A. C. RUTZEN.

SPEED INDICATING AND CONTROLLING DEVICE.

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1,163,264. Patented Dec. 7, 1915.

Fig. 1

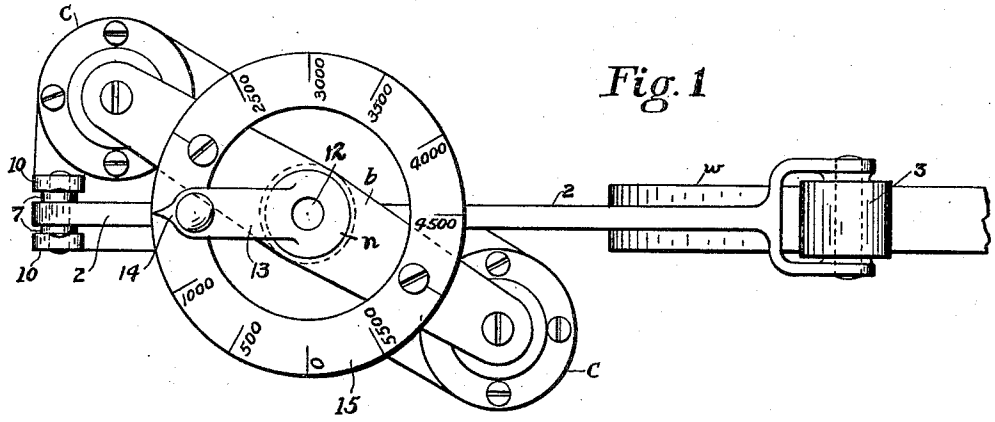
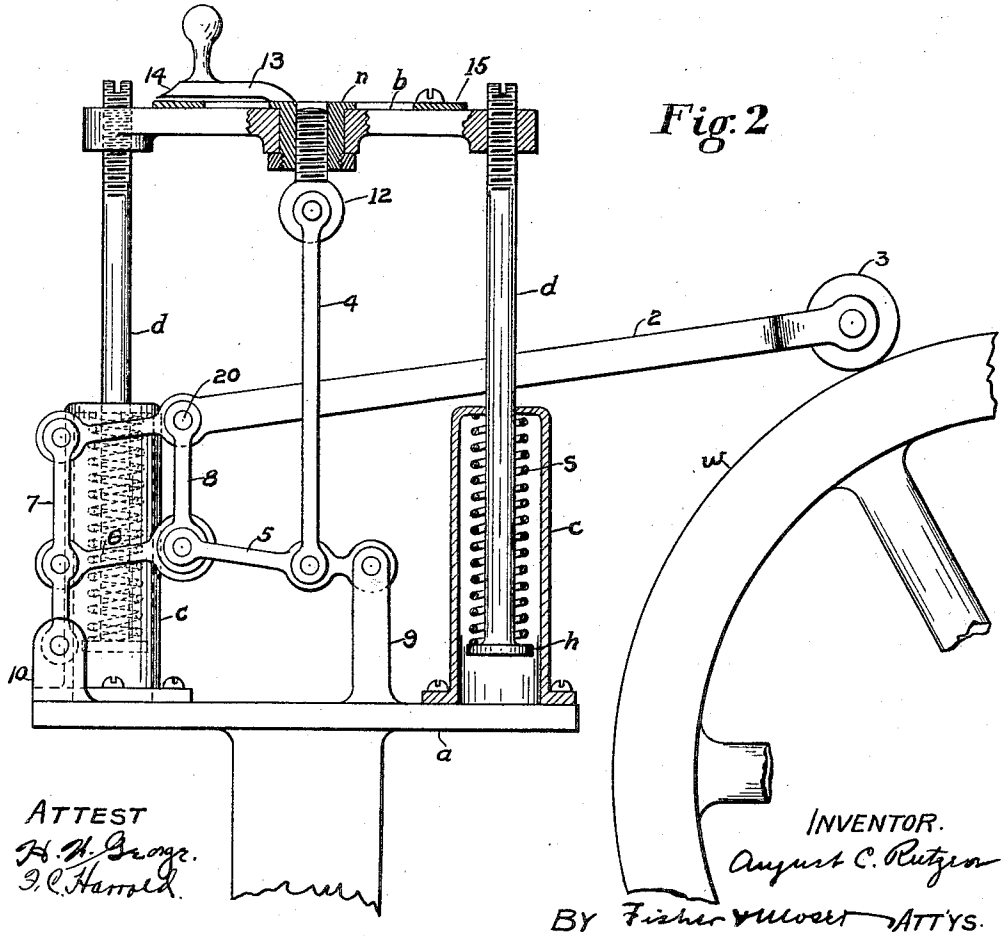


Fig. 2



ATTEST

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SPEED INDICATING AND CONTROLLING DEVICE.

1,163,264. Specification of Letters Patent. Patented Dec. 7, 1915.

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To all whom it may concern:

Be it known that I, AUGUST C. RUTZEN, citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Speed Indicating and Controlling Devices, of which the following is a specification.

This invention has reference to a speed controlling and indicating device more especially applicable to machines or engines having fly wheels through which the control is effected, all substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the said mechanism, and Fig. 2 is a side elevation partially in section.

The conception herein involves a graduated and accurately indicated control of the speed of rotation or revolutions of a fly wheel *w*, or other equivalent rotating member, which, presumably, travels at a comparatively high speed and may approach to five thousand revolutions per minute, more or less. In some machines such means of control is absolutely essential as, for example, in a spring motor which I have invented and a practical form of which is illustrated in my application for Letters Patent, Ser. No. 809,851. The idea of course is to fix the speed of movement within certain possible extremes, and the controlling mechanism includes an indicator which records the rate of travel or rotation the fly wheel attains. This, as above suggested, is particularly desirable in a spring motor having no other means whereby the springs themselves or their power transmitting connections can be toned down to any preferred rate of travel.

