W. KAISLING.

IGNITION TIMER.

APPLICATION FILED DEC. 27, 1915.

1,363,512.

Patented Dec. 28, 1920.

2 SHEETS—SHEET 1.

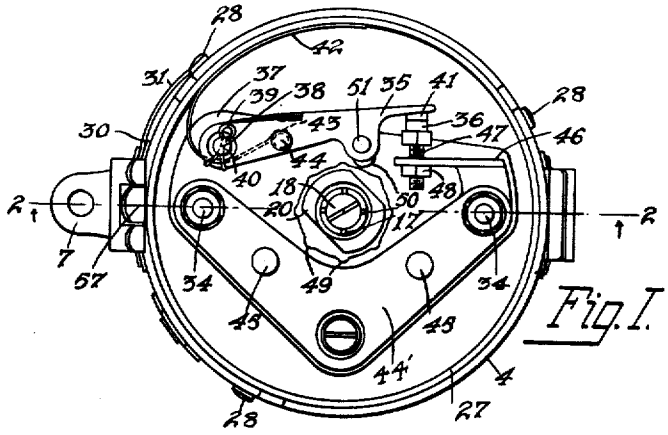

Fig. 1.

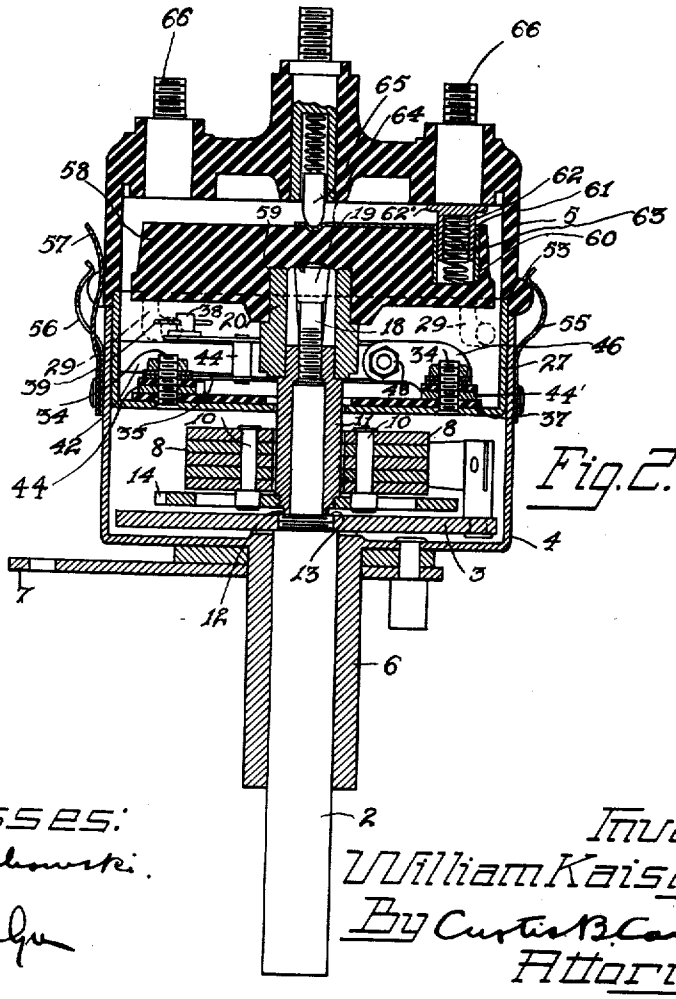

Fig. 2.

Witnesses:
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2 SHEETS—SHEET 2.

Fig. 5.

