Dec. 1, 1925. 1,563,703

H. W. GOSSELL

TIMER

Filed May 11, 1922

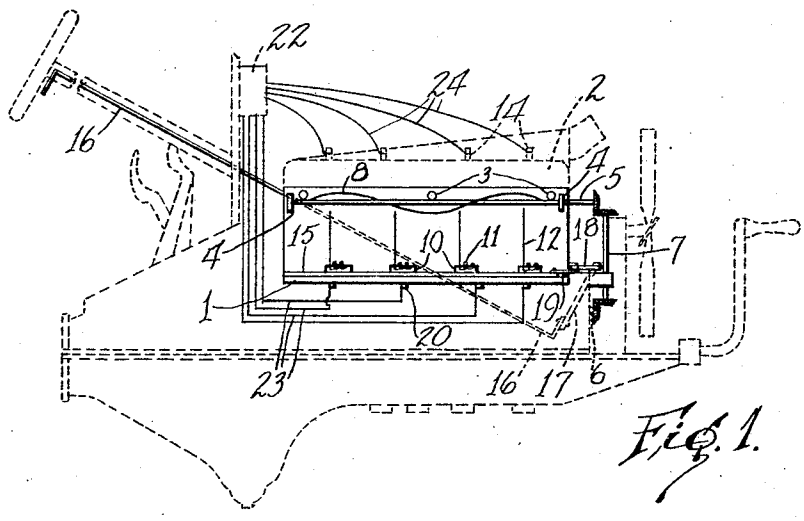


Fig. 1.

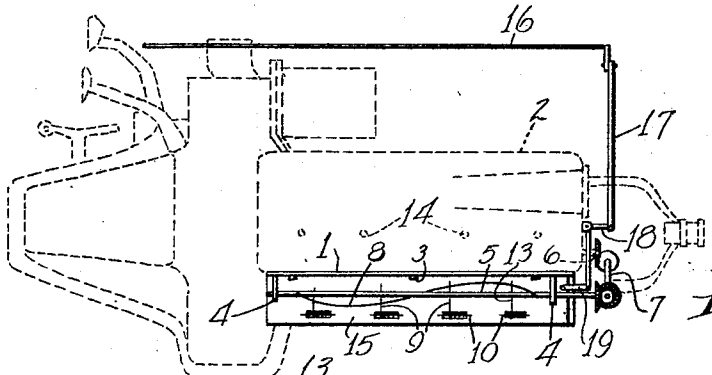


Fig. 2.

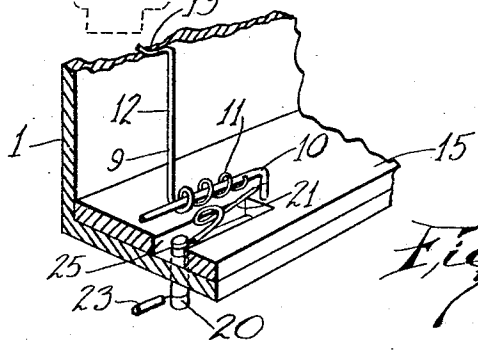


Fig. 3.

INVENTOR
H. W. Gossell
BY Munn & Co.
ATTORNEYS

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UNITED STATES PATENT OFFICE.

HENRY W. GOSSELL, OF VERNDALE, MINNESOTA.

TIMER.

Application filed May 11, 1922. Serial No. 560,168.

To all whom it may concern:

Be it known that I, HENRY W. GOSSELL, a citizen of the United States, and a resident of Verndale, in the county of Wadena and State of Minnesota, have invented a new and useful Improvement in Timers, of which the following is a full, clear, and exact description.

My invention relates to improvements in timers, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a timer in which the brush consists of a single piece of wire bent into a spiral, this brush making contact with wire spring contacts, whereby the metal construction of the ordinary timer is done away with.

A further object of my invention is to provide a device of the character described which has novel means for advancing or retarding the spark.

A further object of my invention is to provide a device of the character described which is positively operated and which makes a positive contact.

A further object of my invention is to provide a device of the character described which is placed away from the lower portion of the engine whereby it is freed from dirt, grease, and the like.

A further object of my invention is to provide a device of the character described which is simple in construction, and is durable and efficient for the purpose intended.

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 claim.

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

Figure 1 is a side elevation of the device as shown operatively applied to an engine.

Figure 2 is a plan view of the device, and

Figure 3 is a perspective view of a portion of the device.

