

H. F. T. ERBEN.
SPEED LIMITING DEVICE.
APPLICATION FILED NOV. 23, 1903.

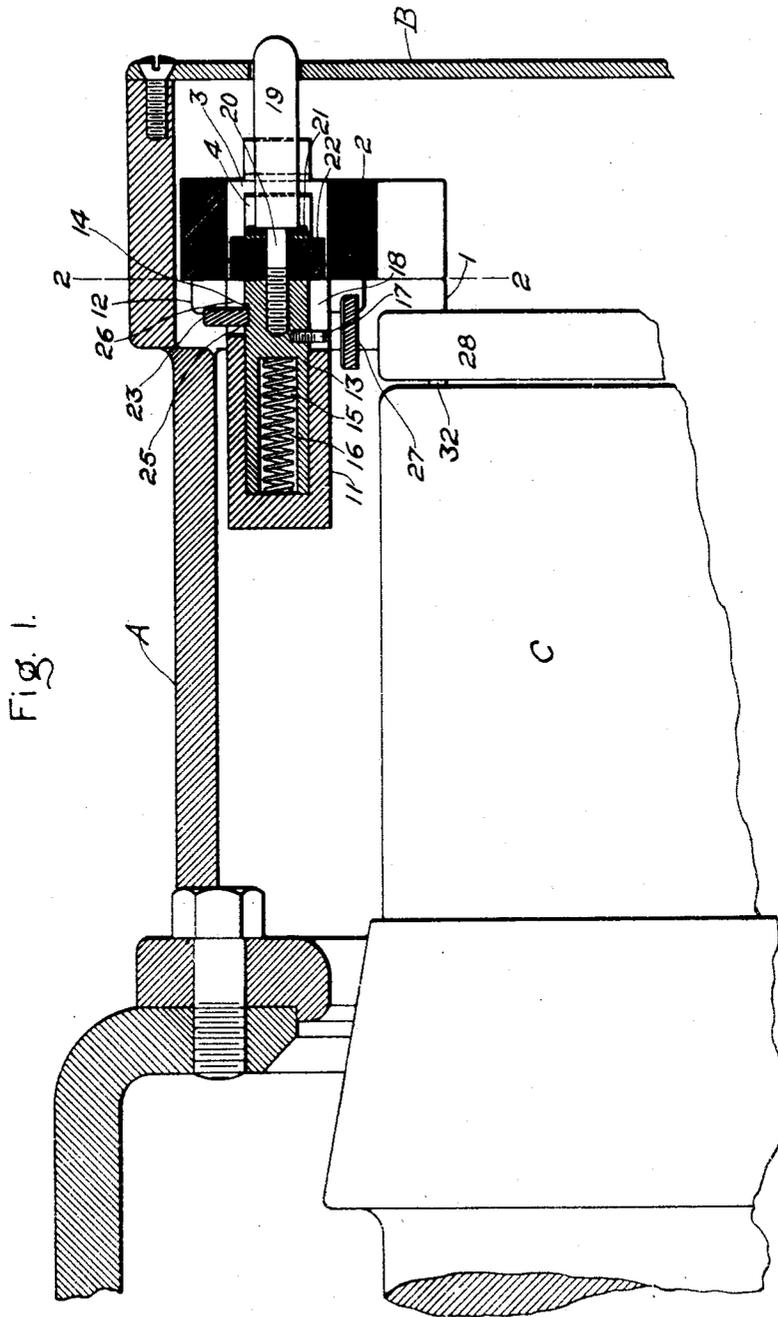


Fig. 1.

Witnesses:

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Helen Arford

Inventor:

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by *Albert ...*
Att'y.

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2 SHEETS—SHEET 2.

