July 26, 1932. A. S. HOWELL 1,868,502

CALIBRATED ADJUSTING DEVICE

Original Filed April 4, 1929 2 Sheets-Sheet 1

Fig-1

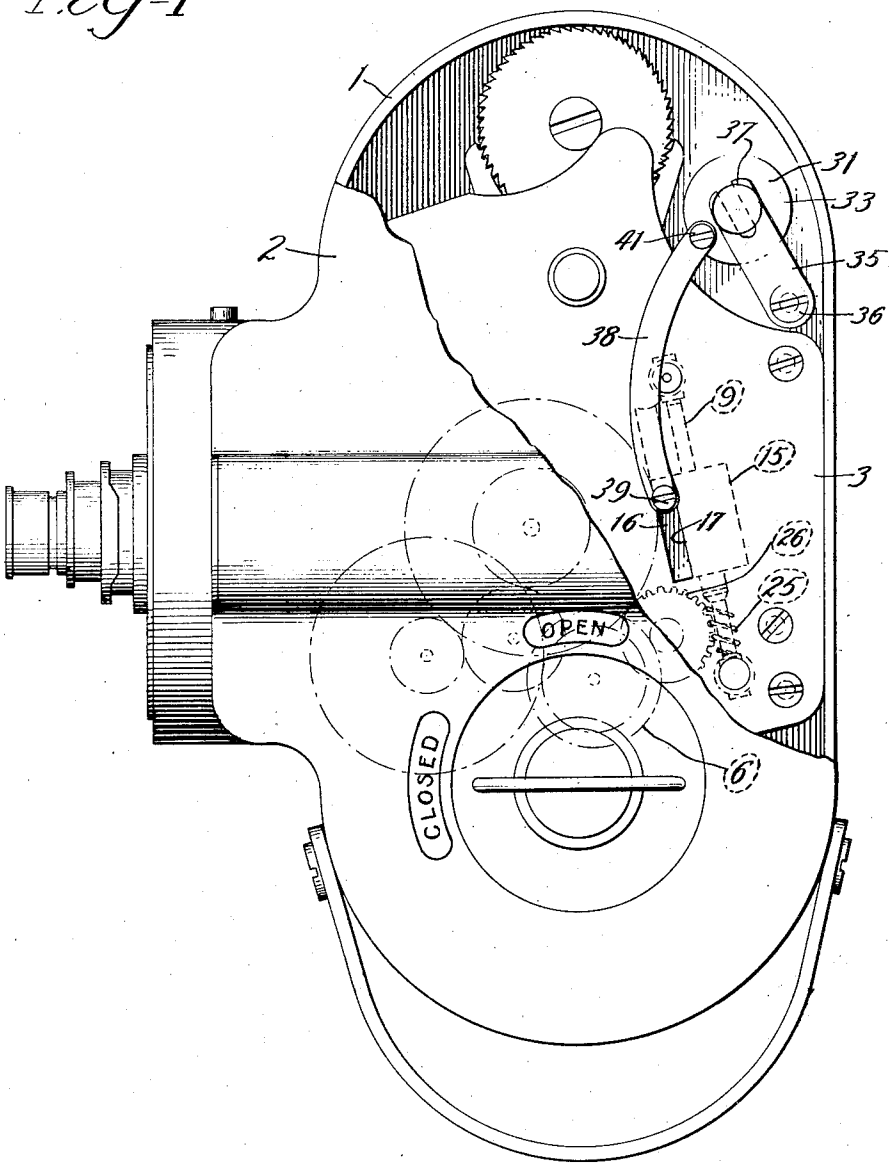

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Fig-2.