To these several ends the said mechanism consists in a suitable base or support *a* and two casings *c* of tubular or barrel shape and provided with flanges at their otherwise open ends seated and secured upon the said base. The upper ends of said casings or barrels are closed except at the center where the plunger rods *d* pass through the same and on which the heads *h* support the springs *s* therein. The said springs are wound spirally about the said rods and bear against the said casings at their top and rest upon the heads or disks *h* at their bottom. The said spring supporting rods *d* are screw-threaded at their upper ends and adjustable in the threaded ends of the yoke or bar *b* and are rotatable axially in said bar by means of a screw driver to govern the tension of the springs *s* and thereby assist in determining the pressure of the lever or arm 2 on the wheel *w* through its roller 3. Normally, the said springs exert an equal downward pressure upon lever 2 through the intervening mechanism, and such pressure is applied and modified through the equalizing mechanism, which comprises a rod 4 adjustably supported in the middle of cross-bar *b*, as will presently be seen, a set of transversely disposed toggle links 5 and 6, pivoted standards 7 on which the extremity of lever or arm 2 is pivotally engaged and a link 8 supported on the joint between the said toggle links and pivotally connected with the said arm 2 relatively near its outer end but so as to be in actuating relation to or with the said toggle mechanism for purposes of sensitive or delicate adjustments as will presently be seen. The toggle link 5 is supported at one end on a post or posts 9 on base *a* and the toggle 6 is supported on another post or posts 10 on said base. It will be seen in Fig. 1 that the equalizing bar *b* occupies a diagonal relation as to lever 2 so as to bring the spring mechanism into right working relations with the lever 2 and the pivot and link connections therewith.

Returning now to the connecting rod 4 with which the spring balancing mechanism is operatively related through said equalizing cross-bar *b*, it will be seen that the said bar has a nut *n* rotatably mounted therein and that a coupling stem 12 engaged in said nut and has an eye in which the connecting rod 4 is pivotally engaged. The said nut *n* is shown as having a controlling handle 13 provided with an indicator point 14, and said handle serves to rotate and to shorten or lengthen the connection with the said toggle links through rod 4 and thereby increase or decrease the pressure upon arm 2 for the control of wheel *w*, within limits.

Now, assuming that the springs are under tension and all the parts adjusted about as appears in Fig. 2, there necessarily is developed a certain downward pressure or pull through or by the said springs upon lever 2 through rod 4, the lever 5 and the link 8, the direct downward pressure of the springs being exerted through rod 4 upon the toggle

link 5 relatively near its pivot on post 9, thus leaving the greater length of said link to convey the action to the link 6 and the upright link 8 which supports said arm 2 in a sense as a fulcrum. Obviously, with the rear end of said arm pivoted on standard 7, which is pivoted on post 10 but does not change in length, and the front end resting upon wheel *w* the said arm necessarily comes into equalized relation as to the several parts 4, 5, 6 and 8 and also as to the spring depressed balancing bar *b*, and which said parts together hold said bar up and maintain working relations.

An annular scale plate or ring 15 is fixed upon bar *b* and has indices at intervals running from 1 to 5500 in this instance, and the pointer 14 on the end of the handle 13 which works with said scale plate serves to indicate the rate of speed or number of revolutions at which the fly wheel *w* is traveling. For example, the zero or 0 mark indicates the dead point at which the fly wheel is locked, and release occurs gradually from this point onward in increasing proportion as the pointer is curved forward to 500, 1000, 2,000 and so on around to the maximum, 5,500. Incidentally, as this occurs, the lever or arm 2 is more or less relieved on wheel *w* by reason of raising the fulcrum 8. Of course the difference between zero when the fly wheel is locked, and the period of lightest pressure on said wheel is in no case a visible one, as the thread on the coupling screw 12 in nut *n* is very fine and the adjustment slight but sufficient.

What I claim is:

1. A device adapted to control the revolutions of a fly wheel or like rotatable part comprising a pressure imposing member and means to vary the pressure of said member, comprising a pressure lever and link mechanism and springs therewith through which pressure is variably applied.

2. A device adapted to control the speed action of a machine or motor, the same comprising a pivotally mounted lever, a set of balancing springs and toggle links with which said lever is engaged and located between said lever and said springs.

3. A device as described having a pressure delivering member and means to produce down pressure thereon comprising a set of balancing springs, rods carrying said springs under tension links connected with said member, a cross bar connecting the ends of said rods, and means on said bar adapted to vary the pressure upon said member through said links.

4. The mechanism described comprising a pivotally mounted lever and means to cause more or less pressure to be delivered to the free end of said lever comprising rods carrying said springs, a yoke adjustable on said rods and having a rotatable nut therein, a rod adjustable by said nut and balancing links supporting said rod and carrying the fulcrum end of said lever.

5. A device as described, consisting of a pivoted lever and a set of springs and means therewith adapted to exert a downward pressure on the free end of said lever and comprising toggle links at the fulcrum end of said lever and in balanced relation with said springs.

6. A device as described comprising a set of spiral springs under tension and rods about which said springs are coiled and held, a bar connecting said rods having a rotatable nut at its midde, in combination with a pivotally mounted lever and means to deliver pressure from said springs to said lever consisting of a rod adjustable in said nut, and toggle links mechanism engaged by said lever and said rod.

In testimony whereof I affix my signature in presence of two witnesses.

AUGUST C. RUTZEN.

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