The present device is shown operatively applied to a Ford engine and it is obvious that with but slight modifications the device may be applied to any internal combustion engine. The device comprises an angular-shaped supporting frame 1 which is secured to the engine block 2 by means of bolts 3. The vertical portion of the frame 1 carries bearings 4 in which a timer shaft 5 is journalled. The shaft 5 is positively rotated by the ordinary cam shaft 6 through a chain of gears 7. The shaft 5 has a wire contact making member 8 which is disposed between the bearings 4 and has its ends rigidly secured to the shaft. The member 8 is fashioned into a spiral which makes one complete revolution.

In Figure 3 I have shown a novel stationary spring contact member which comprises a wire 9 that is secured to a U-shaped bracket 10 at one end thereof. The wire 9 is bent into a spring 11 which encloses the bracket 10 and is then bent upwardly at 12 and then laterally so as to make an arcuate-shaped portion 13. The portion 13 is adapted to be contacted by the spiral 8 during each revolution of the shaft 5. In the present device I have provided four of these contact members 9, which are connected by means of the wires 23 with their respective primary coils in the coil box 22. The brackets 10 are carried by a control insulating board 15, this board being operatively connected to the spark lever 16 in a manner now to be described.

The board 15 is held in adjusted position on the frame 1 by any means (not shown) and is adapted to move longitudinally with respect to the frame. As clearly shown in Figures 1 and 2, the spark lever 16 is operatively connected to the board 15 by means of a link 17, a bell crank lever 18, and a link 19. It will be noted from this construction that a swinging of the spark lever 16 will move the board 15 longitudinally with respect to the frame 1. The frame 1 carries binding posts 20 which are insulated therefrom and which are electrically connected to the brackets 10 by means of a flexible wire 21. Each of the binding posts 20 is also connected to the coil box 22 by a wire 23. Wires 24 lead from the coil box 22 to the spark plugs 14. When the device is actuated, current will flow from the ground through the spiral 8 and through any one of the wires 12 which happen to be in contact with the wire. Current will then flow on through the wires 23, the primaries in the coil box 22, and from the secondaries through the wires 24 to the spark plugs 14, and back to ground. This completes the circuit and causes the spark plugs 14 to ignite the gases within the cylinders at the proper moment. Two of the wires 23 are crossed so as to cause

the spark plugs 14 to fire in the ordinary manner, i. e., 1, 2, 4, 3.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. As heretofore stated, when the engine is started, current will flow through the wire 8, and the stationary contacts 9 which will cause the spark plugs 14 to ignite the gases within the cylinders at the proper moment. The shaft 5 with the wire 8 forms a very simple means by which the circuit is closed through the various members 9 at predetermined intervals. If desired, the frame 1 may be enclosed by a casing (not shown) so as to keep the moving parts free from dust, dirt, and the like. The wires 12 are yieldingly carried by the brackets 10 and therefore form a close contact with the wire 8 as it engages therewith. A positive contact between the wire 8 and the portion 13 is therefore assured.

In case the operator wishes to advance or retard the spark, he actuates the spark lever 16 in the ordinary manner. As heretofore stated, this lever is operatively connected to the board 15 whereby movement thereof will move the board 15 longitudinally with respect to the frame 1. A slight movement of the board 15 with respect to the frame 1 will move the contact members 9 with respect to the wire 8, whereby the closing of the circuits through the members 9 will be changed. In this manner, the spark is advanced or retarded at the will of the driver. The device does not interfere with the ordinary operation of the engine and can be readily installed with but slight expense. The board 15 is provided with slots 25 into which the binding posts 20 project. These slots permit the board 15 to be moved with respect to the frame 1 when it is desired to advance or retard the spark. It is obvious that this circuit will always be closed whether the board 15 is moved or not. The device is disposed above the lower portions of the engine and is therefore not likely to accumulate grease or the like which the timer of ordinary construction has to contend with.

I claim:

A timer for internal combustion engines comprising a frame, a timer shaft rotatably carried by said frame, means connected with the crank shaft of the engine for rotating said timer shaft, a spiral conductor carried by said timer shaft, a slidable support disposed parallel with said timer shaft, a series of spring conductors disposed in longitudinal alinement on said support and arranged to be engaged successively by different portions of said spiral conductor, and means for shifting said support longitudinally to vary the time of contact of said spiral conductor with said spring contacts.

HENRY W. GOSSELL.