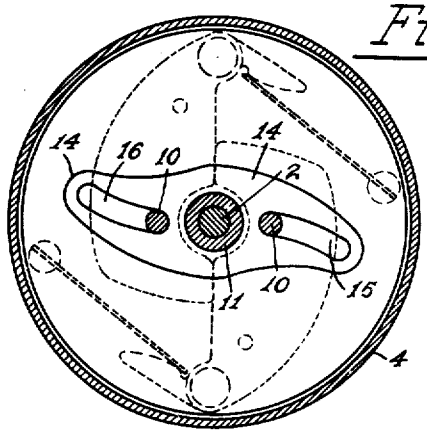
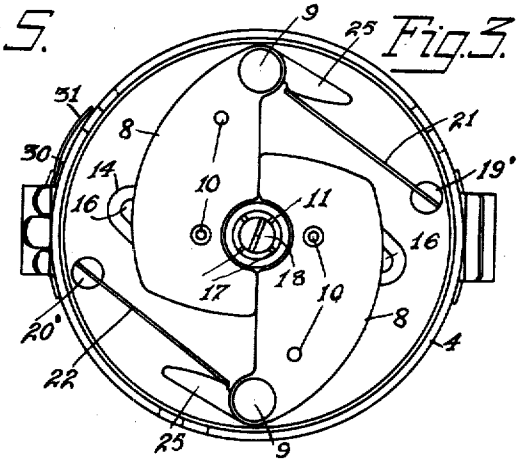


Fig. 3.



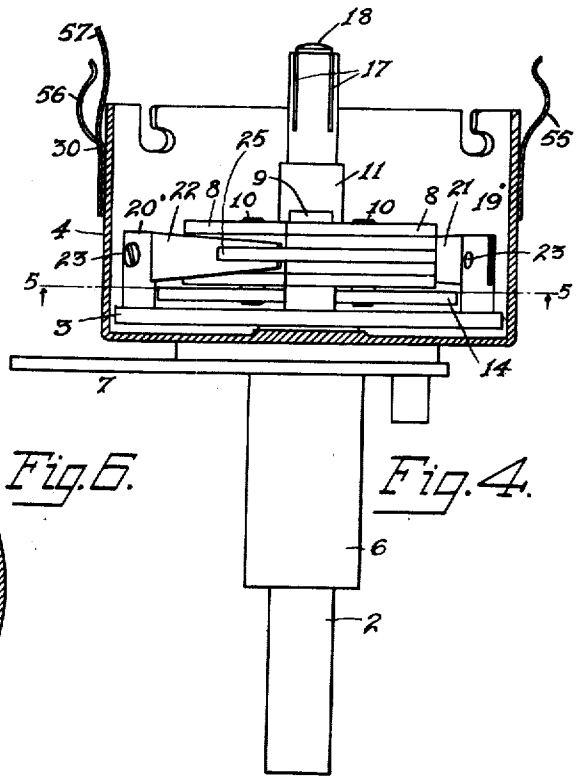


Fig. 6.

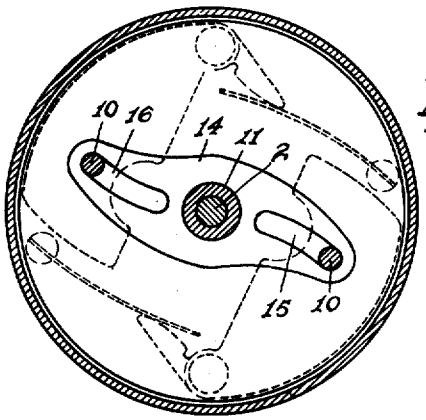


Fig. 4.

Witnesses:

Geo. Yanochowski.

Wm. Berglund

Inventor:

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UNITED STATES PATENT OFFICE.

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

IGNITION-TIMER.

1,363,512. Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed December 27, 1915. Serial No. 68,692.

To all whom it may concern:

Be it known that I, WILLIAM KAISLING, a citizen of the United States of America, residing in Chicago, 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 improvements in current controllers commonly called ignition distributers for the electric ignition of internal combustion engines, and is particularly intended for use in engines which are subject to various and sudden changes of speed, such as automobile engines.

