

A. P. SHAW.
 COMBINED CAM AND FINGER ADJUSTMENT DEVICE FOR TIMERS AND DISTRIBUTERS.
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1,279,594.

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Fig. 1.

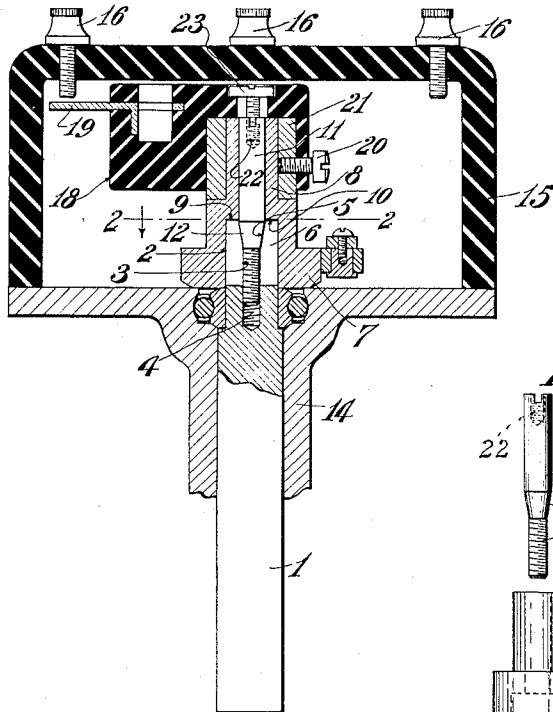


Fig. 3.

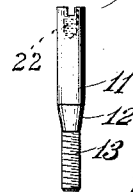


Fig. 4.

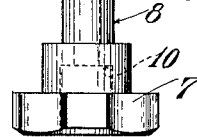


Fig. 5.

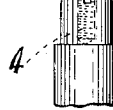
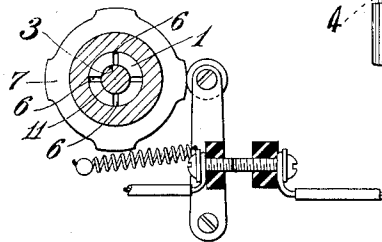


Fig. 2.



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COMBINED CAM AND FINGER ADJUSTMENT DEVICE FOR TIMERS AND DISTRIBUTERS.

1,279,594.

Specification of Letters Patent.

Patented Sept. 24, 1918.

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To all whom it may concern:

Be it known that I, ALBERT PARK SHAW, a citizen of the United States of America, residing in the city of Pittsfield, county of Berkshire, and State of Massachusetts, have invented certain new and useful Improvements in Combined Cam and Finger Adjustment Devices for Timers and Distributors, of which the following is a specification.

This invention relates to improvements in combined cam and finger adjustment devices for timers and distributors which are used in connection with the ignition systems for igniting the charge in internal combustion engines. An object of the invention is to provide a device which will readily permit an angular adjustment of the make-and-break cam which is used to momentarily open and close the primary circuit of an induction coil, or magneto electric machine, such an adjustment being made relative to the shaft on which the cam is located.

A further object of the device is to provide means for varying the angular position of the distributing finger which allows the passage of the high tension current from the secondary winding of an induction coil to the distributing terminals that are connected to the various wires which are connected to the spark plugs. A further object of the invention is to permit the angular adjustment of the cam and distributing finger as a unit, or one piece on the supporting shaft.

The invention broadly stated comprises a shaft, one end of which is formed with radial slits that extend to an axially arranged opening in the end of the shaft; the inner end of the opening being provided with threads and the outer end of the opening being formed with a conical shaped, or inclined surface, the make-and-break cam being located on the outside of the shaft and having an opening therethrough to receive an expanding pin which passes through the cam and into the opening in the end of the shaft, the distributor finger

being provided with means for attaching the same to the end of the pin, and further means for adjusting the finger relative to the angular position of the cam, said construction permitting the finger and the cam to be adjusted, as a unit if desired, relative to the shaft, whereby the time of making and breaking the primary circuit and the time of opening and closing the circuits to the various plugs may be varied when considered in either the advanced or retarded position. This invention permits the ready adjustment of the cam and finger to suit individual requirements.

Referring to the drawings:

Figure 1 is a sectional view taken on a plane which is considered as passing through the axis of the shaft which carries the cam, the distributing finger, and the inclosing casing to which the various distributor terminals are connected, and clearly illustrating the axially arranged pin in the end of the shaft for adjustably securing the make-and-break cam to the shaft, the means for securing the distributing finger to the expanding pin in the end of the shaft, and the means for adjustably securing said finger to the cam for adjustment as a whole on the shaft.

Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1 showing the radially arranged slots in the end of a shaft, the expanding pin located in the recessed end of the cam for making and breaking the primary circuit, and conventional make-and-break contacts included in said circuit;

Fig. 3 is a detail view of the expanding pin with a conical surface;

Fig. 4 is a detail view of the cam; and

Fig. 5 is a detail view of the slitted end of the shaft.

