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SWITCH FOR ENGINE-DRIVEN GENERATORS

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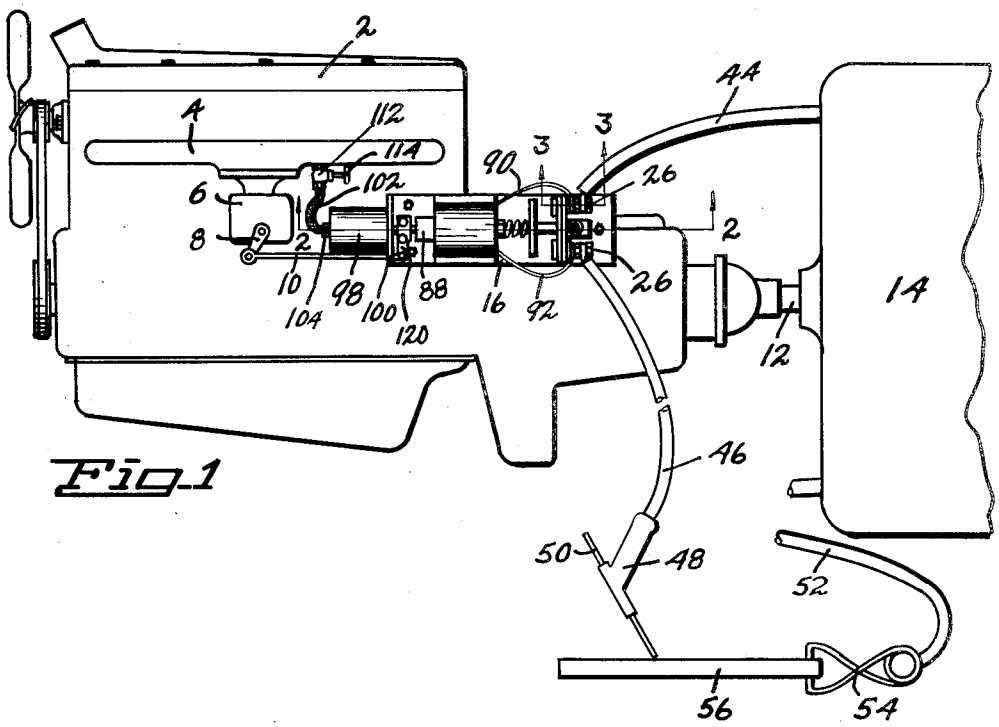
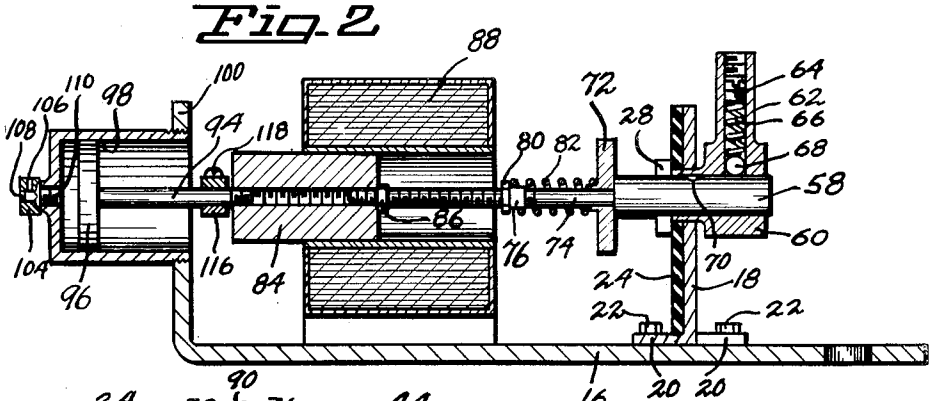


Fig. 1

Fig. 2



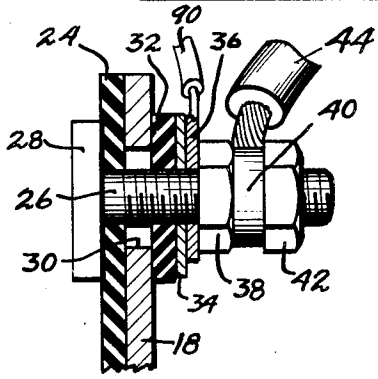


Fig. 3

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SWITCH FOR ENGINE-DRIVEN GENERATORS

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1 Claim. (Cl. 200—81.5)

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My present invention relates to an improved switch for engine driven generators and more particularly to an automatic control for the carburetor of an engine driving a generator for a welding apparatus wherein the work forms a part of the welding circuit.