One of the features of my invention is the provision of a simple and efficient device of the above character which will automatically advance the spark supplied to the combustion chambers of the engine at the desired rate as the engine increases its speed, but not in direct ratio to the speed at which the engine is accelerated. The present distributers that are in commercial use are such that as the speed of the engine is increased the spark is automatically increased in substantially direct ratio thereto.

It has been found that an advance of this kind does not give the best result but that it is desirable to advance the spark very slowly, if at all, until the speed of the distributer shaft has reached a speed of say 250 revolutions, then the spark should be gradually advanced as the speed of the distributer shaft is increased until the speed of the distributer shaft has reached a speed of say 950 revolutions, when the advance of the spark should be complete, and it should not be advanced for any higher speeds of the distributer shaft. However, the point at which the advance of the spark should commence and when it should cease to further advance varies with the different types of motors. Also the amount of advance, that is the number of degrees that the timer cam should be advanced in relation to the distributer shaft varies in the different types of engines. After the advance of the spark has started at a certain predetermined speed of the distributer shaft the ratio of advance of the timer cam with relation to the advance of the speed of the distributer shaft varies. That is, the advance of the timer cam in degrees from a speed of 350 revolutions to a speed of 500 revolutions will be different than the advance of the timer cam in degrees from a speed of 500 revolutions to a speed of 650 revolutions of the distributer shaft. In other words, the advance of the timer cam is not in direct proportion to the advance of the speed of the distributer shaft from the point when the advance of the timer cam starts to advance. The type of engine entirely regulates the ratio of advance of the timer cam in relation to the speed of the distributer, the ratio of advance of the timer cam not being constant for a constant advance of the speed of the distributer shaft. Therefore, it is the object of my invention to produce an improved device of the class described which will obviate the above-mentioned undesirable features and embody the said desirable features and advantages all in a simple, efficient and economical manner, and to the accomplishment of this object and such others as may hereinafter appear, my invention consists in the novel details of construction; parts, and combination of parts hereinafter described, and particularly pointed out in the appended claims, forming a part hereof in which the same reference characters indicate like parts throughout the several views, and in which—

Figure 1 shows a top view, with the cover cap removed, of the combined timer and distributer of my invention;

Fig. 2 is a sectional view along the line 2, 2, of Fig. 1 with the cover cap in place;

Fig. 3 is a top view of the device with the cup containing the timer contacts removed;

Fig. 4 is a side elevation of the device with the cup in section to show the inner mechanism; Fig. 5 is a sectional view taken along line 5—5 of Fig. 4 but showing the weighted members and their spring controlling means which appear above the section line dotted, the weighted members being in their normal position;

Fig. 6 is a view similar to Fig. 5 but showing the weighted members in their actuated positions;

Referring to the accompanying drawings, the mechanical construction of these parts including the timer cam and the distributer mechanism embodied compactly in one piece of apparatus, will now be described.

The driving shaft 2 is suitably connected to the engine shaft and geared to the proper ratio of movement to operate the timer and

