H. R. FOWLER.

SAFETY GATE.

APPLICATION FILED FEB. 23, 1915.

1,243,056.

Patented Oct. 16, 1917.

2 SHEETS—SHEET 1.

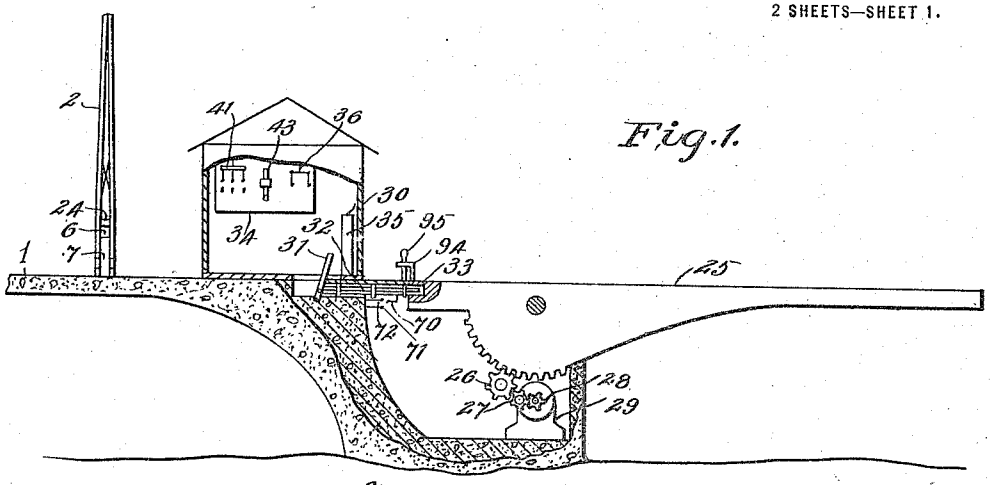


Fig. 1.

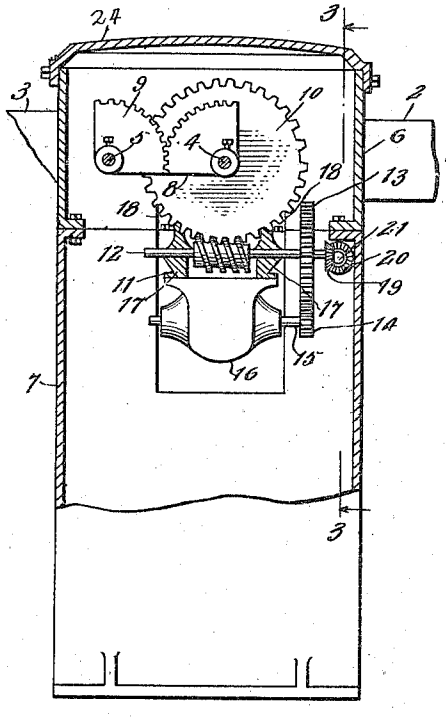


Fig. 2.

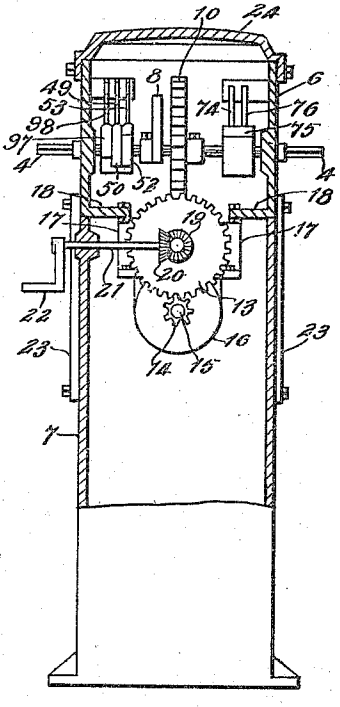


Fig. 3.

