July 15, 1952 T. W. RIEDER 2,603,698

SIGNALING DEVICE

Filed Feb. 20, 1950

Fig. 1.

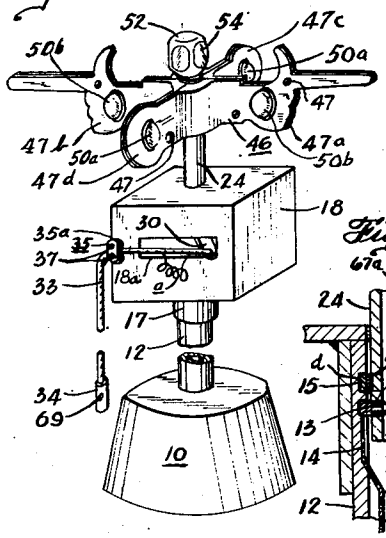


Fig. 2.

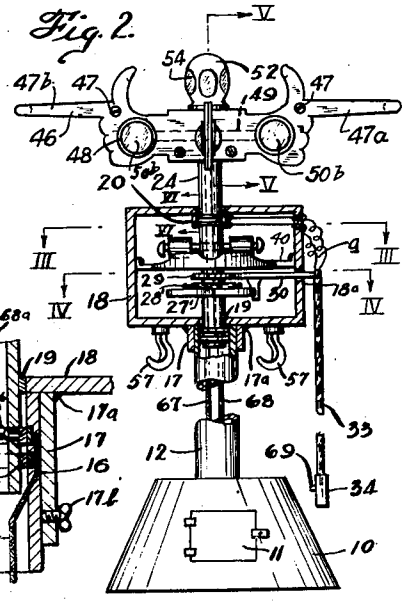


Fig. 6.

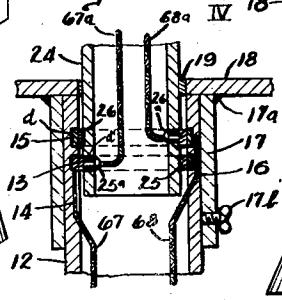


Fig. 3.

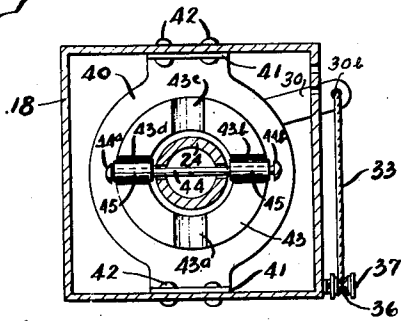


Fig. 4

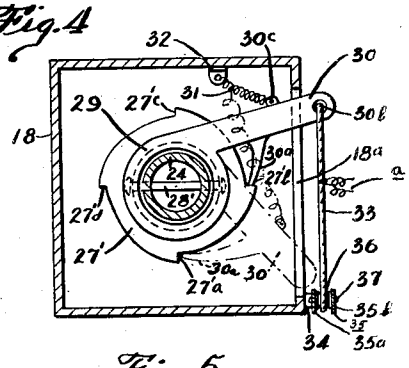


Fig. 7

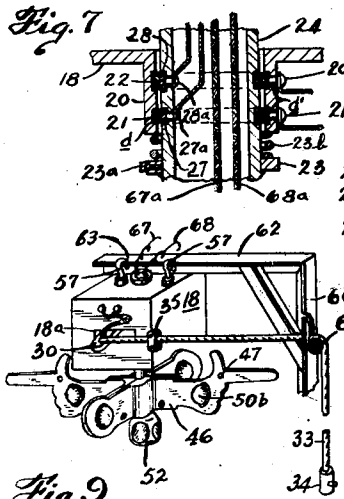


Fig. 9.

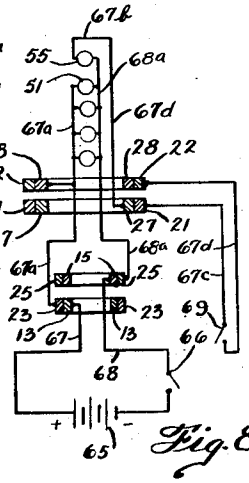


Fig. 8.

Fig. 5

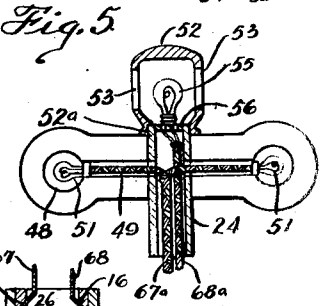
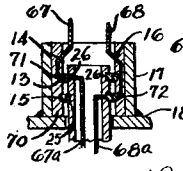


Fig. 9A.



