J. WILKINSON.

EMERGENCY GOVERNOR.

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1,076,472.

Patented Oct. 21, 1913.

Fig. 1.

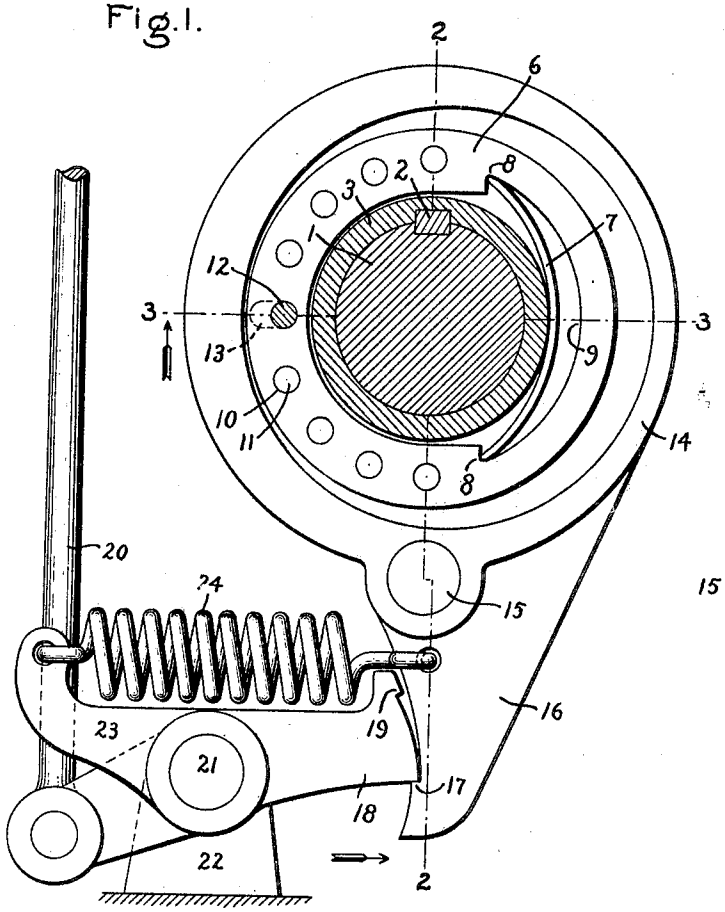


Fig. 2.

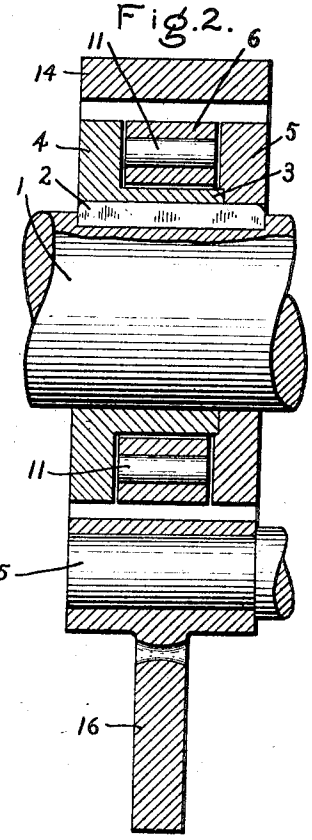
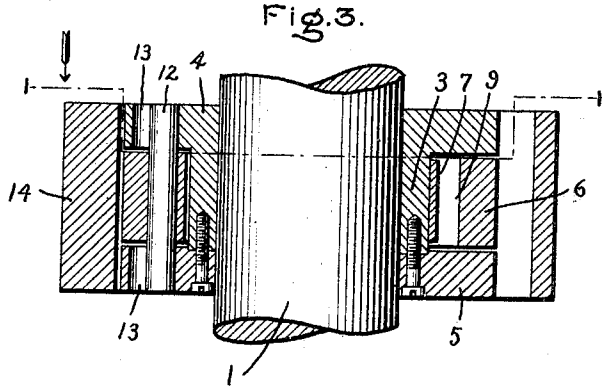


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES WILKINSON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

EMERGENCY-GOVERNOR.