Harry R. Fowler
Inventor:

By Geo. Kirk
Attorney

H. R. FOWLER.

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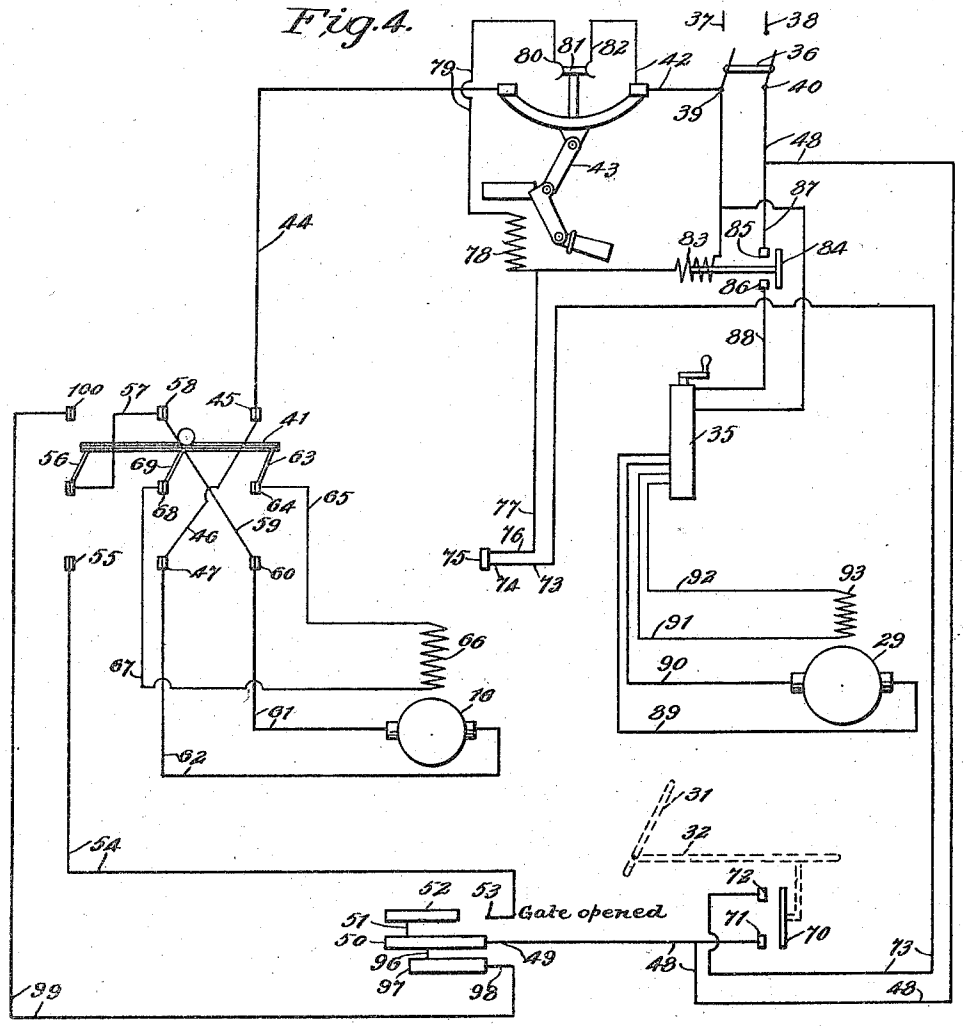
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Fig. 4.



Harry R Fowler
Inventor:

By Geo B Kirk
Attorney

UNITED STATES PATENT OFFICE.

HARRY R. FOWLER, OF TOLEDO, OHIO, ASSIGNOR TO THE FOWLER ELECTRICAL SUPPLY COMPANY, OF TOLEDO, OHIO, A CORPORATION OF OHIO.

SAFETY-GATE.

1,243,056. Specification of Letters Patent. Patented Oct. 16, 1917.

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To all whom it may concern:

Be it known that I, HARRY R. FOWLER, of Toledo, Lucas county, Ohio, a citizen of the United States of America, have invented new and useful Safety-Gates, of which the the following is a specification.

This invention relates to ways, and movable means for governing traffiic in connection therewith.

