

March 10, 1931

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1,795,477

GARAGE DOOR OPERATING DEVICE

Filed Sept. 18, 1929

3 Sheets-Sheet 1

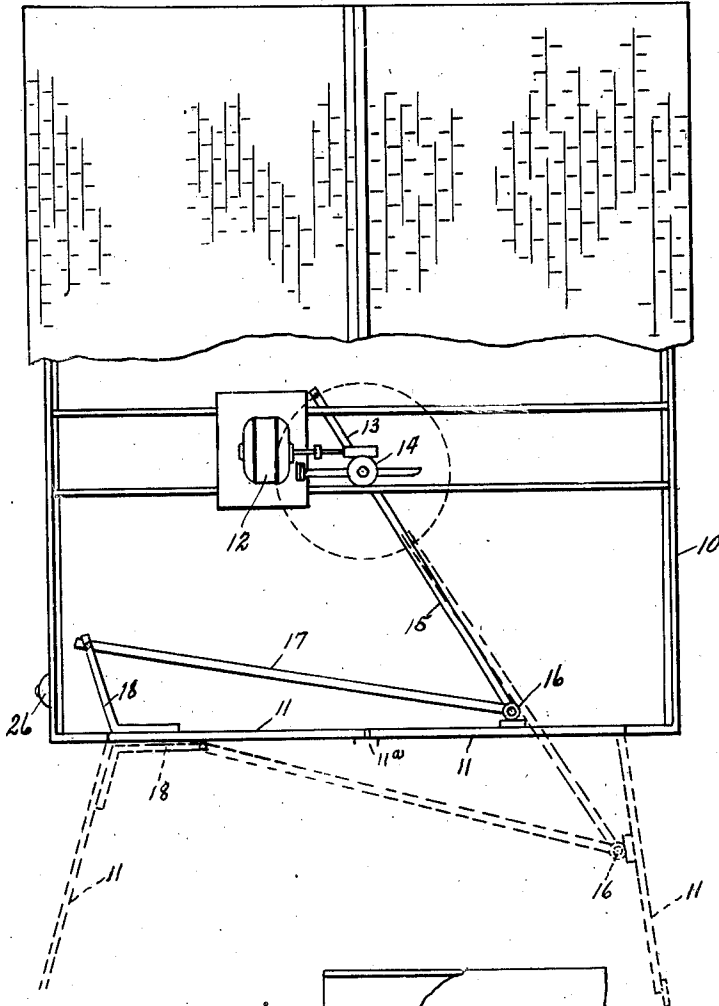


FIG. 1.

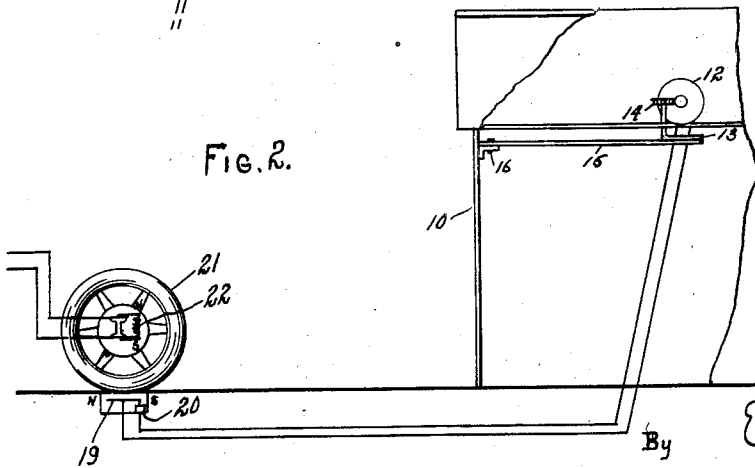


FIG. 2.

