W. KAISLING.

IGNITION TIMER.

APPLICATION FILED JULY 21, 1913.

**1,144,135.**

Patented June 22, 1915.

Fig. 1.

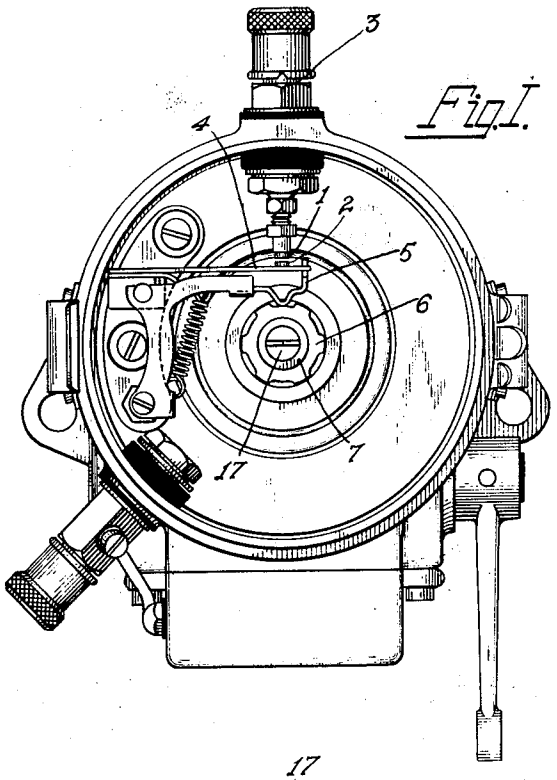
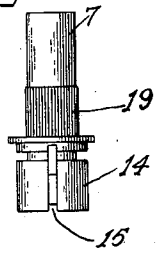



Fig. 3.



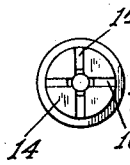




Fig. 4.

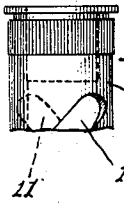



Fig. 5.

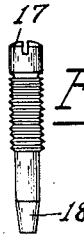



Fig. 7.

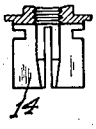



Fig. 6.

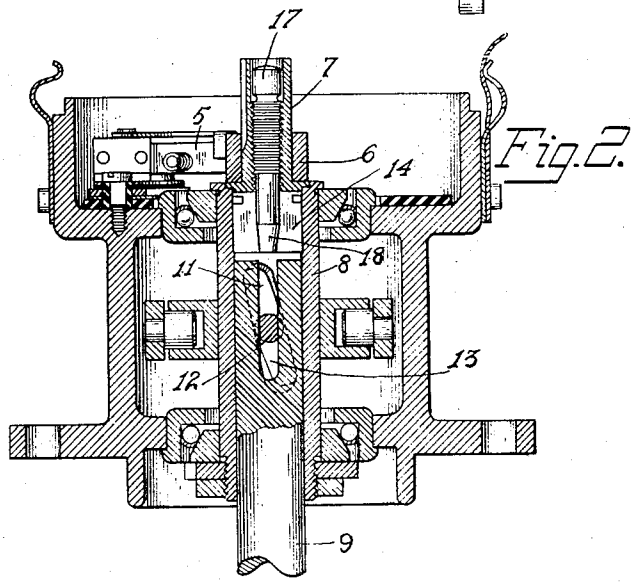



Fig. 2.

Witnesses:

G. E. Mueller

Wm. Borghalm

Inventor:

William Kaisling

By Curtis B. Camp

Attorney.

# UNITED STATES PATENT OFFICE.

WILLIAM KAISLING, OF CHICAGO, ILLINOIS, ASSIGNOR TO KELLOGG SWITCHBOARD & SUPPLY COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## IGNITION-TIMER.

1,144,135. Specification of Letters Patent. Patented June 22, 1915.

Application filed July 21, 1913. Serial No. 780,141.

*To all whom it may concern:*

Be it known that I, WILLIAM KAISLING, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ignition-Timers, of which the following is a specification.

