E. FUCHS.

SHAFT COUPLING.

APPLICATION FILED MAY 6, 1916.

1,235,129.

Patented July 31, 1917.

2 SHEETS—SHEET 1.

Fig. 1

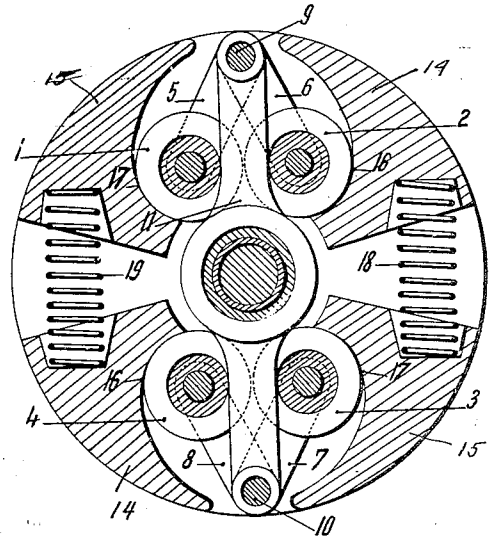
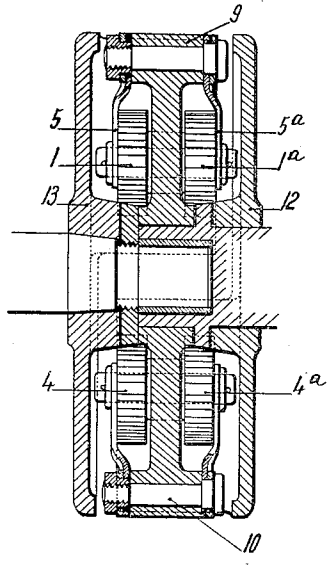


Fig. 2



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2 SHEETS—SHEET 2.

Fig. 3.

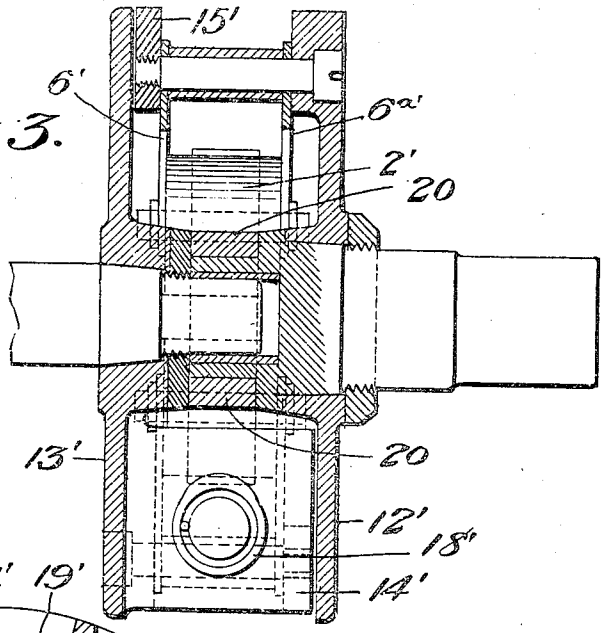


Fig. 4.

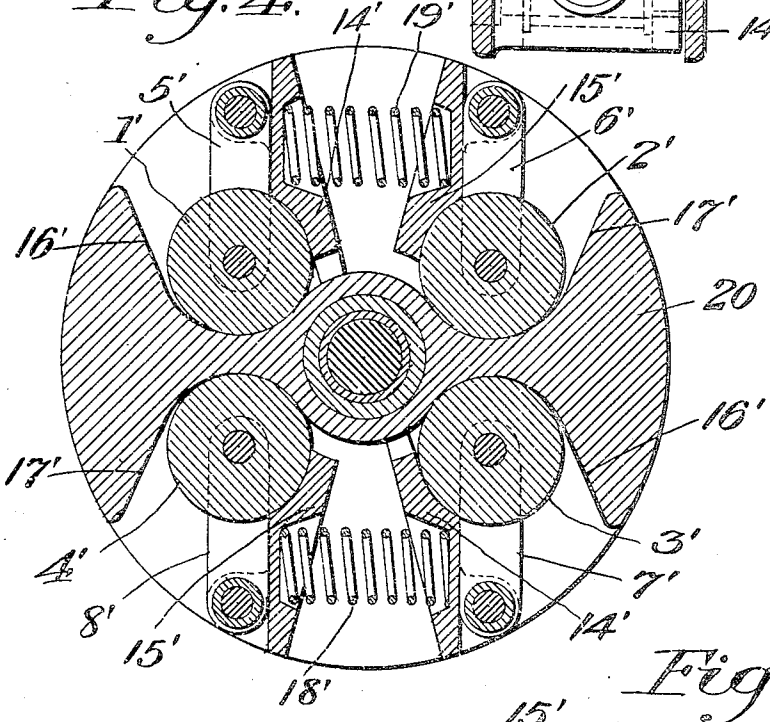
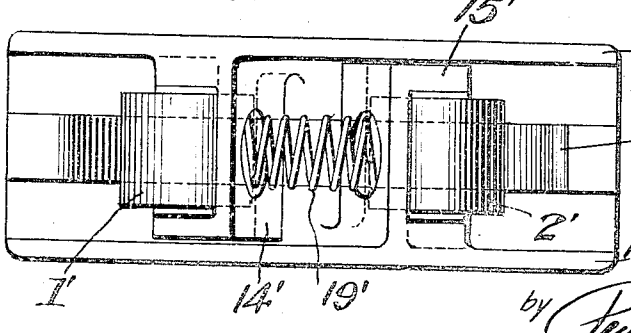


Fig. 5.