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SIGNALING DEVICE

Thomas W. Rieder, Pittsburgh, Pa.

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4 Claims. (Cl. 177—327)

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This invention relates to a signaling device or semaphore for streets and roads, and particularly, to an interchangeable and portable type of signaling device.

It has come to my attention that there is a definite need for a relatively simple and inexpensive type of signaling device that can be moved from one location to another in accordance with traffic density and especially, for use in apprehending criminals by means of a road block. The need is for a type of signaling device that can be carried by police officers in their squad car, for example, and set up at any desired location in a metropolitan area or in the country, as the need arises. Such a type of device will have particular usefulness where normal traffic density does not require a Stop and Go signal, but which occasionally, by reason of unusual traffic conditions or by reason of the need for apprehending criminals known to be driving in a given area, becomes an important adjunct to the traffic and policing system of a given area. I have also determined that such a type of device should have a lighting system to increase its effectiveness and to definitely indicate to motorists on a high speed highway that traffic is being controlled and that vehicle speed must be reduced.

It has thus been an object of my invention to provide a new and improved form of signaling device and one which can be effectively used in apprehending criminals within a given area;

Another object has been to provide a signaling device that is readily portable and can be mounted and dismounted as desired at various required locations;

A further object has been to provide a signaling device that will give increased police protection in this age of high traffic density and of motorized criminals;

These and many other objects of my invention will appear to those skilled in the art from the illustrated embodiments thereof.

In the drawings, Figure 1 is a vertical view in elevation of a device of my invention illustrating how it may be mounted upon a corner standard or upright;

Figure 2 is a vertical view in elevation of the apparatus of Figure 1 showing operating parts thereof in section;

Figures 3 and 4 are horizontal sections taken along the lines III—III and IV—IV, respectively of Figure 2;

Figure 5 is an enlarged vertical section taken along the line V—V of Figure 2 and showing details of lights employed in the device;

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Figure 6 is a greatly enlarged vertical sectional detail taken in the same direction as Figure 2 through an upper portion of a housing member shown therein; and Figure 7 is a similar sectional detail taken through a lower or bottom portion of the housing member of Figure 2;

Figure 8 is a diagrammatic circuit diagram illustrating how the device or apparatus of Figure 1 may be energized;

Figure 9 is a vertical view in elevation showing the device of Figure 1 mounted on an overhead frame or bracket structure and with Figure 1, illustrating its ready adaptation to mounting or suspension on various types of supporting structures;

Figure 9A is an enlarged detail of an adaptor piece that may be used when the device is mounted as shown in Figure 9.

Referring particularly to Figures 1 and 2 of the drawings, I have illustrated a standard that may be permanently mounted in position at strategic locations at street and road crossing corners, so that a device of my invention may be positioned thereon for operation at any desired time when needed. This standard has a base 10 having a hollow portion provided with an inspection door 11 and has a vertically-extending tubular member, upright or post 12 which projects upwardly therefrom. The standard may be of portable type containing storage or dry cells for supplying energy or may be a permanently mounted type wired to a source of current or adapted to use a storage battery or dry cells carried by a police squad car.

The signaling device of my invention has a downwardly-vertically extending mounting sleeve member 17 suitably secured to a box-like housing 18 by suitable means, such as weld metal 17a, and adapted to slidably fit over or to be telescoped by and rest upon the tubular member 12 of the standard. The housing box 18 has inwardly-extending bottom edge portions carrying bearing material 19 which define an opening therethrough for receiving an operating shaft or tube 24 which extends (see Figures 2 and 6) vertically into the sleeve member 17. The bottom edge portions are adapted to rest upon top rim edges of the vertical member 12 when the device is in a mounted position. The top wall of the housing box 18 has an inwardly-downwardly-vertically extending top flange wall 20, see Figure 7, which defines an opening therethrough for the shaft 24 that is in alignment with the opening defined by the bottom edge portions.

As shown particularly in Figures 2 and 7, the

top flange 20 carries a pair of vertically spaced-apart and inset bearing and electric contact rings or annular bearing members 21 and 22 that are mounted on its inner wall, have binding posts or pins 20*a* and 21*a* and extend outwardly thereof to engage and slidably abut with corresponding spaced-apart contact rings 27 and 28 that are inset in the outer wall of the operating shaft 24 and have binding posts or pins 27*a* and 28*a*. A transversely or horizontally projecting ledge or stop flange 23 is secured by set screws 23*a* on the operating member 24 to engage a spring 23*b* that abuts a lower rim edge of the flange 20 and vertically positions the operating shaft 24 and the box 18 with respect to each other. The spring 23*b* permits the shaft 24 to be slightly raised, so that rollers 45 may be raised out of cam depressions 44*a*, 44*b*, etc. (see Figure 2) when the shaft 24 is to be turned as hereinafter described.

