

No. 676,584.

Patented June 18, 1901.

H. P. MAXIM.
SIGNAL ACTUATING APPARATUS.
(Application filed Sept. 16, 1897.)

(No Model.)

Fig. 1

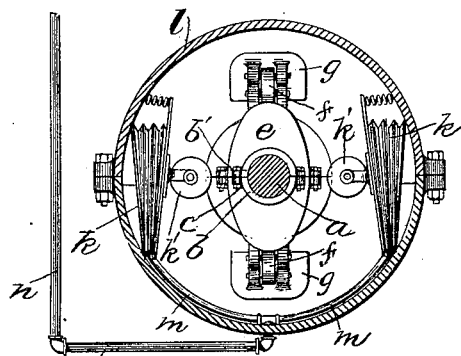
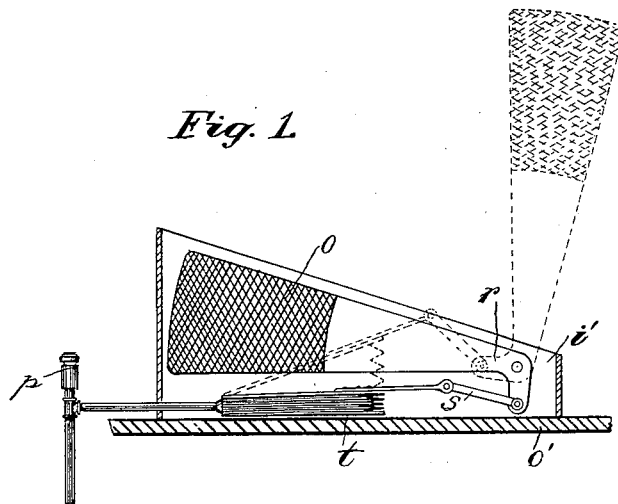
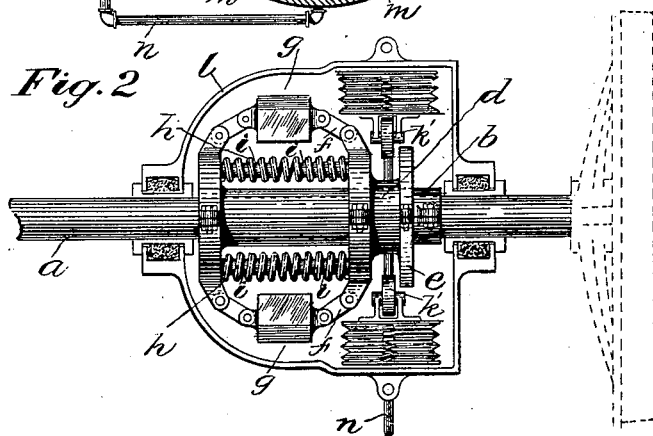


Fig. 2



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UNITED STATES PATENT OFFICE.

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SIGNAL-ACTUATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 676,584, dated June 18, 1901.

Application filed September 16, 1897. Serial No. 651,884. (No model.)

To all whom it may concern:

Be it known that I, HIRAM PERCY MAXIM, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Signal-Actuating Apparatus, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

The object of my invention is to provide a device which is applicable to a moving vehicle, as a street-car, for the purpose of actuating a signal when the speed of the car exceeds a certain predetermined rate; and to this end my invention consists in the details of the several parts making up the apparatus and in the combination of the parts, as hereinafter described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a view in cross-section through a car-axle and casing surrounding it, showing in side elevation a portion of the apparatus and above this casing the signal device and its trip mechanism. Fig. 2 is a view in lengthwise section through the casing of a car-axle, showing in side elevation the apparatus located about the car-axle.

In the accompanying drawings one form of the apparatus and actuating mechanism is shown, the main idea being illustrated in this selected form, although my improvement is not limited to such specific form or construction of parts.

In the accompanying drawings the letter *a* denotes the axle of a car or like moving vehicle, and on this axle *a* a sleeve *b*, formed in two sections for the purpose of more convenient attachment to the axle, is clamped, as by means of bolts *c*, extending through lugs *b'* at opposite ends and also on opposite sides of the sleeve. A sliding member *d* is mounted, preferably, on the sleeve and arranged to have a limited movement lengthwise of the axle, said movement being imparted to it by means of a governor device operating by centrifugal force. This sliding member *d* is attached to or provided with a cam *e*, having its periphery of elliptical or like irregular curved outline with radii of different lengths when referred to the center

of revolution of such cam. This sliding member *d* is connected by the toggle-arms *f* to weights *g*, these weights being connected on the opposite side to projections or brackets secured to the sleeve or otherwise fixed to the axle. These two members are kept separate by means of springs *h*, supported on lugs *i* or like devices to retain the springs in proper operative position between the fixed member and the sliding member of the governor. These springs are readily procured of standard strength, so that they will be compressed at all times an equal degree by and under the application of the same force. These governor weights and springs are counter-balanced by being arranged on diametrically opposite sides of the axis by preference, and it will be seen that as the axle of the car rotates the governor-weights are revolved, and when thrown outward by centrifugal force will cause the sliding member *d* to move toward the fixed member. This inward sliding movement of the member *d* draws the cam *e* into the central plane of the bellows *k* or like air-compressor.

