J. E. ENGLESSON.

CENTRIFUGAL GOVERNOR.

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1,313,175. Patented Aug. 12, 1919.

Fig. 1

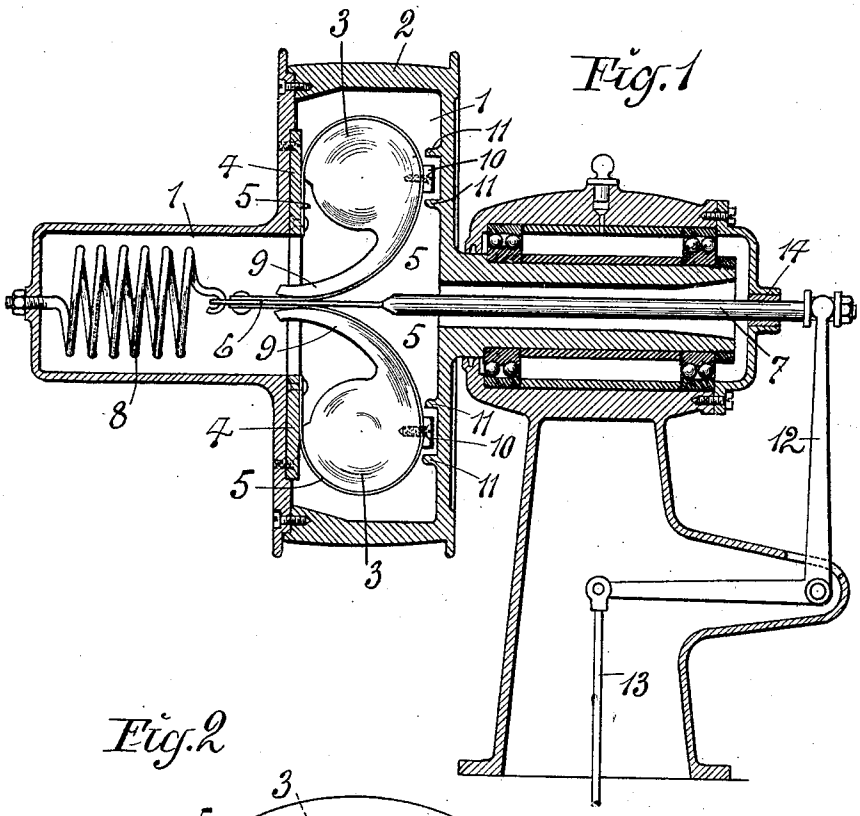
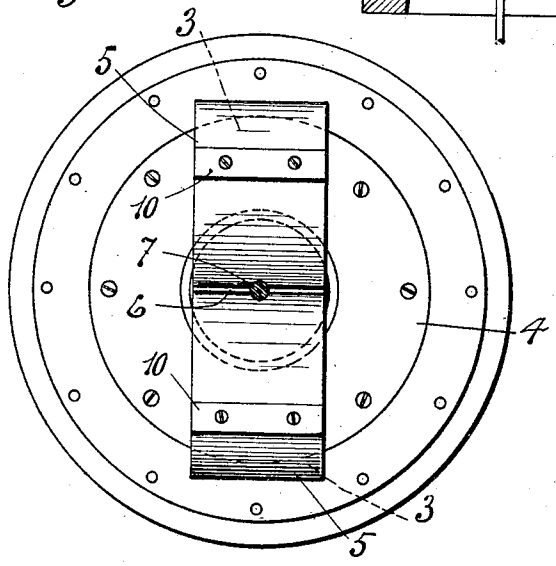


Fig. 2



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CENTRIFUGAL GOVERNOR.

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To all whom it may concern:

Be it known that I, JOHN ELOV ENGLESSON, a subject of the King of Sweden, and resident of Fabriksgatan 15, Kristinehamn, in the Kingdom of Sweden, have invented certain new and useful Improvements in Centrifugal Governors, of which the following is a specification, reference being had therein to the accompanying drawing.

