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G. J. & H. G. PELSTRING.

SPEED REGULATOR FOR GENERATORS.

APPLICATION FILED SEPT. 2, 1902.

NO MODEL.

Fig. 1.

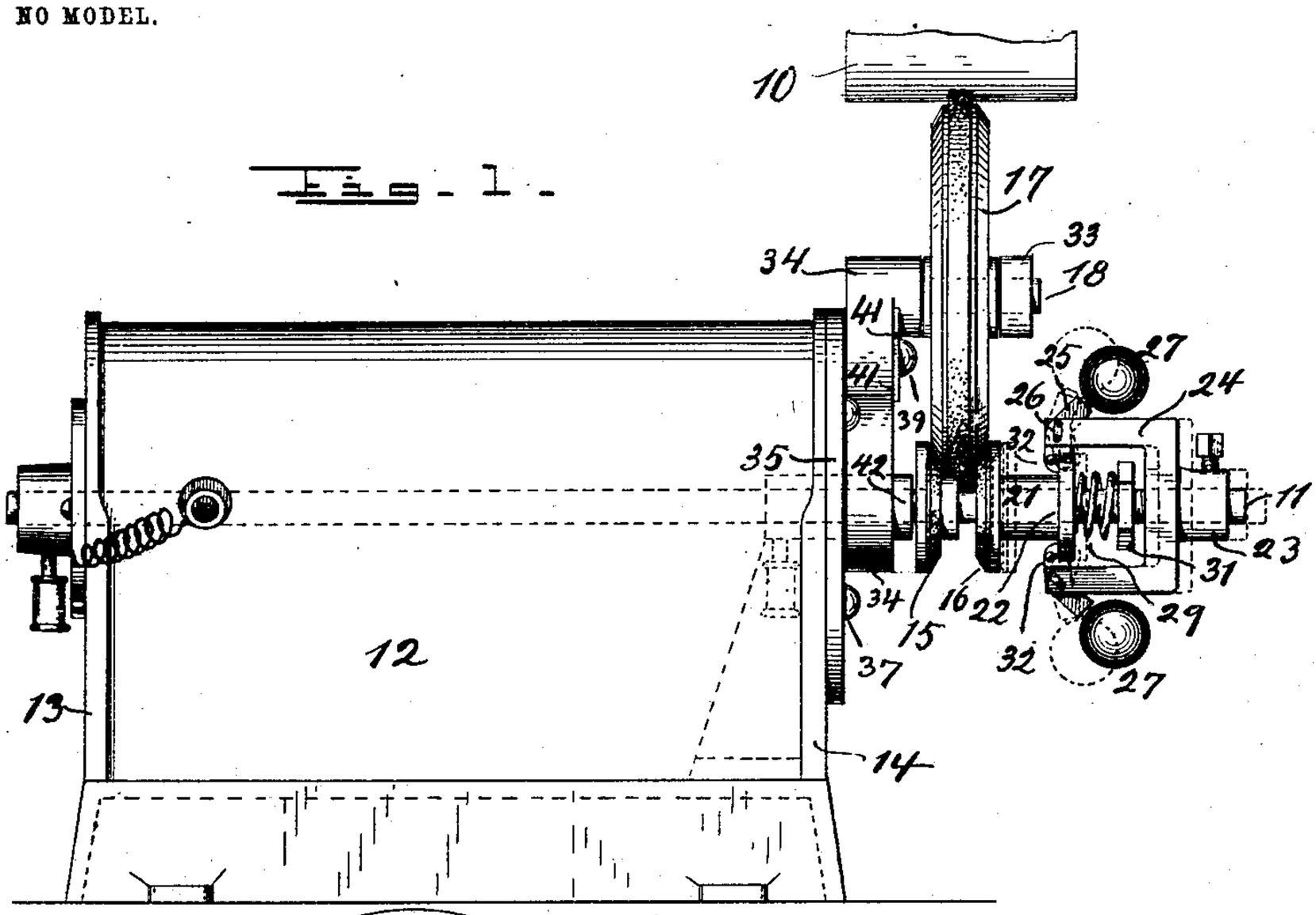


Fig. 2.

