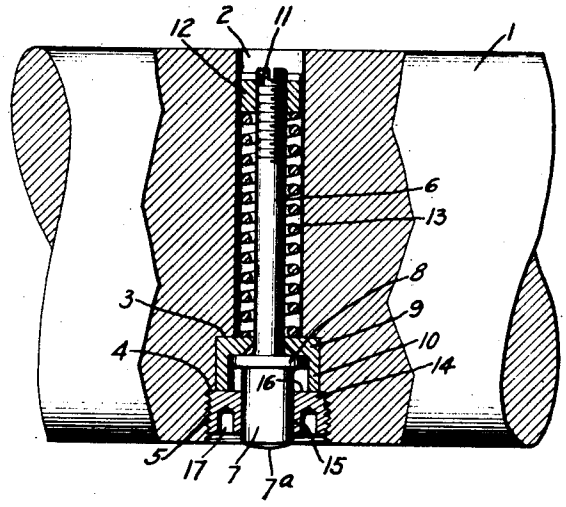
Oct. 17, 1933. D. F. WARNER 1,931,096

BOLT TYPE EMERGENCY GOVERNOR

Filed Aug. 24, 1932



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Patented Oct. 17, 1933 1,931,096

UNITED STATES PATENT OFFICE

1,931,096

BOLT TYPE EMERGENCY GOVERNOR

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Application August 24, 1932. Serial No. 630,221

2 Claims. (Cl. 264—17)

The present invention relates to emergency governors such as are used in connection with elastic fluid turbines, for example, to effect closing of the emergency control valve means in case of excess speed. It relates especially to emergency governors of the bolt type wherein a bolt or plunger, the center of gravity of which is at one side of the center of the shaft, is held against movement normally by a spring but in case of excess speed is thrown out by centrifugal force and strikes a trip finger or trigger which, when moved, releases the emergency valve mechanism and permits it to close. Such governors must be set accurately for the desired tripping speed, this being done usually at the factory before the turbine or other machine of which it forms a part is shipped.

One object of my invention is to provide an improved bolt type emergency governor which is extremely simple in construction and made up of a minimum number of parts so that it can be manufactured at a low cost.

A further object of my invention is to provide a bolt type emergency governor which is a unitary structure whereby it may be assembled and adjusted on a test stand before being mounted on a turbine shaft.

Other objects and the advantages of my invention are pointed out in the following specification, and for a consideration of what I believe to be novel and my invention, attention is directed to the following specification and the claims appended thereto.

In the drawing, the figure is a sectional view of bolt type emergency governor embodying my invention.

Referring to the drawing, 1 indicates a shaft such as, for example, the shaft of an elastic fluid turbine. In the shaft is a transverse opening 2 counter-bored at one end to provide an inner shoulder 3 and an outer shoulder 4, the opening beyond the outer shoulder being threaded as is indicated at 5.

Mounted in opening 2 is an emergency governor comprising bolt 6 of a length preferably slightly less than the diameter of the shaft. On one end of the bolt is a head 7 having a curved striking face 7*a*, this being the face which strikes the trip trigger to effect closing of the emergency valve mechanism as is well understood. At the base of head 7 is a collar 8 which engages the bottom wall 9 of a cup-shaped member, the side wall of which is indicated at 10. Or, otherwise considered, 9 is a base plate or wall provided with a flange 10. Bolt 6 projects through an opening in wall 9 and its outer end is threaded as is indicated at 11 to receive an adjusting nut 12. Located between nut 12 and the outer surface of wall 9 is a spring 13 which surrounds bolt 6. Screwed into the threaded end of opening 2 is a holding nut 14 having a central opening 15 through which head 7 projects. Nut 14 overlies the end of wall or flange 10 to provide a stop or abutment 16. At 17 are openings in holding nut 14 to receive a suitable tool for screwing the nut into and out of position. Collar 8 has a sliding fit with wall 10, the wall serving as a guide for the head 7. Also the opening through nut 14 serves as a guide for head 7.

The throw of bolt 6 is determined by the distance between collar 8 and the inner surface of nut 14 and this in turn is determined by the depth of wall or flange 10. When the emergency governor operates, flying out by centrifugal force, the movement is limited by collar 8 striking the inner side of nut 14. The tension of spring 13 is varied by adjusting nut 12 on threads 11.

It will be seen that the emergency governor comprises only five elements—the bolt 6, the spring 13, two nuts 12 and 14, and a cup-shaped member comprising walls 9 and 10. This provides a simple structure and one which is easily assembled.

In assembling the construction, it is necessary merely to drop bolt 6 through the opening in the bottom wall 9 of the cup-shaped member, position the spring 13 over the bolt and apply adjusting nut 12. As thus assembled, the structure may be mounted on a test stand and adjusted and tested to trip out at the desired speed. After being adjusted or set, it can be mounted in the shaft by dropping it as a unit into the opening 2 and screwing in place the holding nut 14. This arrangement makes its application to and removal from the shaft an extremely simple operation.

The nut 14 performs two functions in that it holds the emergency governor structure in position in the shaft and also provides a wall or shoulder against which flange 8 strikes when the bolt flies outward to limit its outward movement.

As is obvious, a construction in accordance with my invention can be built and assembled at low cost and readily mounted in position in a shaft. At the same time, it is thoroughly reliable in operation.

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

1. An emergency governor comprising a bolt having a threaded portion at one end and an

enlarged head at the other end, the inner end of the head having a collar which provides a shoulder surrounding the bolt, an adjusting nut on the threaded end, a cup shaped member having an opening in its bottom through which the bolt extends, the head of the bolt being located in said cup-shaped member, the side wall of the cup-shaped member projecting beyond said flange a distance equal to the desired throw of the bolt, and a spring located between said nut and cup-shaped member.

2. The combination with a shaft having an opening and means providing a shoulder adjacent one end of the opening, of a cup-shaped member seated in the opening against said shoulder, said member having an opening in its bottom wall, a bolt which projects through said opening having a head at one end located in said cup-shaped member, the inner end of the head being surrounded by a collar and the side wall of the cup projecting beyond said collar a distance equal to the desired throw of the bolt, a nut holding the cup-shaped member in said opening, said nut having an opening through which the bolt head extends and which forms a guide for the head, said nut engaging the outer end of the cup and forming a stop to limit the throw of the bolt, a nut threaded on the other end of the bolt, and a spring located between said last named nut and the cup-shaped member.

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