

Sept. 25, 1923.

1,469,032

E. R. BARKER

TIMER

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Fig. 2a.

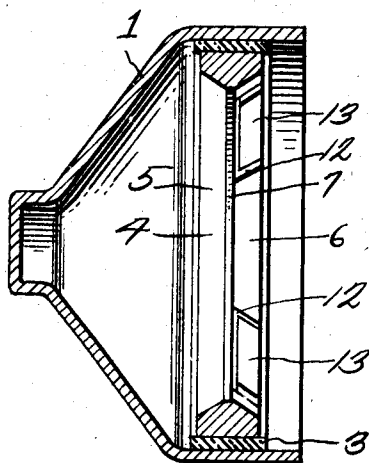


Fig. 1.

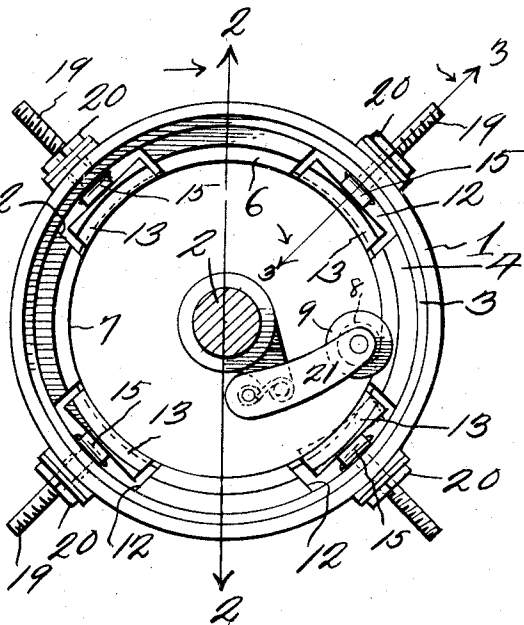


Fig. 3.

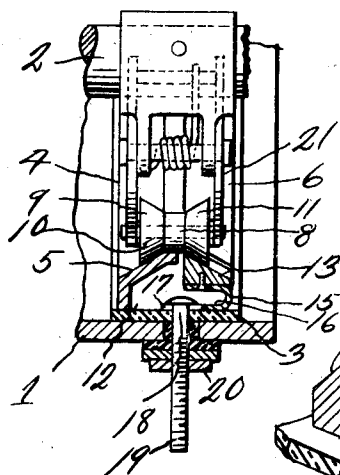


Fig. 4.

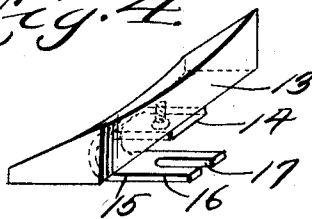
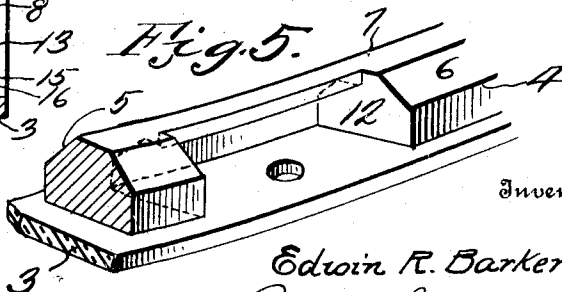


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWIN R. BARKER, OF SOUTH BEND, INDIANA.

TIMER.

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To all whom it may concern:

Be it known that I, EDWIN R. BARKER, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Timers, of which the following is a specification.

The invention relates to a timer for controlling an electric circuit for internal combustion engines, and has for its object to provide a device of this character wherein the timer roller is grooved and rotates in engagement with a conductor ring having its opposite sides bevelled and adapted to be engaged by the bevelled flanges of the contact roller, and to provide spring supported segments supported by springs and universally rockable, said segments forming a portion of the track to one side thereof and disposed within chambers of the conductor ring but spaced from the walls of said chambers, thereby preventing short circuiting through the conductor ring.

It has been found that where conductor plates are imbedded in the inner face of a nonconductor casing and over which conductor plates a compact roller moves, or a shoe moves, considerable trouble is encountered because the revolving contact shoe gradually scrapes away enough metal from the contact plates and carries it along until the space between the contact plates becomes bridged and consequently a short circuit occurs, therefore it is an object of the invention to provide contact segments supported independent of surrounding structure and yieldably under the tension of a spring actuated contact roller in such a manner that rapid wearing away of the metal of the contact members is obviated, and the movement of the segments preventing accumulation of whatever small metal particles may accumulate in the gaps dividing the segments from the remaining portion of the ring, thereby obviating short circuits, and at the same time providing a structure in which no ridges may be formed to cause the roller to jump or chatter.

With the above and other objects in view the invention resides in the combination and arrangement of parts as hereinafter set forth, shown in the drawings, described and claimed, it being understood that changes in the precise embodiment of the invention may be made within the scope of what is

claimed without departing from the spirit of the invention.

In the drawings:—

Figure 1 is a view looking into the timer.

Figure 2 is a vertical sectional view through the timer taken on line 2—2 of Figure 1, and showing the contact roller and its supporting mechanism removed.

