C. S. MARTIN.

TIMER.

APPLICATION FILED FEB. 8, 1909.

947,736. Patented Jan. 25, 1910.

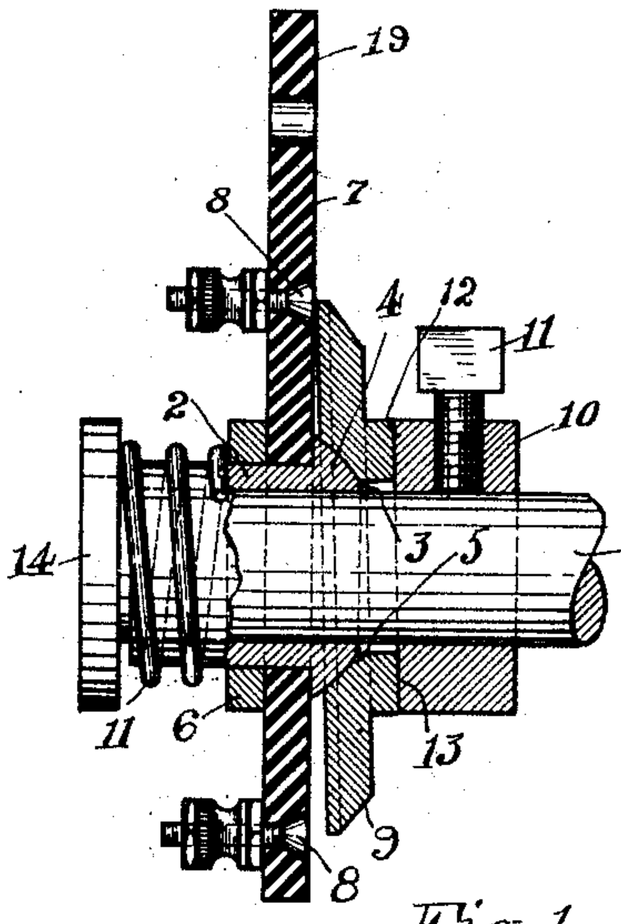

Fig. 1.

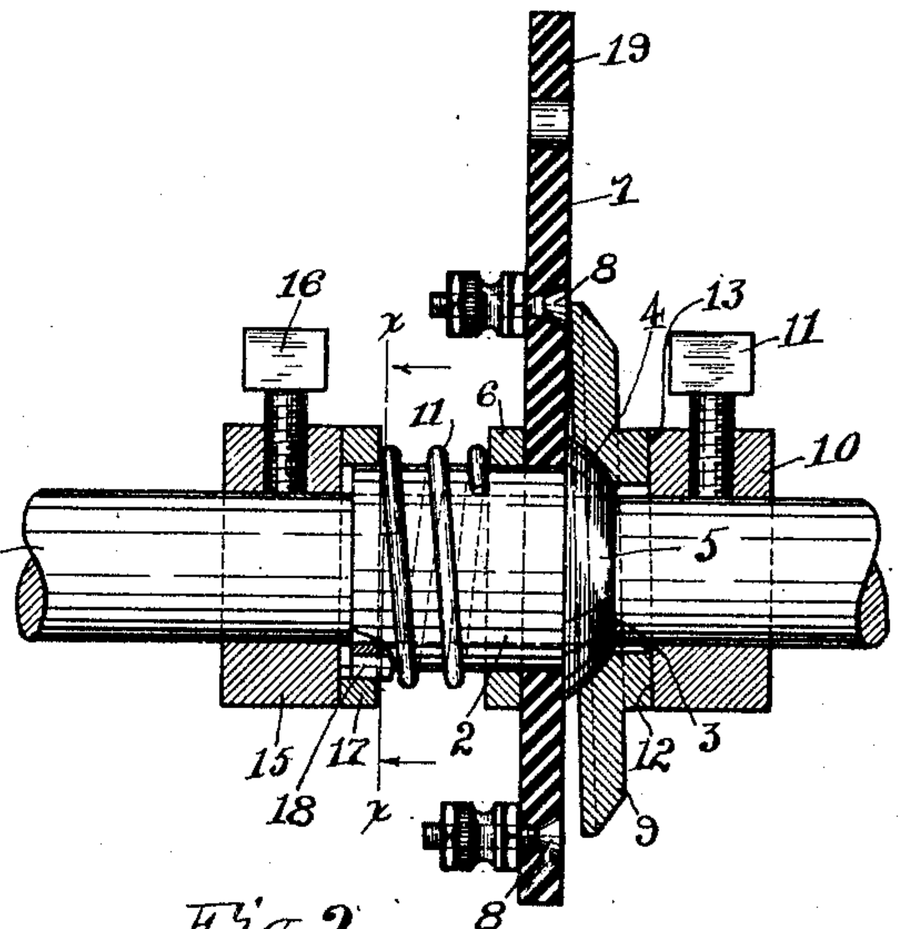

Fig. 2.