As shown particularly in Figure 6, the downwardly extending bottom sleeve member 17 may be removably secured on the vertical member or post 12 of the standard by a thumb screw 17*b*. The member 12 is provided with a pair of vertically spaced-apart electrical contact rings or annular bearing members 13 and 15 inset within the inner periphery of its wall adjacent its upper end. Passageways or grooves 14 and 16 extend along the inner wall of the member 12 from the contact rings 13 and 15, so that current carrying wires or leads may be connected to the latter. The upper or rotatable operating shaft or tube 24 of the device at its lower end carries corresponding electrical contact and bearing rings 25 and 26 which are mounted about and inset within its inner periphery or wall, have binding posts or pins 27*a* and 26*a*, and make electrical contact with the rings 13 and 15, respectively.

It will be noted that each of the rings 13, 15, 25, 26, 20, 22, 27 and 28 are provided with insulating enclosures *d* of mica or other suitable dielectric material that insulate them from the metal portions within which they are mounted and in like manner, the pins 20*a*, 21*a*, 27*a*, and 28*a*, 25*a* and 26*a* are provided with dielectric mounting sleeves *d'*.

The upper tubular operating shaft member 24, as shown particularly in Figures 2 and 4, carries a ratchet wheel 27' which is secured thereto by a pin 28' for rotation therewith and a ratchet member 29 which is rotatably mounted on the shaft 24 and is provided with an arm 30 having a ratchet finger 30*a*. As will be noted particularly in Figure 4, the ratchet wheel 27 has a series of tooth portions or teeth 27'*a*, 27'*b*, 27'*c* and 27'*d* about its periphery which are adapted to be engaged by the ratchet finger 30*a* to rotate the operating shaft 24 in step (quarter turn) increments. The end of the ratchet arm 30 is adapted to extend through a horizontal or transverse opening or slot 18*a* in the housing 18, see Figures 1 and 4, to receive a pull cord 33 which is knotted or secured in its hole 30*b*. A spring 31 is secured at one end to a mounting lug 32 that extends inwardly from the housing 18 and at its other end to lug projection 30*c* that extends from the ratchet arm 30. It will thus be apparent that a manual pull on the cord 33, due to the engagement of tooth 27'*a* and finger 30*a*, will move the arm 30 from the full line position of Figure 4 to the dot and dash line position thereof and rotate the shaft 24 a quarter of a turn. At such time, the spring 31 is expanded. When the pull on the cord 33 is released, the arm 30 is brought back to its original starting position by the spring 31 and its finger 30*a* slides over a peripheral edge of the ratchet wheel 27' until it engages the next successive ratchet tooth 27'*b* in readiness for the next quarter turn or advancement of the operating arm 24.

The cord 33 is shown mounted to extend through a pulley guide bracket 35 which, as shown particularly in Figures 1, 3 and 4, has a pair of spaced-apart arms 35*a* and 35*b* and carries a pair of vertically spaced-apart pulleys 36. The pulleys 36 are rotatably mounted on pins 37 which extend through the arms 35*a* and 35*b* of the pulley guide bracket 35. As shown particularly in Figure 4, the pulley guide bracket 35 has a horizontal piece 34 which may be secured in any suitable manner as by welding to the outside of the housing 18. The cord 33 is of sufficient length to extend downwardly to the height of the policeman who is to operate the device and has a hand grip member 34 secured thereto and provided with a light operating switch 69, see Figures 1 and 2.

Referring particularly to Figures 2 and 3, a stationary bearing member 40 has bracket portions 41 that are secured as by rivets 42 to extend across the inside of the housing 18. The bearing member 40 has an upper bearing portion provided with a series of cam depressions 43*a*, 43*b*, 43*c*, and 43*d* corresponding to different quadrant positions of the device and to the number of teeth, such as 27'*a*, etc. of the ratchet wheel 27'. A transverse or horizontal pin shaft 44 extends through the operating shaft 24 and has a pair of bearing rollers 45 that are adapted to rest upon the upper cam or bearing surface of the member 40 and roll into the quadrant grooves 43*a*, etc., as the shaft 24 is moved a quarter turn from one position to another. The rollers 45 are rotatably positioned between upset ends or heads 44*a* and 44*b* of the pin shaft 44 and the shaft 24 and fall into transversely opposite depressed portions (such as 43*b* and 43*d*) to hold the shaft 24 in a proper, turned position.

