

C. H. NEWMAN.
 SPARK REGULATOR FOR EXPLOSION ENGINES.
 APPLICATION FILED MAR. 3, 1911. RENEWED NOV. 10, 1911.

1,029,026.

Patented June 11, 1912.

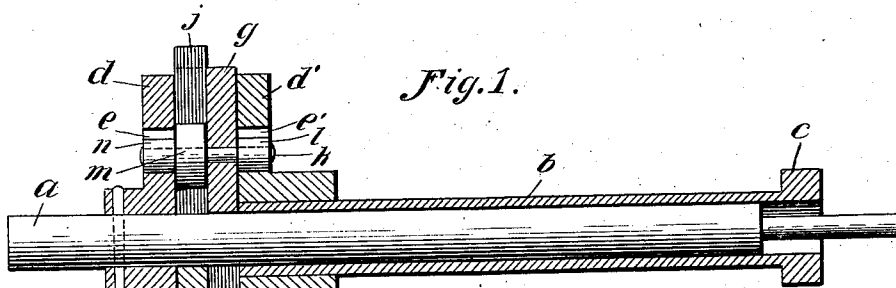


Fig. 1.

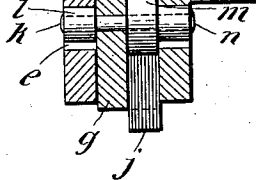


Fig. 2.

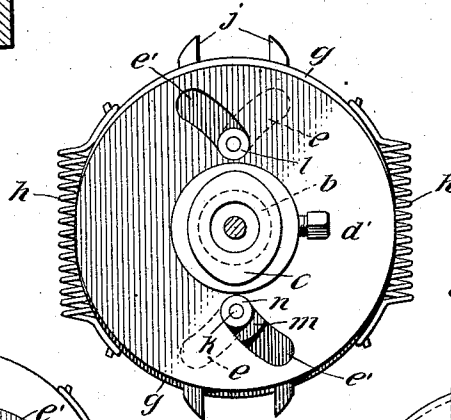


Fig. 3.

Fig. 4.

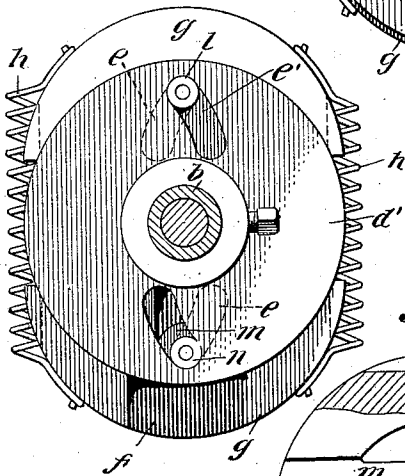
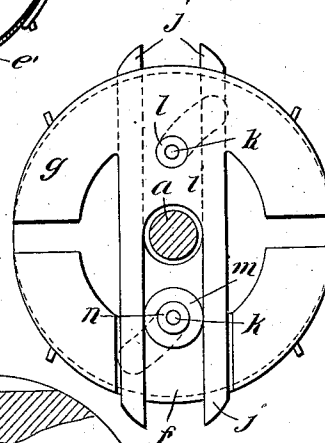


Fig. 5.

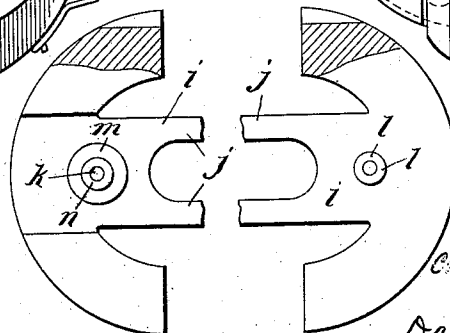


Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

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SPARK-REGULATOR FOR EXPLOSION-ENGINES.

1,029,026.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed March 3, 1911, Serial No. 612,139. Renewed November 10, 1911. Serial No. 659,670.

To all whom it may concern:

Be it known that I, CHARLES H. NEWMAN, a citizen of the United States, and a resident of Blackstone, county of Nottoway, and State of Virginia, have invented certain new and useful Improvements in Spark-Regulators for Explosion-Engines, of which the following is a full and clear specification, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal section partly in side elevation showing a preferred form of my improvement; Fig. 2 is an end elevation; Fig. 3 a transverse section taken through the shafts and showing the governor weights partly extended; Fig. 4 a transverse section of the driving shaft showing the arrangement of the governor weights; and Fig. 5 detail views partly in section of the two governor weights.

