiting the upward movement of the plate when the sensitive spring comes into action. Thus, a portion 28 of the cross piece of the stirrup is cut out and turned down to form an abutment engaged by the bar 15 for preventing vibration whilst the adjacent part 29 of the cross piece forms the limit stop for the upward rise of the bar 15. The casing 23 adjacent the rear edge of the bar 15 (when the latter is raised) may be provided with a guide surface 30 against which the bar 15 abuts to prevent rocking of the armature and vibration of the arm.

In operation when the arm is in its normal non-indicating position (see Figure 1) it is locked against vibration by the engagement of the locking plate 15 with the stirrup 13, the lower portion 10 being rigidly held against the stirrup or upper arm by the spring 24.

With the parts in the normal locked position, the lower arm portion 10 may be raised by hand hinging relatively to the upper arm portion or stirrup which remains locked by the locking plate as shown in Figure 4, such movement increasing the tension of the spring 24 so that the lower arm portion will be returned to normal position when released.

On energizing the electro-magnet 17 the locking plate 15 is lowered against the tension of the light spring 27 to release the upper arm or stirrup and then acts upon the cross pin 14 and raises the arm to the indicating position, the two parts 10 and 18 being maintained in their relative positions by the spring 24 located within the arm, which spring, it will be appreciated, will be of considerable strength. This position is indicated in Figure 3, in which it will be noted that the edges 31 of the sides of the stirrup engage the casing and form a stop.

The solenoid 17 is mounted in the casing 23 by a forked element 42 at the upper end engaging a stud 43 on the casing and by a bracket 44 having a plug 45 which enters the lower end of the spool. The bracket 44 carries a buffer 46 for the arm when returning to normal position.

At the upper end of the spool a contact 47 is provided with which a contact button 48 is adapted to engage the button being connected to the lamp lead 49.

With the improved form of arm and locking means according to the invention various advantages are obtained as follows:

The lock spring 27 is necessarily weak and sensitive and after repeated use may become ineffective to raise the locking plate 15; consequently, the arm will not be held in the closed position inside the case. By means of the improved construction when the arm is raised by hand, see Figure 4, the channel portion 13 of the arm will press down upon the spring, and if necessary bend it so that it again becomes tensioned and effective.

Again in known constructions where the hand operation of the arm is effected by separate release of the lock when forced the arm is liable to become bent as it is necessarily made of light material and is constructionally weak.

This objection is avoided in the present case as the only resistance to be overcome when raising the arm by hand, the lock being on, is that of the arm spring 24, the strength of which is insufficient to cause distortion of the arm.

In known forms distortion of the arm is also caused when the arm is raised by the electro-magnet as the arm comes to rest in the upper position with a jerk. This jerk is accommodated in the present construction by the jointing of the arm parts which allows the lower part, if necessary, to move relatively to the upper part after the stirrup has engaged the wall of the casing. This action is illustrated in Figure 5 where the lower arm has risen above its normal indicating position.

Further, the present construction permits the arm to be raised by hand to a higher position than the indicating position so that the insertion or withdrawal of the lamp is facilitated. The raising of the arm from its inoperative position may be accomplished by grasping the edge of the arm through the open side of the case 23, as shown in Fig. 1.

It will also be appreciated that when the arm is raised by hand no forcing of the parts, such as the pivot, the short arm of the leverage and the locking means, can occur.

According to a modification, see Figure 6, the cross pin 32 upon which the locking plate 15 acts may be carried by the upper arm portion 33 and the division of the arm may occur at a point outwardly of the normal pivotal axis 34. With such an arrangement, the parts of the arm may be connected together by a hinge 35, a snap fastening 36 being provided to hold the parts in their normal aligned position.

According to a further feature of the invention the construction and operation of the arm may be such that in bringing the arm to the signalling position a force (other than gravity) is set up tending to return the arm to normal position whereby the difficulty experienced in the arm sticking at the indicating position is avoided.

This feature of the invention may be applied to the improved two part arm by forming the stirrup so that it abuts against the casing before the lower part of the arm has reached the horizontal whereby the continued movement of the lower part of the arm tensions the spring 24.

Figure 7 illustrates this modification of the invention and shows the parts in indicating position. The stirrup 13 is formed with extended stop forming edges 37 which engage the casing 23 when the lower portion 10 has reached the dotted position. The lower part 10 continues to rise until it reaches the horizontal, thus stressing the spring 24 and setting up a force which when the electro-magnet or solenoid is de-energized will positively initiate the return of the arm overcoming any holding tendency caused by wind resistance.

In applying this feature of the invention to a modified arrangement suitable more particularly where a one piece arm is present a spring may be mounted in a position to be directly compressed by the core of the solenoid.

Thus, referring to Figure 8, a spring 38 is

mounted within the spool 39 and is adapted to be compressed between the core 40 and the plug 41 of the mounting.