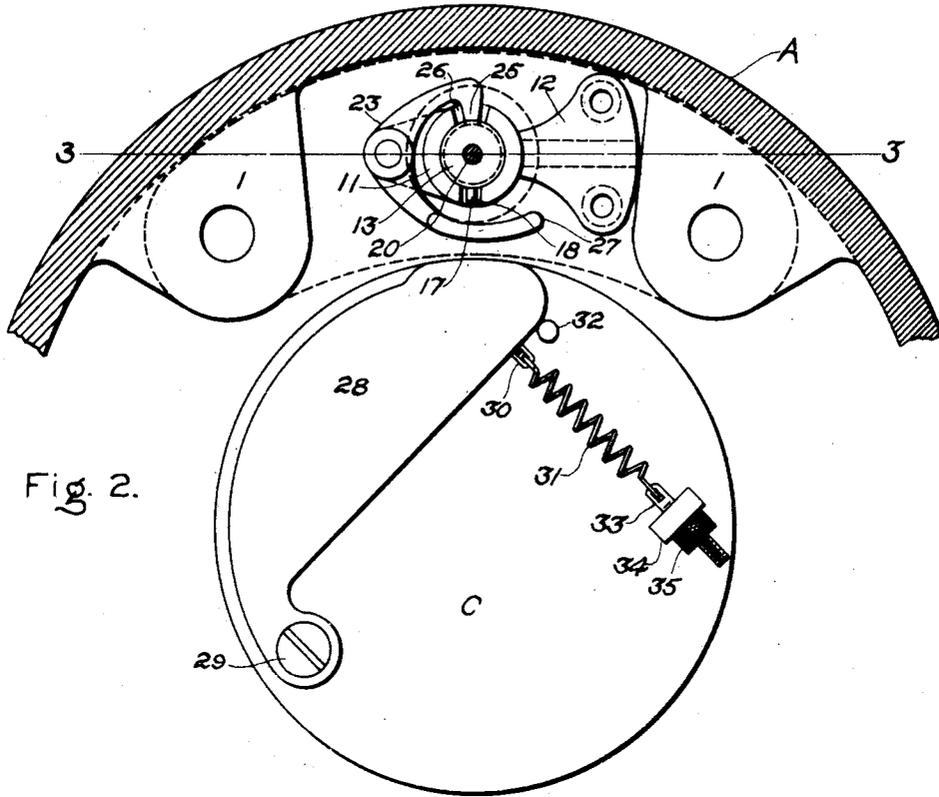


Fig. 2.

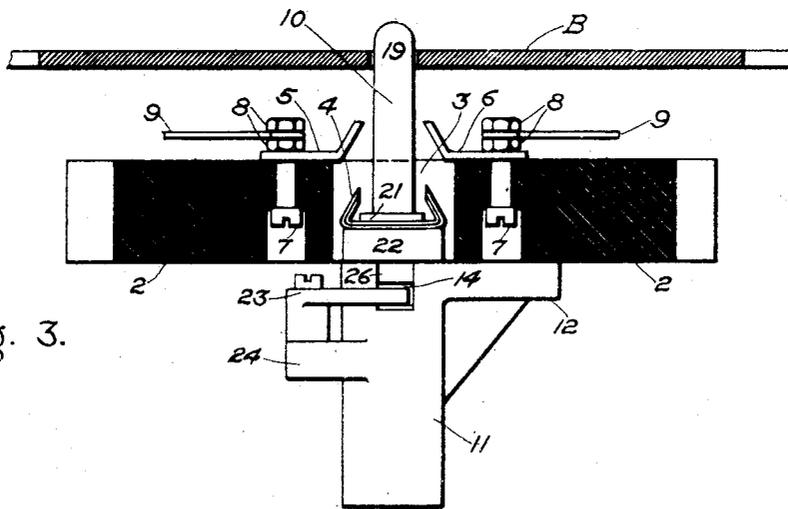


Fig. 3.

Witnesses:
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UNITED STATES PATENT OFFICE.

HERMANN F. T. ERBEN, OF SCHENECTADY, NEW YORK, ASSIGNOR TO
GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SPEED-LIMITING DEVICE.

SPECIFICATION forming part of Letters Patent No. 792,012, dated June 13, 1905.

Application filed November 23, 1903. Serial No. 182,357.

To all whom it may concern:

Be it known that I, HERMANN F. T. ERBEN, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Speed-Limiting Devices, of which the following is a specification.

The present invention relates to speed-limiting devices for rotary machines, and particularly to that class of speed-limiting devices which operate automatically to close an electric circuit through suitable translating mechanism upon a certain predetermined speed being exceeded.

The object of my invention is to provide a very simple, compact, and inexpensive device of this character which may be applied with facility to a shaft or other rotating part of the machine whose speed of rotation is to be limited.

In carrying out my invention I provide the rotary element of the machine with a radially-movable weighted part and connect thereto a spring which operates to hold it in its innermost position against centrifugal action until a predetermined maximum speed is exceeded, and upon some stationary part in proximity thereto I mount a spring-pressed electric switch normally held in retracted position by a latch having an end extended into position to be struck by the weighted part whenever the latter moves out of its innermost position and immediately release the spring-pressed member of the switch, and thereby complete the electric circuit through the translating devices.

The invention will be more readily understood upon reference to the following description and the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a broken sectional elevation of the shaft and housing of a dynamo-electric machine having connected thereto a speed-limiting device embodying my invention. Fig. 2 is a right-hand sectional elevation taken on line 2 2 of Fig. 1, showing the parts in their normal position; and Fig. 3 is a horizontal section of the insulating-support of the

switch, taken on line 3 3 of Fig. 2, with the switch parts shown in plan.

The housing A is cast with two inwardly-projecting lugs 1, provided with bolt-holes, and to these lugs is secured a block of insulation 2, which serves as a support for the circuit-closing device. A central aperture 3 is provided in the block 2 for the passage therethrough of the movable member 4 of the circuit-closing device, and to the front side of the block, on opposite sides of the aperture 3, are secured stationary contacts 5 and 6, having their inner ends bent forward at an angle to the face of the block and held in place thereon at their outer ends by bolts 7 extending through the block and provided with pairs of nuts 8, which also serve as binding means for the ends of the conductor-wires 9.

