July 3, 1928. 1,675,974

P. GAMBAROTTA

SPEED INDICATING DEVICE

Filed Dec. 12, 1924

Fig. 1.

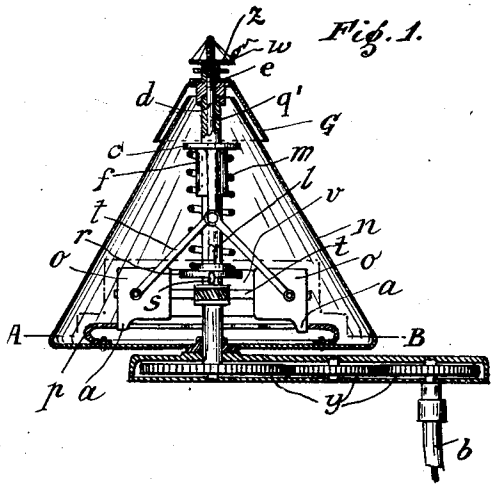


Fig. 2.

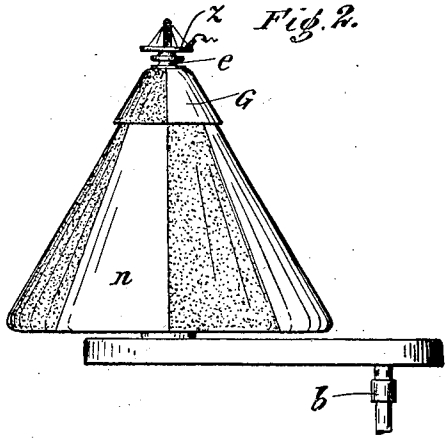


Fig. 3.

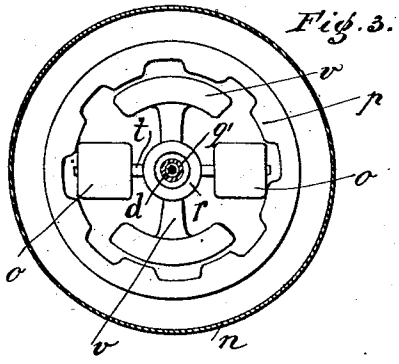
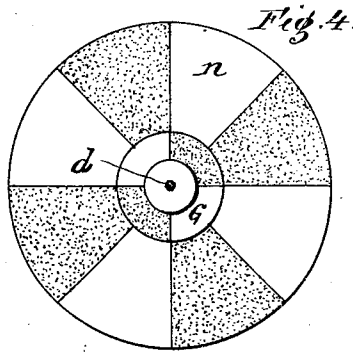


Fig. 4.



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UNITED STATES PATENT OFFICE.

PIERO GAMBAROTTA, OF QUINTO AL MARE, ITALY.

SPEED-INDICATING DEVICE.

Application filed December 12, 1924. Serial No. 755,539.

The present invention concerns improvements in the speed indicating device described in the specification and shown in the drawings of my prior U. S. patent application filed October 26th, 1922, Serial No. 597.209.

One of the objects of this invention is to provide means by which the so called balls painted in the manner pointed out in the said prior application are controlled in a way opposite to that set forth in same specification: viz, the balls remain stationary until a predetermined rate of speed, different for each ball, has been attained whereafter said balls revolve. Said means consist for each ball, in a centrifugal governor whose bodies, when the rate of speed for which it has been adjusted has been attained, engage the inner outline of a ring connected with the ball and revolve this latter until the speed decreases below said rate to thereafter release the bodies from the ring thus permitting the ball to become stationary. A flywheel connected to the main shaft of the governor secures the smooth running of the device.

Another object of the invention consists in providing means by which, at all times, even when the balls are stationary, it will be indicated whether the several main shafts of the balls are in engagement with the transmission gear and consequently whether the device is or is not in working condition. Said means consists in a suitable member (cup, ball, banderole, figure, cap, disc or the like) fastened on the upper end of the main shaft of each of the centrifugal governors.

A further object of the invention consists in providing the device with means adapted to permit adjustment from outside (i. e. without opening or dismounting the balls) of the compression of the counteracting springs of the centrifugal governors in order to adjust each device for the rate of speed at which the bodies of the centrifugal governor are to engage the ring of the ball for revolving the same. Said means comprise, for each ball, a nut mounted on the threaded free end of a rod slidably mounted in the hollow main shaft of the centrifugal governor and supporting, by means of pins fastened at the other end of said rod and projecting through longitudinal apertures in said hollow shaft, a slidable ringplate on which rests an end of the counteracting spring, the other end of said spring resting on a flange of the collar to which the arms of the governor are hinged. Said nut is secured to said rod by a lock-nut. A safety lead sealing the ends of a wire passed through holes in said lock-nut and free end of said rod, serves for preventing the adjustment of the device from being unduly mishandled.

The invention is shown, by way of example only, in the annexed drawings, wherein:

Fig. 1 shows a vertical middle section of the improved device provided with a ball of substantially conical shape.

Fig. 2 shows an elevation of said device.

Fig. 3 shows a cross section on line A—B of Fig. 1.

Fig. 4 is a top view of Fig. 2.