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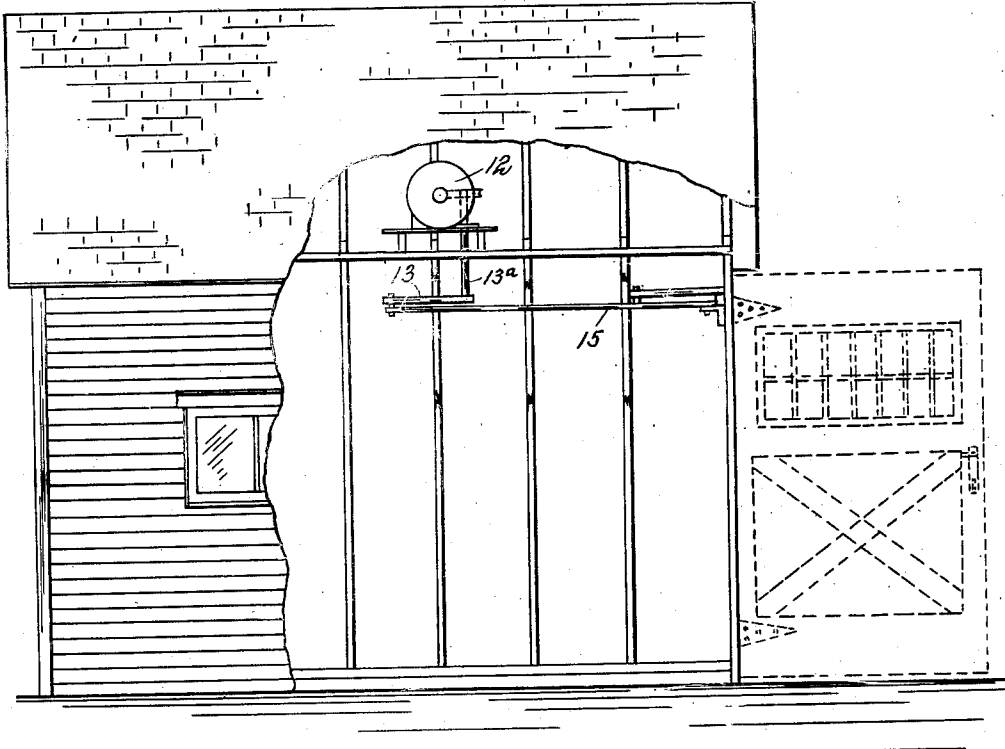


Fig. 3.

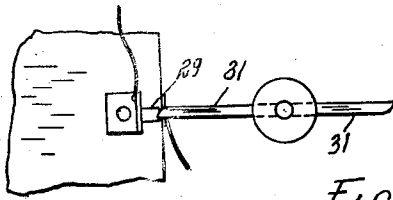


Fig. 5.

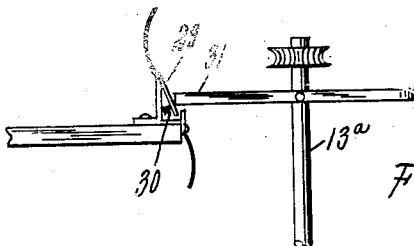


Fig. 6.

