

H. H. IDE.
GOVERNOR FOR AUTOMATIC DIALS.
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1,276,367.

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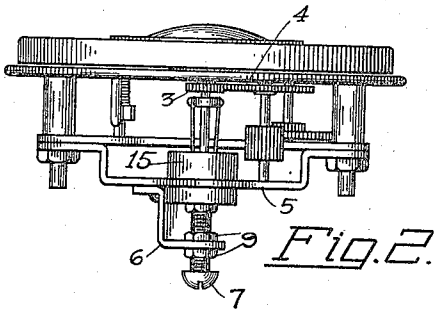


Fig. 2.

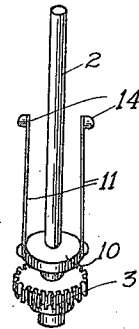


Fig. 5.

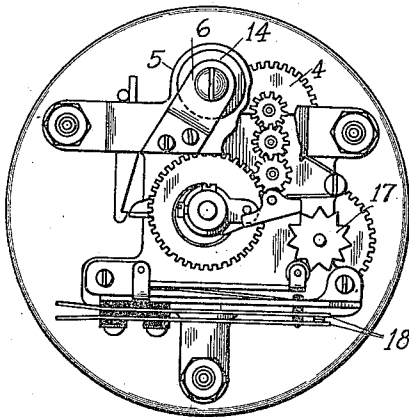


Fig. 1.

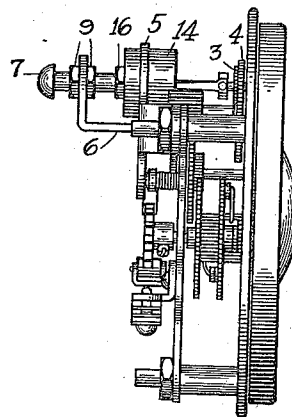


Fig. 3.

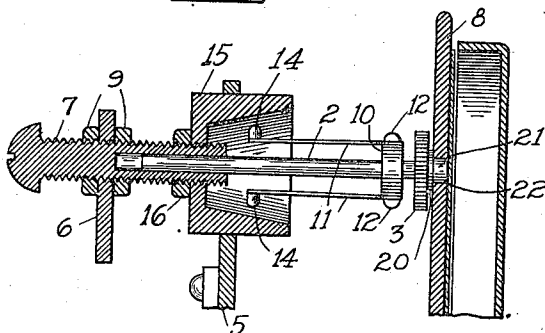


Fig. 4.

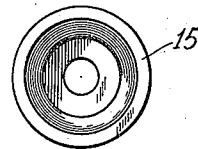


Fig. 6.

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UNITED STATES PATENT OFFICE.

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GOVERNOR FOR AUTOMATIC DIALS.

1,276,367.

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To all whom it may concern:

Be it known that I, HARRY H. IDE, a citizen of the United States of America, residing in La Grange, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Governors for Automatic Dials, of which the following is a specification.

My invention relates to governors and has to do more particularly with governors for use in connection with automatic calling devices, such devices as are commonly employed in automatic and semi-automatic systems for controlling the automatic switches which are located at the central office by directive impulses. I have shown my governing device connected to an automatic calling device, but it is to be understood that I do not wish to limit its use to such, as it may be used in connection with a great many other devices. In the accompanying drawing, I show my governing device in connection with an automatic dial of the type shown in United States Letters Patent, No. 1,096,841 issued May 19th, 1914, to William Kaisling.

In the present automatic telephone system in use, especially in those systems commonly called two-wire systems, one of the chief sources of trouble has been in not being able to provide an automatic calling device, with a governor that can readily be adjusted to regulate the speed of the calling device to any desired speed, and in which the governing device when so adjusted would maintain the speed of the calling device constant. It is a prerequisite of the so-called two-wire automatic telephone system to maintain the speed of the calling device constant, as a slight change of the speed of the device will effect the operations of the slow-acting relays at the central office, thus effecting the automatic switches, and causing a wrong operation thereof. In commercial practice it has been found necessary to often adjust these governors, due to the fact that after the calling device has run a short time dust collects on the different parts of the mechanism, thus tending to slow it down, or the different bearings of the device wear smooth from constant use thus causing the device to speed up, consequently causing a change in the operation of the calling device. The adjustment of the device to correct speed is very often done by the inexperienced lay-

men who use the first tool handy to adjust the weighted members of the calling device to obtain the correct speed. Adjustments made in this manner are not permanent, as the bent members soon lose their tension after a few adjustments have been made and finally break due to the continuous adjustments made. To overcome these objections I have provided an adjustable governing device that can be very readily adjusted by the laymen, without in any way affecting the normal and natural shape of the weighted members of the governing device.