If a centrifugal governor should be used for indirect regulation, it must be extremely sensitive *i. e.* frictionless in the greatest possible degree. This invention relates to a centrifugal governor provided with rolling weights which are so arranged, that the friction, practically, is eliminated. Moreover, the said governor is so arranged, that the tendency of the weights to bring the spindle into an inclined position, when one of the weights is somewhat heavier than the other, practically, also is eliminated.

A form of the invention is shown diagrammatically in the accompanying drawing, in a longitudinal section, Figure 1, and in an end view, Fig. 2.

The governor consists of a rotating casing 1, formed to a belt pulley 2. Inside the said casing or pulley two rolling weights 3 are provided together with two plane radial tracks 4, one for each weight, on which the broad weights 3 roll. Each of the weights is fixed by means of a broad band 5 of steel to the track 4 and to a flattened part 6 of the spindle 7 of the governor. The said bands 5 transmit the centrifugal action of the weights to the spindle 7, between the free end of which and the end wall of the casing a spiral-spring 8 is fixed, which counterbalances the centrifugal force. The parts of the weights, which bear against the tracks, are cylindrical and provided with arms 9, which bear against the flattened part 6 of the spindle through the medium of the bands 5 and are formed in accordance with involutes or curves nearly corresponding thereto. Consequently, for each weight only one band 5 is necessary, the one end of which is fixed to the radial track 4 and the other end of which is fixed to the flattened part 6 of the spindle. Besides, the bands are connected at one point with the weights respectively for instance by means of a plate 10 fixed to the weight by means of screws. The said plate is preferably located between two abutments 11 provided in the casing 1 and adapted to limit the radial movement of the weight.

While the adjusting power of the governor is transmitted to the link system, which according to the drawing consists of a bell crank lever 12 and a link 13, friction powers always arise which counteract the rotation of the spindle 7 of the governor, but owing to the fact that the twisting moment thus generated is sustained by the broad surfaces of the weights, also here only rolling friction arises which does not influence, in a degree worth mentioning, upon the sensitiveness of the governor.

If one of the weights should be somewhat heavier than the other, there is a surplus of force at the one side of the spindle, tending to bring the same into an inclined position. Owing to the fact that the flattened part 6 of the spindle may be very thin, the contact surfaces of the arms 9 will be located very close to each other, which results in the lever arm of the said unbalanced force being very short. In order, however, to eliminate the effect of the same, the spindle is journaled, in the shown form of the invention, in a stationary bearing 14, in which the spindle can easily slide. This arrangement is based upon the known fact, that a very slight power is necessary for moving a heavily loaded shaft, when it rotates in a bearing, since the shaft is then, so to say, screwed forward in the bearing, whereas a very great power is wanted for moving the shaft longitudinally, when the shaft does not rotate.

As seen from the above description, there is in the governor in question no sliding friction but only rolling friction, owing to which fact the governor is very sensitive.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A rotatable centrifugal governor provided with plane tracks disposed perpendicular to the rotary axis of the governor, a spindle, rolling weights provided with arms bearing against said spindle, the bearing surfaces of the arms being formed substantially in accordance with involutes.

2. A rotatable centrifugal governor provided with plane tracks disposed perpendicular to the rotary axis of the governor, a spindle, rolling weights provided with arms bearing against said spindle, and said

weights having a rolling and non-slidable engagement with the said tracks, the bearing surfaces of the arms being formed substantially in accordance with involutes.

3. A rotatable centrifugal governor provided with plane tracks disposed perpendicular to the rotary axis of the governor, a spindle having a flattened portion, and rolling weights having arms with bearing surfaces disposed to roll against the flattened portion of the spindle, the bearing surfaces of the arms being formed substantially in accordance with involutes.

4. A rotatable centrifugal governor provided with plane tracks disposed perpendicular to the rotary axis of the governor, rolling weights, a spindle, and bands connecting the weights with the tracks respectively and with said spindle.

In witness whereof I have hereunto signed my name.

JOHN ELOV ENGLESSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."