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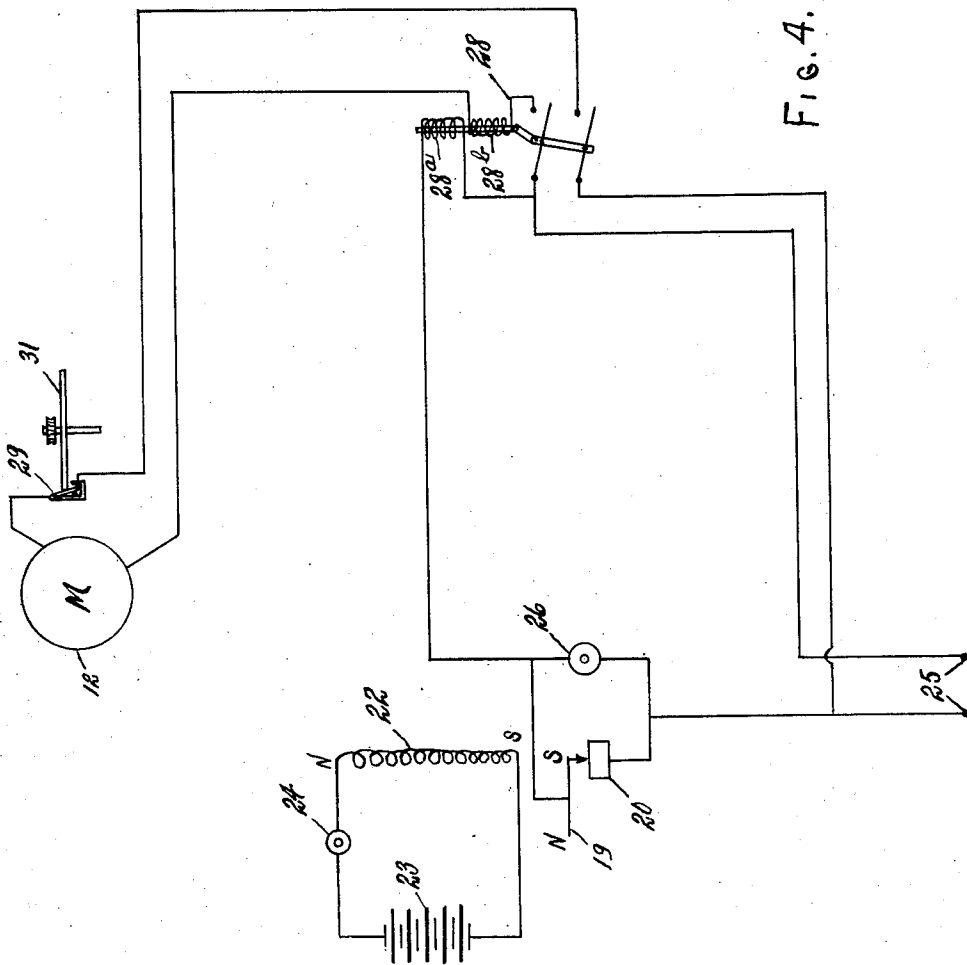
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GARAGE DOOR OPERATING DEVICE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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GARAGE-DOOR-OPERATING DEVICE

Application filed September 18, 1929. Serial No. 393,326.

This invention relates to garage door opening and closing devices, and particularly to devices of this kind adapted to be automatically actuated from the automobile.

5 One purpose of the invention is to provide in combination with a garage door opening and closing device, a control therefor arranged in the drive to the garage and adapted to be magnetically operated by means on
10 the car to open or close the garage door.

A further purpose of the invention is to provide an improved garage door opening and closing device.

15 The foregoing and other objects of the invention are attained in the device illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific form thereof shown and described.

20 Of the accompanying drawings,

Figure 1 is a plan view, partly broken away and in section, of a garage showing the improved door operating device therein;

25 Figure 2 is a reduced side elevation thereof, partly broken away and in section, and illustrating the arrangement of the control devices on the automobile and the drive by which the door operating device is actuated;

30 Figure 3 is a side elevation of the garage, partly broken away and in section, showing the improved door operating device;

Figure 4 is a wiring diagram for the electrical connections;

35 Figure 5 is an enlarged plan detail of the motor stopping mechanism; and

Figure 6 is a side elevation of Figure 5.

Referring to the drawings, the numeral 10 designates a garage having suitable doors 11, 11 adapted to be opened or closed by a motor 12 by means of a driven crank 13 on a shaft 13^a which may be driven by the motor through suitable reduction gearing 14. When applied to double hinged door garage constructions as shown, the crank 13 may be
45 hingedly connected by a link 15 to one door 11 as at 16 and a link 17 may be connected at one end to said door at 16 and at the other end to an arm 18 fixed on the other door 11, the linkage being such that the crank 13 can be
50 rotated 180° to open the doors and then 180°

more in the same direction to close the doors.

Embedded in the garage drive as near the surface thereof as is practical is a pivoted magnetic needle 19 having an end adapted to make electrical contact with a mercury cup 20. The mercury cup can obviously be replaced by a carbon cup, spring contacts or the like if desired. A car, indicated diagrammatically at 21, is provided with a magnetic coil 22 which is placed as near the surface of the road as is permissible.