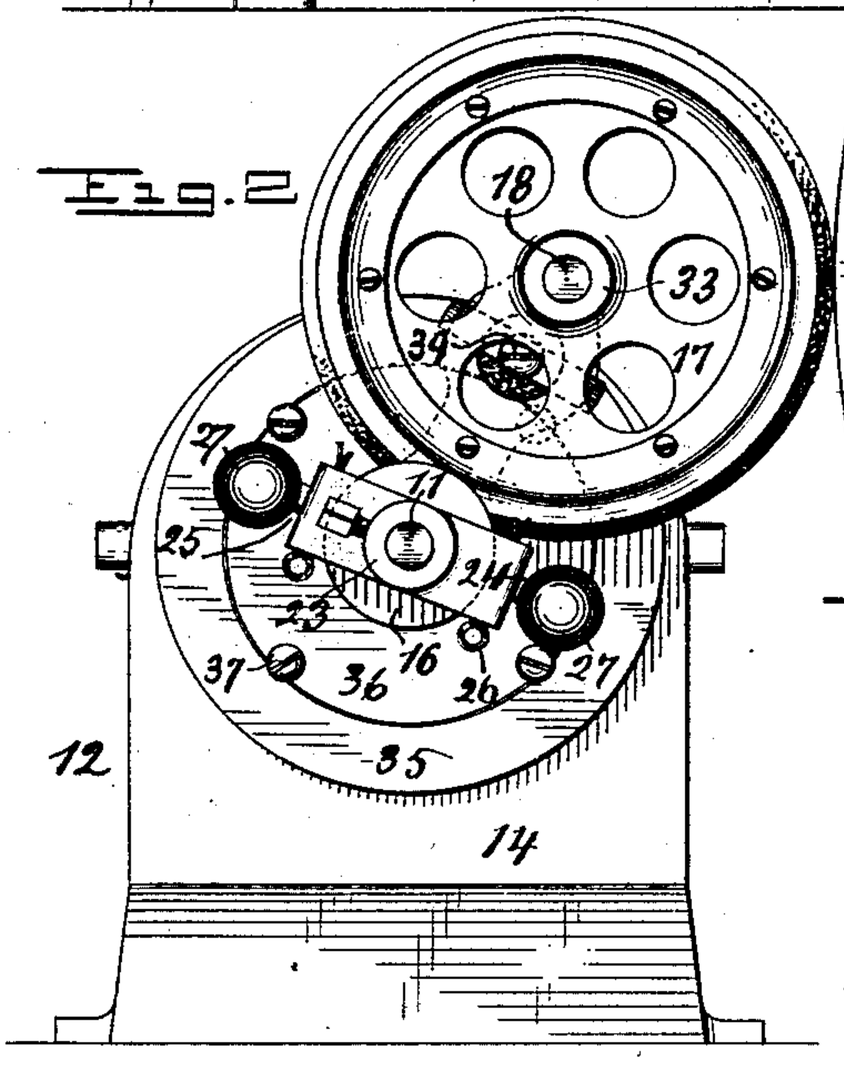


Fig. 3.