distributer in proper cycle. The upper end of the driving shaft 2 is reduced and threaded to receive a circular plate 3 that carries the mechanism that operates to automatically advance the spark as the speed of the driving shaft is increased. The circular plate member 3 as well as the rest of the mechanism that forms the combined timer and distributer is carried in a cup-shaped containing member 4 which is provided with an inverted cup-shaped cap 5 formed of insulating material. The cup 4 is provided with an integrally formed sleeve member 6 through which the shaft 2 extends and which is adapted to set in a bearing (not shown) on the engine base, so that it may be rotatably advanced or retarded through a manual connecting link which is connected to the plate 7 that is riveted to the bottom of the cup casing 4. The plate 7 and its connecting links forming manual means to rotate the cup casing 4 in turn rotating the cap 5 in which are embedded the terminals 66 thereby advancing or retarding the spark that the distributer furnishes to the engine. The weighted members 8 consist of laminations of sheet metal and they are pivoted diametrically opposite each other to the circular plate 3 by means of pins 9, that are staked to the said circular plate 3. The free ends of the weighted members extend inwardly and are each provided with a semi-circular recess to permit the end of the shaft 2 to extend therethrough. The weighted laminated members are held together by means of rivets 10, two of said rivets being provided with extended end portions for purposes hereinafter to be described. Fitting loosely over the extended end of the shaft 2 is a surrounding sleeve 11 that has a bearing surface 12 adapted to engage the shoulder 13 of the shaft 2. The lower end of the sleeve 11 is threaded to receive an irregularly shaped advancing plate member 14. Cut in the plate member 14 is a pair of slots 15 and 16 that are adapted to receive the extended ends of two of the rivets 10 to limit the movements of the weighted members 8. The slots may be of varying shape, for reasons to hereinafter be described. The upper end of the sleeve member 11 is reduced and provided with transverse slots 17 so that when the screw 18 which is provided with a tapered head 19 is tightened the timer cam 20 is securely held in its place upon the said sleeve 11 due to the forcing out of the split portions of the sleeve 11. A pair of studs 19^1 and 20^1 are securely staked to the plate 3 and are provided with transverse slots to receive the ends of a pair of leaf springs 21 and 22. Screws 23 are provided to securely hold the leaf springs 21 and 22 to the staked pins 19^1 and 20^1. The free extremities of the springs 21 and 22 engage ears 25 formed integrally with the middle ones of the laminations of the weighted members 8 and operate to hold the said weighted members in their normal position. The inner surface of the ears 25 are so formed that as the weighted members move outwardly, the spring tension is increased at the desired ratio until the extended ends of pins 10 prevent the further movement of the weighted members 8 in their actuated position. When the weighted members swing about their pivoted parts the inner surface of the ears 25 engage the leaf springs and operate to increase the tension applied to the weighted members by the said leaf springs. It will thus be seen that by forming the inner surface of the ears in the desired manner, the spring tension may be increased in the desired manner. A circular cup-shaped member 27 for carrying the interrupter contacts, fits within the outer inclosing cup 4 and is provided with pins 28 that are staked to the said cup member 27 which are adapted to fit in bayonet slots 29 in the outer casing 4 to hold the said cup in place. A spring member 30 is provided with an extension arm 31 for coöperating with one of the pins 28 to securely hold the cup 27 in its locked position in the outer case 4. To remove the cup 27 from the casing 4, it is only necessary to raise the arm member 31 and turn the cup 27 to a position where it may be vertically raised from its position in the casing 4. Insulatingly secured to the inner surface of the cup 27 by means of bolts 34 are the interrupter contacts 41 and 36. The triangularly shaped mounting plate 37 which carries the contacts 41 and 36 is preferably made of some insulating material such as hard rubber or some other composition. Secured to this plate 37 is a post 38 on which is pivotally mounted the contact arm 35 that carries contact 41. A cotter pin 39 is passed through a transverse slot 40 in the said pin 38 to hold the contact arm in position. A leaf spring 42 is provided with a hooked end 43 that engages a pin 44 in the arm 35 and is then bent around pivot 38 and contacts the inner cylindrical surface of the cup 27 to provide tensioning means for yieldingly holding contact arm 35 in its normal position. A plate member 44^1 is securely held to the plate 37 by means of the bolts 34 and rivets 45 and is provided with an upturned end portion 46 for holding the contact 36. The upturned portion 46 is tapped and threaded to receive a screw member 47 that carries the contact 36, and a locking nut 48 is provided to hold the screw member 47 in its adjusted position. The timer cam 20 is provided with a number of ribs 49, equal in number to the number of cylinders of the internal combustion engine. The ribs 49 are adapted to contact with the nose of a fiber member 50, securely fastened to the contact arm by means of rivets 51, to open and close the contacts 41 and 36 as the dis-

