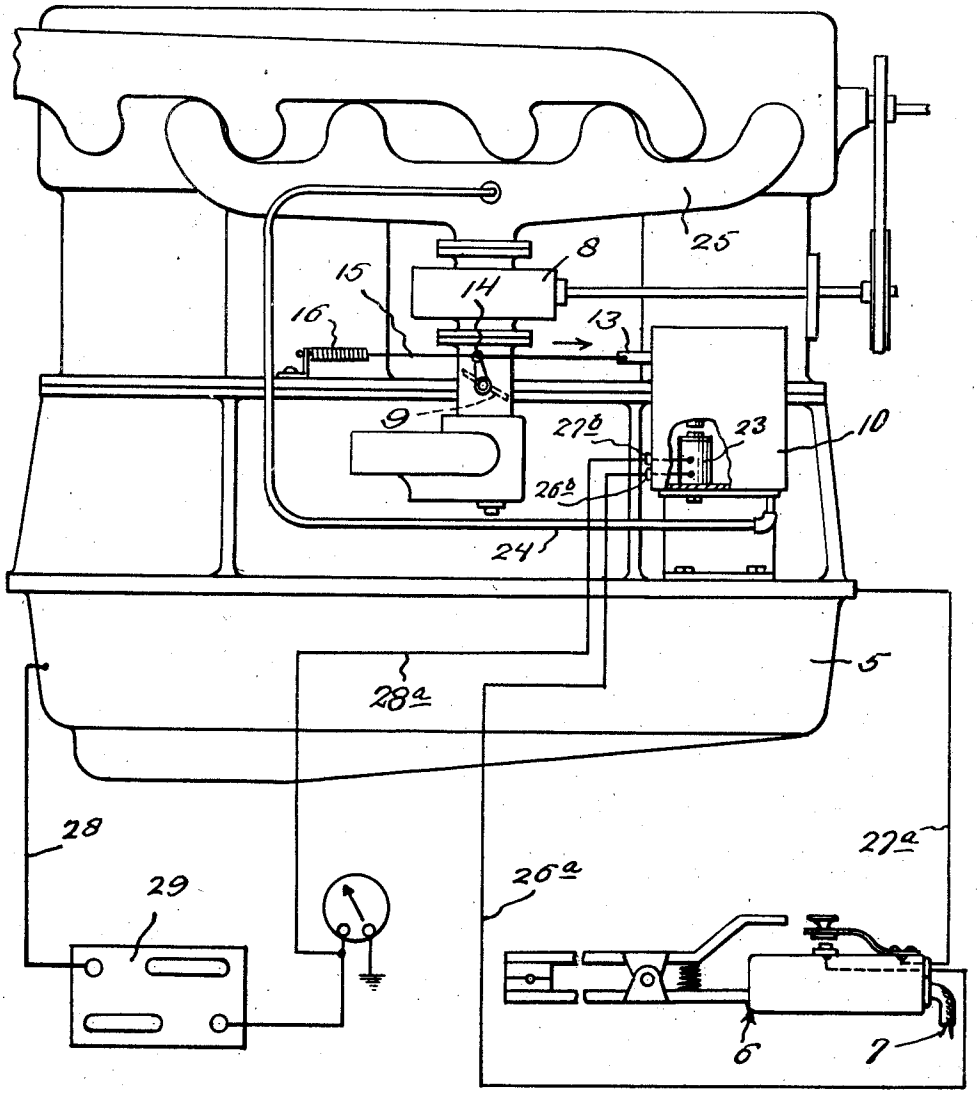
Dec. 3, 1940. E. MAREC 2,223,692

REMOTE CONTROL DEVICE

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Fig. 1.



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Fig. 2.

