June 10, 1924. 1,497,073

C. A. DOYLE

TRAFFIC REGULATOR

Filed March 16, 1921 2 Sheets-Sheet 1

Fig. 1.

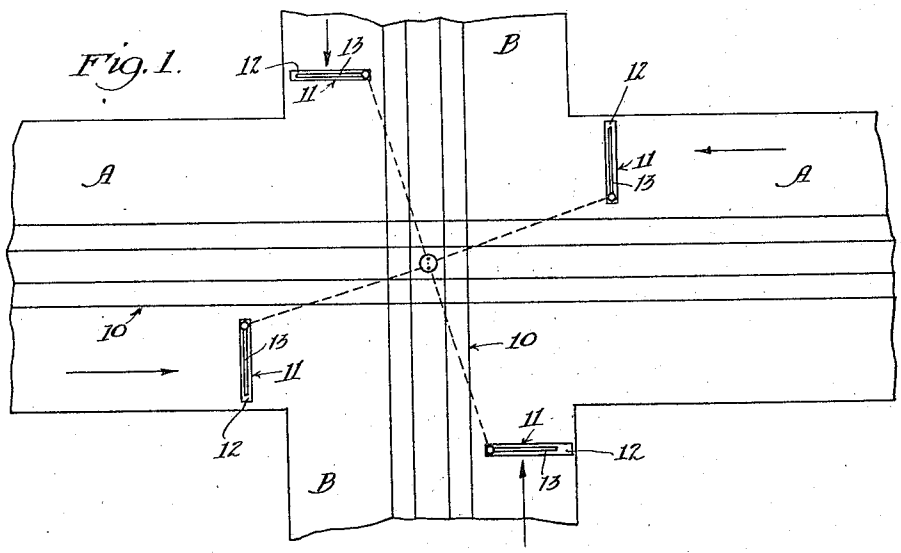


Fig. 2.

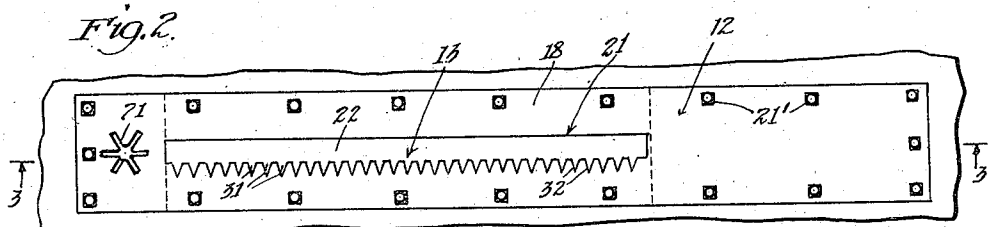


Fig. 3

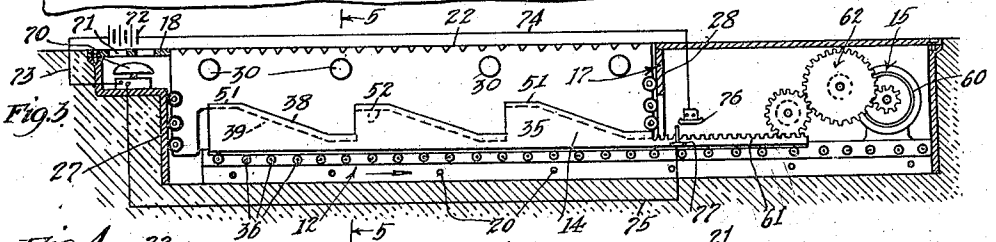
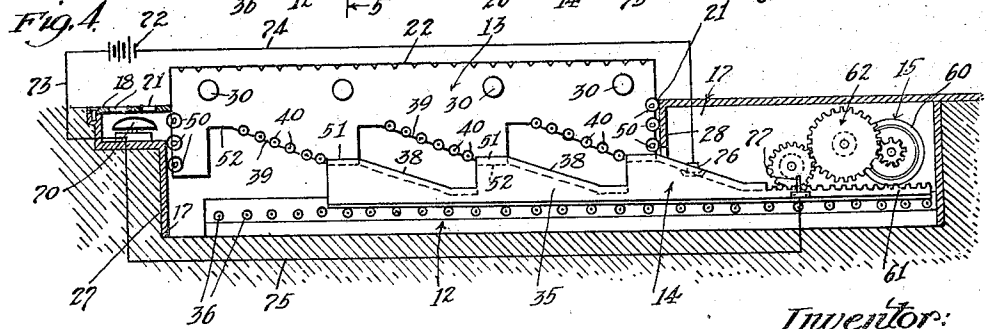


Fig. 4



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Filed March 16, 1921 2 Sheets-Sheet 2

Fig. 5.

