Sept. 28, 1937. H. G. HUNTER 2,094,216

TRAFFIC BARRIER OPERATING SYSTEM

Filed Oct. 22, 1935 2 Sheets-Sheet 1

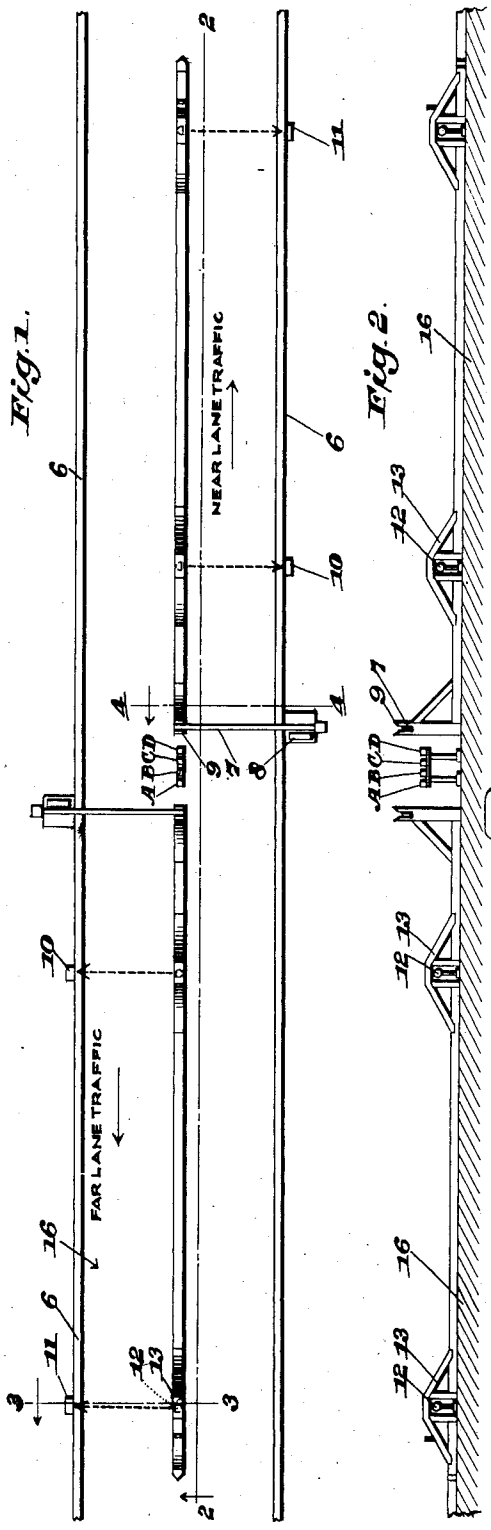


Fig. 1.

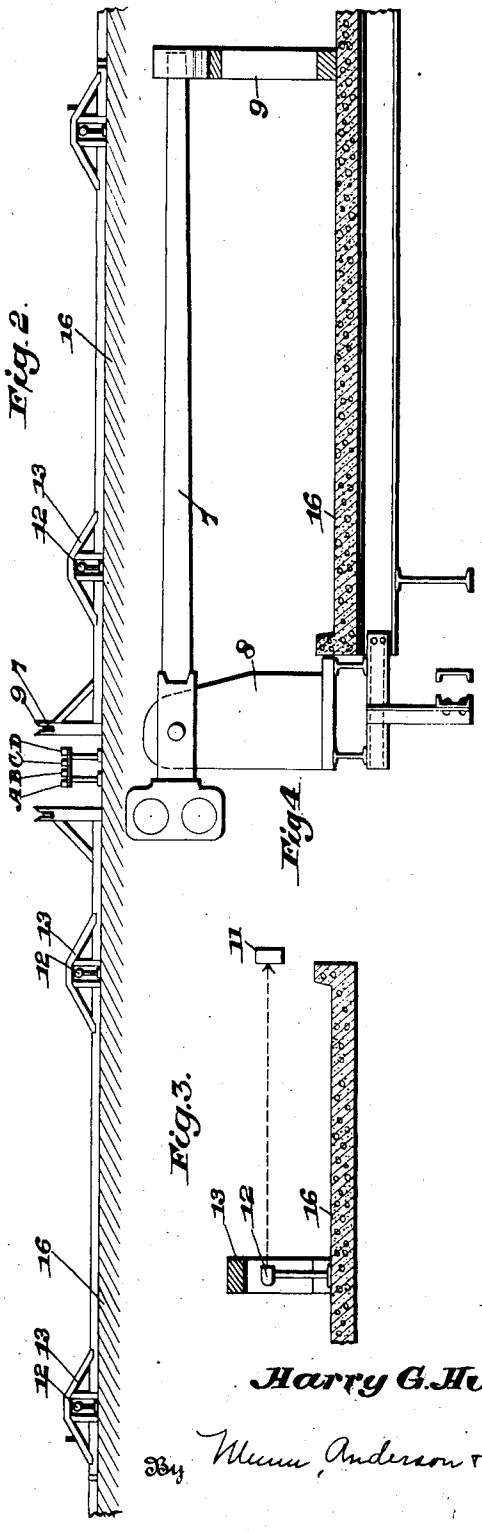


Fig. 2.