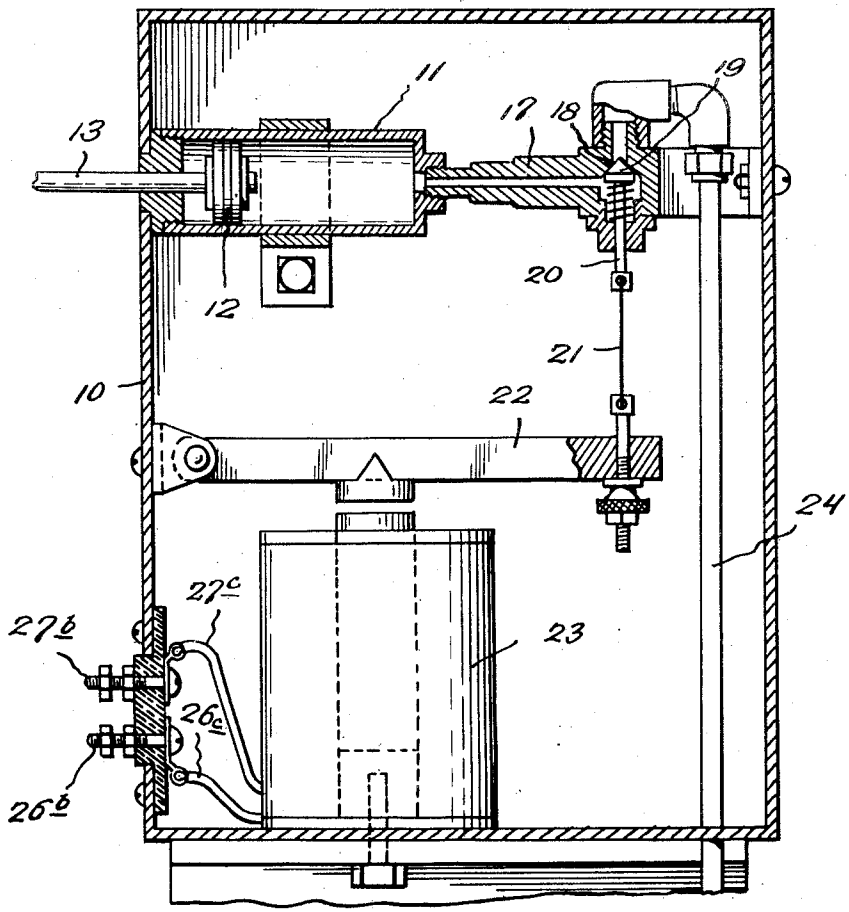
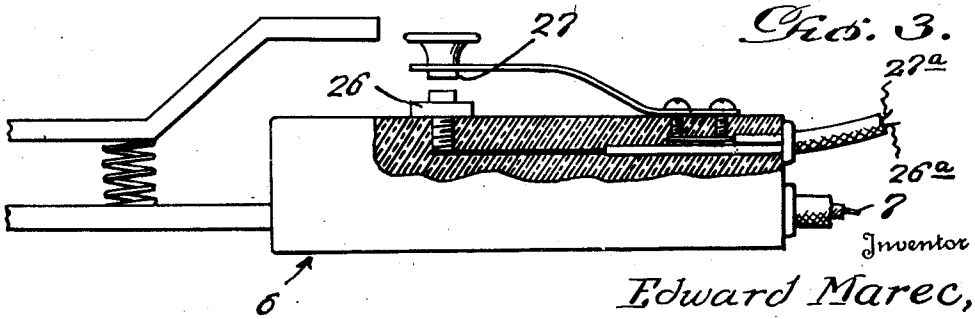


Fig. 3.



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REMOTE CONTROL DEVICE

Edward Marec, Cleveland, Ohio

Application December 9, 1938, Serial No. 244,853

2 Claims. (Cl. 123—102)

This invention relates to a new and useful device for controlling the speed of operation of an internal combustion engine from a point remote to the engine, whereby such engine may be readily caused to idle or run at slow speed or to run at a higher speed as required, without requiring the operator or attendant to be in proximity to the engine.