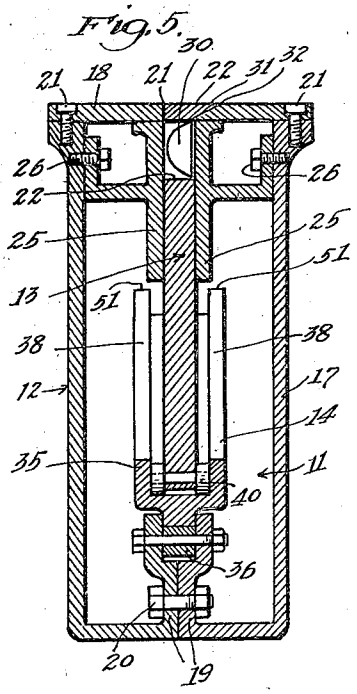


Fig. 6.

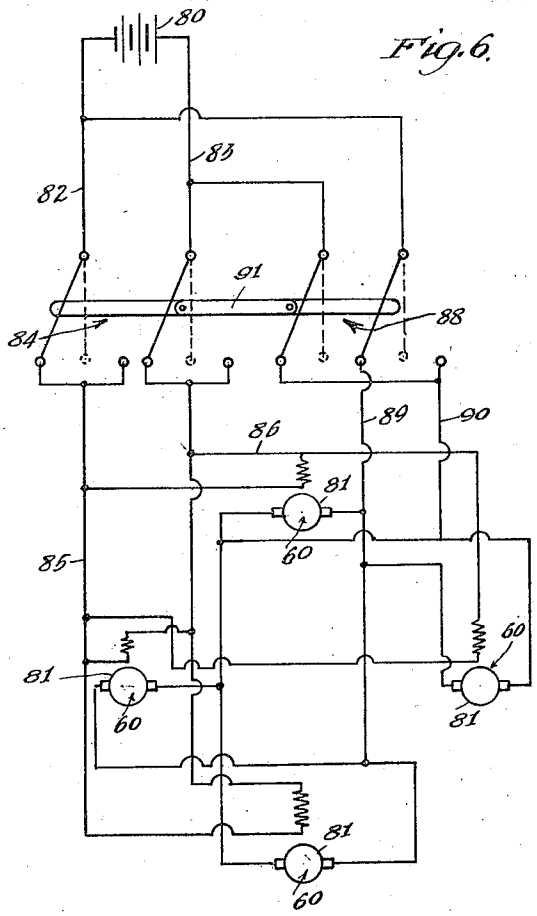
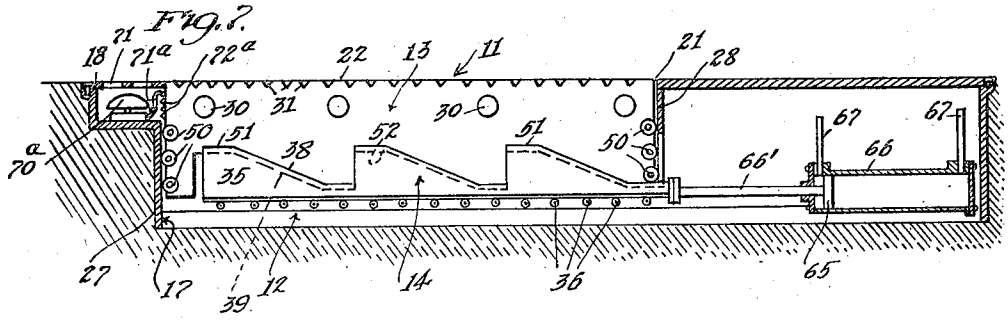


Fig. 7.



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UNITED STATES PATENT OFFICE.

CONAN A. DOYLE, OF LOS ANGELES, CALIFORNIA.

TRAFFIC REGULATOR.

Application filed March 16, 1921. Serial No. 452,747.

To all whom it may concern:

Be it known that I, CONAN A. DOYLE, a citizen of the United States, residing in Los Angeles, county of Los Angeles, State of California, have invented new and useful Improvements in Traffic Regulators, of which the following is a specification.

This invention relates to a device for regulating traffic and it is an object of the invention to provide a simple improved and effective device of this character.

An object of the invention is to provide a device by which traffic can be positively regulated and which will make it impossible for persons to disregard the traffic regulations. The device in positively regulating traffic greatly aids in preventing traffic congestion and accidents.