tributer shaft is revolved. The cover cup 5 which is made of insulating material as hereinbefore mentioned is provided with an inner annular recess 53 which is adapted to fit over the upper edge of the cup member 27 and abut against the upper edge of the casing 4. A pair of springs 55 and 56 are adapted to yieldingly hold the cup 5 in its position upon the cup casing 4 while an upwardly extending arm 57 of the spring 30 is provided to prevent rotation of the cup in relation to the cup casing 4 when it is placed in its locked position. A circular distributing disk member 58 is provided with a recess 59 for securing it to the timer cam 20 so that when the timer cam is rotated the disk 58 is rotated therewith. A cylindrical recess 60 is cut in the upper surface of the disk 58 into which is fitted a cylindrical member 61. A contact button 62 provided with a flattened circular member is adapted to fit within the cylindrical member 61 which has a beveled edge 62^1, and a spring 63 is provided which exerts tension upon the contact button 62 in an upper direction to keep it in contact with the terminals 66 of the head 5. A metallic strip 64 is secured to the upper surface of the disk 58 and forms electrical connecting means from the contact button 62 to a contact point 65 which is carried by the distributer head 5. A plurality of contact terminal studs 66 extend through the upper surface of the distributer head 5 into position to be engaged by the contact button 62 as the disk 58 is rotated, the contact terminals 66 corresponding in number to the number of cylinders of the internal combustion engine. The threaded ends of the terminals 66 constitute the secondary terminals that connect to the cylinders that contain the explosive mixture ready for firing. At the same time that the contact button 62 is rotated over the contact ends of the terminals 66, the timer cam 20 is of course operating the make and break device to cause the impulses to be sent through the primary winding of an induction coil.

Referring now to the operation of the device, when the shaft 2 is rotated, due to its connection to the shaft of the engine, the circular disk 3 which is attached thereto is rotated and the free ends of the weighted members 8 due to their centrifugal force are forced outwardly against the tension of the leaf springs 21 and 22. The rotation of the weighted members 8 rotates the surrounding sleeve 11 which carries the timer cam 20 (through the medium of the extended ends of the pins 10 and the plate member 14). The rotation of the timer cam operates to interrupt the timer contacts to make and break a circuit through the primary of the induction coil. The rotation of the cam member also causes the distributing disk 56 to be rotated thereby causing the contact button 62 to make contact with the contact studs 66 thereby distributing the secondary currents to the different cylinders of the combustion engine. As the speed of the distributer shaft is increased, the weighted members are forced farther from their normal position causing the pins 10 to move outwardly in their grooves 15 and 16 thereby causing the plate member 14 to advance the surrounding sleeve 11 which in turn advances the timer contacts thereby causing the timer contacts to be operated to transmit an impulse to the primary of the induction coil in advance of the impulses that would have been transmitted had the timer cam not been advanced. Conversely, as the speed of the distributer shaft is decreased the weighted members are forced inwardly by the leaf springs 21 and 22 thus causing the timer cam to be moved backwardly in relation to its position with the distributer shaft thereby retarding the spark.

The shape of the contacting surfaces of the ears 25, as hereinbefore mentioned, may be varied so as to increase the spring tension applied to the weighted members in the desired manner as the said weighted members are rotated about their pivot points due to their centrifugal force.

To assist in obtaining the desired advance of the timer cam in its relation to the driving shaft, I form the slots cut in the plate 14 in such a manner so that for a certain movement of the weighted members about their pivoted points that any desired advance of the timer cam may be secured, that is, if the weighted members swing X degrees about their pivot points the slot can be shaped so that the timer will be advanced Y or any desired number of degrees, and when the weighted members swing about their pivot points for X degrees more, the timer, by regulating the shape of the slot, may be made to advance Y degrees as in the former instance, or a less or a greater number of degrees as the case demands.

While I have described one form of mechanism well adapted to accomplish the objects sought, it is to be understood that various other forms might be utilized to accomplish the desired results. Therefore, I do not wish to be limited to the exact structure as shown, as many changes and modifications may readily suggest themselves, but I aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

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

1. In an electric current controller the combination of a rotary device adapted to be driven at various speeds, a pivoted weighted member carried by said device and adapted to move outwardly relative there-

to under the action of centrifugal force, a contact operating device mechanically linked to said rotary device and angularly movable relative thereto, means controlled by the speed of rotation of said device for moving said weighted member over equal distances of space, and means controlled by said weighted member and responsive to such movements for varyingly changing the angular position between said contact operating device and said rotary device.