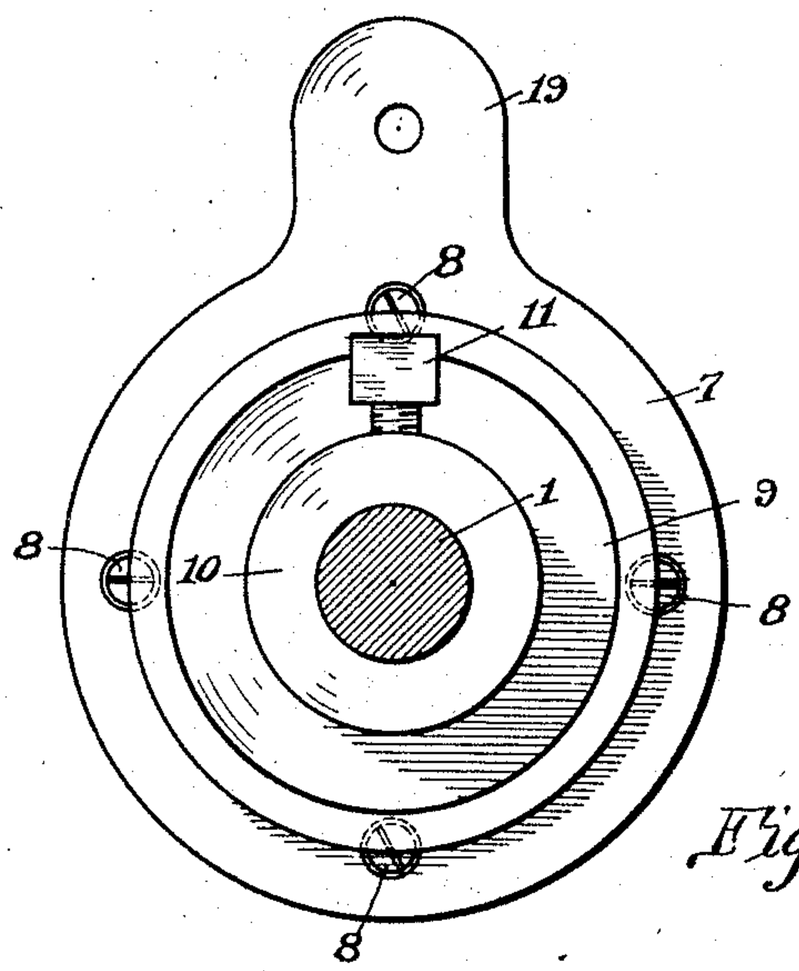

Fig. 3.

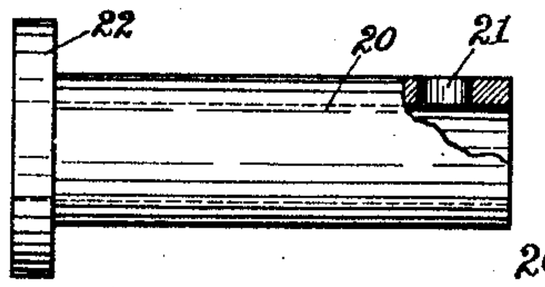

Fig. 5.

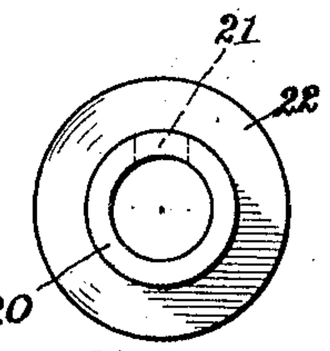

Fig. 6.

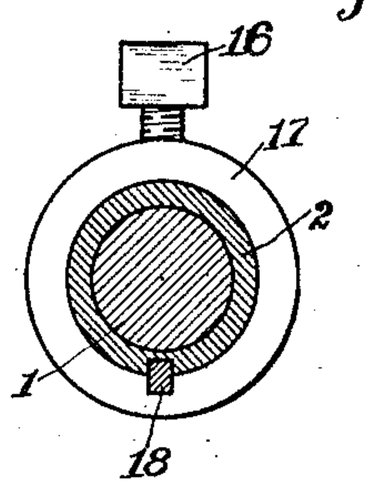

Fig. 4.

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UNITED STATES PATENT OFFICE.

CONLEY S. MARTIN, OF DANVILLE, ILLINOIS.

TIMER.