A distinctive feature of the invention is the simplicity and sightliness of the device. The device is of simple effective and reliable construction, and is adapted to be arranged so that it is completely out of sight and out of the way of all traffic when not operated. The fact that the device is neat and sightly is of great importance as it is particularly desirable that devices used on streets and the like should not make the streets congested or unsightly.

The objects and features of the invention will be best and more fully understood from the following detailed description of a typical embodiment of the invention throughout which reference is had to the accompanying drawings in which—

Fig. 1 is a more or less diagrammatic plan view of a typical street intersection showing a manner in which devices of the present invention may be arranged to regulate traffic at a street intersection; Fig. 2 is an enlarged plan view of the device provided by the invention; Fig. 3 is a vertical longitudinal sectional view of the device being a view taken as indicated by line 3—3 on Fig. 2 showing the device in its down or unoperated position; Fig. 4 is a view similar to Fig. 3 showing the device in its up or operated position; Fig. 5 is an enlarged detail transverse sectional view of the device being a view taken as indicated by line 5—5 on Fig. 3; Fig. 6 is an electrical diagram showing the manner in which the devices indicated in Fig. 1 may be connected to properly cooperate; and Fig. 7 is a view similar to Fig. 3 showing another form of the invention.

In the drawings the letters A and B designate intersection streets on which there are car tracks 10. For sake of example it is assumed that the traffic on both streets travels so that all of the traffic going in one direction keeps to one side of the street while all of the traffic going in the other direction keeps to the other side of the street. In such a case if the bodies of traffic pass each other to the left they will be at the sides of the street and will move in the directions indicated by the arrows throughout Fig. 1. In the particular case just outlined the traffic on both streets at the intersection of the two streets may be effectively regulated by the use of four devices provided by this invention arranged in a manner such as is indicated in Fig. 1. In the particular arrangement indicated in Fig. 1 the devices are arranged transversely of the streets to extend between the car tracks 10 and the edges of the streets. The invention, however, is not in any way limited or restricted to the devices being of any particular length or to their being arranged between the car-tracks and the edges of the street; as it will be obvious to those skilled in the art how the devices might be extended any desired distance across the streets and how they can be very easily and simply designed to extend across car tracks, and the like, so that there will be no interference between them and the car tracks. Further, it is to be understood that the devices of the present invention are not specifically limited to use at a street intersection of the exact character indicated in Fig. 1 nor to being arranged at a street intersection in the specific manner indicated in Fig. 1, and that the particular case herein set forth is merely typical and for purposes of illustration.

All of the devices 11 being operatively and structurally the same I will proceed to describe only one of them in detail and will then proceed to describe a manner in which several of them may be interconnected to cooperate in regulating traffic at a street intersection, or the like.

The device 11 comprises, generally, a casing 12, a traffic controlling member or barrier 13, operating mechanism 14 for the barrier 13, and power means 15 to actuate the operating mechanism 14. The casing 12 comprises a body part 17 adapted to be buried, or set down in, a street, and a top

or cover plate 18 adapted to be arranged over the body 17 and be flush or even with the surface of the street. The body 17 may be split longitudinally into two sections each formed with a flange 19. The two sections may be secured together by bolts 20 arranged through the flange 19. The flange 19 preferably extends inwardly into the casing 12 so that the bolts 20 are accessible from the inside of the casing. With this construction it is possible to easily and quickly remove the body 17 of the casing from the street by detaching or removing the bolts 20 and then removing the two sections of the body 17 one after the other. In ordinary cases the cover plate 18 is a flat smooth plate removably secured to the body 17 by bolts 21ª. It will be understood, of course, that the casing 12 may be of any design or construction to meet any particular circumstance or condition and that it may be made in various numbers of parts and out of various suitable materials.

