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PARALLEL PIVOT TYPE SPEED RESPONSIVE BRAKE

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FIG. 1

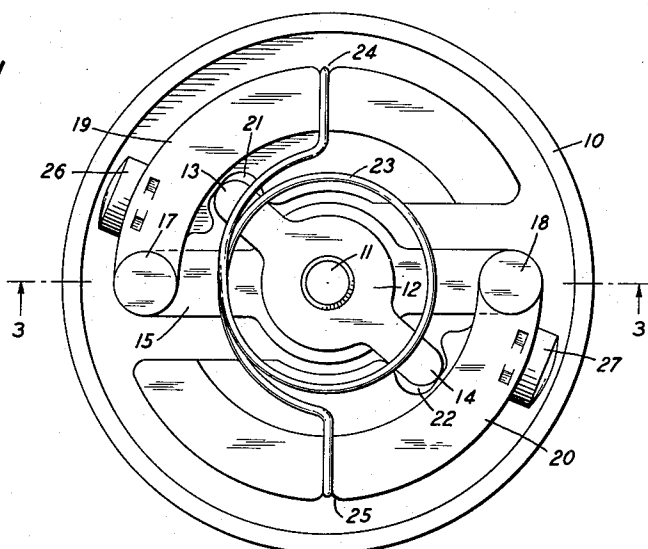


FIG. 2

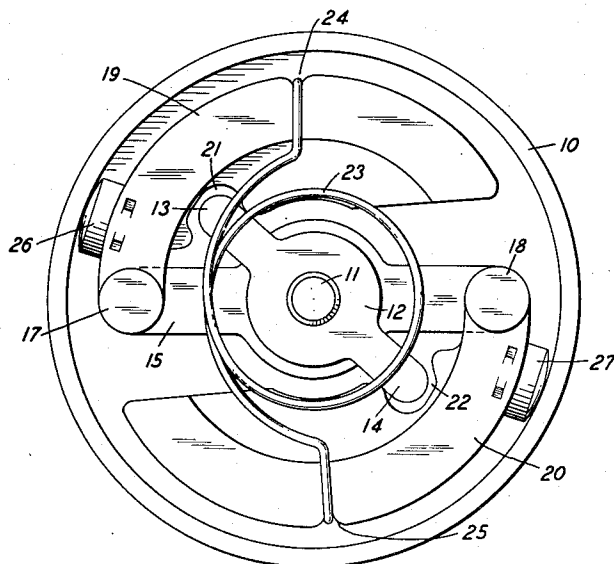
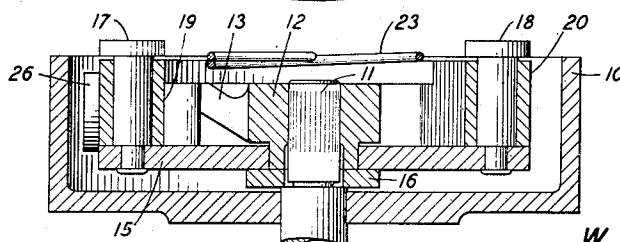


FIG. 3



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PARALLEL PIVOT TYPE SPEED RESPONSIVE BRAKE

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4 Claims. (Cl. 188—184)

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This invention relates to speed regulating devices and more particularly to frictionally retarded centrifugal governors for telephone calling dials.

It is common practice in governors of the above type to employ rotatable weights which are thrown outwardly by centrifugal force into frictional engagement with a stationary member whereby a retarding force is created in opposition to the force which causes the governor to rotate. In structures of this general nature, the rotatable weights are usually restrained in their outward movement by a spring or springs, the tension of which may be varied to regulate the speed of the governor. The speed of the mechanism will increase with the tension of the spring and will decrease as tension is decreased.

It has been found that in governors of the aforementioned type, it is difficult to adjust the rotatable weights in order to provide a retarding force which is uniform with respect to the action of each weight on the stationary member.

One object of this invention is to provide a balanced centrifugal governor, especially suitable for use in telephone calling dials, which is of simple and inexpensive construction wherein the speed regulation is improved and the effect of gravity on the weights is reduced so that it has little or no detrimental effect on the operation of the device and a uniform rotational speed is attained.

In accordance with the general features of this invention, there is provided a stationary cup-shaped housing having a substantially cylindrical inner wall. A shaft coaxially disposed with respect to the inner wall is rotatably mounted in the cup member and has fixedly secured thereto a drive-bar member having two radially extending arm portions, which are adapted to engage and drive a pair of arcuate shaped weights. The latter are pivotally mounted on an axially disposed fly-bar member which is rotatably mounted on a lower shoulder portion of the drive-bar. The arcuate weights are provided on their peripheries, adjacent their pivot points, with studs which are adapted to frictionally engage the inner wall of the cup member, and on their inner edges with notches to receive the ends of the drive-bar. A spring extends across the assembly and has its ends positioned in notches in the peripheries of the weights for drawing the weights toward each other to disengage the friction studs from the inner wall of the stationary member.

The invention will be more clearly understood

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from the following detailed description when read in conjunction with the accompanying drawing, of which:

Fig. 1 is a top plan view of a device illustrative of this invention in its normal, or at rest, position;

Fig. 2 is a view similar to Fig. 1 and shows the operated position of the device; and

Fig. 3 is a cross-sectional view taken on line 3—3 of Fig. 1.

