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H. I. HOUGEN ET AL

TIMER

Filed Sept. 19, 1922

Fig. 1.

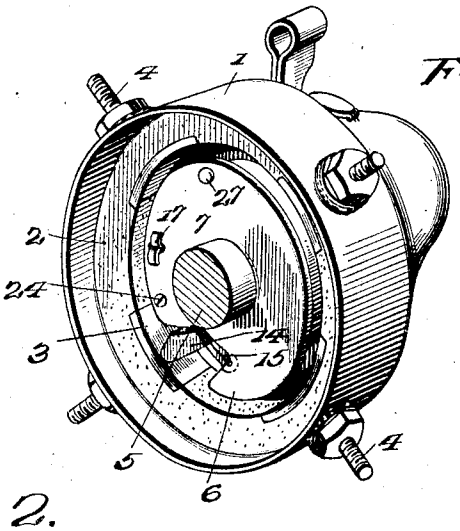


Fig. 2.

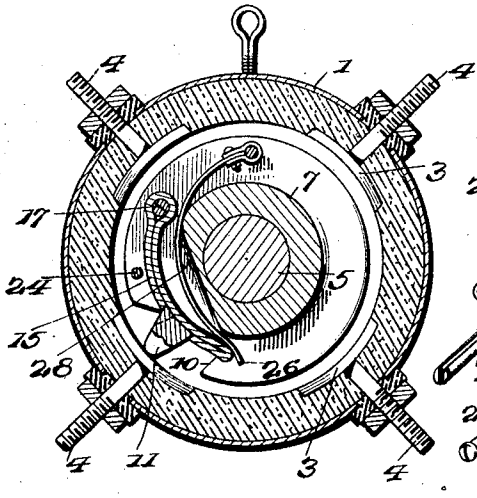
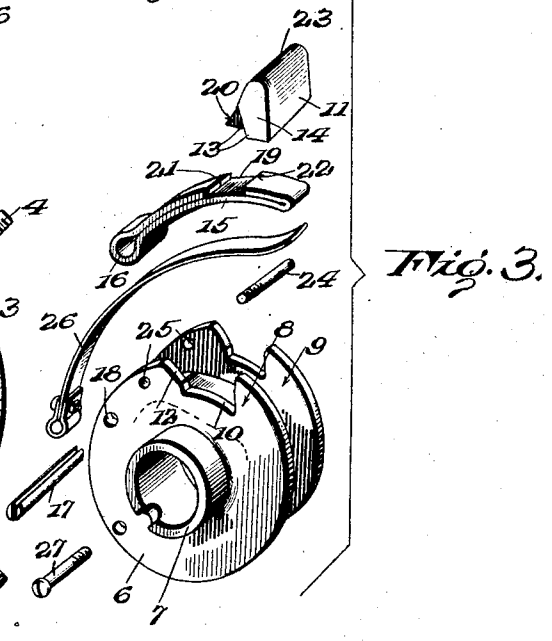


Fig. 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRY I. HOUGEN AND CHARLES O. HOUGEN, OF LANDER, WYOMING.

TIMER.

Application filed September 19, 1922. Serial No. 589,193.

To all whom it may concern:

Be it known that we, HENRY I. HOUGEN and CHARLES O. HOUGEN, citizens of the United States, and residents of Lander, in the county of Fremont and State of Wyoming, have invented certain new and useful Improvements in Timers, of which the following is a specification.

This invention relates to timers, and has for its object the provision of a brush formed of hard tempered steel which is so supported within the usual commutator casing that the timing of the spark will be accurate and reliable, and this will be true even though the spaced contacts may be worn.

A further object of the invention is the provision of a timer brush which will cause an equal wear on the fiber track and metal segments of the commutator casing, with a spring exerting a sufficient pressure on the brush to maintain the brush always in contact with the metal segments when the commutator casing has been packed with grease or other lubricant.

Another object of the invention is to provide a brush of such design and material that when the sparking between the contact edge of the brush and the metal contact segments fuses the metal, the constant wear in the direction of travel of the brush will always tend to maintain a sharp edge on the brush whereby a perfect contact is had between the brush and the respective segments.

This invention will be best understood from a consideration of the following detailed description in view of the accompanying drawing forming part of this specification; nevertheless, it is to be understood that the invention is not confined to the disclosure, being susceptible of changes or modifications, but such changes or modifications shall mark no material departure from the salient features of the invention as expressed in the appended claims.

Figure 1 is a view in perspective of a timer casing with our improved brush applied thereto,

Figure 2 is a vertical transverse section of the same,

Figure 3 is a view in perspective of the timer brush with the parts unassembled.

Referring to the drawings, 1 indicates the usual Ford timer casing having the fiber track 2 with the spaced contact segments 3 so mounted within the track that the outer face of said segments are curved coincident to the curvature of the track 2. These contact segments are in circuit with the binding posts 4.

A timer shaft 5 which is disposed centrally of the casing 1 and rotatable within the same, is provided with a rotatable member 6 having a laterally projecting sleeve 7 embracing the shaft 5 and whereby the rotatable member 6 is rigidly secured to said shaft. Upon the periphery of the rotatable member 6 is formed two parallel annular flanges 8 and 9 having a portion 10 cut away to form a seat for the movable brush 11.