Therefore, my invention is directed to the producing of an improved device of the class described, which will obviate the objectionable features heretofore found, and embody desirable features and advantages all in a simple, efficient, and economical manner; and to the accomplishment of this object and such others as may hereinafter appear, my invention consists in the novel details of construction, parts and combination of parts hereinafter described, and particularly pointed out in the appended claims, reference being had to the accompanying drawings in which I illustrate the device in different views, and in which like reference characters indicate like parts, and in which:

Figure 1 is a rear view of a calling device showing an end view of the adjustable governing device of my invention;

Fig. 2 is a side elevation of Fig. 1 as seen from the top;

Fig. 3 is a side elevation of Fig. 1 as viewed from the right side;

Fig. 4 shows an enlarged view of the governor of my invention, part being shown in cross section;

Fig. 5 shows a side elevation of the governor shaft and of the weighted spring members;

Fig. 6 shows the cup member that the weighted spring members cooperate with to regulate the speed of the calling device.

As my invention relates more particularly to the governing device, a full description of the operation of the calling device shown in the accompanying drawings will not be given, but only such description as is necessary for a full and complete understanding of the governing mechanism, reference being had to the said United States Letters Patent if a more complete description of the operation of the calling device is desired.

Referring now more in detail to my invention as illustrated, it comprises a shaft 2 provided with a pinion 3 which meshes with a gear 4 of the train of gearing which operatively connects the governing mechanism to the motive power of the calling device. Mounted upon the bridge plate 5 of the calling device is an angle arm 6 carrying a screw member 7 which has screw-threaded engagement with the said arm 6. A hole is drilled in the end of screw 7 and forms a bearing for one end of the shaft 2, while the opposite end of shaft 2 is provided with a cylindrical end portion 21 which fits into a recess 22 in the mounting plate 8. A pair of lock nuts 9 are provided for adjustably holding the screw member 7. The screw 7 and the lock nuts 9 provide means for adjusting the endwise movement of the governor shaft 2. Securely fastened to the shaft 2 is a collar 10 which carries a pair of very thin springs 11 mounted directly opposite to each other and secured to the said collar 10 by means of screws 12. Attached to the free end of each of the springs 11 is a weighted member 14. The members 14 are adapted to frictionally engage the inside surface of the cup member 15 for regulating the speed of the shaft 2, thereby regulating the speed of the calling device. The cup member 15 is drilled and threaded to provide screw-threaded engagement with the screw member 7, and a lock nut 16 is provided for securely holding the cup member 15 in its adjusted position. The inside of the cup member 15 takes the form of a frustum of a cone, that is the outer diameter is greater than the inner diameter, the recess in said cup being a tapered one.

Having given a description of the construction of the governing device illustrated, a brief description of the operation of the same together with a description of how the device may be adjusted, will now be given. The dial of the calling device is first adjusted to one of its operative positions to set the impulse mechanism in an operative position for transmitting a predetermined number of impulses. The dial is then released thereby operatively connecting the gearing mechanism of the calling device to the shaft 2 of the governing mechanism for controlling the speed of the return movement of the dial and of the impulse transmitting mechanism. When the shaft member 2 rotates the members 14 are forced out away from the shaft 2 due to their centrifugal force until they frictionally engage the inside conical surface of the cup member 15. The frictional engagement of these members with the conical surface of the cup member 15 retards the return movement of the dial and of the impulse mechanism thereby keeping the rotary movement of the shaft constant. If it is found that the return movement of the impulse mechanism is too great, that is the

speed at which the star wheel 17 operates the impulse springs 18, the lock nut 16 is loosened and the cup member 15 rotated to cause it to recede from the mounting plate 8 thereby slightly increasing the distance from the weighted members to their engaging surface of the cup and at the same time lengthening the frictional engaging path per revolution, of the weighted members 14, since the circumference of the circle that the weighted members will now describe is greater than it was in the previous instance due to the varying diameters of the conical surface. The tension of the spring members 11 is very light due to their thinness, and the change of speed that would consequently result from increasing the distance between the inside surface of the cup and the normal position of the weighted members when the cup 15 is moved away from the mounting plate 8, is practically negligible. The change in the speed of the device being dependent upon the length of the path traveled, per revolution, by the weighted members. The lock nut 16 is now tightened to securely hold the cup member 15 in its new position. The speed of the calling device is again tried and if it is found to still be too great the above operation is repeated until the desired speed is obtained. If it is found that the speed of the device is too slow the cup member 15 is rotated to cause it to move closer to the plate 8 thereby forming a shorter frictional engaging path per revolution for the weighted members 14. It is thus seen by increasing and decreasing the length of the engaging path per revolution of the weighted members, the speed at which the governor device is operated may be increased or decreased. A wider range of variation may be acquired by changing the taper of the recess in the said cup 15.