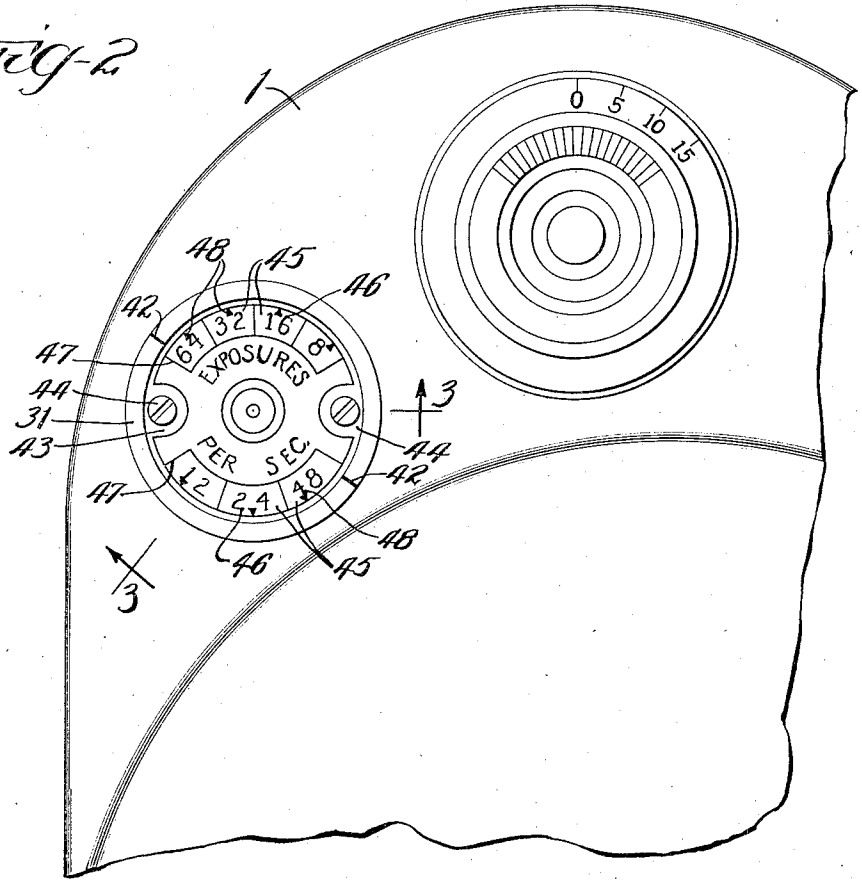
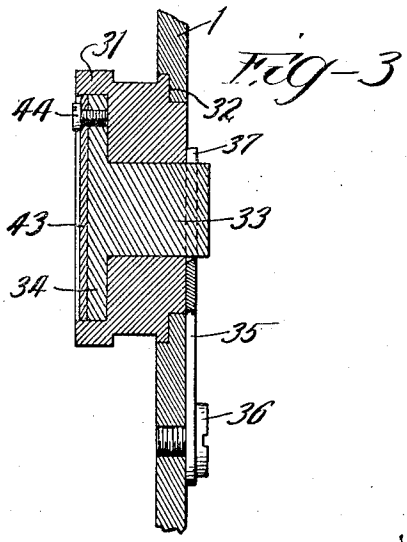


Fig-3.



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UNITED STATES PATENT OFFICE

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CALIBRATED ADJUSTING DEVICE

Original application filed April 4, 1929, Serial No. 352,390. Divided and this application filed April 6, 1931. Serial No. 528,220.

My invention relates particularly to calibrated adjusting devices for the variable speed governors of spring driven motion picture cameras although not limited to this use alone.

The main feature of my invention relates to a calibrated adjusting device which, while it embodies a standardized index scale, permits of marking the scale individually with reference to the particular device, say a variable speed governor, with which the adjusting device is used, so that the calibrated adjustments are accurate and individual to the particular device controlled by the adjusting device.

The above feature and certain other features hereinafter appearing are embodied in the preferred form of my invention, hereinafter fully described and illustrated in the accompanying drawings, and are effected by certain novel constructions, combinations and arrangements of parts particularly pointed out in the appended claims.

In the said drawings—

Figure 1 is a side elevation of a certain well known type of spring driven motion picture camera embodying my invention, with a portion broken away:

Figure 2 is an enlarged partial opposite side elevation of the same; and

Figure 3 is a partial section on the line 3—3 of Figure 2.

Like characters of reference indicate like parts in the several views.

Referring to the drawings, 1 designates a casing, one side of which is formed by a removable cover 2. See Figures 1 and 2. Secured within the casing is a mechanism frame including an outer frame plate 3, and carried by this frame is spur driving gearing 6. See Figure 1.