As shown particularly in Figures 1, 2 and 5, the upper end of the operating shaft 24 is provided with a semaphore construction 46 securely mounted thereon for rotation therewith. The construction 46 may consist, as shown particularly in Figure 1, of a series of four angle members 47*a*, 47*b*, 47*c* and 47*d* secured together by bolts 47 and surmounted by an amber light head 52, see Figure 5. The construction 46 is provided with light and socket units or assemblies 51 positioned therein (in spacing 48), see Figure 5, and with cable or wiring grooves 49 between abutting faces of the members 47*a*, etc. That is, abutting, inner faces of the members 47*a* and 47*b*, for example, define openings 48 and 49 for receiving the light assemblies 51 and their electrical connections.

In accordance with usual practice, one set of lens 50*b* may be red in color and the other set 50*a* may be green in color. As shown particularly in Figure 5, the light head 52 is threadably secured to the upper end of the shaft 24 at 52*a*. It will also be noted that it is provided with openings 53 facing in four directions to receive amber lens 54, see Figures 1 and 2. A light and socket unit or assembly 55 is mounted on an upper end piece 56 of the shaft 24 to light the head 52 and give a warning signal to motor-

ists that the device is about to be turned from a "go" to a "stop" position, and vice versa. It will be noted that the semaphore is made up of cross arms, one of which carries the red lights and the other of which carries the green lights. The first-mentioned cross arm has the shape of a man's hand at each of its opposite end portions (see Figures 1 and 2) with the thumb and a direction-indicating, lengthened index finger having considerable prominence.

In Figure 9, I have illustrated a standard or upright of an overhead arm construction which consists of a vertical member **60** and a horizontal member **62** which has a pair of holes **63** to receive hook ends **57** which extend from the bottom of the housing **18**. In this arrangement, the device of my invention is mounted upside down, but will function just as efficiently as when mounted in the manner shown in Figures 1 and 2. The overhead structure may have a pulley **61** mounted thereon to guide the cord **33** downwardly along the vertical member **60**.

Referring to the circuit diagram of Figure 8, I have illustrated a source of current **65** which may be a battery or a usual power line. If a local source of current is not available, a battery **65** and switch **66** may be positioned within the base **10** or in any other suitable container. The main leads **67** and **68** are carried up through the lower or vertical support member **12**, as shown in Figures 2 and 6, to connect with rings **13** and **15** carried by the member **12**, see Figure 6. The current supplied to the rings **13** and **15** then is picked up by corresponding rings **26** and **25** of the vertical operating shaft **24** and sub-leads **67***a* and **68***a* therefrom extend upwardly through the shaft **24** and are connected in parallel to the light units **51** for the red and green lens **50***b* and **50***a*. It is thus apparent that the light units **51** will be illuminated at all times as long as the switch **66** is closed. To give warning of a change of the position of the device and thus, of the direction of the routed traffic, the amber light **55** may be energized periodically by the operator through the agency of the push button switch **69**. As shown in Figure 8, one side of the sub-line **68***a* is connected to one side of the light unit **55** and the other side of **55** is connected to sub-line **67***a*, through the rings **28** and **22** to sub-line **67***d*, through switch **69** to sub-line **67***c*, and through rings **21** and **27** (see also Figure 7), to the sub-line **67***b*. It is thus apparent that the closing and opening of the switch **69** will turn the amber light **55** on and off as desired.

The sub-leads or lines **67***c* and **67***d* are, as shown particularly in Figures 1 and 2, provided with loop portions *a* which permit the necessary movement of the lever arm **30**. The outer ends of the loop portions *a* extend into the pull cord **33** which has a hollow center and extend along this cord to the push button switch **69**.

If the device is hung as shown in Figure 9, an adapter sleeve **70** (see Figure 9A) is used having rings **13** and **15** and grooves **14** and **16** (similar to the upper end portion of member **12**) and binding posts **71** and **72** for the lines **67** and **68**. The rings **25** and **26** are insulated in their mountings by dielectric material *d* and the binding posts by dielectric *d'*.

It will be apparent from the above description of the illustrated embodiment of my invention that the device is adaptable to any suitable type of mounting structure and can utilize any suitable source of current. It can thus be carried from place to place by the policeman, quickly set up and used as desired. A pull on the cord **33** to the full extent permitted, causes the ratchet arm **30** to actuate the ratchet wheel **27** a quarter of a turn to turn the shaft **24**, slightly raise it, change the seated positioning of the rollers **45**, and change the facing alignment of the red and green lens. That is, during a complete rotation of the shaft **24**, both the red and green lights will be presented twice to one direction of the traffic. The device can, as shown, be mounted to extend upwardly from a base standard or to extend downwardly from an overhanging standard.