The barrier 13 is preferably a comparatively long flat member arranged vertically in a slot 21 formed longitudinally in the cover plate 18. Normally the barrier extends downwardly into the body 17 of the casing so that its upper edge 22, which is preferably flat and smooth, is flush with the top surface of the cover plate 18. The barrier fits more or less loosely in the slot 21 so that it can be moved vertically from its normal position, just described, to a position where it extends or projects a considerable distance above the cover plate, as shown in Fig. 4 of the drawings. The barrier 13 may be guided and braced to move truly vertically by guides 25 secured to the side walls of the body 17 by bolts 26, by the end wall 27 of the body 17, and by a transverse guide part 28 formed in the body 17. The barrier 13 is proportioned so that when it is in its extreme upper position, as shown in Fig. 4, sufficient of it is still within the casing 12 to prevent its being removed from the casing by a shock or jar such as might be caused by a vehicle running into it. Fig. 4 of the drawings clearly illustrates how a considerable amount of the barrier 13 is within the casing 12 when it is in its up position. When the barrier is down or within the casing, as shown in Fig. 3 of the drawings, it is completely out of sight and allows vehicles of all descriptions to pass over the device without interference or inconvenience. However, when the barrier 13 is up as shown in Fig. 4 of the drawings it is visible and positively prevents vehicles from passing the device. In practice the barrier may be designed to extend about 8 or 10 inches above the cover plate 18 thus making it impossible for a vehicle to bump or pass over it without sustaining considerable damage. When the barrier is up or is moving up it is extremely conspicuous to persons approaching it as it is directly ahead of them and is obviously a positive barrier which cannot be passed. It will be understood, of course, how the barrier may be painted or otherwise treated to be particularly conspicuous up, and how it can be equipped with electric lamps 30, or the like, to illuminate it at night. If it is desirable, or necessary, sharp projections 31 may be provided on the part of the barrier 13 which extends above the cover plate 18 so that vehicles running into the barrier are sure to receive injury. It is obvious, of course, how recesses 32 may be provided in the cover plate 18 to receive the projections 31 when the barrier is down. When the barrier 13 is equipped with projections 31 persons will be particularly careful not to drive their vehicles into the barrier and will not attempt to drive over it.

The mechanism 14 provided for operating the barriers 13 comprises a member 35 supported on rollers 36, mounted in the bottom of the casing 12, and formed with a plurality of wedge or inclined surfaces 38. The inclined surfaces 38 are adapted to cooperate with inclined parts 39 at the bottom or lower portion of the barrier 13. It is preferred, although not necessary, that rollers 40 be arranged at the inclined portions of the barrier 13 to engage the incline surfaces 38 of the member 35 in order to reduce friction between the barrier 13 and the member 35. From inspection of Figs. 3 and 4 of the drawings it will be readily understood how the surfaces 38 of the member 35 and parts 39 of the barrier 13 cooperate so that the barrier 13 moves from the position shown in Fig. 3 to that shown in Fig. 4 when the member 35 is moved in the direction indicated by the arrow in Fig. 3 from the position shown in Fig. 3 to that shown in Fig. 4. The rollers 36 and 40 reduce the friction of the mechanism to a minimum so that it can be very easily operated. In practice rollers 50 may be arranged at the ends of the barrier 13 to engage the end walls 27 and the guide part 28 so that the ends of the barrier will not bind against these parts. In the preferred form of the invention flat parts 51 are provided at the upper ends of the inclined surfaces 38 to cooperate with flat parts 52 at the lower ends of the inclined parts 39 of barrier 13 to hold or support the barrier when the device is in the position shown in Fig. 4. It will be obvious how the barrier 13 will be lowered from the position shown in Fig. 4 to that shown in Fig. 3 upon movement of the member 35 from the position shown in Fig. 4 to that shown in Fig. 3. Although this particular operating mechanism is only one type of mechanism which may be employed in carrying out the invention it is preferred because it is extremely simple effective and

inexpensive. This construction is also desirable because it is particularly durable and reliable.

In the form of the invention shown in Figs. 3 and 4 of the drawings the member 35 is adapted to be actuated by an electric motor 60. The motor 60 is a reversible motor and is connected with the member 35 through a rack 61, which extends from the member 35, and a train of reducing gears 62 which connect the rack and motor shaft. Figs. 3 and 4 of the drawings clearly show the manner in which the motor 60 is connected with the member 35 through the rack and reducing gears so that the member can be operated in either direction to actuate the barrier 13. It will be understood, of course, that any suitable driving connection may be provided between the motor 60 and member 35 and that the invention is not in any way limited to an arrangement or construction such as is shown in the drawings. For instance, the member 35 may be advantageously operated by fluid pressure by simply connecting it with a piston 65 arranged in a cylinder 66 adapted to have fluid pressure admitted into it at opposite ends. Such a construction as this is illustrated in Fig. 7 of the drawings. The piston 65 may be directly connected with the member 35 by a connecting rod 66′ and suitable fluid pressure conducting pipes 67 may be connected into the ends of the cylinder 66 so that the piston can be moved in either direction.