1,076,472. Specification of Letters Patent. Patented Oct. 21, 1913.

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To all whom it may concern:

Be it known that I, JAMES WILKINSON, a citizen of the United States, residing at Boston, county of Suffolk, State of Massachusetts, have invented certain new and useful Improvements in Emergency-Governors, of which the following is a specification.

The present invention relates to so-called emergency governors that are employed to stop the apparatus by which they are driven when the speed of said apparatus exceeds a predetermined limit.

The governor is of particular application in connection with elastic fluid turbines although the invention is not necessarily limited thereto.

The object of my invention is to provide an emergency governor that is simple in construction, reliable in operation and cheap to manufacture.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying description and claims appended thereto.

In the drawing which illustrates one of the embodiments of my invention, Figure 1 is a view partially in elevation and partially in section of an emergency governor, the section being taken on line 1—1 of Fig. 3; Fig. 2 is a sectional view taken on line 2—2 of Fig. 1; and Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

1 indicates a shaft driven by a turbine or other apparatus to be controlled. Surrounding it and secured thereto by a key 2 is a sleeve 3 having a flange 4 formed integral therewith. 5 indicates a second flange that is also keyed to the shaft and coöperates with the sleeve to form a recess, Fig. 2, to receive the weight 6. The weight 6, best shown in Fig. 1, comprises a ring-like structure that surrounds the sleeve and has a greater mass on one side of a vertical plane passing through the axis of the shaft than on the other so that as said weight is rotated it has a tendency to move in a direction perpendicular to the axis of the shaft. This action is resisted or opposed by a flat spring 7 that is seated at its ends in notches 8 formed at the ends of a recess in the weight and which at its central portion rests on the sleeve 3. This spring at all times has a tendency to straighten out. It is held against axial movement by the flanges of the sleeve. The ring directly back of the spring is cut away or recessed at 9 to permit the weight to move, in Fig. 1, from right to left upon a predetermined increase in speed. So long as the speed is normal the weight remains in the position shown. As it is necessary to adjust these weights to actuate at a predetermined speed, it is some times necessary to change the mass of said ring. To this end a number of holes 10 are bored in the ring and these are filled with plugs 11. By removing one or more of these pins the unbalanced arrangement of the mass can readily be changed thereby effecting a variation in the tripping speed of the governor.

12 indicates a pin that is carried by the weight and moves in slots 13 formed in the flange 4 and in the ring 5. This forms the driving connection between the shaft and weight and serves to prevent angular movement of the weight independently of the shaft.

Surrounding the weight is a ring 14 that is supported by a pivot pin 15 carried by any suitable support. The ring is provided with an extension or projection 16 containing a shoulder 17 that engages with the latch 18, the latter being provided with a shoulder 19 that engages the shoulder 17 when the governor is tripped, said shoulder 19 limiting the movement of the rod 20 which is connected to one end of the latch and also serving as a means to limit the movement of the ring. The latch is provided with a pivot 21 supported in one or more brackets 22 from a suitable fixed support.

23 indicates an arm that is formed integral with the latch to which one end of the coiled extension spring 24 is connected, the other end of the spring being attached to the projection 16 of the ring. The rod 20 may be arranged to trip an emergency valve to shut off steam to the turbine or if the governor is used with some other apparatus than a turbine, it can be employed to trip a suitable regulating mechanism that will cut off the supply of energy to the apparatus driving the governor.

The operation of my improved governing mechanism is as follows:—Assuming that speed of the driven shaft 1 reaches a predetermined value, the heavy portion of the weight 6 will move outward away from the

shaft and when it is moved a sufficient distance will come in contact with the inner surface of the ring 14, thereby swinging it to the left about its pivot 15. When a certain displacement of the weight has taken place, the shoulder 17 will be withdrawn from engagement with the latch 18 and the spring 24 will turn the latch about the pivot 21 and in so doing move the rod 20 upwardly to trip the valve or other mechanism actuated thereby, thus shutting down the machine. The shoulder 19 engaging the shoulder 17 limits the movement of the ring and also of the rod 20. To reset the apparatus the projection 16 is pulled to the right and the latch raised until its end is slightly above the shoulder 17 when the projection 16 is released and the spring 24 will hold the parts in the position shown.