2. A device of the character described comprising a rotary device adapted to be rotated at various speeds, a contact operator connected to said rotary device and angularly movable relative thereto, a pivotally secured centrifugal element rotatable with said rotary device rotatable upon its pivoted point, and means whereby when the speed of said rotary device is varied said centrifugal element has its angular position in respect to said rotary device changed at a uniform rate and said contact operator at a varying rate.

3. In a device of the character described the combination with a power driven rotary device, of a circular disk securely attached thereto, a pair of weighted members pivoted at the periphery of said disk and adapted to move about their pivoted points, a sleeve member loosely mounted on said rotary device and adapted to have its angular relation in respect to said rotary device changed, a contact controller and a contact distributer connected to said sleeve, and a connecting link connecting said weighted members to said sleeve member whereby when said power driven device is rotated said weighted members operate to change the relation between said sleeve member and said rotary device varying angular distances for equal changes in the speed of rotation of said rotary device.

4. A device of the character described comprising a power driven shaft, a circular disk attached to said shaft, a pair of centrifugal elements attached to the outer periphery of said disk having their free ends extending inwardly, said centrifugal device being movable relative to said disk about their attached ends, a contact controller rotatable with said disk and adapted to have its angular relation changed in respect to said rotary disk, means for rotating said rotary device whereby the cetrifugal device operates to change the relation between the said contact controller and said disk unequal amounts for equal changes in the speed of rotation of said shaft, and manual means for changing the relation between said contact controller and said power driven shaft.

5. A device of the character described comprising a rotary disk, a centrifugal member pivoted at the outer periphery of said disk, a projecting member secured to said centrifugal member, and a leaf spring secured to the outer periphery of said disk in engagement with said projecting member, said projecting member being so shaped as to increase the action of said spring upon said centrifugal member in such a manner as to cause unequal movements of said centrifugal member for equal changes in the speed of rotation of said rotary disk.

6. A device of the character described comprising a rotary disk, a centrifugal member consisting of laminations of sheet metal attached to the outer periphery of said disk, a projecting ear for one of said laminations, and a spring member attached to the outer periphery of said disk having its free end in contact with said projecting ear whereby the tension of said spring member upon said centrifugal member is increased at the desired rate.

7. A device of the character described including a rotary shaft, a disk secured to said shaft, a pair of weighted members secured to said disk, a member supporting a contact operator mounted in the plane of said rotary shaft and angularly movable relative to said shaft, a plate attached to said supporting member and provided with curved slots, pins connected to said weighted members and extending into said slots, springs for maintaining said weighted members in their normal position when said shaft is quiescent, said slots and springs being so devised that when the speed of the rotary shaft is changed equal amounts the weighted members operate to change the angular relation between the contact operator and the rotary shaft varying amounts.

8. In an electric current controller the combination of a driven rotary device, of pivoted weighted members carried by said device and movable outwardly relative thereto under the action of centrifugal force to different equal positions in response to the change of speed of rotation of said device, a contact operating device linked to said rotary device and adapted to be moved relative thereto, and means controlled by said weighted members for changing the relation between the contact operating device and the rotary device varying amounts in accordance to the said different equal positions of said weighted members.

9. A device of the character described comprising a rotary disk, a centrifugal element attached to said disk and movable relative thereto, a spring member carried by said disk for holding said centrifugal element in its normal position of rest, means whereby when the speed of rotation of said rotary disk is increased by equal steps, the resisting force of said spring member is so applied as to cause the changes in relation between said centrifugal element and said

rotary disk to be of varying steps in response to the said equal steps of change in the speed of rotation of said rotary disk, and a spark distributer rotatable with said disk.