In the preferred form of the invention an electric gong or bell 70 is arranged in the casing 12 under a portion of the cover plate 18 in which there are openings 71. The bell 70 may be connected with a battery 72 by a wire 73 and by wires 74 and 75. The wire 73 connects one side of the battery with one side of the bell, the wire 74 connects the other side of the battery with a contact 76 mounted in the casing 12, while the wire 75 connects the other side of the bell with a contact 77 mounted on the rack 61. The contacts 76 and 77 may be arranged to cooperate to close the battery circuit so that the bell is operated during the first part of the movement of the member 35 in actuating the barrier 13. With this arrangement warning is given as the barrier raises so that persons will be fully aware that the barrier is being actuated.

In Fig. 7 another form of alarm is shown. In this case the gong 70^a is adapted to be actuated through a trip lever 71^a. The trip lever engages projections 72^a on the end of the barrier so that it is actuated as the barrier moves up.

In Fig. 6 of the drawing a system is illustrated which may be employed to operate four devices 11 arranged as shown in Fig. 1 so that the two devices on street A operate opposite to the two devices on street B. With this manner of connecting the devices the traffic on street A is positively stopped when the traffic on street B is free to move and likewise the traffic on street B is positively stopped when the traffic on street A is free to move. The field windings 81 of the motors 60 may be energized from the source of electrical energy 80 through the main lead wires 82 and 83, the switch 84, and the distributing wires 85 and 86. The distributing wires 85 and 86 are arranged so that the field windings are all energized with current of the same polarity and the switch 84 is a double throw switch arranged so that the polarity of the current in the wires 85 and 86 is the same for both of its positions. The armature windings of the motors are energized from the source of electrical energy 80 through the main lead wires 82 and 83, the reversing switch 88 and the distributing wires 89 and 90. The distributing wires 89 and 90 are arranged so that the armature windings of two motors 60 are energized with current of a polarity opposite to that of the other two. With this arrangement when the switches 84 and 85 are closed two of the motors will operate in one direction while the other two will operate in the other direction. When the reversing switch is thrown from one on-position to the other the polarity of the current in the distributing wires 89 and 90 is changed thus causing all of the motors 60 to reverse in direction of operation. The switches 84 and 88 may be connected with a link 91 so that they will operate together. The full lines in Fig. 6 show the switches in an on position and the dotted lines show them in the off position. It will be obvious how the motors of the several devices shown in Fig. 1 may be connected in the manner just described so that they will operate as hereinbefore described. The switches may be arranged at any point where they can be conveniently operated, say for instance, at the center of the crossing as indicated in the diagram. It will be understood how various arrangements may be provided for connecting the devices of the present invention and how various safety devices may be incorporated in such arrangements so that they will operate accurately and reliably.

Having set forth a preferred embodiment of my invention, I do not wish to limit or restrict myself to the particular details hereinabove set forth, but wish to reserve to myself any changes or variations that may appear to those skilled in the art or that may fall within the scope of the following claims.

Having described a preferred form of my invention, I claim:

1. A traffic regulating device embodying a barrier normally positioned below the surface of a street, an inclined part on the

barrier, an inclined member adapted to cooperate with the inclined part to move the barrier to extend above the surface of the street, and means for actuating said member.

2. A traffic regulating device embodying, a barrier normally positioned below the surface of a street, a plurality of inclined parts spaced along the barrier, a member having a plurality of inclined parts adapted to cooperate with the first mentioned parts to move the barrier to extend above the surface of the street, and power means for actuating said member.

3. A traffic regulating device embodying, a barrier normally positioned below the surface of a street, an inclined part on the barrier, a horizontal part on the barrier, an operating member having an inclined part adapted to cooperate with the inclined part on the barrier to operate the barrier vertically and a horizontal part adapted to cooperate with the horizontal part on the barrier to support the barrier in a position where it extends above the surface of the street, and means for operating said member.

4. A traffic regulating device embodying a casing adapted to be located below the surface of a street, a cover for the casing having an opening in it, a barrier normally arranged in the casing and adapted to extend through the opening in the cover to project above the surface of the street, an inclined part on the barrier, an operating member having an inclined part adapted to cooperate with the inclined part on the barrier to operate the barrier vertically, and power means for actuating the operating member located in the casing.

5. A traffic regulating device comprising a vertically reciprocating barrier provided at its upper edge with a plurality of horizontally extending projections, a fixed surface member receiving the barrier and projections when the barrier is unactuated so that the surface member barrier and projections form a smooth surface.

In witness that I claim the foregoing I have hereunto subscribed my name this 7th day of March, 1921.

CONAN A. DOYLE.

Witness:
E. D. CAVENDER.