The base **10** is preferably of heavy, weighted construction, such as concrete, and may be enlarged and permanently set in the ground, if desired. If a motor is to be used for turning the semaphore **46**, it can be mounted in the axis portion of the semaphore and overhead electric leads taken therefrom. In Figure 9, the semaphore **46** is shown in a reversed relationship to Figure 1; this is preferable, although the unit may be hung with the semaphore in the mounted relationship of Figure 1. It is desirable, as shown, to make the unit immediately adaptable for mounting on either a post or an overhead support frame.

What I claim is:

1. A signaling device structure of the character described which comprises, a hollow base member adapted to contain a source of current, a tubular post extending upwardly from said standard, a pair of slip rings mounted on said post adjacent an upper end thereof, a housing, a hollow operating shaft journaled to extend through upper and lower portions of said housing, a semaphore member mounted on an upper extending end of said shaft for movement therewith, a series of stop and go lights carried by said semaphore member, a sleeve extending downwardly from said housing and about the lower end of said shaft, said sleeve being adapted to removably fit over an upper end of said post, a pair of slip rings mounted on a lower end of said shaft and adapted to slidably engage said first-mentioned pair of slip rings when said housing is mounted on said post, electric leads extending along said post from the source of current to said first-mentioned pair of slip rings, a second pair of leads extending along said shaft to said second pair of slip rings and connected to the lights of said semaphore member, a flange projecting from an upper portion of said housing about said shaft, a control switch, a third pair of slip rings mounted on said flange and connected through electric leads to said control switch, an amber light carried by said semaphore member and connected to one of said second-mentioned pair of leads, a fourth pair of slip rings carried by said shaft in slidable engagement with said third pair of slip rings, the other of said second-mentioned pair of leads being connected to one ring of said fourth pair of slip rings, the other side of said light being connected through said third and fourth pairs of slip rings through said control switch to the other of said second-mentioned pair of leads, an actuating means operatively mounted within said housing and connected to said shaft to turn it and said semaphore member about said housing, and a hand pull means operatively connected to said actuating mechanism and carrying said switch in its extending end, so that said amber light may be flashed on

and off by an operator preliminary to turning said semaphore member.

2. In an improved signaling device of the character described to be removably positioned on an upright post and in an inverted position, to be removably suspended from an overhead arm member, the combination of a housing, a tubular operating shaft rotatably mounted within and having upper and lower end portions extending through top and bottom portions of said housing, a semaphore mounted on said upper end portion of said shaft for rotation therewith, said semaphore having a pair of cross arms extending at right angles to each other, one of said arms carrying a pair of red lights and the other of said arms carrying a pair of green lights, said one cross arm having the shape of a thumb and a direction-pointing index finger at each of its opposite end portions, an amber light mounted over said upper end portion of said shaft to surmount said semaphore, an actuating mechanism operatively mounted in said housing to turn said shaft through a quadrant, a hand pull means operatively connected to said actuating mechanism and positioned to extend vertically with respect to said housing, said lower end portion of said shaft being adapted to removably receive the upright post and position said housing thereon, and hooks projecting from the bottom portion of said housing to removably engage the overhead arm member and suspend said housing in an inverted position therefrom.

3. In a signaling device as defined in claim 2, wherein the combination also comprises, a pair of slip rings carried by said housing, a pair of slip rings carried by said shaft and in peripheral engagement with said first-mentioned slip rings, an electrical switch secured to an extending end portion of said hand pull means, electrical connections through said second-mentioned pair of slip rings and said switch to said amber light, and means for connecting said first-mentioned pair of slip rings to a source of electrical energy.

4. In a signaling device as defined in claim 3, wherein the combination also comprises, a lower pair of slip rings carried by said lower end portion of said shaft, a sleeve portion having a telescopic relationship with said lower end portion, a lower pair of slip rings carried by said sleeve portion and in peripheral engagement with said first-mentioned lower pair of slip rings, electrical connections through said first-mentioned lower pair of slip rings to said red and green lights, and means for connecting said second-mentioned lower pair of slip rings to the source of electrical energy.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
991,964	Flaherty	May 9, 1911
1,355,361	Selligman	Oct. 12, 1920
1,546,501	Martus	July 21, 1925
1,558,333	Benninghoff	Oct. 20, 1925
1,575,857	Matthews	Mar. 9, 1926
1,779,582	Blesso	Oct. 28, 1930
1,830,784	Dapron	Nov. 10, 1931