Sept. 2, 1924. 1,506,957

B. L. TOQUET

TIMER

Filed Dec. 15, 1921

Fig. 1

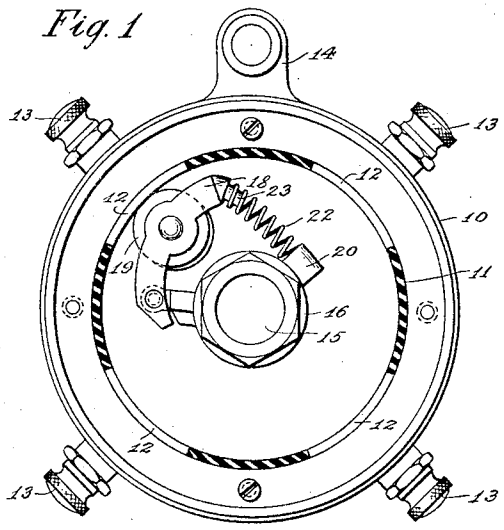


Fig. 3

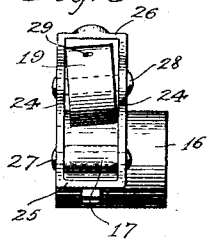


Fig. 2

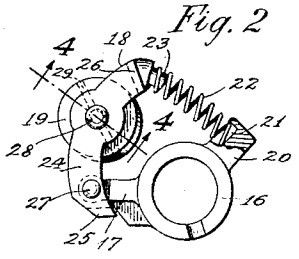
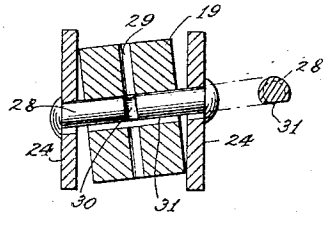


Fig. 4



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UNITED STATES PATENT OFFICE.

BENJAMIN LOUIS TOQUET, OF WESTPORT, CONNECTICUT, ASSIGNOR TO THE TOQUET CARBURETOR CORPORATION, OF WESTPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

TIMER.

Application filed December 15, 1921. Serial No. 522,636.

To all whom it may concern:

Be it known that BENJAMIN LOUIS TOQUET, a citizen of the United States, and resident of Westport, in the county of Fairfield and State of Connecticut, has invented certain new and useful Improvements in Timers, of which the following is a specification.

This invention relates to a new and improved timer for internal combustion engines.

The broad object of the invention is to provide a novel timer which will be as simple in construction and as cheap to manufacture as any device of similar nature heretofore known, and will, at the same time, be more durable, reliable and efficient than any timer now on the market.

Specifically, the aims of this invention are to provide an electrical spark timer device equipped with means better adapted to the purpose of insuring the necessary engagement between the contact roller and each of the contact segments of the timer as the roller moves over the race in the performance of its function; to so arrange the contact roller with respect to the timer shaft and race that a slipping action of the roller over the insulating ring and contact segments tending to clear the race of foreign matter will result; and to device a unique and improved contact roller which will be self-lubricating.

With the above and other objects in view, the construction, arrangement and combination of parts constituting the invention will now be fully described and will hereinafter be specifically claimed, it being understood that slight changes in details of construction and arrangement of parts may be made so long as within the spirit of the invention and the scope of the appended claims.

In the accompanying drawing forming a part of this specification.

Fig. 1 is an elevational view of the timer with cover removed;

Fig. 2 is an elevational view of the unit of the timer which rotates with the timer shaft, showing the unit removed from the timer casing and shaft;

Fig. 3 is an elevational view looking from the left in Fig. 2; and

Fig. 4 is an enlarged sectional view on line 4—4 in Fig. 2, looking in the direction of the arrows.

With reference to the drawing and the numerals thereon, 10 denotes the timer casing, 11 a ring of insulating material within the casing, 12 the contact segments within the ring, the contact segments being provided in ordinary manner with binding posts 13, 14 a radially extending lug intended to be so connected that the spark can be advanced or retarded, 15 the timer shaft projecting into the timer casing, and 16 denotes a sleeve or hub within the casing and connected upon the timer shaft in any manner to turn therewith. The parts just described may be of ordinary or preferred construction.

As very clearly shown, a lug 17 upon the sleeve or hub 16 pivotally supports one end portion of the carrier 18 for the contact roller 19, and a lug 20, also upon the sleeve and spaced from the lug 17, is provided with a seat 21 for one end of a coil spring 22 the opposite end of which receives a protuberance 23 upon the other end portion of said carrier 18.

The carrier 18 is preferably constituted by a pair of parallel side members 24 which are desirably of general curvilinear conformation in the direction of their length, and a pair of parallel end members, denoted by 25 and 26, which connect the side members. The lug 17, as disclosed, is arranged between the side members 24 adjacent the end member 25, a pin 27 through the lug and side members affording the pivotal connection, and the protuberance 23 is upon the end member 26, preferably at the midlength thereof.