Referring now to the drawing, the cup-shaped housing or casing 10, has rotatably journaled therein a shaft 11 which is operatively connected to the dial operating mechanism (not shown). Fixedly secured to the upper end of the shaft 11 is a drive-bar member 12, which is provided with radially extending arms 13 and 14 and is provided at its lower end with a reduced shoulder portion. Rotatably mounted on the reduced shoulder portion is the fly-bar member 15, which is spaced away from the bottom of the cup member 10 by the washer 16. Pivotaly mounted on the ends of the fly-bar 15, by means of studs 17 and 18, are the arcuate shaped weights 19 and 20. These weights are provided on their inner walls with notched portions 21 and 22 in which the ends of the arms 13 and 14 are seated, as shown in Fig. 1. A coil spring 23 extends across the assembly and has its ends in engagement with notches 24 and 25 on the periphery of the weights 19 and 20 and serves to restrain the outward movement of the weights due to the centrifugal force exerted thereon and the torque force, applied by means of the drive-bar 12, which has its ends 13 and 14 in engagement with the notches 21 and 22 in the weights 19 and 20. The peripheries of the weights 19 and 20 are provided with studs 26 and 27, which, as shown in Fig. 2, are adapted to engage the inner wall of the cup-shaped member 10, due to the centrifugal and torque forces when the governor is operated to control the rotation of the shaft 11.

In the operation of the governor of this invention, the driving torque from the shaft 11, is transmitted to the weights 19 and 20 through the arms 13 and 14 of the drive-bar 12, which as shown, is secured to the shaft 11, and the fly-bar member 15 and the weights 19 and 20 are free to pivot about the shaft 11.

The governor weights 19 and 20 are caused to rotate by the driving torque of the shaft 11 acting on drive-bar 12 thence to the weights 19 and 20 and not through the pivots 17 and 18. With the structure of this invention, the driving torque increases the speed of rotation uniformly until

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a critical velocity is reached. When speeds in excess of the critical velocity occur, the centrifugal force of the weights 19 and 20 and the force exerted by the arms 13 and 14 of the drive-bar 12 on the weights 19 and 20, result in the studs 26 and 27 frictionally engaging the inner wall of the cup member 10, as shown in Fig. 2.

It is thus readily apparent that both of these forces contribute, during the run-down of the shaft 11 which is connected to the dial mechanism, not shown, at which time the governor mechanism rotates in a clockwise direction. As the governor assembly rotates, the weights 19 and 20 tend to move outward under the influence of centrifugal force and torque. The centrifugal force acts through the center of gravity of the weights 19 and 20 radially from the turning center of the shaft 11. The torque force is applied on the weights by the drive-bar arms 13 and 14. Both of these forces are opposed by the force of the spring 23. The force of the studs 26 and 27 on the inner wall of the cup member 10 results in a frictional component which acts on the weights 19 and 20 to govern the speed regulation of the mechanism secured to the shaft 11.

While I have shown and described a preferred embodiment of my invention, it is understood that various changes and modifications may be made therein without departing from the scope and spirit of the invention.

What is claimed is:

1. A centrifugal governor comprising a stationary cup-shaped member, a shaft rotatably journaled therein, a drive-bar member secured to said shaft, a fly-bar member rotatably mounted on the lower end of said drive-bar member, a pair of weights pivotally mounted on the ends of said fly-bar member, said weights each having a notched inner edge and a cam surface adjacent thereto, friction means on each of said weights and extending beyond the outer surface thereof for frictionally engaging the inner wall of said cup member, in response to torque and centrifugal force, said drive-bar member having its end portions in engagement with the notches on the inner edges of said weights, and spring means extending across said weights and secured thereto for drawing them toward each other to disengage the frictional means from the stationary member.

2. A centrifugal governor comprising a stationary cup-shaped member, a shaft rotatably journaled therein, a drive-bar member secured to said shaft, a fly-bar member rotatably mounted on the lower end of said drive-bar member, a pair of arcuately shaped weights pivotally mounted on the ends of said fly-bar member, said weights each having a notched inner edge and a

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cam surface adjacent thereto, friction means on each of said weights and extending beyond the outer surface thereof for frictionally engaging the inner wall of said cup member, in response to torque and centrifugal force, said drive-bar member having its end portions in engagement with the notches on the inner edges of said weights, and spring means extending across said weights and secured thereto for drawing them toward each other to disengage the frictional means from the stationary member.

3. A centrifugal governor comprising a stationary cup-shaped member, an axial shaft rotatably journaled therein, a drive-bar member, having radially projecting arms, secured to said shaft, a fly-bar member rotatably mounted on the lower end of said drive-bar member, a pair of weights pivotally mounted on the ends of said fly-bar member, said weights each having a notched inner edge and a cam surface adjacent thereto, friction means on each of said weights and extending beyond the outer surface thereof for frictionally engaging the inner wall of said cup member, in response to torque and centrifugal force, said drive-bar member having the ends of its arms in engagement with the notches on the inner edges of said weights, and spring means extending across said weights and secured thereto for drawing them toward each other to disengage the frictional means from the stationary member.

4. A centrifugal governor comprising a stationary cup-shaped member, an axial shaft rotatably journaled therein, a drive-bar member secured to said shaft, a fly-bar member rotatably mounted on the lower end of said drive-bar member, a pair of pivot pins secured on each end of said fly-bar member, weights pivotally mounted on said pins, said weights each having a notched inner edge and a cam surface adjacent thereto, friction means on each of said weights and extending beyond the outer surface thereof for frictionally engaging the inner wall of said cup member, in response to torque and centrifugal force, said drive-bar member having its end portions in engagement with the notches on the inner edges of said weights, and spring means extending across said weights and secured thereto for drawing them toward each other to disengage the frictional means from the stationary member.

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