While I have illustrated and described my invention operating in connection with a certain type of automatic calling device, I do not wish to be limited to the same as my invention can be adapted to cooperate in conjunction with other devices and many changes and modifications may readily suggest themselves to one skilled in the art. Therefore I do not wish to be limited to the exact structure as shown, but aim to cover all such changes and modifications as come within the spirit and scope of the appended claims.

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

1. A device of the class described comprising a rotatable shaft member provided with weighted members, a cup member provided with an inner conically shaped surface adapted to be engaged by said weighted members, and means for moving said cup member for increasing or decreasing the

frictional engaging path of said weighted members per revolution thereby controlling the speed of rotation of said shaft member.

2. A device of the character described including a spring-driven impulse mechanism, a rotatable shaft connected to said impulse mechanism, a governor member carried by said shaft for controlling the speed of rotation of said impulse mechanism; a non-rotatable cup member adapted to be frictionally engaged by said governor member, and means for adjusting said cup member to vary the speed of rotation of said impulse mechanism.

3. A device of the class described comprising a rotatable member, weighted members attached to said rotatable member, a cup member adapted to be frictionally engaged by the said weighted members only when said weighted members are rotated at a predetermined speed, and means for adjusting said cup member for varying the length of the path traveled by said weighted members whereby the speed of rotation of said shaft is varied.

4. A governing device comprising a rotatable shaft, a pair of weighted members attached to said shaft, a movable cup provided with an engaging surface for said weighted members, said weighted members normally disengaging said engaging surface, and means for adjusting said cup member for varying the length of the path described by said weighted members thereby varying the speed of rotation of said rotatable member.

5. A governing device of the class described comprising a rotatable shaft, a weighted member attached to said shaft, a cup provided with an inner conically shaped surface, means for rotating said shaft for causing said weighted member to engage the said inner surface of said cup, and means for laterally moving said cup thereby regulating the speed of rotation of said shaft.

6. A governing device of the class described comprising a shaft, a weighted member secured to said shaft, an adjustable cup adapted to be frictionally engaged by said weighted member, means for adjusting said cup thereby increasing or decreasing the length of the path traveled by said weighted member, the speed of said shaft being dependent upon the length of path traveled by said weighted member.

7. A governing device of the class described comprising a rotatable shaft provided with a pair of rotatable members firmly secured to said shaft at one of their ends, weighted members attached to the free ends of said rotatable members, a stationary adjustable cup adapted to be frictionally engaged by said weighted members, means for adjusting said cup thereby controlling the speed of rotation of said rotatable shaft.

8. A governing device of the character described including a rotatable shaft, a weighted member attached to said shaft and rotatable therewith, a cylindrical cup provided with an inner conically shaped surface, means for rotating said shaft thereby causing said weighted member to engage the inner surface of the said cup, a threaded member upon which said cup is mounted, and means for laterally adjusting said cup by revolving the same upon its threaded support, thereby regulating the speed of rotation of said shaft by changing the length of path traveled per revolution by said weighted member.

9. A device of the character described including a rotatable shaft, a weighted member carried by said shaft, a threaded member provided with a recess forming one bearing for said shaft, a stationary cylindrical cup carried by said threaded member, means for revolving said cup upon said threaded member, thereby moving said cup laterally away from or toward said weighted member thereby regulating the speed of rotation of said shaft.

10. A device of the character described including an impulse sending mechanism, a rotatable shaft geared to said mechanism, a member carried by said shaft for controlling the speed of rotation of said shaft, a member provided with an inner peripheral surface adapted to be frictionally engaged by the member carried by said shaft, and means for adjusting said last member to vary the speed of rotation of said shaft and said impulse mechanism.

Signed by me at Chicago in the county of Cook and State of Illinois in the presence of two witnesses.

HARRY H. IDE.

Witnesses:

G. A. LANOCHOWSKI,
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