My invention relates to ignition timers and has for its object the provision of an improved device of this order in which means are provided to adjustably mount various parts in such a way that a permanent adjustment of certain elements may be readily secured.

In a form of my invention as illustrated herein I have a contact element which is adapted periodically to control an ignition circuit of an explosive engine, for instance. This contact element is adapted for periodic actuation by means driven from the engine shaft. Suitable devices are interposed by means of which the contact controlling means aforesaid may be under the control of the operator thus to advance or retard the time at which this contact is to be made with relation to the angular position of the driving element.

My present invention concerns itself for providing additional means of an adjustable nature for mounting the contact controlling means so that a permanent adjustment, depending upon the character of the engine may be secured. It is found that in all of these engines certain characteristics of the engine control the time at which normally the spark should occur. This normal sparking time may then be varied depending upon circumstances in the case of operation of the engine by the interposed devices above referred to. As stated, however, each engine must have the contact making means adjusted normally for the particular kind of engine or possibly the particular kind of service it may be called upon to perform, or possibly depending upon the quality of the gasolene.

My invention concerns itself therefore with the provision of the adjustable mounting facilities for securing a permanent adjustment of the contact controlling means.

I will explain my invention more in detail by referring to the accompanying drawing in which:

Figure 1 is a top view of an ignition timer constructed in accordance with my invention; Fig. 2 is a longitudinal sectional view thereof; Fig. 3 is a sleeve for holding the contact controlling cam; Fig. 4 is an end view of the same; Fig. 5 is a sleeve used for advancing or retarding the spark; Fig. 6 is a sectional view of the lower portion of the sleeve shown in Fig. 3, and Fig. 7 is a screw for forcing elements of my device together.

Referring more particularly to Fig. 1, I have two contacts 1 and 2, the contact 1 being stationarily mounted upon an insulated binding post 3, and the contact 2 being carried by a flexible spring 4. The spring 4 in conjunction with a directional element 5 are adapted to be periodically moved outwardly through the agency of a cam 6, which cam is fixedly secured to a sleeve 7. The sleeve 7 receives its rotational effort from the driving shaft of the engine through the interposition of various instrumentalities as will presently appear. Whenever the protrusions upon the cam 6 engage the element 5 contact is established between the contact elements 1 and 2 to thereby close or otherwise control an ignition circuit for the explosive engine. The sleeve 7 is carried by a second sleeve 8 upon which it is adjustably mounted in accordance with the structure of my improved design, as will be explained hereinafter.

The sleeve 8 as stated receives its driving force from a shaft 9 and transmits it to the element 7. By means of the slots 10 and 11 in the sleeve 8 and the transverse pin 12 the particular angle of the sleeve 8 relative to the shaft 9 may be controlled as the pin 12 is moved along the slot 13 in the shaft 9. My invention is not concerned with this particular feature, it being sufficient merely to state that the devices thus far described in connection with the sleeve 8 provide facilities for advancing or retarding the time of spark, which change may be made during continuous operation of the engine. Now as before stated it is of prime importance that the normal time when this spark should occur with the pin 12 in a given position be susceptible of adjustment in accordance with the characteristics of the particular engine, and this adjustment must be made after the parts are all assembled in order not to change the characteristics of the engine. Means must thus be provided which will permit the sleeve 7 and thereby

the cam 6 to be given a permanent adjustment after all the parts are assembled practically in the condition shown in Figs. 1 and 2. My invention provides this means and one form which this invention may take is shown in which the sleeve 7 has a downwardly extending cylindrical element 14 which is provided with two slots at right angles, respectively 15 and 16, so that this cylindrical element 14 consists practically of four quadrants as shown. These quadrants 14 enter the sleeve 8 and then may be forced outwardly into intimate contact with the sleeve 8 through the agency of the screw 17 which has at its lowermost extremity a cone-shaped portion 18. This cone shaped portion engages a correspondingly inclined portion of the quadrant 14, and when the screw 17 is forced downwardly into the position of Fig. 2 it forces the quadrants apart. The sleeve 7 of course as stated carries the cam 6. Now whenever it is desired to adjust the cam 6 to the permanent position to correspond with the characteristics of the engine, all that is necessary to do is to loosen the screw 17, whereupon the sleeve 7 may be rotated to the desired angular position, whereupon the screw is then again tightened to permanently adjust this sleeve 7 in place upon the sleeve 8. The cam 6 is preferably forced onto the sleeve 7 over a fluted portion 19 thereof.