It is important in this class of inventions to provide means for the easy adjustment of the timing of the spark, and a convenient adjustment of the distributor.

Referring to the drawings in detail: 1 designates a shaft which is driven by suitable connecting means from the engine. The

outer end of the shaft is formed with a reduced portion 2 and an axially arranged opening 3, the lower end of which is threaded, as indicated at 4. The upper end of the opening 3 is formed with a conical or inclined shaped surface 5. The upper end portion of the shaft 1 is further formed with a series of radially arranged slots 6 four of which are shown, and which extend longitudinally thereof a distance substantially equal to the length of the make-and-break cam which is indicated at 7. This cam is formed with a reduced or stem portion 8. The end 9 of the shaft engages a shouldered portion 10 of the cam 7. For the purpose of adjustably securing the cam 7 to the shaft an expanding pin 11, shown in detail in Fig. 3, is provided, which is formed with a conical or inclined surface 12 and a threaded end 13 which threaded end engages the threads 4 at the bottom of the opening 3 in the shaft 1 and the conical surface 12 engages the correspondingly shaped surface 5, whereby, when the pin 11 is threaded into the shaft 1 the conical surface 12 will expand the slitted end of the shaft forcing the same outward against the inner surface of the cam 7, whereby the cam is rigidly secured thereto. It is to be understood that the angular position of the cam 7 with reference to the shaft 1 can be changed before the expanding screw 11 is tightened. The shaft 1 is preferably mounted in the base-portion 14 of the distributor casing 15, which is composed of some suitable insulating material, and in the upper end of which, as shown, the terminals 16 to which the lead wires that are connected to the spark plugs, are connected. The current distributing member which conveys the high tension current to these terminals is shown secured to the portion 8 of the cam 7. 18 designates a rotatable head portion of insulating material which carries the current distributing finger 19. This head portion is adjustably secured to the reduced portion 8 of the cam 7 by means of the set screw 20 which passes through the sleeve or bushing 21 that is formed with a threaded opening. It is evident that before the set screw 20 is tightened the head 18 and finger 19 may be readily positioned on the reduced portion 8 of the cam 7 and relative thereto and also relative to the shaft 1. For the purpose of securing the head 18 directly to the shaft a thread 22 is formed in the outer end of the expanding pin 11 and engaging this thread is a screw 23 which passes through an opening in the head 18. The screw serves as an additional means for securing the head to the shaft 1.

It is evident that after the screw 20 is tightened on the cam 8 and before the pin 11

is turned downward into the thread 4 the head 18 (and its distributing finger 19) and cam 8 can be adjusted as a unit on the shaft 1 if desired. The device, therefore, provides, first, a convenient adjustment of the distributor finger 19 with respect to the high tension terminals 16 when the device is installed; second, to provide for an easy and convenient timing of the spark with respect to the motion of the piston by means of the ready adjustability of the make-and-break cam.

It is of course understood that suitable means is provided for conducting the current to the distributing finger 19.

What I claim is:

1. In a timer and distributing device, the combination with a rotatable shaft having a split end portion, a make-and-break cam on said portion, means engaging the split end portion for angularly adjusting the cam to advance or retard the ignition spark, a distributor finger for the high tension current and carried by the cam, means for independently adjusting said finger with respect to the position of the cam and shaft.

2. In a timer and distributing device, the combination with a rotatable shaft having a split end, a make-and-break cam thereon, means engaging the split end for angularly adjusting the cam to advance or retard the ignition spark, a distributor finger for the high tension current and carried by the cam, means for independently adjusting said finger with respect to the position of the cam, the split end engaging means serving to adjust the cam and finger as a unit on the shaft.

3. A timer and distributor device comprising a shaft having a split end portion, a cam thereon, means for expanding said portion for tightening the cam to prevent movement on the shaft, a distributing finger for high tension currents, and means for securing the finger to said cam tightening means.

4. A timer and distributor device comprising a shaft having a split end portion, a cam thereon, means for expanding said portion for tightening the cam to prevent movement on the shaft, a distributing finger for high tension currents, means for securing the finger to said cam tightening means, and additional means for adjusting the finger on the cam and with respect thereto.

5. In combination, a shaft having a slitted end portion, and an axially arranged opening in the slitted end of the shaft, that portion of the opening that is adjacent the end of the shaft having a conical surface, the extreme inner end of the opening being threaded, a cam on the slitted end, a pin having a threaded end and a conical surface extending through the cam and engaging

the threaded end and conical surface, respectively, of the opening in the shaft for expanding the slitted end for securing the cam to the shaft, and a distributing finger 5 on the cam and means for adjusting the finger with respect to the cam and shaft.

6. In a device of the kind described, a

shaft having a split end, a breaker cam, a distributing finger, means comprising an elongated pin engaging the split end of the 10 shaft for adjustably securing the cam and finger, as a unit, to the shaft for timing the spark.

ALBERT PARK SHAW.