Fig. 4

Fig. 3.

Inventor

Harry G. Hunter.

By Munn, Anderson & Liddy

Attorneys

Sept. 28, 1937. H. G. HUNTER 2,094,216

TRAFFIC BARRIER OPERATING SYSTEM

Filed Oct. 22, 1935 2 Sheets-Sheet 2

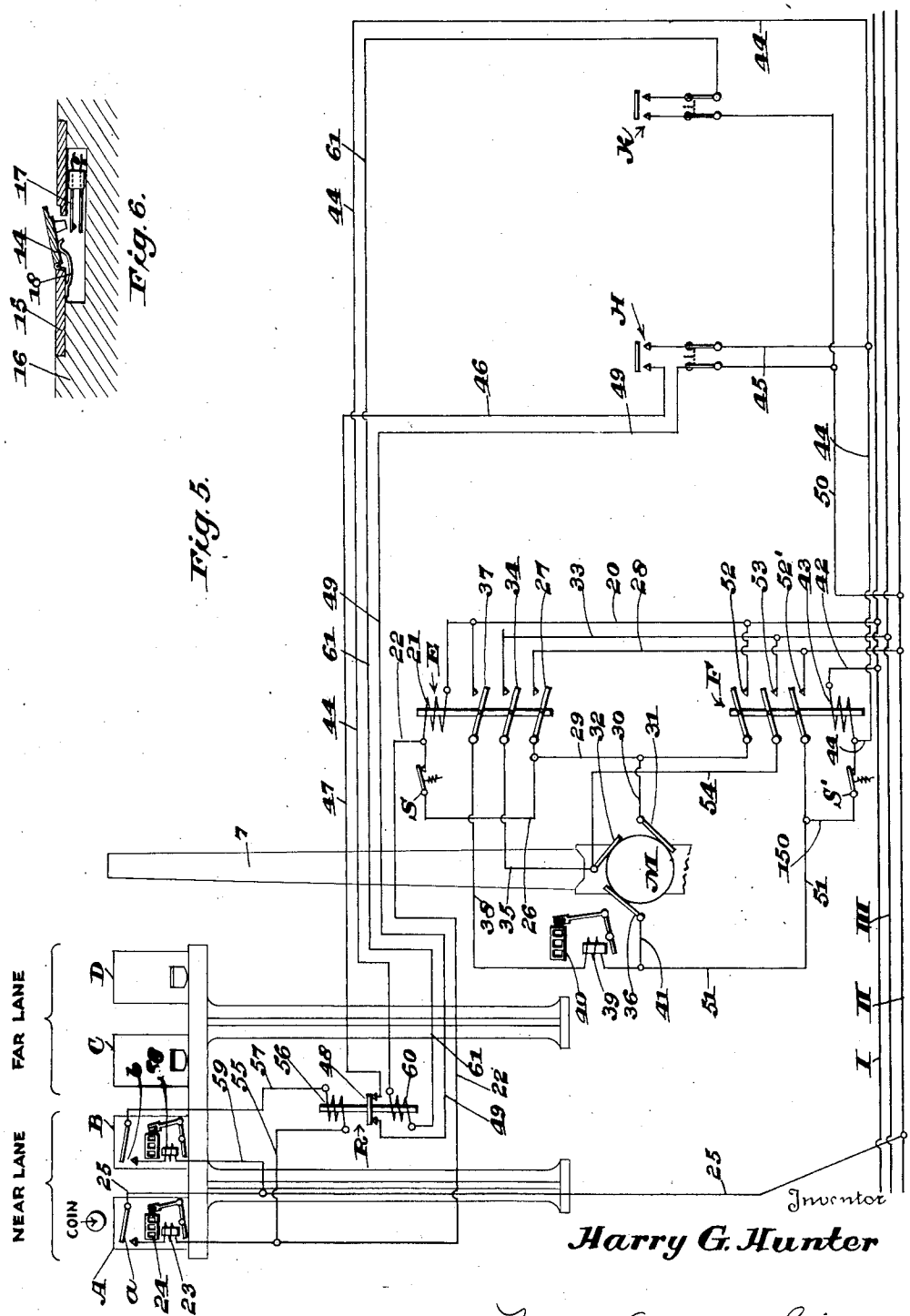


Fig. 5.