From what has been described it is thought the nature of my invention will be clear, and it will also be clear that the invention is susceptible of many modifications without departing from its spirit.

Having however thus described one form which my invention may take, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising a shaft, an element driven by said shaft, means interposed between said element and said shaft to adjust the relative angular position between said element and shaft during rotation of said shaft, a contact controlling device, and means interposed between said element and said device to permanently adjust the relative angular position of said device with respect to said element with said parts all in assembled position, said last aforesaid means including a slotted sleeve and a wedge for forcing the slotted portions into engagement with said element.

2. A device of the character described comprising a shaft, an element driven by said shaft, means interposed between said element and said shaft to adjust the relative angular position between said element and shaft during rotation of said shaft, a contact controlling cam, and means interposed between said element and said cam to permanently adjust the relative angular position of said cam with respect to said element with said parts all in assembled position, said last aforesaid means including a spiral sleeve and a wedge for forcing the spiral portions into engagement with said element.

3. A device of the character described comprising a shaft, an element driven by said shaft, means interposed between said element and said shaft to adjust the relative angular position between said element and shaft during rotation of said shaft, a contact controlling device, and means interposed between said element and said device to permanently adjust the relative angular position of said device with respect to said element with said parts all in assembled position, said last aforesaid means including a sleeve for said device having a slotted portion and a wedge for forcing said slotted portion into engagement with said element.

4. A device of the character described comprising a shaft, an element driven by said shaft, means interposed between said element and said shaft to adjust the relative angular position between said element and shaft during rotation of said shaft, a contact controlling cam, and means interposed between said element and said cam to permanently adjust the relative angular position of said cam with respect to said element with said parts all in assembled position, said last aforesaid means including a sleeve for said cam having a slotted portion and a wedge for forcing said slotted portion into engagement with said element.

5. A device of the character described comprising a shaft, an element driven by said shaft, means interposed between said element and said shaft to adjust the relative angular position between said element and shaft during rotation of said shaft, a contact controlling device, and means interposed between said element and said device to permanently adjust the relative angular position of said device with respect to said element with said parts all in assembled position, said last aforesaid means including a sleeve for said device having a slotted portion and a wedge having screw threaded engagement with said sleeve for forcing said slotted portion into engagement with said element.

6. A device of the character described comprising a shaft, an element driven by said shaft, means interposed between said element and said shaft to adjust the relative angular position between said element and shaft during rotation of said shaft, a contact controlling cam, and means interposed between said element and said cam to permanently adjust the relative angular position of said cam with respect to said element with said parts all in assembled position, said last aforesaid means including a sleeve for said cam having a slotted portion

and a wedge having screw threaded engagement with said sleeve for forcing said slotted portion into engagement with said element.

7. An ignition timer comprising an operating shaft, a contact operating cam therefor, a second shaft operatively related to the first shaft and having said cam securely attached thereto, and coöperating expanding and expansible elements for said shafts for permitting adjustment of the angular relation of said shafts so as to provide a definite angular relation between said cam and first shaft.

8. An ignition timer comprising an operating shaft, a contact operating cam therefor, a second shaft having said cam securely attached thereto, an expansible extending element carried by said second shaft for insertion within an opening in the end of said first shaft, and an expanding element coöperating with said extending element for adjusting said second shaft angularly relative to the first shaft so as to provide a definite angular relation between said cam and first shaft.

9. A device of the character described comprising a shaft, means adapted for providing a second shaft for driving the first said shaft, means for adjusting the relative angular position of such shafts while operating, a contact operating cam, a third shaft having said cam securely attached thereto, an extension carried by said third shaft for insertion within an opening in the end of the second said shaft, and means for adjusting said third shaft angularly relative to the second shaft so as to provide a permanent angular relation between said cam and second shaft.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

WILLIAM KAISLING.

Witnesses:
M. R. ROCHFORD,
GEORGE E. MUELLER.