My improved governing mechanism has the advantage of requiring only very simple parts which can be made as rugged as desired. All nicely fitting parts are avoided so that no particular skill is required in the manufacture thereof and the governor as a whole is readily assembled and taken down when desired.

In accordance with the provisions of the patent statutes, I have described the principle of operation of my invention, together with the apparatus which I now consider to represent the best embodiment thereof; but I desire to have it understood that the apparatus shown is only illustrative and that the invention can be carried out by other means.

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

1. In an emergency governor, the combination of a driving member, a ring shaped weight which surrounds the member and has a greater mass on one side of a plane passing through the axis of the member than on the other, a spring which opposes the movement of the weight in a plane perpendicular to the axis of the member, said spring being located between the weight and said driving member, and a means arranged to be actuated by said weight.

2. In an emergency governor, the combination of a driving member, a ring shaped weight which surrounds the member and has a greater mass on one side of a plane passing through the axis of the member than on the other, a flat spring whose ends are fitted into notches in the weight and whose central portion rests on the member, and a means actuated by the periphery of said weight.

3. In an emergency governor, the combination of a driving shaft, a flanged sleeve on the shaft, a ring-shaped weight that surrounds the sleeve and is located between its flanges, said ring-shaped weight having an unbalanced mass, a recess in the weight, terminating in notches, a flat spring whose ends are seated in the notches and whose central portion rests on the sleeve for opposing the outward movement of the weight, and means actuated by the peripheral portion of the weight.

4. In an emergency governor, the combination of a driving member, a ring-shaped weight which surrounds the member and has a greater mass on one side of a plane passing through its axis than on the other, a spring opposing the movements of the weight, a ring which surrounds the weight and is moved thereby, a latch controlled by the ring, and a means that is released by the latch.

5. In an emergency governor, the combination of a driving member, a ring-shaped weight which surrounds the member and has a greater mass on one side of a plane passing through its axis than on the other, a spring opposing the movements of the weight, a ring which surrounds the weight and is rocked thereby, a projection on the ring having a shoulder, a latch arranged to engage the shoulder, a means actuated by the latch, and a spring that tends to hold the shoulder and latch in fixed relation.

6. In an emergency governor, the combination of a driving member, a ring-shaped weight which surrounds the member and has a greater mass on one side of a plane passing through its axis than on the other, a spring opposing the movements of the weight, a ring which surrounds the weight and is rocked thereby, a projection on the ring having a shoulder that holds the ring in a fixed position, a spring that holds the latch and ring in definite relation, and a rod connected to the latch which is moved by the spring when the governor displaces the ring and releases the latch.

7. In an emergency governor, the combination of a driving member, a weight moved thereby, a spring opposing the movement of the weight away from the member, a means acted upon by the weight, a pivoted latch that is fixed in position by the means, a device that is moved by the latch when the latter is released by the means, and a spring which normally holds the latch and means in position and which moves the device when the means releases the latch.

8. In an emergency governor, the combination of a shaft, a flanged sleeve mounted thereon, a ring-shaped weight that surrounds the sleeve and is located between its flanges, said weight being heavier on one side than on the other, a spring that opposes the movements of the weight, and a pin carried by the weight whose ends project into slots in the flanges to prevent independent rotation.

9. In an emergency governor, the combination of a shaft, a flanged sleeve mounted

hereon, a ring-shaped weight that surrounds the sleeve and is located between its flanges, said weight being heavier on one side than on the other, a flat spring that is located in a recess in the weight whose ends rest in notches in the weight, said spring being prevented from moving axially of the shaft by the flanges on the sleeve, a pin for preventing independent angular movements of the weight and sleeve, and a means actuated by the weight.

In witness whereof, I have hereunto set my hand this 5th day of February 1912.

JAMES WILKINSON.

Witnesses:
BENJAMIN B. HULL,
HELEN ORFORD.