It will be appreciated that the stressing of the returning spring should not take place until the arm has nearly reached its signalling position when the power of the solenoid is strongest. Further, the provision of an energy storer to initiate the return movement may be applied to direction indicators in which means other than a solenoid or electro-magnet is provided for raising the arm.

Moreover, the improved locking device and two part arm may be applied to vehicle direction indicators other than electrically operated, for example, the actuation of the arm may be by suction or suction electric means, such as described for example in my application Serial No. 12,481, filed March 22, 1935.

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

1. A vehicle direction indicator comprising an arm, a housing therefor, means pivotally mounting the arm in the housing for swinging movement into and out of the housing, said arm having a stirrup pivotally mounted on the pivot axis of the arm mounting, a tension spring the ends of which are connected to the stirrup and arm, a relatively fixed abutment carried by the housing and adapted to be engaged by said stirrup for determining the signalling position of the arm, said stirrup having a surface adapted to engage the relatively fixed abutment to limit the pivotal movement of the stirrup, when the arm is raised in signalling, whereby the arm continues its movement to stress the spring, setting up a force tending to return the arm.

2. In a vehicle direction indicator, a housing, a signalling arm, means pivotally mounting the arm in the housing for swinging movement into and out of the same, said arm comprising hingedly connected parts with resilient means normally holding said arm parts definitely related to each other, means engaging one of said arm parts for moving the other arm part to an indicating position, said other arm part being manually movable relative to the first named arm part and against the tension of said resilient means, and means engaging the first named arm part for locking the arm in a non-indicating position, said first named part being pivotally mounted by said first means.

3. A vehicle direction indicator comprising a pivotally mounted indicating arm movable from an inoperative position to an indicating position, means detachably connected to the arm for moving it to its indicating position, a member movable with the arm about its pivot as a unit, and means yieldably connecting said member to the arm for movement as a unit while permitting independent movement of the arm when subjected to an abnormal force, said moving means having a part engageable by the member when the unit is in its inoperative position for yieldably holding the arm against movement.

4. A vehicle direction indicator comprising an indicating arm, means pivotally mounting the arm for movement from an inoperative position to an indicating position, means directly engageable with the arm for moving the latter to its indicating position, a member resiliently connected to the arm for movement therewith as a unit and yielding on the arm to permit independent movement of the latter, and a part movable by said moving means and engageable by said member to restrain movement of the latter while permitting movement of the arm from its inoperative position.

5. A vehicle direction indicator comprising an indicating arm, means pivotally mounting the arm for movement from an inoperative position to an indicating position, means operatively connected to the arm for moving it to its indicating position, the connection between the moving means and the arm permitting independent movement of the latter toward its indicating position, and a member resiliently connected to the arm for movement therewith as a unit, said moving means having a part engageable by the member when the unit is in its inoperative position to restrain movement of the member from such position while the resilient member yieldably permits such independent movement of the arm.

6. A vehicle direction indicator comprising an arm composed of inner and outer end portions, means pivotally mounting the arm portions for movement from a normal position to a raised signalling position, actuating means for raising the arm from its normal position to a signalling position, said actuating means including locking means engageable with the inner end portion for holding the arm against vibration when in the normal position, said locking means being initially released when the actuating means is operated to raise the arm, and yieldable means connecting the arm portions for yieldably holding them in a definite relationship while permitting the outer end portion to be manually moved toward its indicating position while the locking means remains operative.

7. A vehicle direction indicator comprising an arm, means pivotally mounting the arm for movement from a normal position to a signalling position, electro-magnetic means for raising the arm from its normal position to a signalling position, anti-vibrating means for holding the arm in the normal position and operable initially by said electro-magnetic means to release the arm by and during movement of said electro-magnetic means in its arm operating movement, and an inner end portion engageable by said anti-vibrating means, both arm portions being independently and pivotally mounted on the first means, and means yieldably holding the two arm portions for movement in unison and acting to permit the outer portion to be manually moved while the inner portion remains engaged by said anti-vibrating means.

8. A direction indicator comprising an indicating arm composed of inner and outer portions, means pivotally mounting the arm portions for swinging from an inoperative position to an operative position, and an actuator slidably mounted and normally engaging the inner arm portion to hold it aaginst swinging with the outer arm portion, said outer arm portion having a fixed part extending into the path of the actuator to be engaged thereby for moving the arm to its operative position, said arm embodying resiliently carried means yieldably holding the inner and outer arm portions for movement as a unit while permitting the outer arm portion being swung manually toward its operative position when said actuator is engaged with said inner arm portion.

WILLIAM EDWARD OSHEI.

CERTIFICATE OF CORRECTION.

Patent No. 2,179,344. November 7, 1939.

WILLIAM EDWARD OSHEI.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 3, first column, line 52, claim 2, after the word "named" insert arm; and second column, line 48, claim 7, after "movement," insert said arm including an outer portion,; line 62, claim 8, for "aaginst" read against; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 12th day of December, A. D. 1939.

Henry Van Arsdale,

(Seal) Acting Commissioner of Patents.