A casing *l*, made in sections by preference, is secured about the axle, and to the walls of this on opposite sides of the axle is attached a number of bellows *k*. Each of these bellows has a free member on the side toward the axle and is supplied with a contact-piece *k'*, preferably a roller, mounted in a bracket and adapted to receive the impact of the periphery of the cam when the latter is moved into the plane in which such contact-piece is located. The normal position of these contact-pieces *k'* is such that a space is left between the surface of the contact-piece and the center of the axle less than the greater radius of the cam, so that the latter in its revolution will strike against the contact-piece and close the bellows, thus forcing the air through the connecting-pipes *m* and a leader *n* to the signal device *o*, which is mounted in any convenient position, as on the roof *o'* of a car. A whistle device *p*, actuated by this current of compressed air, may be located on a branch of the pipe, if desired, and used either separate from or in addition to the visual signal. This visual signal comprises, preferably, a semaphore-arm *r*, pivoted to a casing *r'* or like-situated support and ar-

ranged to swing in a vertical plane. The signal is formed by the broader blade of the arm, while the shorter arm is connected by a toggle *s* to the moving flap of a bellows *t* or like movable part, which may be actuated by the pressure of air. This semaphore-arm is preferably in the shape of a bent lever, as shown; but it is obvious that other forms, both of visual signal and of actuating mechanism other than air as the moving agent, may be employed in their places.

It will be noticed that in my invention the apparatus remains stationary so far as the immediate signal devices are concerned until a certain speed of the car or vehicle to which the apparatus as a whole is attached is exceeded, but that it will when the speed is increased beyond that point move a certain definite distance. By reason of the fact that the immediate signal-operating parts are in use only at intervals or at times when the speed is exceeded they are preserved from undue wear, and in the form shown the parts are so constructed as to be easily and readily attached to cars as at present made, the pneumatic portion of the apparatus being of simple construction, and the bellows are provided with leather flaps, which will do duty as valves without much danger of getting out of order or failing to operate when required.

I claim as my invention—

1. In combination with a moving vehicle, a fluid-compressor normally inoperative and adapted to be operated upon a predetermined speed of the vehicle and means appurtenant to the fluid-compressor adapted to display a visual signal and sound an alarm upon the operation of the fluid-compressor.

2. In combination with a moving vehicle, a sounding signal, a visual signal, a fluid-compressor, means for operating the fluid-compressor at predetermined rates of speed of the vehicle, and connections between the fluid-compressor and the signaling apparatus.

3. In combination with a car-axle or like moving member of a vehicle, a centrifugal governor attached thereto and including a sliding member bearing a revoluble cam, a pneumatic pump having a movable member in the path of movement of the revolving cam, a signal device attached to the vehicle and tubular connections between the pump and the signal device, all substantially as described.

4. In combination with a car-axle or like moving member of a vehicle, a centrifugal governor attached thereto and including a sliding member bearing a revoluble cam, an

air-compressing device having a movable member in the path of movement of the revolving cam, a visual signal attached to the vehicle and connected to the air-pump, tubular connections between the pump and the signal device, and a sounding signal attached to the tubular connections, all substantially as described.

5. In combination with a moving vehicle, a sounding signal, a visual signal, a fluid-compressor operatively connected with said signals and automatic means for operating the fluid-compressor upon predetermined speeds of the vehicle.

6. In combination with a moving vehicle, a sounding signal, a visual signal, and signal-operating mechanism including a pneumatic pump and a centrifugal governor comprising a member movable laterally and radially of a central support to operate the pneumatic pump, all substantially as described.

7. In a moving vehicle, a positively-acting fluid-compressor normally inoperative and adapted to be operated upon a predetermined speed of the vehicle, and means appurtenant to the fluid-compressor adapted to operate signaling apparatus synchronously with the operation of the fluid-compressor.

8. In combination with a moving vehicle, a sounding signal, a visual signal normally inoperative, means including a compressed fluid for automatically operating both of said signals by the movement of the vehicle at a predetermined rate of speed and only so long as an excessive speed of the vehicle is maintained.

9. In combination in a moving vehicle, a governor arranged upon a moving part of the vehicle, a positively-acting fluid-compressor mounted in operative relation to said governor, and means intermediate of the governor and compressor for intermittently actuating the latter upon a predetermined speed of the former, and signaling apparatus adapted to be operated by the compressor.

10. In combination with a vehicle-axle or like moving part, a governor mounted upon said movable part, signaling apparatus located substantially remote from the governor, and a normally inert fluid intermediate of the governor and signaling apparatus adapted to actuate the latter upon a predetermined rate of speed of the former through the coaction of a positively-acting fluid-compressor.

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Witnesses:

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