This invention has utility when incorporated as a traffic guard or gate, especially in connection with movable bridges.

Referring to the drawings:

Figure 1 is a fragmentary side elevation of a bridge with a gate interlocked therewith;

Fig. 2 is a side elevation with parts broken away of the gate support and driving means;

Fig. 3 is a view on the line III—III Fig. 2; and

Fig. 4 is a wiring diagram of the electrical connections, the interlocking means and actuating means for the gate and lift bridge.

The way 1 is provided with a gate having the long arm or trac guard member 2 say for the highway section, and the short arm or traffic guard member 3 for the sidewalk section. The arm 2 is keyed to the shaft 4 and the arm 3 is keyed to the shaft 5. These shafts 4 and 5 are in the upper housing section 6 carried by the lower housing member 7. The shafts 4 and 5 are connected by the segmental gears 8 and 9 intermeshing to bring about simultaneous action in the opposite directions so that in operation each will move away from the other and move to closed position as to the way.

Also fixed to the shaft 4 is the worm wheel 10 with which meshes the worm 11 on the shaft 12 carrying the large gear wheel 13 in mesh with the pinion 14 on the shaft 15 of the electric motor 16 carried by brackets 17 forming the bearing for the shaft 12 and connected to the brackets 18 of the upper housing member 6. The driving means for the traffic guard members or arms 2, 3, accordingly passes through two speed reductions, the speed reduction gearing 13, 14, and the speed reduction gearing 10, 11. This latter worm gearing has its angle of friction such that whenever the actuating means or motor 16 stops, the arms will at once cease to travel and be held by this worm gearing in such position. This feature of construction simplifies the gates in determining without mechanical braking means the limit of position or travel of the arms.

Instead of the motor an alternative actuating means may be provided for emergency use or when the motor is out of service. Mounted on the shaft 12 is the bevel gear 19 in mesh with the bevel gear 20 on the angularly disposed shaft 21 extending through either side of the housing 7 to carry the removable crank 22. Figs. 2 and 3 show this connection to different sides of the housing 7. For ready access to the motor and the adjacent driving means or speed reduction gears the plates 23 may be connected to the housing, while there is also provided the removable cap 24 for the housing.

The operation of the gate may be controlled in connection with a movable means as to the way, say a lift bridge 25, so that when the bridge is free to travel, the gate must be closed and cannot be shifted until the bridge is again closed. The bridge may be operated by the speed reduction gears 26, 27, 28, from the motor 29. For control of the various devices, there may be provided a convenient operator's quarters or housing 30 having therein the lever 31 to unlock the bridge by moving the bar 32 out of the hole 33 in the bridge 25.

There is also disposed in the house 30 the switch board 34 and the controller 35. In operation, the main double pole knife switch 36 may be thrown in to connect the supply wires 37, 38, with the terminals 39, 40. The double throw three-bladed switch 41 is thrown down to cause the gate to be closed. This permits current from the terminal 39 to flow through the lead wire 42 past the circuit breaker 43 to the lead wire 44, to the terminal 45 by the jump wire 46 to the terminal 47. From the terminal 40, at switch 36, current flows from the lead wire 48 terminating in brush 49 coacting with the contact 50 on the shaft 4, which has an electrical connection by the wire 51 with the

contact 52. When the arms are up, this contact 52 is in position to be wiped by the brush 53 closing the circuit through the lead wire 54 to the terminal 55, which will permit an electrical connection through the bar 56 of the switch 41 and current to flow by the wire 57 through terminal 58, jump wire 59 to terminal 60 and thence by the lead wire 61 to the motor 16, return circuit from which is by the wire 62 to the terminal 47. The bar 63 of the switch 41 will conduct electric current to the terminal 60, to the terminal 64 and thence by the wire 65 to the shunt field 66 of the reversible motor 16, return line 67 from which extends to terminal 68 and thence via bar 69 of the switch 41 to the terminal 47. This will result in the motor moving the gate arms down to closed position.