10. In an ignition system for combustion or explosive engines, the combination with an electrical device including a contact operator and a spark distributer adjustable throughout a given range of advance and retard, automatic means including a centrifugally controlled device formed of laminations for adjusting said electrical device variable distances for equal increments of movement of said adjusting means, and manual means for adjusting said contact operator and spark distributer within said range of advance and retard.

11. In an ignition system for internal combustion engines, the combination with an electrical spark distributer adjustable throughout a given range of advance and retard, of a rotary shaft associated with said spark distributer adapted to be rotated at various speeds, automatic means including a centrifugally controlled device and a varyingly curved slot for adjusting said electrical spark distributer variable distances for equal increases in the speed of rotation of said rotary shaft, and manual means for adjusting said spark distributer throughout the given range of advance and retard, a pin secured to said centrifugally-controlled device extending into said curved slot, the plate containing said curved slot and the centrifugal device being mounted in parallel planes at right angles to the plane of said rotary shaft.

12. A device of the character described including a rotary member adapted to be driven at various speeds, a contact controller connected to and rotatable with said rotary member and adapted to have its angular relation with said rotary number changed during the rotation of said rotary member, and centrifugally controlled means located between said rotary member and said contact controller adapted to change the angular relation between said contact controller and said rotary member varying amounts for equal changes in the speed of rotation of said rotary member, said centrifugally-controlled means including a plate provided with a pair of curved slots and adapted to receive projecting pins connected to said centrifugal members, said plate being attached to said contact controller and mounted in a plane at right angles to the plane of the rotary member.

13. In a device of the character described, the combination with a rotary driven element, of a spark controlling member for advancing and retarding the spark, and automatic mechanism intervening between said spark controlling member and said rotary element whereby equal increments of movement of the spark controlling member will be caused by unequal changes in the speed of rotation of said rotary device, said automatic mechanism including a plate attached to said spark-controlling member and provided with a curved slot, a weighted member secured to a rotary disk attached to said rotary-driven element, and a pin connected to said weighted member and extending into said slot, said weighted member, said plate and said disk all being mounted in parallel planes.

14. In a device of the character described, the combination with a rotary driven device adapted to be driven at different speeds, of an electrical device including a contact operator, and a spark distributer, automatic means connecting said electrical device to said rotary device comprising pivotally-secured members adapted to rotate about their pivot points away from the rotary-driven device, a plate connected to said electrical device and provided with slots adapted to receive pins projecting from said pivotally-secured members, said slots being of varying angularity whereby said electrical device changes its angular position in respect to said rotary device different degrees through a given range upon equal changes in the speed of rotation of said rotary device.

15. In a device of the character described, the combination with a rotary driven device adapted to be driven at different speeds, a spark controlling device adapted to be advanced or retarded, and mechanism connected therewith and constructed to produce a greater advance in degrees of the timing device for a given change in speed of rotation of said rotary device when said rotary device is advanced from one speed of rotation than for an equal change in speed of rotation of said device when said device is advanced from a different speed of rotation, said mechanism including a pair of weighted members formed of laminations pivotally secured to said rotary-driven device and adapted to turn about their pivot points in a plane at right angles to the plane of the rotary-driven device, and pins and orifices connecting said weighted members to said spark-controlling device.

16. A device of the character described including a rotary driven device adapted to be rotated at various speeds, a contact operator rotatable with said device and arranged to have its angular position changed in respect to said rotary device, a centrifugal element formed out of a plurality of sheets of metal carried by said rotary device connecting said rotary device to said contact operator, a spring member for holding said centrifugal element in its normal position when said rotary device is at rest, said spring member operating upon said centrifugal element so

as to allow said contact operator to change its relation with said rotary device equal amounts for unequal changes in the speed of rotation of said rotary device.

17. In an electrical current controller, the combination of a rotary driven device adapted to be driven at various speeds, of pivoted weighted members carried by said device and adapted to turn upon their pivoted points under the action of centrifugal force, resilient means for allowing said weighted members to move unequal steps in response to equal changes in the speed of rotation of said rotary device, an electrical device controllable by said weighted members, and manual means for controlling said electrical device.