Figure 3 is an enlarged detail sectional view taken on line 3—3 of Figure 1.

Figure 4 is an enlarged perspective view of one of the contact segments showing its supporting spring.

Figure 5 is a detail perspective view of a portion of the conductor ring, showing one of the chambers therein.

Referring to the drawings, the numeral 1 designates the cup of a conventional form of timer, preferably the type used in connection with engines of Ford automobiles and 2 the engine cam shaft, which is disposed within the cup 1. Disposed within the cup 1 is a ring 3, which ring is formed from insulating material and supports a conductor ring 4 formed from conductor material. The conductor ring 4 is provided with bevelled sides 5 and 6, thereby forming a conductor ring substantially V-shaped in cross section, however at a point between the bevelled surfaces 5 and 6 an annular run-way 7 is provided which engages a cylindrical portion 8 of the spring actuated contact roller 9, the conically shaped portions 10 and 11 of which engage the bevelled surfaces 5 and 6 of the conductor ring, thereby causing the contact roller, as the cam shaft 2 rotates, to accurately and positively engage the conductor ring 4 during the rotation of the roller. It has been found that where contact plates are disposed within a casing and a contact member rotated in engagement with said contact plates, that fine particles are scraped from the plates and soon bridge the spaces between the plates thereby causing short circuit. To obviate the above difficulty the conductor ring 4, at spaced intervals is provided with chambers 12 which receive the segmentally shaped contacts 13, which contacts are substantially the same radius as the bevelled sides 6 of the conductor ring, but are spaced from the walls of the chambers 12, thereby preventing lodgment or accumulation of any fine particles between the sides of the contact segments and the walls of the cham-

bers 12, which would cause short circuit. Each segmentally shaped contact 13 is secured to the arm 14 of a transversely disposed U-shaped spring 15 thereby supporting the segmentally shaped contact 13 in such a manner that it may universally rock as the bevelled side 11 of the contact roller 9 moves over the same, thereby preventing the formation of ridges or the like which cause the roller to jump or chatter as it moves over the contact. It will be seen that the contact segments are supported in such a manner that they may easily move, consequently the formation of bridges from fine particles between the ends of the segments and the walls of the chamber 12 will be prevented. The arms 16 of the springs 15 are provided with bifurcations 17, which bifurcations receive the headed end 18 of binding posts 19 and are sufficiently long to allow inward or outward adjustment of the contact segments, thereby allowing the segments to be adjusted in relation to the bevelled side 11 of the contact roller 9. The binding posts are provided with nuts 20 which when tightened hold the springs 15 against movement.

As the cam shaft 2 rotates and consequently the roller 9 which is supported on the spring actuated pivoted arm 21, said roller will rotate in engagement with the conductor ring 4 and when it passes over the contact segments 13, it will complete a circuit through the cam shaft and the binding posts 19, therefore it will be seen that a timer is provided, which is simple in construction, positive in its operation and one wherein the danger of short circuiting is reduced to a minimum.

The invention having been set forth what is claimed as new and useful is:—

1. A circuit maker and breaker comprising a casing having a conductor ring disposed therein, said ring being insulated from the casing, said ring having its inner face oppositely bevelled thereby forming raceways, a shaft disposed within the casing and adapted to be rotated, a spring actuated arm carried by said shaft, a contact roller carried by said arm and having a contact roller provided with conically shaped sides engaging the bevelled raceways of the conductor ring, said conductor ring at spaced intervals being provided with contact segments forming portions of the raceways at

one side thereof and supported in chambers and spaced from the walls thereof, said segmentally shaped contact segments conforming to the curvature of the raceways and being resiliently mounted for universal movement on springs.

2. The combination with a periodic multiple contact rotary circuit maker and breaker, said circuit maker and breaker comprising a casing, a conductor ring disposed within said casing and insulated therefrom, oppositely bevelled raceways carried by said conductor ring, a conductor roller having bevelled surfaces engaging said bevelled raceways of the conductor ring and rotated thereon, of segmentally shaped contact segments spring supported and disposed in chambers of the conductor ring and spaced from the walls of said chambers.

3. The combination with a conductor ring formed from conductor material and over which conductor ring a conductor wheel moves, said conductor ring being provided with spaced chambers and having oppositely extending bevelled surfaces with which the roller engages, of segmentally shaped contact segments disposed within the chambers and conforming to the curvature of the bevelled surfaces, said contact segments being spaced from the walls of the chambers and insulated from the conductor ring, U-shaped springs disposed within the chambers and supporting the contact segments in such a manner that said contact segments may universally rock, means for securing the springs within the chambers in such a manner that they may be adjusted inwardly or outwardly, said springs being insulated from the conductor ring.

4. A circuit maker and breaker comprising a ring formed from conductor material and having oppositely bevelled faces forming raceways, a conductor roller movable over said raceways and provided with bevelled surfaces engaging the same, parts of one of said raceways being formed from segmentally shaped contacts, said contacts being mounted on springs and in chambers of the ring, said segmentally shaped contacts being spaced from the walls of the chambers and universally movable upon a flexing of the springs.

In testimony whereof I affix my signature.

EDWIN R. BARKER.