This invention has relation to that type of motor vehicle engines in which an electric spark is employed to ignite the fuel in the cylinders of the engine, and the special object of my improvement is to provide simple means for advancing the sparking time automatically in direct proportion to the speed of the vehicle whereby, as is well known, a proper cushioning effect is provided for the reciprocating parts of the engine and also the full expansive power of each charge is obtained at the proper time with respect to the working stroke of the piston, as more fully hereinafter set forth.

Referring to the drawings annexed by reference characters, *a* designates a shaft which is geared up to the engine in the usual way, the letter *b* represents the shaft which carries the contact cam *c* of the timer, which may be of any suitable construction, this shaft *b* being concentric with the shaft *a* and consisting preferably of a sleeve journaled on said shaft *a*.

Rigidly affixed to shaft *a* is a plate or disk *d* provided at points diametrically opposite each other with slots *e* which curve outwardly in opposite directions. Affixed upon the adjacent end of the shaft *b* is a similar plate or disk *d'* having slots *e'* which are shaped similarly to the aforesaid slots *e* but extend in the opposite directions respectively. The disks or plates *d*, *d'* are parallel to each other.

Between the disks is mounted a pair of semi-circular governor weights *g* which when in normal position lie substantially

within the circumference of the disks, for compactness sake. These two weights are normally drawn inwardly toward the shaft by means of a pair of coil springs *h*. Attached rigidly to the inner face of each of the weights *g* is an arm *i*, which arms extend in opposite directions and overlap each other, the adjacent faces of the arms making free contact with each other and the end of each arm working through a groove *f* in the adjacent face of the governor weight. Each arm is slotted longitudinally to form two fingers *j* which straddle the shaft *a*, and each arm is provided with a rigid pin or shaft *k* extending through it. On one of the projecting ends of said pin *k* is a roller *l* while on the oppositely projecting end is mounted a pair of rollers *m* and *n*. The rollers *l* and *n* work in the respective slots *e* and *e'*, while the rollers *m* fit and work in the respective slots between the fingers *j*.

It will be observed that as the engine speeds up the governor weights will by centrifugal force move outwardly to a degree determined by the speed. As the governor weights swing outwardly the radial arms *i* are pulled outwardly in opposite directions and thus through the medium of the rollers *l* and *n* and the cam slots serve to advance the contact shaft *b* to a degree determined by the speed of the engine. When the engine slows up the governor weights will be drawn inwardly by the springs and the action will be reversed, bringing the spark-making devices back to normal. The arms *i* and the attached weights are guided principally by engagement with the rollers *m*. The pins *k* with their rollers *n* and *l* connect the governor weights with the positively driven disk *d*, so that the governor weights are positively driven from the driving shaft *a*. The disk *d'*, attached rigidly to the contact making shaft, is driven through the medium of the rollers *l* and *n* engaging in the slots *e'* of said disk, and it will be observed that the action of these rollers in the cam slots *e'* is to still further advance the contact making shaft *b*, whereby I am enabled to impart to said shaft *b* the desired advanced movement relative to the drive shaft, the mechanism employed being simple and compact and reliable. By sleeving the contact making shaft on the driving shaft, it will be observed that the shafts will be kept concentric at all times. It will be understood that the shaft *b* will

be prevented from end-wisely sliding on the shaft *a* far enough to disengage its disk from the cam rollers by the position and arrangement of the parts in the engine structure.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is—

1. In a device of the class set forth, a driving shaft, a concentric governed shaft, a pair of plates affixed respectively to said shafts and provided with oppositely arranged cam slots, a pair of radially operating arms carrying rollers working respectively in said cam slots, and centrifugal devices attached to said arms, for the purpose set forth.

2. In a device of the class set forth, a driving shaft, a concentric carrying the operating element, a plate attached to each shaft and arranged parallel and each being provided with diametrically opposite cam slots, the slots in one plate being arranged oppositely to the other slots, radial arms slotted to embrace one of said shafts, each radial arm carrying a roller working in the slot of the other arm and with an additional

pair of rollers working in cam slots in said plates, and centrifugal devices connected to said radial arms.

3. In a device of the class set forth, a driving shaft, a governed shaft sleeved on the driving shaft and provided with the operating element, companion disks fastened to the respective shafts and provided with cam slots, and governor-weight operated means between the disks and in engagement with said slots for independently advancing the rotation of the sleeved shaft.

4. In combination, a driving shaft, a governed shaft sleeved thereon and carrying the operating element, a pair of disks affixed respectively to said shafts, governor weights mounted between said disks and carrying means engaging the disks and adapted to advance the disk on the governed shaft, for the purpose set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES HENRY NEWMAN.

Witnesses:

B. T. WHITE,
H. H. IRBY.