(No Model.) 2 Sheets—Sheet 1.

T. A. EDISON.

VALVE GEAR FOR ELECTRICAL GENERATOR ENGINES.

No. 273,493. Patented Mar. 6, 1883.

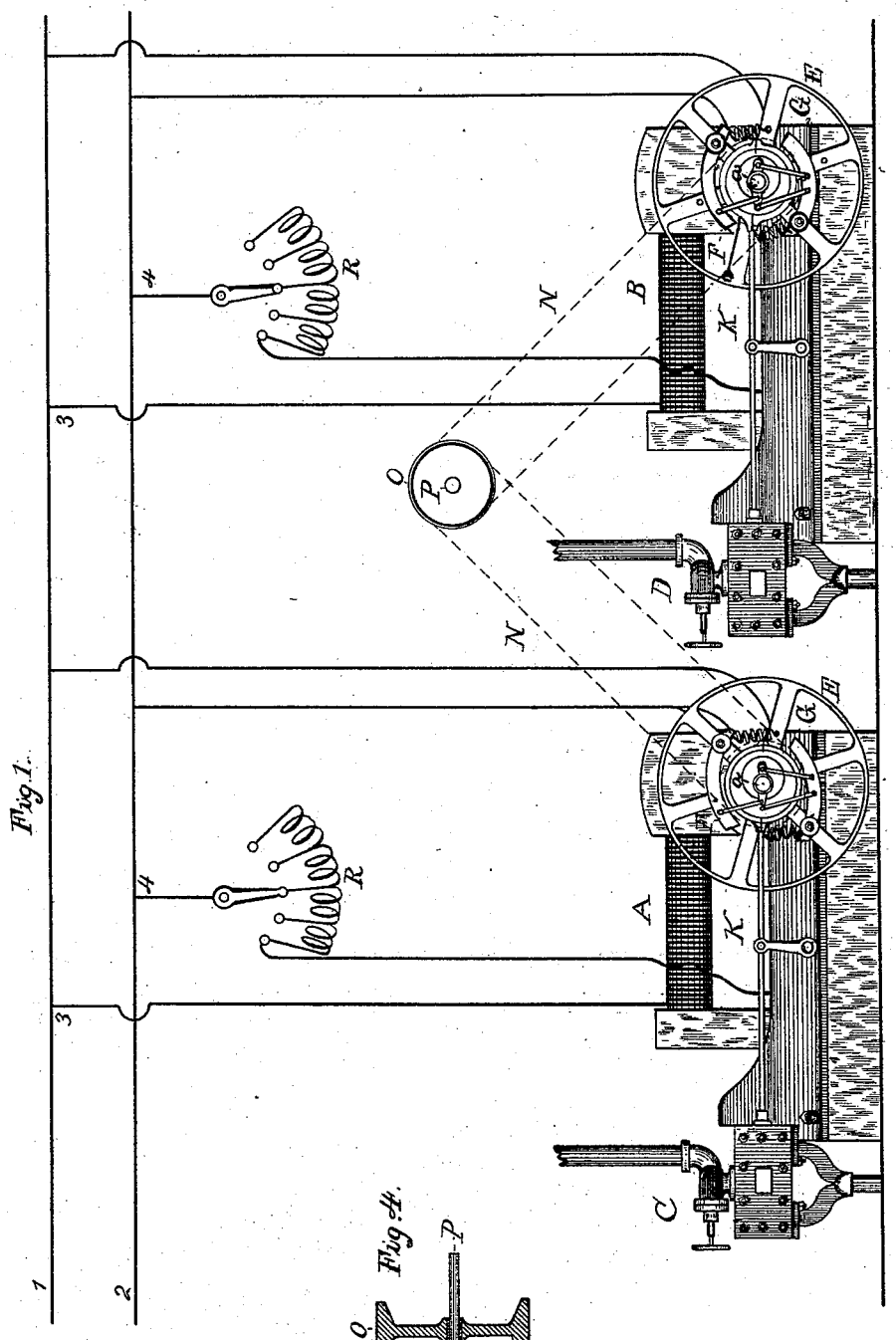

Fig. 1.

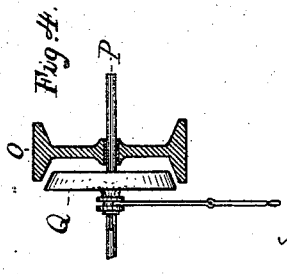

Fig. 4.

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

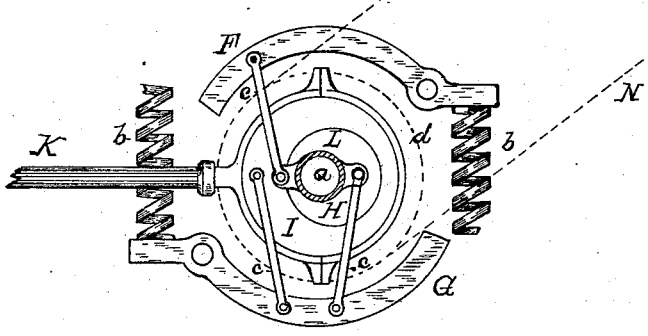
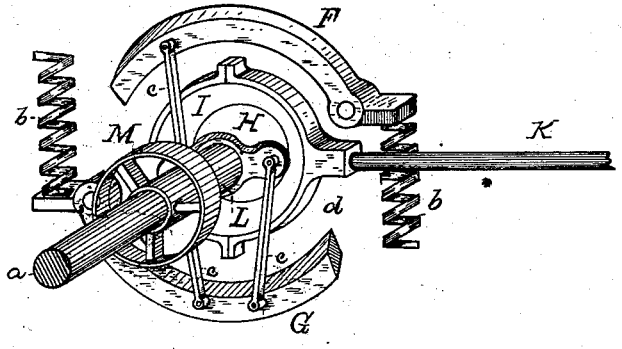


Fig. 3.