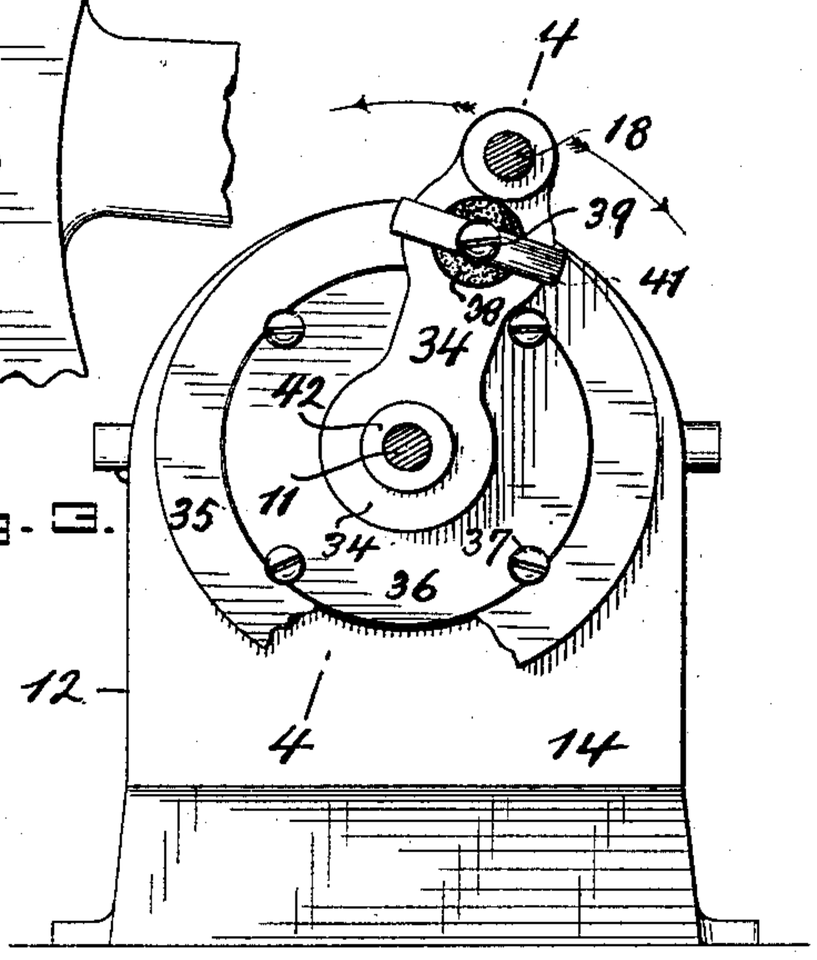


Fig. 4.

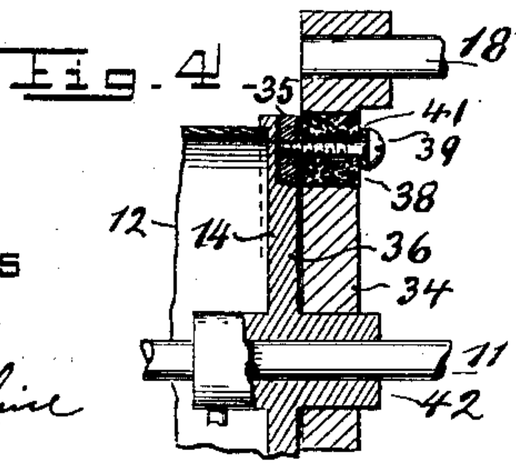
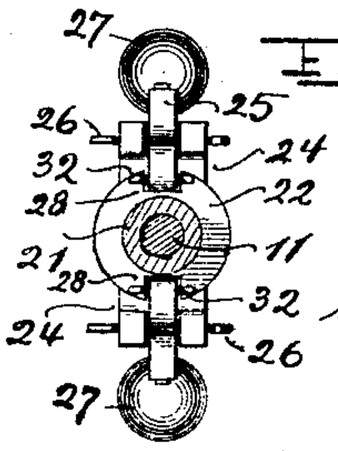


Fig. 5.



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UNITED STATES PATENT OFFICE.

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SPEED-REGULATOR FOR GENERATORS.

SPECIFICATION forming part of Letters Patent No. 719,037, dated January 27, 1903.

Application filed September 2, 1902. Serial No. 121,779. (No model.)

To all whom it may concern:

Be it known that we, GEORGE J. PELSTRING, of Cincinnati, Hamilton county, State of Ohio, and HENRY G. PELSTRING, of Covington, Kenton county, State of Kentucky, have invented certain new and useful Improvements in Speed-Regulators for Generators; and we do declare the following to be a clear, full, and exact description thereof, attention being called to the accompanying drawings, with the reference-numerals marked thereon, which form also a part of this specification.

This invention relates to a governor for regulating and equalizing the rotary speed of a device driven by means which transmit the power by frictional contact and the operating speed of which means is not strictly constant. A governor of this kind is particularly desirable in connection with electrical generators from which a current of constant quality is required. A condition which meets all these premises exists in explosive-engines using gas or vapor which is ignited by an electrical spark the current for which is furnished by a small generator driven by one of the moving parts of the same engine.

The object of this invention is to provide a governor for such a generator which is simple and efficient for the purpose and which may be readily placed in operative connection with an engine of the kind named.

In the following specification and particularly pointed out in the claims is found a full description of the invention, together with its operation, parts, and construction, which latter is also illustrated in the accompanying drawings, in which—

Figure 1 is a side view of such a generator, frequently also called "sparking generator" or "sparker," the same placed in operative connection by frictional contact with parts of an engine. Fig. 2 is an end view of Fig. 1. Fig. 3 shows the same view with certain parts of the mechanism removed. Fig. 4 is a section on line 4 4 of Fig. 3. Fig. 5 is a cross-section through hub 21.