According to my invention an electromagnetic device is employed in the welding circuit so that when the amperage flow from the generator is high as when the work is contacted by the welding rod, the engine will, under control of the throttle actuated by the electromagnetic device, operate at high speed. When the welding rod is removed from the work the circuit will be broken de-energizing the solenoid and decelerating the engine.

In the accompanying drawings I have illustrated one complete example of the physical embodiment of my invention according to the best mode I have thus far devised, but it will be understood that various changes and alterations may be made in the exemplified structure within the scope of the appended claim.

In the drawings:

Fig. 1 is a side elevational view of the control of my invention shown mounted on an engine.

Fig. 2 is a longitudinal vertical sectional view of the control at line 2—2 of Fig. 1.

Fig. 3 is an enlarged detail sectional view at line 3—3 of Fig. 1.

Referring now to the drawings wherein I have illustrated the present preferred embodiment of my invention, I use an internal combustion engine of conventional type 2 having an intake manifold 4 and carburetor 6 and the valve, not shown, in the carburetor is actuated by link 8, and rod 10. The drive shaft 12 of the motor drives the rotor of the generator 14 to provide electric current of high amperage and low voltage for welding.

To accelerate or decelerate the engine to raise or lower the output of the generator automatically I provide a control device mounted on base 16 which is suitably secured to the engine.

On this base I locate a support 18 having oppositely disposed lugs 20 secured by bolts 22, and an insulating sheet 24 on the inside face thereof. At spaced locations on the support I provide terminal bolts 26 having heads 28 against the insulating sheet and the bolts extend through enlarged apertures 30 so as not to touch the support. An insulating washer 32 is positioned on the bolts 26 and in turn are provided, washers 34, eyed contacts 36, nuts 38, eyed contacts 40 and nuts 42.

Cable 44 provides positive contact to one terminal and cable 46 from the other terminal has a holder 48 for welding rod 50. The ground cable 52 has a spring clamp 54 to be secured upon the work 56.

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As thus described the terminals are not connected and no circuit is provided. To close this circuit a cylindrical bar 58, slidable in an aperture in the support and also in the collar 60 rearwardly mounted on the frame having an upper extension 62 interiorly threaded for nut 64 which confines spring 66 bearing against ball 68, is reciprocated through the support and collar. A plate 72 on the bar 58 is arranged to touch the heads of the terminal bolts to make electrical contact therebetween. As the welding rod 50 is touched frequently to the work during the welding operation, the spring will press the ball into the notch to hold the circuit closed until a definite time has elapsed whereupon the rod may then move. This prevents the circuit being frequently opened and closed when not desired.

The inner reduced end 74 of bar 58 has a sleeve 76 secured to nut 80 which confines spring 82 between it and the plate 72. This rod on its end has a core 84 threadedly secured and locked by nut 86, and the core reciprocates in and through the solenoid 88 to which the wires 90 and 92 from contacts 36 are attached to provide current to the solenoid to react on the core.

On the other end of the core I threadedly secure a rod 94 having a piston 96 reciprocable in cylinder 98 secured in flange 100 of the base 16, and a tube 102 is secured to nut 104 having a lateral vent 106 to the atmosphere, and the bore 108 of the nut communicates through passage 110 with the interior of the cylinder. The tube is connected with a valve 112 having an adjusting stem 114 and the valve is attached to the intake manifold.

A collar 116 on rod 94 secured by screw 118 has a rigid link 120 secured to rod 10 and movement of the core and connected rods will actuate rod 10 and the throttle valve.

With the engine at idling speed, when the welding rod 50 is touched to the work, a circuit is closed through wires 90 and 92 and the solenoid to draw in the core against the low vacuum from the manifold at idling speed until the plate 72 touches the terminal bolts closing the main circuit to the welding rod and opening the throttle. The ball 68 will engage notch 70 and will retain the plate in engagement despite vibration and the vacuum pressure during the touching of the rod to the work until the welding rod is removed from the work for a definite period, where-

upon the circuit is broken and the vacuum will return the core and rod to the position of Figs. 1 and 2 closing the throttle and idling the engine.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent is:

A control mechanism comprising a base plate and a ported stabilizing cylinder disposed horizontally on one end of the plate in communication with vacuum pressure means, a solenoid on the plate and an electric circuit therefor in series with a main circuit, an armature slidable longitudinally in the solenoid and in the same plane as that of the plate, a piston in the cylinder, a rod for the piston secured to one end of the armature, a spring-pressed actuating rod adjustably secured to the other end of the armature, main circuit closing means actuated by said rod, and resiliently operated retaining means coacting selectively with the circuit closing means.

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