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UNITED STATES PATENT OFFICE.

ERNEST FUCHS, OF BILLANCOURT, FRANCE, ASSIGNOR TO LOUIS RENAULT, OF BILLANCOURT, FRANCE.

SHAFT-COUPLING.

1,235,129. Specification of Letters Patent. Patented July 31, 1917.

Original application filed August 31, 1915, Serial No. 48,354. Divided and this application filed May 6, 1916. Serial No. 95,912.

To all whom it may concern:

Be it known that I, ERNEST FUCHS, engineer, of 15 Rus Gustave Sandoz, at Billancourt, Department of the Seine, France, citizen of the French Republic, have invented certain new and useful Improvements in Shaft-Couplings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to a device for automatically controlling the angle of lead of the ignition under all conditions of operation in internal combustion engines.

The device comprises, in accordance with the invention, a number of masses secured to pendular arms pivotally mounted on suitable axes, on shafts. The said masses move in curved paths and bear on and control the angular displacement of two plates mounted on the engine shaft and the magneto shaft, respectively.

By selecting a suitable curvature of the path in which the masses move, it is possible to control the angle of displacement for all speeds of rotation of the device.

The accompanying drawings illustrate, by way of example, different constructional forms of the invention.

Figures 1 and 2 are respectively a vertical section at right angles to the axis and a vertical section taken on the axis of a first constructional form of the invention.

Fig. 3 is a sectional view taken parallel to the axes of the shafts of a modification of the coupling device.

Fig. 4 is a similar view taken at right angles to Fig. 3.

Fig. 5 is a plan view of the modification.

The device illustrated in Figs. 1 and 2, comprises four masses 1, 2, 3 and 4 which are secured to the end of four pendular arms 5, 6, 7 and 8 pivotally mounted in pairs on axes 9 and 10 carried by a central support 11 independent of the plates 12 and 13 and mounted on the controlling shaft.

The said plates 12 and 13 are provided with oppositely projecting sectors 14 and 15 provided with curved paths 16 and 17, respectively. The masses, 1, 2, 3 and 4 under the influence of centrifugal force, move away from one another and cause to separate, by contact therewith, the rolling path or paths 16 and 17, thereby causing the sections 14 and 15 to produce the advance of the plate 13 controlling the magneto.

Two springs 18 and 19 tend to bring the plates 12 and 13 back into their relative lagging positions. Instead of fixing the masses on an intermediate member, it is possible to fix the former on the plates, the paths in which they move being cut in a symmetrical member against which the pendular masses bear.

Figs. 3, 4 and 5 illustrate a controlling device which differs from that illustrated in Figs. 1 and 2 by the fact that the masses 1′, 2′, 3′ and 4′ are pivotally connected, by arms 5′, 6′, 7′ and 8′ to supports 14′ and 15′ cast together with the plates 12′ and 13′, respectively, and by the fact that the curved paths 16′ and 17′ are carried by an intermediate member 20 adapted to pivot on the controlling shaft.

The springs 18′ and 19′ acting on the supports 14′ and 15′ tend, as previously described, to separate the plates 12′ and 13′.

The operation of this device is the same as that of the constructional form hereinbefore described, the masses 1′, 2′, 3′ and 4′ acting, on account of tendency to separate on the curved paths, of the member 20; the latter being subject to converse reactions remains stationary while the points of articulation of the masses on the plates tend to approach one another and angularly displace the plates.

It is evident that the above described device is capable of modification, thus the helical springs may be replaced throughout by a single spiral spring.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. The combination with a driving shaft and a driven shaft, of a coupling device interposed between the two comprising a pair of elements secured respectively to the shafts and having opposed cam surfaces, an element located intermediate of the aforementioned elements and carried by one of said shafts, and arms pivoted on said last-mentioned element and having rollers engaging the cam surfaces, whereby upon the movement of the rollers under the action of the centrifugal force, the shafts will be rela-

tively displaced to change their circumferential relation.

2. The combination with a driving shaft and a driven shaft, of a coupling device interposed between the two comprising a pair of elements secured respectively to the shafts, an element located intermediate the aforementioned elements and mounted on the driving shaft, and means carried by the intermediate element and coöperating with the first-mentioned elements to adjust the shafts, each with relation to the other.

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

ERNEST FUCHS.

Witnesses:
CHAS. P. PRESSLY,
HENRI COHEN.