11 is the armature-shaft of the sparking generator, preferably inclosed in a casing of which 12 is the side and 13 and 14 the heads. This shaft is rotated by two friction-pulleys 15 and 16, mounted on it and driven by an intermediate idler friction-pulley 17, mounted on a stud-shaft 18 and operated from a member 10, driven by the engine. The operation is by frictional contact with said member, which may be the fly-wheel of the engine, as shown, or it may be a belt driven by the latter and engaging the rim of idler 17. The driving contact between the rims of these friction-pulleys is a lateral or angular one, for which purpose these rims are shaped as shown, so that a lateral movement of one or both of these pulleys on the armature-shaft will cause such contact to be broken. The contacting surfaces of these pulleys, one in each case, are covered with suitable material—like leather or rubber, for instance—to provide sufficient adherence for this frictional contact. Of these friction-pulleys the one indicated by 15 is rigidly mounted on the armature-shaft, while pulley 16 is mounted in a manner to be connected with said shaft for rotation only, but is otherwise free to slide longitudinally thereon. For such purpose it is provided with a hub 21, having a flange 22, and somewhat farther out on the armature-shaft there is another hub, 23, rigidly connected and provided with arms 24, reaching over toward flange 22. In the outer ends of these arms there are levers 25, pivotally connected by means like split keys 26 and bearing at their outer ends governor-weights 27. Their inner ends reach into notches 28 in flange 22, whereby, since this flange forms a part of pulley 16, this latter is connected for rotation with shaft 11. A spring 29 is interposed between the two hubs and by bearing against the end of hub 21 acts in a manner to normally maintain the frictional contact between pulleys 16 and 17. This latter, being also free of a limited lateral sliding movement on its shaft, is likewise kept in contact with pulley 15. A nut 31 may be interposed between the end of spring 29 and hub 23 and carried on this latter or on shaft 11 and where by the pressure of the spring may be regulated so as regulate in a corresponding degree the impingement of the frictional contact between the pulleys. Additional adjustment is also possible by changing the position of

hub 23 on shaft 11. As soon as the speed commences to rise above the predetermined limit balls 27 swing outwardly, and by means of pins 32, which project from arms 25 and bear against flange 22, pulley 16 is drawn out of contact with pulley 17. This latter being free to slide laterally is at once thrown out of contact by pulley 15, since during rotation there is no tendency to maintain such contact unless the parts are held to each other by positive means. As soon as the speed drops the pressure of spring 29 establishes again operative contact. We are aware that for mere operation one pulley on shaft 11 might be sufficient and pulley 15 could be dispensed with. The lateral contact of the two pulleys would, however, have a tendency to cause them to bind on their shafts, thereby increasing friction and rendering the operation of the device less delicate and slower to respond. While pulley 17 has been described as being free to move laterally, yet such movement is limited by a collar 33 to prevent said pulley from following pulley 16 and maintaining contact therewith. In order to enable the attachment of this sparker to suit existing conditions of parts, particularly as to the position of driving member 10, pulley 17 is adjustable in position with reference to such part 10, but in a manner to always maintain contact with pulleys 15 and 16. For such purpose the shaft of pulley 17 is carried at the outer end of an arm 34, secured to a locking-ring 35, which latter has a rotary adjustment around a boss 36 on head 14 and which adjustment is secured by locking means 37. The attachment of this arm 34 to ring 35 is not absolutely rigid, but rendered slightly yielding to any irregularities in the contact-surface or movement of member 10 and which permits pulley 17 to accommodate itself to such irregularity. This is accomplished by a rubber cushion 38, surroundings crew 39, by which arm 34 is held to ring 35. A washer-plate 41 is added to aid the retention of the rubber.

The position of the parts with reference to the distance between the centers of shafts 11 and 18 should be absolutely rigid, however, for which purpose arm 34 is centered on a hub 42, projecting from head 14 and concentric with the shaft-bearing.

The face of transmitting-pulley 17 has by preference a groove which may be occupied by the material (rubber or leather) in case such pulley is driven by frictional contact from a fly-wheel. If driven by a belt, this latter, which is preferably a rope belt, may then occupy this groove.