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INVENTOR:

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UNITED STATES PATENT OFFICE.

THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

VALVE-GEAR FOR ELECTRICAL GENERATOR-ENGINES.

SPECIFICATION forming part of Letters Patent No. 273,493, dated March 6, 1883.

Application filed October 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in Valve-Gear for Electrical Generator-Engines, (Case No. 500,) of which the following is a specification.

As explained in my application No. 488, (Serial No. 74,096,) great difficulty is experienced in operating two or more independent steam-engines, or other motors, running dynamo or magneto electric machines which feed into the same conductors or system of conductors, on account of the racing of the engines and the conversion of part of the generators into motors. In said application means are particularly shown and described for connecting together mechanically the governors of one type of engines. In that type the governors are mounted on spindles run from the engine-shaft and operate an arm which shifts the position of a slide-block working in a slot in a pivoted eccentric sleeve. The governor-arms being connected to a common shaft, the engines are forced to run in unison.

The object of my present invention is to produce simple and efficient means for connecting the governors of another type of engines, wherein pivoted centrifugal spring-weights are carried by the fly-wheel of each engine, and are connected with a double or single eccentric mounted loosely upon the engine-shaft. The sleeve surrounding the double or single eccentric is connected directly with the valve-rod, and the adjustment of such eccentric by the weights varies the point at which the steam is cut off. When the eccentric is double there is an adjustment of the outer part upon the inner part of the eccentric, as well as an adjustment of the inner part upon the shaft, while if the eccentric is single there is an adjustment only of the eccentric upon the shaft. The object is accomplished by connecting the loose eccentrics of all the engines together, so that variations in the governor of one engine will cause corresponding variations in the governors of all the other engines, and a uniform speed of the engines will be maintained. The connections of the eccentrics is made by any suitable means, each connection being a removable one, so that more or less of the engines can be run, as desired.

In carrying out my invention, the loose eccentric (or the inner part thereof, if it is a double eccentric) is mounted upon a sleeve loose upon the engine-shaft, which sleeve carries a pulley connected by a belt with a pulley on a revolving shaft common to all the engines; or the sleeve of the eccentric may be connected with the common shaft by gearing or otherwise. The connection with the common shaft is made a removable one by the use of a clutch-pulley, or by other means. All the eccentrics being connected with the common regulating-shaft, this shaft will be revolved by the engine-shafts, and the adjustment of one eccentric by its governor will, through the medium of the common shaft, adjust the other eccentrics simultaneously and to the same extent.

In the accompanying drawings, Figure 1 is an elevation of two engines with the governor-eccentrics connected with a common shaft, a diagram of connections being shown; Fig. 2, an elevation of one of the governors; Fig. 3, a perspective view of the same; and Fig. 4, a sectional view of a clutch forming the removable connection with the common shaft.

A and B represent dynamo or magneto electric machines which have their armatures connected to the same conductors, 1 2, or to the same system of conductors. The field-circuits 3 4 of the machines are provided with adjustable resistances R to regulate the machines, as required, by the addition and removal of translating devices.

C and D represent steam-engines, the shafts *a* of which are coupled directly with the shafts of the generators.

Upon each engine-shaft *a* is a wheel, E, which carries two pivoted weights, F G. These weights are thrown inwardly toward the shaft by springs *b*, and are connected by links *c* with the inner and outer parts, H I, of the loose eccentric. If a single eccentric is used, the links *c* will be connected with the one movable part. The eccentric sleeve *d* is connected with the valve-rod K. The eccentric, or the inner part, H, thereof, is mounted on a sleeve, L, sleeved upon the shaft *a*, and carrying a pulley, M. This pulley is connected by a belt, N, with a

loose pulley, O, on the revolving shaft P. The loose pulley O is connected with the shaft P, when desired, by a friction-clutch, Q, Fig. 4. All the engines (two or more) have their governors connected in this way with the revolving shaft P, and are thus forced to work in unison.

What I claim is—

1. The combination, with two or more separate engines having automatic cut-off mechanisms composed of loose eccentrics, and wheel-governors adjusting such eccentrics, of means for connecting such cut-off mechanisms together, so that they will work in unison, substantially as set forth.

2. The combination, with dynamo or magneto electric machines feeding into the same conductors, and two or more separate engines having automatic cut-off mechanisms composed of loose eccentrics, and wheel-governors adjusting such eccentrics, of means for connecting such cut-off mechanisms together, so that they will work in unison, substantially as set forth.

3. The combination, with two or more separate engines having automatic cut-off mechanisms composed of loose eccentrics, and wheel-governors adjusting such eccentrics, of a revolving shaft, and means connecting such shaft with the loose eccentrics of all the engines, substantially as set forth.

4. The combination, with two or more separate engines having automatic cut-off mechanisms composed of loose eccentrics, and wheel-governors adjusting such eccentrics, of a revolving shaft, means connecting such shaft with the loose eccentrics of all the engines, and means for disconnecting the engines as desired, substantially as set forth.

5. The combination, with two or more separate engines having automatic cut-off mechanisms composed of loose eccentrics, and wheel-governors adjusting such eccentrics, of sleeves upon which the eccentrics are mounted, a common revolving shaft, and pulleys and belts connecting the sleeves with said shaft, substantially as set forth.

This specification signed and witnessed this 19th day of October, 1882.

THOS. A. EDISON.

Witnesses:
H. W. SEELY,
E. H. PYATT.