Fig. 6.

Inventor
Harry G. Hunter

By Munn, Anderson + Liddy
Attorneys

Patented Sept. 28, 1937

2,094,216

UNITED STATES PATENT OFFICE

2,094,216

TRAFFIC BARRIER OPERATING SYSTEM

Harry G. Hunter, Greensboro, N. C.

Application October 22, 1935, Serial No. 46,188

5 Claims. (Cl. 39—7)

My invention relates to improvements in devices for operating traffic barriers, preferably on traffic lanes where toll is collected, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a barrier-operating device which may be controlled by the deposit of a coin or token or by the closure of a switch as, for instance, by operating an ordinary push button, and in which the barrier is removed and is subsequently replaced through the closure of a switch by the passage of the traffic itself.

A further object of the invention is to provide a system of the type described in which provision is made whereby the same barrier may be closed by the passing of a vehicle, or other object of traffic, for a short distance, or may be closed by the passage of a longer vehicle for a greater distance.

A further object of the invention is to provide a system for operating a barrier in which a barrier-opening switch is provided for actuating a motor to move the barrier, and in which a barrier-closing switch is actuated by the passage of traffic.

A further object is to provide means for limiting the movement of the barrier when it is opened or removed and when it is closed or replaced.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application, in which:—

Figure 1 is a plan view showing two lanes of traffic controlled by barriers arranged according to my invention,

Figure 2 is a sectional view on the line 2—2 of Figure 1,

Figure 3 is an enlarged sectional view along the line 3—3 of Figure 1,

Figure 4 is an enlarged sectional view along the line 4—4 of Figure 1,

Figure 5 is a diagrammatic view of the operating circuits, and

Figure 6 is a sectional view showing a modified form of contact closing device.

Referring now particularly to Figs. 1 to 4, inclusive, I have shown therein two lanes of traffic designated Near Lane Traffic and Far Lane Traffic, respectively, the outer curbs being shown at 6. The equipment for one lane is duplicated in the other and a description of one will suffice for both.

Consider the Near Lane. At 7 I have shown a barrier which in the present instance is pivotally mounted on a standard 8, disposed at one side of the lane and the outer end of which normally rests on a support 9. Any suitable form of movable barrier may be used without departing from the spirit of the invention.

At A, B, C and D I have shown diagrammatically four coin or token collection boxes, the operation of which will be explained later. Switch actuating devices for controlling the motor that closes the barrier, after a short vehicle such as an automobile of the coupe or sedan type has passed, are shown at 10, while similar devices for use with longer vehicles such as trucks, vans, or automobiles with trailers are indicated at 11. In the present instance these switch actuating devices are controlled by a beam of light from the lamps 12 (see Fig. 3) which are disposed underneath guards 13. A mechanically operated switch could serve the same purpose. Thus in Fig. 6 I have shown a member 14 which is hinged to a plate 15 in the roadway 16 and is normally held away from the switch 17 by the leaf spring 18. When the wheels of the vehicle pass over the member 15 the switch 17 is closed momentarily.

In Fig. 5 I have shown the circuit layout used in connection with the barrier operating devices. It will be understood that other specific circuits may be employed successfully instead of the three wire system herein shown.

In the drawings, I, II and III indicate the main line wires. M is a motor for oscillating the barrier 7. A magnetically actuated switch, indicated in general at E, controls the opening or raising of the barrier and a similar switch F controls the closing of the barrier. An opening limit switch is shown at S and a closing limit switch at S'. At R I have illustrated a double acting magnetic non-return relay, which is normally closed.

The traffic operated switch H is used for short vehicles and the switch K for long vehicles. These switches are shown diagrammatically and may be electrically actuated as by the arrangement shown in Fig. 3 or mechanically as shown in Fig. 6.

From the foregoing statement of the construction, the operation may be readily understood. Consider the Near Lane Traffic. A short vehicle approaches from the left in Fig. 1. The driver pays a coin or token which is dropped into the coin box A (see Fig. 5). The coin closes the switch *a*. A circuit is established from the line

wire I through 20, coil 21 of switch E, 22, coil 23 of counter 24, *a*, and to line II by conductor 25. Switch E closes and a locking circuit is made from conductor 22 (previously energized), S, 26, contacts at 27, 28 to line II. Current also is placed on the brush 31 of the motor M through 28, 27, 29, and 30, on the brush 32 through 33 contacts 34 and 35, and on the brush 36 through 26, contacts 37, conductor 38, coil 39 of counters 40 and 41.

The motor M is energized and raises the barrier by suitable gearing (not shown). The passage of the coin actuates the counter 24 and the energization of the motor actuates the counter 40, which serves as a check against the counter 24.