The lateral frictional contact of either or both pulleys 15 and 16 with the driving medium 10 may also be a direct one and without the use of the intermediate transmitting-pulley 17.

Having described our invention, we claim as new—

1. In a speed-regulator, the combination of a driven shaft, a friction-pulley mounted thereon to rotate it, an intermediate transmitting friction-pulley adapted to receive motion from a driving medium, a spring to maintain the two pulleys normally in contact, which contact is a lateral one and one yielding in a direction parallel to the driven shaft, and mechanism susceptible to the action of centrifugal force, also mounted on the driven shaft and operatively connected to the pulley thereon in a manner which opposes the action of the spring mentioned.

2. In a speed-regulator, the combination of a driven shaft, a friction-pulley mounted thereon to rotate it, an intermediate transmitting friction-pulley adapted to receive motion from a driving medium, a spring to maintain the two pulleys normally in contact, which contact is a lateral one and one yielding in a direction parallel to the driven shaft, governor-weights carried on the driven shaft and attached in a manner to be susceptible to the action of centrifugal force and operative connection between them and the driven pulley which tends to break the contact between the engaged friction-pulleys when subjected to the action of the force mentioned.

3. In a speed-regulator, the combination of a driven shaft, a friction-pulley mounted thereon to rotate it, an intermediate transmitting friction-pulley adapted to receive motion from a driving medium and normally in contact with the other pulley, a governor mechanism susceptible to centrifugal action which controls this contact and a support on which the transmitting-pulley is carried in a manner to meet the position of the driving medium while at the same time remaining in contact with the driven pulley.

4. In a speed-regulator, the combination of a driven shaft, a friction-pulley mounted thereon to rotate it, an intermediate transmitting friction-pulley adapted to receive motion from a driving medium and normally in contact with the other pulley, a governor mechanism susceptible to centrifugal action which controls this contact, a support for the transmitting-pulley, an adjustable locking-ring supported concentrically to the driven shaft, and to which the support mentioned is connected and means to lock this ring with the transmitting-pulley in their adjusted position.

5. In a speed-regulator, the combination of a driven shaft, a friction-pulley mounted thereon to rotate it, an intermediate transmitting friction-pulley adapted to receive motion from a driving medium and normally in contact with the other pulley, a governor mechanism susceptible to centrifugal action which controls this contact, a stud-shaft on which this transmitting-pulley is mounted, an arm capable of a swinging adjustment from which this shaft projects and which arm is pivotally supported on a fixed center, which center is coincident with the center of rotation of the driven pulley, an adjustable locking-ring to which this arm is connected midway between

its ends which connection is one slightly yielding in a direction parallel to the periphery of such ring and means to lock this latter and the arm thereon in their adjusted position.

6. In a speed-regulator, the combination of a driven shaft, two friction-pulleys mounted thereon side by side to rotate it and having their opposite edges bevel-faced, an intermediate transmitting friction-pulley having bevel-faced edges so mounted between the other two pulleys as to be capable of engaging their beveled faces and adapted to receive motion from a driving medium, a spring to normally maintain the contact between these three pulleys and a governor mechanism susceptible to centrifugal action which controls this contact.

7. In a speed-regulator, the combination of a shaft, a friction-pulley to rotate it, the same mounted on said shaft so as to be capable of a sliding movement thereon, a driving medium, a spring to hold the friction-pulley in contact with this latter, which contact is a lateral one and a governor mechanism susceptible to centrifugal action which controls this contact.

8. In a speed-regulator, the combination of a shaft, a pulley mounted thereon in a manner to be free of longitudinal movement, a hub on this pulley, a flange on this hub provided with notches, arms rigidly secured to the shaft, levers mounted on these arms and occupying one each with one of their ends one of the notches mentioned and whereby the pulley mentioned is caused to rotate with the shaft, weights attached to the other end of these levers, projections on these latter adapted to engage the flanged hub to move the same in one direction on the shaft and a spring so mounted as to normally oppose this movement.

In testimony whereof we hereunto set our signatures in the presence of two witnesses.

GEORGE J. PELSTRING.
HENRY G. PELSTRING.

Witnesses:
C. SPENGEL,
ARTHUR KLINE.