The contact roller 19 is mounted to turn upon a short shaft 28 the opposite ends of which are fixed within the side members 24 at substantially equal distances from the axis of the sleeve or hub 16, but at unequal distances from the end members 25 and 26, respectively, said shaft being preferably located at approximately the same distance from the pivot pin 27 as it is from the protuberance 23. That is to say, while the contact roller 17 is mounted about half way between the pivoted point of the carrier 18 and the coil spring 22 on an axis in a plane

that is substantially parallel with the timer shaft, said contact roller and its shaft are set at an angle with respect to the sleeve or hub and its axis, with the result that when the unit, consisting of the sleeve or hub, the carrier 18, the spring 22 and the contact roller 19, is mounted upon the timer shaft and rotated, the full periphery of the contact roller will be firmly pressed against the race and contact segments and the ends of the shaft 28 will be at equal distances from said race, but the peripheral or engaging face of the contact roller, as well as its axis, will be obliquely disposed with respect to the direction of movement of the roller over the race, with the result that the roller will have a tendency to run off of the race, it being prevented from doing so of course by the side members of the carrier. Obviously, a slipping action between the roller and race results which is very useful in clearing the race of foreign matter, such as oil or grease in which the unit may be operating and bits of the metal of the contact roller and segments themselves which inevitably are present.

As will be most clear from Figs. 2, 3 and 4, the contact roller is provided with a lubricating hole 29 which extends diametrically thereacross and affords communication between the peripheral face of the roller and the shaft 28, said shaft being grooved as at 30 and having a flat side as at 31 to allow oil or grease to properly lubricate the axis of the contact roller and to freely pass out through the chamber provided by flattening a portion of the shaft. The lubricating feature as described, while furnishing at all times a well oiled bearing for the contact roller, precludes the possibility of the lubricating hole and the bearing becoming clogged with powder or the combination of lubricant and metal which forms, as already suggested, between the race and contact roller, the groove and flattened portion of the shaft 28 providing an outlet.

It will be noted that the contact roller in the instance of the novel unit of the present timer is between the pivotal point of the carrier and the spring for insuring an engagement between the roller and the contact segments, the stress upon the spring in holding the contact roller against the race being in compression and not in expansion as is the case in other timers of the type with which I am familiar. Obviously, when considered from the standpoint of a compact arrangement, this condition is ideal. In the instance of a unit wherein the hinge for the contact arm is between the spring and roller and at about midway between said spring and roller (as the hinge must be to produce a practical construction of timer), the force exerted by the spring will be about equal in value to the pressure of the contact roller against the race, whereas, with the present arrangement, the pressure of the contact roller against the race and segments is approximately equal in value to about twice the force of the spring. As a consequence, it being axiomatic that more power in a spring means added material to obtain the power (more weight), a spring to accomplish in the novel unit the result accomplished in similar units as heretofore constructed need be only about one-half as heavy, and a spring just as heavy when utilized in my timer will, evidently, provide for substantially twice the amount of pressure against the race and contact segments. It is well known and has already been suggested herein that the continual working of the contact roller upon the race and contact segments wears away both said roller and said race and segments with the result that soon the engagement between the roller and segments, as the rollers moves along at greater or less speed, forms uneven surfaces or pits which tend to cause the contact roller to at intervals be completely removed from the race, more especially when the unit is rotating at rapid rates of speed, sometimes passing over without engaging the different contact segments and thus failing to produce the intended spark. The arrangement as illustrated and fully described is a great improvement over other arrangements and can obviate the difficulties mentioned to a very great extent for the reason that the spring of the present unit can be much lighter, thus having less inertia itself and being quicker in its action to overcome the inertia of the carrier, and, at the same time, the spring can possess greater power to hold the contact roller in more firm engagement with the race. That is, when utilizing the present construction of unit, the spring is more liable to not allow the contact roller to leave the race because of the greater pressure with which the roller engages the race, and when the roller does leave the race, the spring and carrier act more quickly, by reason of the lack of inertia, to return the roller. Or, in other words, the arrangement of the spring and roller in the present case is such that the power of the spring can actuate the carrier to cause the roller to exert great pressure against the race, while the inertia of the spring and carrier, working against the power when the roller leaves the race, is practically negligible.

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

1. In a device of the character described, a rotatable member, a contact roller, and a carrier for the contact roller associated with the rotatable member, the carrier including parallel side members and the contact roller

being mounted in the side members on an axis oblique to said members and to the axis of the rotatable member.

2. In a device of the character described, a rotatable member, a carrier having one of its ends hinged upon the rotatable member, the carrier including parallel side members, a spring supported from the rotatable member and supporting the other end of the carrier, and a contact roller mounted between the side members of said carrier, between said carrier hinge and spring and on an axis oblique to said side members and to the axis of said rotatable member.

3. A device of the character described, comprising a casing, a race therein and including insulation and contact segments, a contact roller adapted to ride over said race and to alternately engage said insulation and segments, a carrier for the roller, the carrier including side members and the contact roller being mounted in the side members, a sleeve with which the carrier is hingedly associated, a timer shaft projecting into the casing and carrying the sleeve, the contact roller being mounted at an oblique angle with respect to the timer shaft, and means for insuring engagement of the contact roller with the race, whereby the full periphery of the contact roller can engage the race as said roller moves over the insulation and contact segments and the working face of the roller can be obliquely disposed with respect to the direction of movement of said roller over said race for the purpose specified.

Signed at Westport, in the county of Fairfield, and State of Connecticut, this 9th day of December, A. D., 1921.

BENJAMIN LOUIS TOQUET.