When the barrier reaches its limit, it opens the switch S, thus deenergizing the magnet 21 of the switch E and stopping the motor.

When the vehicle or other object proceeds and in passing closes the switch H as described, the following circuit is established. From line I by 42, coil of switch F, 44, 45, switch H, 46, 47, 48, 49, 50 to line II. The contacts of switch F will close and a locking circuit is established through switch S', 150, contacts 52', 28 to line II.

The brush 31 will now receive current from line I through 20, 52, 29 and 30, the brush 32 from line III through 33, 53 and 54, and the brush 36 from line II through 28, 52', 51 and 41. The motor M will be reversed and will close the barrier. When the latter reaches the limit switch S' it opens the switch and deenergizes the coil 43 of the switch F which opens the contacts and stops the motor.

For the passage of a group of persons, animals, vehicles, such as trucks, etc., which occupy a length of thoroughfare greater than the distance between the barrier 7 and the switch actuating members 10, a coin or token is deposited in coin box B. This operates a control circuit as follows, from line I through 20, coil 21 of switch E, 22, 55, coil 56 of switch R, 57, *b*, 58, 59 and 25 to line II. Switch E closes and is locked by the circuit already described. The motor M is actuated and the barrier raised until it reaches the limit switch S. The opening of the switch deenergizes the coil 21 of the switch E and stops the motor M.

The closure of the switch H by the traffic now has no effect because the circuit which this switch controls is broken at 48 by the action of the coil 56 of switch R when the coin was deposited in coin box B.

When the traffic passes to the point where it actuates the switch operating member 11 (see Fig. 1) or engages a contact closing device like that in Fig. 6 and closes switch K, a circuit is established as follows, from line I through 42, 43, 44, coil 60 of switch R, 61, contacts at K, and 59 to line II. This energizes the coil 43 of the switch F and results in closing the barrier as before described and also closes switch R so that contacts 48 are reestablished and the system restored to normal position for operation of either switches A or B. The limit switch S' opens the circuit as stated and stops the operating mechanism. These limit switches S and S' are normally closed unless engaged by the barrier. Thus it will be observed that when the barrier leaves the switch it is closed by a spring or otherwise so that it is in position to effect the locking circuits as described.

While A and B are described as coin or token operated, I may use push buttons instead.

I claim:

1. The combination with a traffic lane, of a barrier, a motor for opening and closing the barrier, a first switch and a second switch independently operated for actuating the motor to open the barrier, a near roadway switch spaced from the barrier and operated by traffic for actuating the motor to close the barrier opened by the first independently operated switch, a far roadway switch spaced at a greater distance from the barrier and operated by traffic for actuating the motor to close the barrier opened by the second independently operated switch, and means actuated by the second independently operated switch for rendering ineffective the near switch in the roadway.

2. The combination with a traffic lane, of a barrier, a motor for opening and closing the barrier, a first switch and a second switch independently operated for actuating the motor to open the barrier, a near roadway switch spaced from the barrier and operated by traffic for actuating the motor to close the barrier opened by the first independently operated switch, a far roadway switch spaced at a greater distance from the barrier and operated by traffic for actuating the motor to close the barrier opened by the second independently operated switch, and means actuated by the closing of the barrier for rendering ineffective the far switch in the roadway.

3. The combination with a traffic lane, of a barrier, a motor for opening and closing the barrier, a near roadway switch spaced from the barrier, means actuated by said near roadway switch for closing the barrier, a far roadway switch spaced at a greater distance from said barrier, means actuated by said far roadway switch for closing said barrier independently of said near roadway switch, and means actuated by the closing of the barrier for rendering ineffective the action of traffic on said far roadway switch.

4. The combination with a traffic lane, of a barrier, a motor for opening and closing the barrier, a first and second switch independently operated for actuating the motor to open the barrier, a near traffic-operated switch to cause the motor to close the barrier opened by the first switch, a far traffic-operated switch to cause the motor to close the barrier opened by the second switch, a plurality of coordinated electric circuits in which are included the motor and the switches, and means oppositely and alternately controlled by the circuits for opening one of the circuits while closing the other circuit so that only one of the traffic-operated switches will cause actuation of the motor to close the barrier.

5. The combination with a traffic lane, of a barrier for releasing traffic through the lane, a motor for operating the barrier, spaced traffic actuated switches for causing the motor to close the barrier after varying lengths of traffic have passed the barrier, a first switch for causing actuation of the motor to open the barrier for limited passage of traffic, a second switch for causing actuation of the motor to permit increased traffic to pass, and means for rendering either one of the traffic-actuated switches and either the first switch or second switch inoperative while rendering the remaining switches operative.

HARRY G. HUNTER.