Carried by the mechanism frame is a revoluble shaft 9 which carries the rotating portion of a variable speed governor which is inclusive of a nonrotating member 15 slidably longitudinally of the shaft 9 for varying the speed of the governor, the member 15 being provided with a rib 16 slidably engaged in a slot 17 formed in the outer frame plate 3 and extending in parallelism with the shaft 9. The shaft 9 is driven from the gearing 6 by means of a spiral gear 25 formed on the shaft 9 and meshing with a relatively large gear 26 driven from the gearing 6, so that the speed of the gearing 6 and mechanism operated thereby is controlled by the speed governor, the controlled speed of the governor being adjustable by adjustment of the member 15 longitudinally of the shaft 9, all as fully described and claimed in my U. S. application for Letters Patent, Serial No. 352,390, filed April 4, 1929, for improvement in centrifugal speed governor, of which this application is a division.

Control of the governor to vary the controlled speed thereof is accomplished in the following manner.

A portion of the wall of the casing 1 extends above and is disposed in adjacent parallelism with the outer frame plate 3, and this portion of the casing wall is provided with a bore therethrough in which is engaged for angular movement a manually operable concentrically bored adjusting member 31 having an inwardly axial engagement with the casing wall, as designated at 32, to limit inward axial movement of the adjusting member with respect to the casing. See Figure 3.

A headed member 33 is engaged for relative angular movement in the bore of the member 31 and has the head 34 thereof disposed exteriorly and inwardly engaged in an enlarged outer end of this bore to limit outward axial movement of the member 31 with respect to the member 33.

The shank of the member 33 extends inwardly beyond the member 31 and the aforementioned portion of the wall of the casing 1. See Figures 1 and 3. A securing arm 35 has one end thereof secured against the inner face of the said portion of the wall of the casing 1 by means of a headed screw 36, and the other end of this arm is bifurcated, as designated at 37, and is engaged in diametrically opposite chordal slots formed in the shank of the member 33 adjacent the inner end thereof.

Thus the member 33 is secured with the casing 1 against axial and angular move-

ment while the adjusting member 31 is angularly movable with respect thereto and is conveniently manually adjustable in its angular movement by reason of its projection exteriorly of the casing 1.

A connecting link 38 at the outer face of the outer frame plate 3 has one end thereof pivotally connected with the rib 16 of the friction member 15 by means of a headed screw stud 39 and has its other end pivotally connected to the inner end of the adjusting member 31 by means of a second headed screw stud 41 disposed adjacent the periphery of the member 31. See Figure 1. Thus, angular adjustment of the adjusting member 31 effects corresponding adjustment of the friction member 15 and the control member 19 to adjust the controlled speed of the governor.

In order that the controlled speed of the governor may be predeterminately adjusted an indicating means is provided which will now be described. See Figures 2 and 3.

The outer end of the adjusting member 31 is provided with diametrically opposite peripherally disposed index marks 42, and a cooperating circular scale member 43 is detachably secured on the outer face of the head 34 of the member 33 by means of a pair of headed screws 44 whereby the scale member is replaceable in a predetermined position thereon.

The scale member 43 is provided with standard indicated spaces 45 cooperating with respective of the index marks 42 to indicate ranges of adjustment of the adjusting member 31 embracing corresponding adjustments of the adjusting member, characters 46 at said spaces identifying said adjustments with corresponding spaces. See Figure 2.

In order that the spaces 45 may be of adequate length the scale is formed of two diametrically opposite sections 47, each cooperating with a respective index mark 42, the spaces, consecutive with respect to adjustment of the governor, being disposed alternately in the two sections, whereby, in cooperation with the respective index marks, they indicate relatively large overlapping ranges of adjustment without rendering the scale involved or confusing.

As so comprised the said scale member 43 is standard and is predeterminately mounted for replacement. After assembly the scale is calibrated in accordance with actual test, and marks 48 are placed within corresponding of said ranges thereof independently by individual test on the scale for cooperation with the respective index mark 42 to indicate predeterminately the corresponding adjustment of the governor as identified by the corresponding spaces 45 and characters 46.