In the wiring diagram, the coil 22 mounted on the auto frame is connected to a battery 23 in the car by a push button 24 which is placed in the car within the operator's reach. The magnetic needle 19 and the coil 22 are so arranged that the polarity of the arm of the magnetic needle over the mercury cup will be similar to the bottom pole of the coil, whereby when the coil is energized, the needle will dip and make contact with the cup 20. A push button 26 shunts the magnetic needle and cup. Electric current such as ordinary house current is supplied to the circuit through terminals 25. At 28 is shown a remote control switch which may advantageously be employed in the control circuit. The remote control switch is of a standard well-known type comprising solenoids 28^a and 28^b, double pole, single throw switch blades normally held open by gravity and plungers riding in said solenoids so that when either solenoid is energized the switch will be closed. Arranged in one of the motor leads is an automatic switch 29 shown in detail in Figures 5 and 6. The switch 29 normally is closed by a spring 30. A cam bar 31 carried by the shaft 13^a and having a determined angular relation with the door operating crank 13 is provided to open the switch 29 and break the motor circuit when the doors 11 have swung completely open or closed.

In the operation of the device the car owner upon desiring to open his garage to get his car out will press the push-button 26 which is located at some suitable point. This will energize the coil 28^a and close the remote control switch 28. Current will then flow through the main motor leads to the motor, the switch 29 being closed. The operator

can almost instantaneously remove his finger from the push button 26 and the remote control switch 28 will remain closed, due to the fact that the solenoid 28^b is in the motor circuit. The motor will thus continue to run until the doors will have opened whereupon one-half of the cam bar 31 will open the automatic switch 29 and stop the motor. The cam bar 31 merely opens the switch 29 long enough to allow gravity to open the switch 28 which occurs because the solenoid 28^b has no current flowing through it. The switch 29 is closed immediately thereafter, as the inertia of the motor carries the cam bar 31 on by. The motor of course does not start up again, as the switch 28 is now open.

The operator then drives his car from the garage and by pressing the push button 24 in the car he energizes the coil 22 carried on the lower frame of the car. The car with the energized coil is then passed slowly over or stopped above the magnetic needle embedded in the drive so that the similarly charged poles of the coil and the needle will repel each other and cause the needle 19 to dip into the cup 20, thus energizing solenoid 28^a whereupon the operation of the apparatus will be exactly similar to that described above when the push button 26 closed the circuit except that in this case the motor continuing to rotate in the same direction will close the doors. It will thus be seen that the doors can be opened and closed at will from the automobile or from push buttons located where desired. It will also be seen that once started the door operating mechanism is automatic and does not require the attention of the operator.

It is apparent that the solenoid 28^b and the automatic switch 29 can be done away with if desired and the switch 28 held closed and the duration of the motor operation controlled solely by means of the magnetic needle 19 and the coil 22. When the motor has run long enough to bring the doors to the desired position the coil 22 will be deenergized, permitting gravity to open the switch 28 and stopping the motor. The push button 26 will shunt the magnetic needle and mercury cup the same as before to permit the doors to be opened by means independent of the auto.

Various other modifications can be resorted to without departing from the spirit of the invention or the scope of the appended claims.

What is claimed is:

1. The combination with a door, opening and closing means therefor, and a motor for operating said means, of a magnetically operable switch arranged in the pathway of a vehicle approaching said door and operable to control said motor, magnetic means carried by the vehicle for energizing said magnetic switch, and means controllable at

will by the driver in the vehicle for energizing said magnetic means.

2. The combination set forth in claim 1 in which said magnetically operable switch comprises a receptacle embedded in the pathway so as to be substantially flush therewith and having a mercury cup, a magnetic needle and contact element arranged therein whereby magnetic actuation of said needle will cause said contact element to enter said cup.

3. The combination set forth in claim 1 in which a receptacle for said magnetic switch is embedded in said pathway.

4. The combination set forth in claim 1 in which said magnetic switch is located in the central portion of the pathway and said magnetic means is located on an axle of the vehicle.

5. The combination set forth in claim 1 in which said magnetic means comprises an electromagnetic and a circuit in which said magnet is located including a source of electricity on the vehicle and a switch operable by the driver but adapted normally to assume its open position.

6. The combination with the closure for a building for housing an automobile, means for actuating said closure either open or shut and a motor for operating said closure actuating means, of a magnetic switch arranged in the pathway of the automobile leading to said building and operable to control said motor, and magnetic means carried by said automobile and adapted to be energized at the will of the driver when the automobile is over said magnetic switch to energize said magnetic switch.

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