While the present control device is capable of general use for a variety of purposes and in connection with a variety of apparatus, it will be found especially useful when employed in connection with electrical welding apparatus wherein the engine is employed for driving a generator to supply current to an electrode holder invariably being manipulated by the workman at a point considerably removed from the position of the motor-generator outfit. In the use of apparatus of this kind, the motor and generator are usually at one point, and the actual welding work is invariably being done at another point some distance away from the motor and generator. Without a control device of the present kind, it is necessary for the operator to leave the point at which the welding is done and walk to the point at which the motor and generator are located in order to reduce the speed of the motor while the welding is discontinued for any reason. The occasions for this are numerous, and a further trip back to the motor and generator is necessary when it is desired to increase the speed of the engine again for the purpose of proceeding again with the welding. An important object of the present invention is to provide a device whereby the engine of the motor-generator outfit may be changed from idling speed to higher speed or vice versa from a point remote to the outfit and without requiring constant trips back and forth to and from the work and the outfit.

A more specific object of the present invention is to provide a control device of the above kind which is extremely simple in construction, highly efficient in operation, and otherwise well adapted for successful commercial use.

With the above object in view, the present invention consists in the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings:

Figure 1 is a somewhat diagrammatic view, partly in elevation, showing the present control device applied to the generator driving motor of a welding apparatus.

Figure 2 is an enlarged vertical sectional view of the main part of the control device per se; and

Figure 3 illustrates the control switch of the device applied to the handle of an electrode holder as in Figure 1, a fragment of the electrode holder being shown on an enlarged scale and partly broken away and in section in order to reveal details of construction.

Referring in detail to the drawings, 5 indicates an ordinary internal combustion engine whose speed of operation is to be controlled. This engine may form part of a portable or stationary apparatus of any kind, but is illustrated as the driving motor of a motor-generator outfit, the generator not being shown but being adapted to be driven by the engine 5 in a well known way for supplying welding current to an ordinary electrode holder 6 by means of wires 7, as is well known in the art. The engine may or may not have a governor as generally indicated at 8, and the speed of the engine is controlled in the usual way from low idling speed to higher operating speed by the actuation of the usual throttle valve 9.

The main part of the present control device is adapted to be mounted upon or at one side of the engine 5 where the throttle valve 9 is located, and includes a casing 10 within the upper portion of which is mounted a horizontal cylinder 11 having a piston 12 slidably fitted therein. Carried by the piston 12 is a rod 13 that projects through one side of casing 10 and is connected at 14 with the operating arm of throttle valve 9. This arm is also connected as at 15 with a tension spring 16 which normally positions the throttle valve in partly closed position so as to cause the engine 5 to operate at low or idling speed.

The inner end of cylinder 11 communicates with a fitting 17 which is arranged in the casing 10 and has a seat 18 normally yieldingly engaged by a spring seated valve 19 whose stem 20 is connected at 21 with the free end of a hinged armature 22 operatively associated with a magnet 23 secured upon the bottom of casing 10. The inlet end of fitting 17 is connected with a suction line 24 which extends to and communicates with the intake manifold 25 of the engine 5. With this arrangement, it will be seen that the valve 19 is ordinarily seated so that suction in the line 24 is cut off from the cylinder 11 and the spring 16 is allowed to move the piston 12 to one limit of its movement and cause positioning of the throttle valve 9 so that the engine 5 runs at idling speed. On the other hand, when the magnet 23 is energized to attract the armature 22,

the valve 19 is unseated so that suction is had within the cylinder 11 for drawing the piston 12 inwardly against the action of spring 16 and thereby opening the throttle valve 9 so as to increase the speed of the engine 5 to that required for operating purposes. The operation of magnet 23 is controlled from a remote point by a suitable switch which may consist of fixed contact 26 and a manually operable movable spring contact 27, the contacts 26 and 27 being respectively connected by wire 26a and wires 27a, 28, and 28a to binding posts 26b and 27b, carried by and disposed exteriorly of the casing 10 and connected at 26c and 27c with the opposite ends of the coil of magnet 23. The connection of wire 26a with binding post 26b is direct, but wire 27a is grounded to the engine 5 and the latter is connected by wire 28 with one terminal of a battery 29 whose other terminal is connected by wire 28a to the binding post 27b. In this way, the battery 29 is interposed in the circuit to supply the necessary current for operation of the magnet 23. When the engine 5 forms a part of a welding apparatus, the switch 26, 27 is preferably carried by the electrode holder 6, the fixed contact 26 being suitably fastened to the handle of electrode holder 6 as shown clearly in Figure 3 and being opposed by the contact 27, one end of which is also attached to said handle.