Thus a standard scale is utilized which provides for close calibration, corresponding with the particular camera, in a convenient manner. In the event that a different calibration is required, as where the characteristics of the mechanism are changed say through long use, overhauling or replacement of parts, the calibrated scale is replaced by a new uncalibrated scale, which is then calibrated by actual test.

While I have described and shown the preferred embodiment of my invention I do not wish to be limited to the precise details of construction as changes may readily be made without departing from the spirit of my invention, but having thus described my invention, I claim as new and desire to secure by Letters Patent the following:

I claim:

1. In a device of the character described the combination of a movable adjusting member, and indicating means for predeterminately positioning said adjusting member comprising an index mark and a cooperating scale relatively movable with respect to said mark predeterminately with movement of said adjusting member, said scale comprising indicated spaces cooperating with said index mark to indicate ranges of adjustment of said adjusting member embracing corresponding adjustments of said adjusting member and adapted to have designations located within corresponding of said ranges thereof independently by individual test with respect thereto to cooperate with said index mark to indicate predeterminately said corresponding adjustments of said adjusting member.

2. In a device of the character described the combination of a movable adjusting member, and indicating means for predeterminately positioning said adjusting member comprising an index mark and a cooperating predeterminately replaceable scale relatively movable with respect to said mark predeterminately with movement of said adjusting member, said scale comprising standard spaces cooperating with said index mark to indicate ranges of adjustment of said adjusting member embracing corresponding adjustments of said adjusting member and characters identifying said adjustments with corresponding spaces and adapted to have marks placed independently thereon and within corresponding of said ranges thereof by individual test to cooperate with said index mark to indicate predeterminately said corresponding identified adjustments of said adjusting member.

3. In a device of the character described the combination of a movable adjusting member, and indicating means for predeterminately positioning said adjusting member comprising two spaced index marks and a cooperating scale relatively movable with respect to said marks predeterminately with movement of said adjusting member, said scale comprising two sections of indicated spaces cooperating with respective of said index marks to

indicate consecutive ranges of adjustment of said adjusting member embracing corresponding adjustments of said adjusting member and said spaces, consecutive with respect to adjustment of said adjusting member, being disposed alternately in said two sections, said scale being adapted to have designations located within corresponding of said ranges thereof independently by individual test with respect thereto to cooperate with respective of said index marks to indicate predeterminately said corresponding adjustments of said adjusting member.

4. In a device of the character described the combination of a movable adjusting member, and indicating means for predeterminately positioning said adjusting member comprising two spaced index marks and a cooperating scale relatively movable with respect to said marks predeterminately with movement of said adjusting member, said scale comprising two sections of spaces cooperating with respective of said index marks to indicate consecutive overlapping ranges of adjustment of said adjusting member, embracing corresponding adjustments of said adjusting member and said spaces, consecutive with respect to adjustment of said adjusting member, being disposed alternately in said two sections and characters identifying said adjustments with corresponding spaces, said scale being adapted to have marks placed independently at said spaces by individual test to indicate predeterminately said corresponding identified adjustments of said adjusting member.

5. In a device of the character described the combination with an enclosure part provided with a bore therethrough, of a manually operable concentrically bored adjusting member engaged for angular movement in said bore and having an inward axial engagement with said casing part, a headed member engaged for relative angular movement in the bore of said adjusting member and having its head disposed exteriorly and inwardly engaging said adjusting member, means on the inside of said casing part securing said headed member stationary therewith, and cooperating index mark and scale means associated with the head of said headed member and the outer end of said adjusting member for predeterminately positioning said adjusting member.

6. In a device of the character described the combination with an enclosure part provided with a bore therethrough, of a manually operable concentrically bored adjusting member engaged for angular movement in said bore and having an inward axial engagement with said casing part, a headed member engaged for relative angular movement in the bore of said adjusting member and having its head disposed exteriorly and inwardly engaging in an enlarged outer end of this bore, means on the inside of said casing part securing said headed member stationary therewith, and a circular scale member detachably secured on the outer face of said head and cooperating with a peripherally disposed index mark on the outer end of said adjusting member for predeterminately positioning the same.

In witness whereof I hereunto affix my signature this 3rd day of April 1931.

ALBERT S. HOWELL.