947,736. Specification of Letters Patent. Patented Jan. 25, 1910.

Application filed February 8, 1909. Serial No. 476,705.

To all whom it may concern:

Be it known that I, CONLEY S. MARTIN, a citizen of the United States, residing at Danville, county of Vermilion, and State of Illinois, have invented certain new and useful Improvements in Timers, of which the following is a specification.

My invention relates to gas engines and more specifically to timing devices therefor, commonly known as timers, employed therein in connection with the spark producing apparatus thereof.

The object of my invention is to provide a timing device of the character mentioned which shall be, in comparison with devices of this nature in general use at the present time, of extremely simple construction, hence a device of low cost to manufacture.

A further object of my invention is to provide a timer which will be devoid in its operation of any thrusting strain, as is present in timers of the ordinary construction, such strain tending to injure the mechanism structure, resulting in the latter being short-lived, it being my object to eliminate, as stated, such thrusting in the contact making and to provide a device in the operation of which there will be an even, regular and non-jarring movement.

A still further object of my invention is to provide a timer in which the wear upon the contact-making parts will be reduced to a minimum, and further to provide a device which will be compact, durable, long-lived, and of the highest possible efficiency.

Other objects will appear hereinafter.

With these objects in view my invention consists generally in a timer adapted, because of its compactness, when employing the same in connection with a two-cycle gas engine, to be mounted directly upon the crank shaft of the engine, the same comprising essentially a circular member, the periphery of which is adapted to separately and successively engage or contact the contact terminals communicating with the sparking apparatus of the several engine cylinders.

My invention further consists in a bearing-forming sleeve member for said contact-making member, a ball and socket connection between said members, and a cam member adapted to rock said contact member so that the periphery thereof will successively contact each of the series of contact terminals.

My invention further consists in certain details of construction and arrangement of parts all as will be hereinafter fully described and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a longitudinal section, partly in elevation, of the preferred form of my device. Fig. 2 is a similar section of a slightly modified form thereof. Fig. 3 is a front elevation of either of the forms shown in Figs. 1 and 2. Fig. 4 is a transverse section taken on the line *x*—*x* of Fig. 2. Fig. 5 is a side elevation of a sleeve adapted to be used in connection with my device, in the event of the crank shaft upon which the latter is to be used is of a diameter below the standard, and Fig. 6 is an end elevation thereof.

Referring now to the drawings 1 indicates a gas engine crank shaft. Loosely, but snugly mounted upon said shaft is a sleeve 2, the extremity 3 of which is provided with an outwardly extending circumferential flange 4, the surface 5 of which is spheroidally formed. Fixed to the outer surface of said sleeve, the same being secured thereto preferably by being clamped between said flange and a collar 6 secured, preferably pressed upon said sleeve, is a contact terminal supporting disk 7, the same being preferably formed of fiber although any other suitable insulating material might be used if desired. Said disk during the operation of the device is supported or secured so as to remain relatively stationary. Mounted in said disk member 7, the same being arranged therein equally distant from the center thereof and equally distant from each other, are contact terminals 8 of any ordinary or preferred design or construction. As shown in the drawings, the member 7 is provided with four of such contact terminals, thus adapting the same for employment with a four-cylinder gas engine. However, the number of terminals employed will obviously be dependent upon the number of cylinders in the engine in connection with which my timer is to be used. Mounted upon the spheroidal surface 5 of the member 2, the contacting surface thereof being formed to snugly receive the same, hence resulting in a ball and socket connection between said parts, is a contact disk 9. The

connection between said parts is such that the adjacent surfaces of the contact terminal supporting disk 7 and said contact disk 9, when the latter is arranged in parallelism with the former, will be slightly spaced apart, hence the periphery only of said disk 9 is adapted to contact said disk 7, as clearly shown in Figs. 1 and 2. Said disk 9 is of such a diameter that the periphery thereof is adapted, when said disk is rocked, to successively contact the contact terminals 8. In order to effect such rocking movement of the disk 9, I provide a collar-formed cam member 10, adjustably secured to the crank shaft 1 preferably by means of a set screw 11. The surface 12 of said member is inclined to the axis thereof, the same being adapted to contact the end surface 13 of the disk 9. In order to insure a constant and positive contact between the spheroidally formed end portion of said sleeve 2 and the disk 9, and also between the latter and the cam member 10, a coiled compression spring 11 is provided. Said spring is interposed between an integral circumferential flange 14 formed at the extremity of the shaft 1, and the collar 6. By such construction the above named purpose of said spring is obviously effected. The above construction of the shaft 1 will only be adopted where want of space does not allow for other construction. However, where confinement to a minimum amount of space is not essential, the flange 14 formed upon the engine crank shaft will be eliminated, and in substitution therefor a collar 15 adjustably secured thereto by means of a set screw 16 will be provided. A washer 17 fixed against rotary movement upon the sleeve 2, preferably by means of a key 18, but longitudinally slidable thereon, the same being interposed between the collar 15 or the flange 14 and the extremity of the spring 11, serves an obvious purpose.