It will be seen that the workman carrying and manipulating the electrode holder 6 may, from a point remote to the engine 5, press the contact 27 into engagement with contact 26 and thereby energize the electro magnet 23 so as to cause the speed of the engine 5 to be increased whenever desired in the manner above described. In a like manner, by simply allowing the contact 27 to disengage from the contact 26, the suction in line 24 may be cut off so that spring 16 promptly operates throttle valve 9 to reduce the speed of engine 5 to idling speed, no trip to the engine 5 from the remote welding point being necessary. Naturally, when the magnet 23 is de-energized by disengagement of contact 27 from contact 26, the seating spring of valve 19 simply causes seating of said valve and elevation of armature 22, thereby cutting off suction from the cylinder 11 and permitting the piston 12 to be moved by the spring 16 in the direction necessary to effect partial closing of throttle valve 9. While it is preferred to mount the parts in a casing 10 as shown, a frame may obviously be utilized instead of such casing where exposure of the parts is not objectionable. It will be seen that the present invention embodies few moving parts and will not readily get out of order. Also, the device will operate with high efficiency and supply a needed aid to workmen such as those engaged in electric welding. Minor changes in the specific details of construction illustrated and described are contemplated within the spirit and scope of the invention as claimed.

By controlling the engine in the manner set forth, a saving of time and fuel is effected, wear of the motor is minimized, and the operator is saved much effort and resultant fatigue. When used with an arc welding apparatus, the device reduces the danger of an arc flash due to accidental contact of the electrode or electrode holder with the work, it being apparent that a flash will not occur when the engine is operating at low or idling speed and the rate of amperage in the welding circuit is lowered. When the device is used with an engine utilized for purposes other than arc welding, the electrode holder and its contacts 26 and 27 are replaced by any suitable switch.

What I claim as new is:

1. A remote control device for an internal combustion engine having a throttle valve operable to cause high speed operation of the engine, comprising a spring for normally positioning said throttle valve so as to cause low speed operation of the engine, a casing adapted to be mounted on the engine, a horizontal cylinder mounted in the upper portion of said casing, a piston in said cylinder having a rod projecting outwardly through the casing and adapted to be connected to said throttle valve, a suction line adapted to connect said cylinder with the intake manifold of the engine for moving the piston to actuate the throttle valve against the action of said spring and cause high speed operation of the engine, a normally seated vertically movable shut-off valve arranged in a portion of said suction line within the casing, an electro-magnet mounted in the lower portion of the casing, a hinged armature attractable downwardly by said electro-magnet for unseating said shut-off valve, a manually operable control switch for said electro-magnet operable at a point remote to said engine, and a source of electricity arranged in a circuit in series with said electro-magnet and said control switch.

2. A remote control device for a generator-driving internal combustion engine wherein a throttle valve is provided for controlling the speed of operation of said engine and is normally yieldingly positioned to cause low speed operation of said engine, comprising a suction-operated means adapted to be mounted local to said engine for operating said throttle valve to cause high speed operation of the engine, a suction line adapted to connect said suction-operated means with the intake manifold of the engine, a vertically movable shut-off valve for said suction line, a spring normally seating said shut-off valve, an electro-magnet adapted to be mounted local to said engine, a hinged armature attractable downwardly by said electro-magnet for unseating said shut-off valve, a manually operable control switch for said electro-magnet operable at a point remote to said engine, and a low voltage source of electricity arranged in series with said magnet and said control switch in a circuit independent of the circuit of said generator.

EDWARD MAREC.