Referring to the drawings, to an inner part of the ball —*n*— (Figures 1 and 3) is solidly or resiliently connected a ring-shaped plate —*p*—, whose inner outline can be shaped in any suitable or desirable manner, being shown in the drawing as toothed.—

With the main hollow shaft —*q'*— of the device is associated a centrifugal governor whose bodies —*o*— are slidably mounted on arms —*t*— rigidly projecting from shaft —*q*—, and are provided at the outer end of their lower faces with lugs—*a*— which, when the speed of the vehicle, or of the machine, is lower than the rate for which the device has been adjusted, cannot engage the inner outline of said ring-plate —*p*— and therefore the ball —*n*— remains stationary. As soon as the speed of the vehicle or of the machine reaches the predetermined rate to be indicated, or signalled, said lugs —*a*— engage the inner outline of the ring-plate —*p*— and cause the same, together with the ball —*n*—, to revolve. As soon as the rate of speed of the vehicle, or of the machine, becomes lower than that to be indicated or signalled, said lugs release the inner outline of the ring plate —*p*— so as to permit the ball to stop.

As represented in Fig. 3, to the main hollow shaft —*q'*— a fly-wheel —*v*— is fastened to absorb the shock when the lugs —*a*— strike the ring-plate —*p*—.

A member G of any desired shape (in the drawing represented in the form of a cone-shaped cap) is fastened to the upper end of the main hollow shaft —*q'*— projecting from an aperture provided in the ball —*n*—. Said member G provides means for seeing at all times whether the transmission members

—*b*— and —*y*— are or are not in engagement with the main hollow shaft —*q'*—. The driving and transmission mechanisms may be of any well known type inserted between the drive shaft of a motor vehicle or of a machine and the main shaft —*q'*— of the device. In the case of a vehicle the transmission can be derived from the hub of one of the wheels.

The means permitting adjustment of the compression of the counteracting spring of the centrifugal governor from outside the ball, without removing or dismounting either the indicating member G or the ball —*n*—, consists of a nut —*e*— screwed onto the threaded upper end of a rod —*d*— slidably mounted in the hollow main shaft —*q'*— and abutting against the member G, which in turn abuts against the upper end of shaft —*q'*—. A locknut —*z*— is provided for locking the nut —*e*— in adjusted position. By screwing or unscrewing said nut —*e*—, pins —*s*— fastened to the other end of said rod —*d*— and passing through longitudinal apertures—*l*— in the wall of shaft —*q'*— raise and lower a ring plate —*r*— slidably mounted on said shaft. Between said ring-plate —*r*— and a flange —*c*— of the slidable collar —*f*— of the centrifugal governor is arranged the counteracting spring—*m*—. Arms —*x*— are pivoted at one end to collar —*f*— and at the other to bodies —*o*—. The screwing and unscrewing of the nut —*e*— moves said ring-plate —*r*— towards and away from the flange —*c*— respectively to compress spring —*m*— or permit it to expand, thus raising or lowering the rate of speed to be indicated by the ball —*n*—.

A lead —*w*—, sealing the ends of a wire —*i*— passed through holes provided in the free end of rod —*d*— and in the lock-nut —*z*—, serves for preventing unauthorized alteration of the adjustment of the working condition of the device.

While an apparatus has been shown and specified comprising only a single speed indicating device, it is understood that the invention comprises also the arrangement of more of said devices in combination whose main hollow shafts can be geared to a rotary shaft driven by means of any known transmission mechanism from the vehicle or from the machine.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. A speed indicating device for vehicles or machines comprising a normally stationary revolubly mounted body colored so as to have a different appearance when rotating than when stationary, a rotatable member mounted adjacent said colored body, means for gearing said member to a moving part of a vehicle or machine, and means for causing said member to engage said colored body when the vehicle or machine has attained a predetermined speed to cause said colored body to rotate.

2. A speed indicating device for vehicles comprising a normally stationary revolubly mounted body, a rotatable member mounted concentrically within said body, means for gearing said member to a moving part of a vehicle, and weights resiliently mounted on said member adapted to be spread apart by centrifugal force upon rotation of said member, and to engage said body to cause it to rotate when the vehicle has reached a predetermined speed.

3. A speed indicating device according to claim 2 having a part of the rotatable member projecting out through the body to provide an indicator for showing whether the gearing connecting the rotatable member to the moving part of the vehicle is functioning.

4. A speed indicating device for vehicles comprising a hollow shaft, means for gearing said shaft to a moving part of the vehicle, an indicating body loosely mounted on said shaft, radial arms fixed to said shaft, weights slidably mounted on said arms, a collar slidable on said shaft connected by links to said weights, longitudinal slots in said shaft, a rod slidable in said hollow shaft and having pins on one end projecting through said slots, the other end of said rod being threaded and projecting beyond the end of said shaft, a nut on the threaded end of said rod, a second collar slidable on said shaft and mounted on said pins, a spring interposed between said collars, said weights being adapted to slide outwardly against the action of said spring as their speed of rotation increases and to engage said indicating body when their speed exceeds a predetermined limit, and a member clamped between the adjusting nut and the adjacent end of the shaft, and extending outside of the indicating body to provide means for determining whether the gearing between the shaft and the moving part of the vehicle is functioning.

Signed at Milan (Italy), this 21st day of November, 1924.

PIERO GAMBAROTTA.