One side edge of the cut-away portion 10 of each flange 8 and 9 is inclined as shown at 12 upon which the inclined portions 13 of the brush 11 are adapted to ride when said brush is moved back and forth within the seat or cut away portion 10 of the flanges of the rotatable member 6. The inclined faces 13 of the brush 11 are located upon the forward edge of the wings 14 which project laterally from the opposite sides of the brush, and are seated within the cut-away portions 10 of the flanges 8 and 9.

A metal strap 15 which provides a holder for the brush 11 is bent upon itself to form at one end a socket 16 which is adapted to receive a cotter pin 17 mounted within the alined perforations 18 formed in the flanges 8 and 9, and spaced from the cut out portions 10 of said flanges. The free ends of the strap are spaced from each other and cut at an angle to form with the body of the strap, a socket 19 which receives the brush 11, the rear face of the brush adjacent its base being inclined and engaging an inclined end of the strap, while a projecting toe 20 extending forwardly from the other face of the brush is received between the other beveled end of the strap and the body of the strap per se.

The resiliency of the metal of the strap 15 causes the ends 21 and 22 of the strap to firmly grip or clamp the brush 11 in place. As shown more particularly in Figures 2 and 3, the brush is triangular in cross section, thereby providing a substantially sharp contact edge 23 for engaging the contact segments 3 of the timer casing 1.

A pin 24 having one end threaded is adapted to be screwed into one of a pair of alined perforations 25, with both perforations receiving the pin. The pin is spaced above the body of the strap 15 and prevents

the strap or brush holder from being moved out of the space between the flanges 8 and 9 of the rotatable member 6.

The flat spring 26 pivotally mounted on a pin 27 is adapted to engage the strap 15 for forcing the strap outwardly and likewise the brush in order that the brush will be always maintained in engagement with the metal segments 3 of the casing. As shown in Figure 2, the periphery of the rotatable member is cut away at 28 adjacent the cut-out portions 10 of the flanges to form a flat portion upon which the spring 27 is adapted to rest when in engagement with the holder 15, and forming a means for placing the spring under tension between the holder 15 and the periphery of the rotatable member 6.

The spring 25 is of such strength that it is able to exert four or five pounds pressure upon the brush 11 in order to maintain the contact edge 23 of the brush always in engagement with the contact segments 3 of the timer casing when the timer casing is packed with grease for lubrication.

The rotatable member 6 is rotated in the direction indicated by the arrow in Figure 2, so that the brush 11 will trail behind the pivotal point of the holder 15, and as the sharp contact edge 23 slides over the contact segments and a sparking is produced between the brush and the segment, the contact edge of said segment being fused by the sparking, will always be worn away to a sharp edge so that a perfect contact will be had between the brush and the contact segment no matter how much the parts are worn. The spring, by reason of its great pressure exerted upon the holder 15 will aid in maintaining the two members 11 and 3 in proper contact.

Furthermore, the pressure of the spring and the construction of the steel brush 11 will cause an even wear of the fiber track 2 and the contact segments, thereby always insuring perfect contacting surfaces between the brush and the segments.

We claim:—

1. In a timer, a rotatable member provided with spaced annular flanges on its periphery, with portions of both flanges cut away to form sockets, a brush provided with laterally extending wings movable within the sockets, a holder for the brush pivotally mounted between said flanges, a spring mounted between the flanges adapted to force the pivoted holder and likewise the brush outwardly from the periphery of the rotatable member with the wings of the brush movable in the sockets.

2. In a timer, a rotatable member, provided with spaced annular flanges on its periphery, a brush, a holder for the brush pivotally mounted between the flanges, a spring in engagement with the holder for forcing the brush outwardly from the periphery of the rotatable member, said holder comprising a flat strip of metal folded upon itself to form a socket for pivoting the holder between the flanges with the free ends of the flat strip in engagement with the body of the strip and spaced from each other to receive the brush and clamp the brush between the free ends of the strip.

3. In a timer, a rotatable member provided with spaced annular flanges on its periphery, a brush holder pivotally mounted between the flanges, a spring urging the free ends of the brush holder outwardly from the periphery of the rotatable member, and a brush mounted in the holder and comprising a metallic member triangular in cross section and provided with a V-shaped lug projecting outwardly from one side of the member, and resilient clamping means on the holder adapted to engage the V-shaped lug and the opposite face of the brush for locking the brush on the holder.

4. In a timer, a casing provided with spaced contacts, a rotatable member mounted within the timer and provided with spaced flanges on its periphery, a brush mounted for oscillation in sockets formed by cutting away portions of the flanges, a resilient holder adapted to clamp and support the brush, a spring mounted on the rotatable member and between the flanges and in engagement with the holder for forcing the holder and the brush outwardly of the periphery of the rotatable member, the periphery of the rotatable member being cut away adjacent the cut-out portion of the flanges and engaged by the spring for causing the spring to urge the pivoted holder to an outward movement relative to the periphery of the rotatable member.

5. In a timer, a brush holder adapted to be pivoted to one end and formed of a strip of metal bent upon itself to provide a pivotal eye on the one end, an inner or main bar and an outer bar, said bar being spread between the adjacent ends of the strip and forming a recess for a brush, and a brush held in said recess.

6. In a timer, a brush holder adapted to be pivoted to one end and formed of a strip of metal bent upon itself to provide a pivotal eye on one end with the ends of the bent-in portions spaced from each other and adapted to form a recess for a brush, and a brush formed of hard tool steel gripped at its base by the free ends of the bent portions of the metal strip.

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