The movable member 4 of the circuit-closing device is carried by a spring-pressed plunger 10, and consists of sheet-metal laminae bent up at their ends parallel to the inner ends of the stationary contacts 5 and 6, so that the former when moved outwardly will engage the latter with a wedging action. The plunger 10 is supported to move freely in a longitudinal direction in a cylindrical casing 11, supported by a radial bracket 12, bolted to the rear surface of the supporting-block 2. The inner end of the plunger 10 consists of a metallic cylinder 13, notched in one side at 14 and provided with an axial cavity 15, in which is located a helical spring 16, adapted to thrust against the end of the casing 11 and the inner end of the cavity 15, and with an external lug or projection 17, which extends into a longitudinal slot 18, formed in the cylindrical casing 11 and serving to prevent rotation of the plunger relative to the casing and stationary contacts. To the front end of the metallic cylinder 13 is secured a push-button 19, having a reduced shank 20, which extends through an insulating-washer 21, the movable contact member 4, a second insulating-washer 22, and engages a screw-threaded hole in the metallic cylinder 13. The push-button is made long enough to extend some distance through the end plate B of the housing, so that it may

be readily forced into its innermost position and latched.

The latch 23 is fulcrumed upon a lug 24, projecting from a side of the casing 11, and has one arm extended above the casing and turned downward, forming a toe 25, which projects through a slot 26, formed in the casing, and into the path of the plunger 10, so that it will readily engage the notch 14 therein to hold the plunger in retracted position against the tension of the spring 16, and a second arm extended under the casing and provided with a broadened striking end 27, adapted to be engaged and moved upward by the centrifugal member to thereby raise the toe 25 out of engagement with the plunger. The centrifugal member 28 consists of a thick bar of metal provided at one end with a hole for a screw 29, by which it is pivotally attached to the revoluble element C, and at the other end with an eye 30, to which is attached a helical spring 31, which is operative to hold the member 28 drawn inward against a stop 32 in opposition to centrifugal action at normal speeds. The opposite end of the spring 31 is connected to a threaded rod 33, extending through a lug 34, secured to the end of the revoluble element C and provided with a thumb-nut 35, whereby the tension of the spring may be readily adjusted to vary the tension on the spring 31, and thereby calibrate the centrifugal member 28 to operate upon a desired speed being exceeded. In order that there may be no unnecessary vibration of the member 27, the stop 32 is provided, consisting of a pin which projects a slight distance from the end of the rotary element and is so positioned as to engage and hold the centrifugal member 28 in an outward position with slight clearance-space between its outer end and the striking end 27 of the latch-lever.

I do not desire to restrict myself to the particular construction or arrangement of parts herein described and shown, since it is apparent that they may be changed and modified without departing from my invention.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a longitudinally-biased circuit-controlling device, a latch for holding it in retracted position, and centrifugal means for engaging and tripping said latch.

2. The combination of a spring-pressed circuit-controlling device, a latch for holding it in retracted position, and a centrifugal member adapted to engage and trip said latch and

thereby permitting the circuit-controlling device to move into closed position under the recoil of its spring.

3. The combination of a spring-pressed circuit-controlling device adapted to be mounted upon a stationary support, a latch for holding said device in retracted position, and a weighted movable member mounted upon a revolving part and adapted to engage and trip said latch.

4. The combination of a stationary support, electric contacts secured thereto, a spring-pressed movable contact, a casing for supporting said movable contact secured to said support, a latch for holding said movable contact in retracted position, and centrifugal means for engaging and tripping said latch.

5. The combination of stationary contacts, a movable contact carried by a spring-pressed plunger, a latch for engaging and holding said plunger in retracted position, and centrifugal means carried by a revoluble part for engaging and tripping said latch.

6. The combination of stationary contacts, a movable contact carried by a spring-pressed plunger, a casing in which said plunger is free to move provided with a lug and an attaching-bracket, a latch pivoted upon said lug and adapted to hold said plunger in retracted position, and centrifugal means carried by a revoluble part for engaging and tripping said latch.

7. The combination of stationary contacts, a movable contact carried by a spring-pressed plunger having a push-button, a latch for engaging and holding said plunger in retracted position, and a centrifugal member carried by a revoluble part for engaging and tripping said latch.

8. The combination of stationary contacts, a movable contact, a plunger carrying said movable contact and provided with an axial recess and a push-button, a casing in which said plunger is free to move longitudinally, a spring located in said axial recess and operating to move said plunger out of said casing, a latch fulcrumed upon said casing and adapted to engage and hold said plunger in retracted position, and centrifugal means carried by a revoluble part and adapted to engage and trip said lever.

In witness whereof I have hereunto set my hand this 21st day of November, 1903.

HERMANN F. T. ERBEN.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.