In operation, upon the engine crank shaft being rotated, the cam member 10 will rock the contact disk 9 so that the periphery thereof will be brought to successively contact the extremities of the contact terminals 8, said disk remaining during such rocking movement thereof practically stationary or moving slowly with reference to rotary movement, resulting in an obvious advantage, the frictional contact of the periphery with the member 7 retarding or preventing such movement. By means of a hand piece forming projection 19 extending from said disk 7, adjustment of the latter is effected, it being clear that by rockingly actuating said disk the advancement or the retardation of the sparking in the engine cylinders may readily be brought about.

In the event of the crank shaft upon which my device is to be used, being of a diameter below that of the standard diameter of gas engine crank shafts, I provide a sleeve or filler-in-member 20 adapted to be fixed to such shaft by means of the set screw 11, the same being provided with a perforation 21 adapted to snugly receive said screw. Upon the employment of said member 20, my device proper will be mounted directly thereon, the circumferential flange 20 formed at the extremity of said member, in which event, being adapted to serve in the same capacity as that of the flange 14 or collar 15 before described.

Although I have shown no casing or housing whatsoever for the protection of my mechanism, as the same is but a secondary consideration, it is understood that any design or form of casing may be employed in conjunction therewith without departing from the spirit of my invention. While I have shown what I deem to be the preferable form of my device, I do not wish to be limited thereto, as there might be many changes made in the details of construction and arrangement of parts within the scope of the appended claims. And while I have designed my device with special reference to gas engines, I may use the same in any other connection to which it is applicable.

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

1. In a timer, the combination of a contact disk, a ball and socket bearing therefor, contact terminals, and means for rocking said contact disk into successive contact with said contact terminals.

2. In a timer, the combination of a contact disk, a ball and socket bearing therefor, contact terminals arranged in the path of the periphery of said disk and means for rocking said contact disk into successive contact with said contact terminals.

3. In a timer, the combination of a contact disk, a bearing member, a ball and socket connection between said disk and said bearing member, contact terminals, and rotatable means for rocking said contact disk into successive contact with said contact terminals.

4. In a timer, the combination of a contact disk, a bearing member, a ball and socket connection between said disk and said bearing member, contact terminals, rotatable means for rocking said contact disk into successive contact with said contact terminals, and means for insuring a positive contact between said parts, substantially as described.

5. In a timer, the combination with an engine shaft, of a contact disk, a sleeve loosely mounted upon said shaft forming a bearing for said contact disk, a ball and socket connection between said sleeve and said disk, contact terminals, and means for rocking said contact disk into successive contact with said contact terminals, substantially as described.

6. In a timer, the combination with an en-

gine shaft, of a contact-making disk, a sleeve loosely mounted upon said shaft forming a bearing for said contact making disk, a ball and socket connection between said sleeve and said disk, a relatively stationary second disk, contact terminals carried by said second disk, and rotatable means for rocking said contact making disk into successive contact with said contact terminals, substantially is described.

7. In a timer, the combination with a shaft, of a contact-making disk, a sleeve loosely mounted upon said shaft forming a bearing for said contact-making disk, a ball and socket connection between said sleeve and said disk, a relatively stationary second disk, contact terminals carried by said second disk, and a cam member adapted to rock said contact-making disk so that the periphery thereof will successively contact said contact terminals, substantially as described.

8. In a timer, the combination with a shaft, of a contact disk, a sleeve loosely mounted upon said shaft forming a bearing for said contact disk, a ball and socket connection between said sleeve and said disk, a second disk mounted upon said sleeve, contact terminals carried by said second disk, and a cam member fixed to said shaft adapted to engage said contact disk so as to rock the same into successive contact with said contact terminals, substantially as described.

9. In a timer, the combination with a shaft, of a contact-making disk, a relatively stationary sleeve loosely mounted upon said shaft forming a bearing for said contact disk, a ball and socket connection between said sleeve and said disk, a second disk carried by said sleeve, contact terminals carried by said second disk, a collar fixed to said shaft, one of the end surfaces of said collar being obliquely disposed, said obliquely disposed end surface being adapted to engage an end surface of said contact-making disk, and means for holding said sleeve and said contact-making disk and the latter and said collar in constant engagement, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CONLEY S. MARTIN.

Witnesses:
CLAUD R. BONGE,
HENRY C. CUTTER.