18. In an electrical current controller, the combination of a rotary driven device adapted to be driven at various speeds, of pivoted weighted members secured to a member connected to said rotary-driven device, said weighted members being adapted to turn upon their pivoted points under the action of centrifugal force, said member and said weighted members being mounted in parallel planes at right angles to the plane of said rotary-driven device, resilient means for allowing said weighted members to move unequal steps in response to equal changes in the speed of rotation of said rotary device, and a contact operating device rotatable with said rotary device and mechanically linked to said weighted members whereby said contact operating device is operated to have its angular position in relation to said rotary device changed in response to such changes in the speed of rotation of said rotary device.

19. A device of the character described including a rotary element adapted to be rotated at various speeds, a pair of centrifugal members pivoted at their one ends to said rotary element, said centrifugal members being mounted in a plane at right angles to the plane of said rotary element, resilient members maintaining said centrifugal members in their normal position when said rotary element is quiescent and permitting said centrifugal elements to turn about their pivoted points unequal distances for equal increments in the change of speed of rotation of said rotary element, and a contact controller and a contact distributer controlled by said centrifugal member.

20. In a device of the character described for internal combustion engines, the combination with a spark controlling device and a spark distributer, of an engine actuated rotary device for intermittently opening and closing the spark controlling device, and for operating said spark distributer, mechanism connecting the spark controlling device and spark distributer to the rotary device, said mechanism including a disk secured to said rotary device, a weighted member pivotally secured to said disk and mounted in the plane of said disk, a member secured to said spark-controlling and distributing device provided with an orifice, a spring maintaining said weighted member in normal position when the rotary device is quiescent, and a pin connected to said weighted member and extending into said orifice whereby said spark-controlling and distributing device may be advanced variable degrees for equal increments or changes in the speed of rotation of said rotary device.

21. A device of the character described including a rotary disk, a centrifugal element attached to said disk and adapted to turn about its pivoted point, a spring member carried by said disk for holding said centrifugal element in its normal position when said disk is at rest, means whereby when the speed of rotation of said rotary disk is increased by equal steps the resisting force of said spring member is so applied as to cause said centrifugal element to rotate upon its pivoted point steps of various length in response to said equal steps of change in the speed of rotation of said rotary disk, and a spark distributer controlled by said centrifugal element.

22. A device of the character described including a rotary device adapted to be rotated at various rates, a contact operator rotatable with said rotary device but adapted to have its angular relation with said rotary device changed for varied speeds of rotation of said rotary device, mechanical means including a disk secured to said rotary device, a centrifugal member pivoted to said disk, a plate attached to said contact operator and provided with a slot, and a pin secured to said centrifugal member extending into said slot whereby when the speed of said rotary device is changed at a constant rate, the angular relation between said contact operator and said rotary device is changed at a varying rate.

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

WILLIAM KAISLING.

Witnesses:
GEORGE A. YONOCHOWSKI,
M. R. ROCHFORD.

Corrections in Letters Patent No. 1,363,512.

It is hereby certified that in Letters Patent No. 1,363,512, granted December 28, 1920, upon the application of William Kaisling, of Chicago, Illinois, for an improvement in "Ignition-Timers," errors appear in the printed specification requiring correction as follows: Page 4, line 49, claim 4, for the word "device" read *devices;* same page and claim, line 55, for the word "cetrifugal" read *centrifugal;* page 5, claim 11, line 29, commencing with the word "and" strike out all to and including the word and comma "retard," line 32; same page and claim, line 37, after the word "shaft" insert the comma and words *, and manual means for adjusting said spark distributer throughout the given range of advance and retard;* page 6, line 55, claim 19, for the word "member" read *members;* and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22d day of March, A. D., 1921.

[SEAL.]

M. H. COULSTON,
Commissioner of Patents.

Cl. 200—22.