When closed, the mechanical elements will be in a position shown in Figs. 2 and 3, while the contact 52 will have moved away from the brush 53 and thus automatically break the circuit and cut out the motor when the gate is closed. The worm gearing will hold the gate in this closed position.

Operation of the lock lever 31 will bring the switch closing member 70 to close the circuit between the contacts 71 and 72, thereby permitting current flow from the line 48 to the line 73 terminating in the brush 74 which when the gate is closed engages the contact 75 and closes the circuit to the brush 76 on the line 77 thereby energizing the coil 78 in the shunt circuit 79 to trip the circuit breaker 43 and thus cut out the flow of current to the gate so that the gate may not be electrically operated with the connections in position for the bridge to be operated.

In the tripping of this circuit breaker, the contact 80 has its switch closing member 81 cut it off from the opposing switch closing member 82 and there is no current flowing through this coil 78 after the circuit breaker is tripped.

This lead line 77 also energizes the coil 83 to move the switch closing member 84 into position as to the contacts 85, 86, thereby closing electric circuit from the line 48 through the line 87, 88, to the controller 35 which may be manipulated to supply current through the lines 89, 90, to the motor 29 as well as through the lines 91, 92, to the shunt field 93 of this reversible motor, and the bridge may be moved to its opened or lifted position as to the way.

In the lifting of the bridge, the block 94, loosely mounted on the pin 95, falls in position to prevent throwing of the lever 31 until the bridge again comes to closed position.

When the bridge is in closed position, this lock 94 is automatically moved out of holding position by the bridge 25 and the handle 31 may be moved to lock the bridge closed. This breaks the circuit through the switch 70 and accordingly releases the solenoid switch 83, 84 for breaking the circuit to the controller 35.

With no circuit in the lines 73, there is no energy in the coil 78 and the circuit breaker 43 may be re-set, and the switch 41 thrown to upper position. The electric current from the line 48 through the brush 49 to the contact 50 will now flow through the connection 96 to the contact 97 to be taken off by the brush 98 and travel through the line 99 to the terminal 100 where it will flow through the bar 56 of the switch 41 and thence through the line 57, terminal 58, line 59, terminal 60, line 61, to the motor 16 and thence by the line 62 back through terminal 47. From the terminal 58, the bar 69 of the switch 41 conducts the current through the line 67 oppositely through the shunt field 66 of the motor 16 to reverse the motor 16, thence by the line 65 to the terminal 64 and by switch bar 63 to the terminal 45. With the motor 16 thus reversed, the gates will operate oppositely to that of their initial travel and will be swung upward or open.

It is accordingly seen that there are interlocking safety connections precluding operation of the bridge at other than closed position of the gate and precluding operation of the gate with the bridge other than in down or closed position, thereby placing checks upon the operator to increase the safety in handling the equipment.

The housing structure is designed for exceptional accessibility to the working parts. Removal of the cap leaves the devices in position or removal of the housing 6 takes therewith two speed reduction driving gear trains as well as the actuating motor.

What is claimed and it is desired to secure by Letters Patent is:

1. A traffic guard member, a support therefor comprising a housing having an upper section and a lower section, and driving means mounted in the housing fixed with the upper section to be removable therewith from the lower section.

2. A traffic guard member, a support therefor comprising a sectional housing, and a member driving motor mounted in the housing and removable with one of the sections of the housing.

3. A traffic guard pivoted arm, a supporting housing therefor comprising upper and lower sections, and arm driving and actuating means carried in the housing by the upper section and projecting therefrom into the lower section whereby the upper section and actuating means may be removed as a unit from the lower section.

4. A traffic guard member, driving means therefor having a member holding friction

angle, a motor for the driving means and manually operable actuating means for the driving means, said motor and actuating means each being connected to the driving means on the side beyond the holding friction angle away from the guard member.

In testimony whereof I affix my signature in the presence of two witnesses.

HARRY R. FOWLER.

Witnesses:

GEO. E. KIRK,

GLADYS JAMESON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."