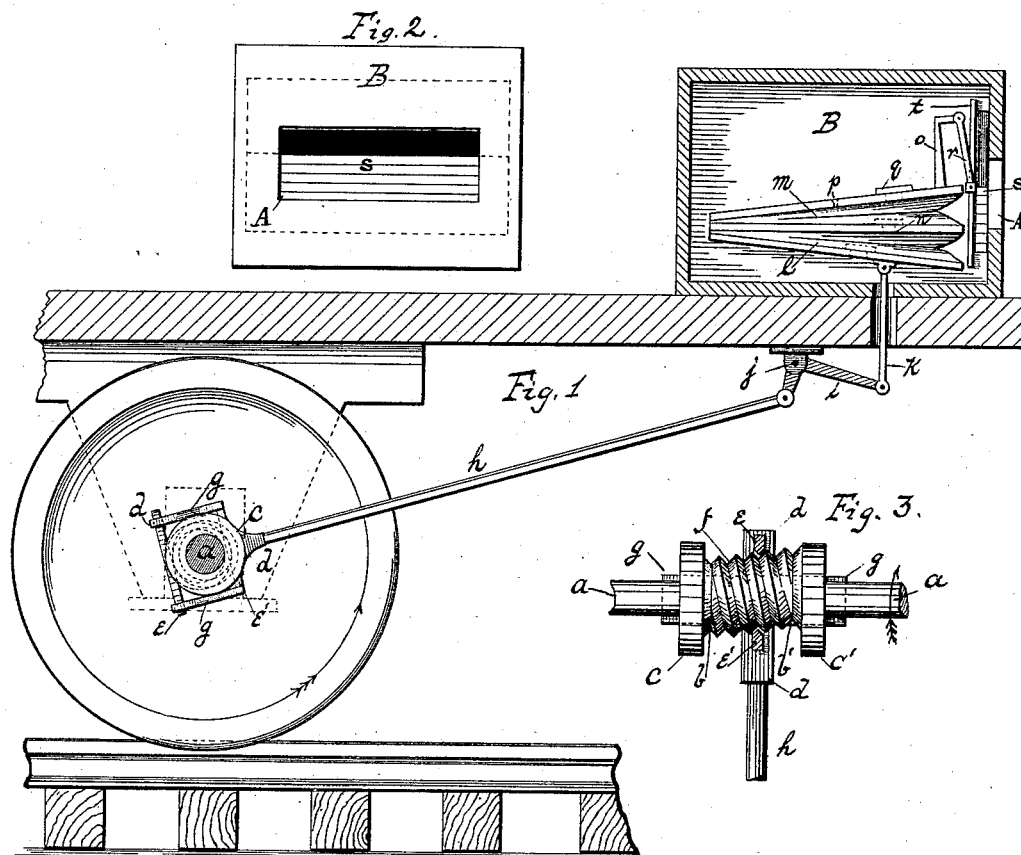


(No Model.)

G. G. WAGNER.
RAILWAY CAR SIGNAL.

No. 302,451.

Patented July 22, 1884.



Witnesses:

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GUSTAVUS G. WAGNER, OF MOUNT VERNON, NEW YORK.

RAILWAY-CAR SIGNAL.

SPECIFICATION forming part of Letters Patent No. 302,451, dated July 22, 1884

Application filed November 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVUS G. WAGNER, a citizen of the United States residing at Mount Vernon, in the county of Westchester and State of New York, have invented a new and useful Improvement in Railway-Car Signals, of which the following is a specification.

My invention relates to the class of signals which are displayed in the rear of a train for the purpose of indicating the motion of the train or when the train is standing still. When my signal is applied to a car, it operates as follows: When the car is moving in the direction from the observer, a white disk or light is shown. When the car moves in the direction toward the observer, a red disk or light is shown. When the car is standing still, a red disk or light is shown. When the car is moving slowly in the direction away from the observer, an alternate red and white disk is shown, or, at night a red and white light is flashed. This enables the engineer of the following train to determine the movement of the train ahead of him. I accomplish this by the mechanism illustrated in the accompanying drawings, which are part of this specification.

Figure 1 represents a vertical cross-section. Fig. 2 represents a front elevation of the signal box or lamp. Fig. 3 represents the double-threaded screw-cam on a fraction of a car-axle, and the lower part of the movable frame.

Similar letters refer to similar parts throughout the several views.

To the car-axle *a*, I rigidly fasten the cam, which consists of a double-threaded screw, one end of which ends in the groove *b*, the periphery of which is true with that of the axle *a*, and the flanges *c* and *c'*, the other end of the screw ends in the groove *b'*, the periphery of which is eccentric to that of the axle and the flanges *c* and *c'*.

To the movable frame *d* are rigidly fastened two guide-lips, *e* and *e'*, directly opposite each other and at right angles to the axle, and mesh with the screw-threads *f*. To carry the frame *d* from the circumferential groove *b* to the circumferential groove *b'*, and vice versa, I employ a screw, as shown in Fig. 3, which has two spirals running in the same direction. The object of the double spiral is to have the

grooves always opposite each other and on a line at right angles to the axle. The movable frame *d* is also provided with four guide-arms, *g*, which ride on the periphery of the flanges *c* and *c'*. One end of the connecting-rod *h* is rigidly fastened to the frame *d*. The other end is jointed to the bell-crank lever *i*, which has its fulcrum at the point *j*. The connecting-rod *k* connects the bell-crank lever with the bellows or air-pump *l*. The air-chamber *m*, connects directly with the air-pump *l* by means of the valve *n*. The upper part of the air-chamber is movable vertically, and is provided with a vent, *p*, and a safety-valve, *q*. The arm *o* is rigidly fastened to the upper part of the air-chamber, and engages with the connecting-rod *r*, one end of which is connected to the movable slide *s*, which is arranged and held in position on the inside of the box B by means of the guide *t*. The slide *s* is divided into two halves, the lower half being of a different color to that of the upper half. Thus when the slide by its own gravitation drops, one color is shown through the aperture A in the box B, and when the slide is raised by means of pumping air into the chamber *m* another color is shown. It will be obvious that when glass is used for the slide and a light placed in the box B a lamp is produced.

The operation of my invention is as follows: When the axle moves in one direction, and assuming the direction is as shown by the arrow on the wheel, the guide-lips are carried by means of the threads of the screw to the groove *b'*, which is eccentric to the flanges *c* and *c'*, and thus imparts a reciprocating motion to the frame *d* and to the connecting-rod *h*, which imparts it to the bell-crank lever *i*, thence to the connecting-rod *k*, and to the air-pump *l*. The motion continues and the air-chamber is gradually filled and rises, carrying with it the arm *o*, connecting-rod *r*, and the slide *s*, thus showing a different color when the air-chamber is filled, and the motion continues, the surplus air escapes through the valve *q*. When the motion of the axle ceases, the air in the chamber *m* slowly escapes through the vent *p*, and the slide falls gradually back into its normal position. When the axle revolves in the opposite direction to that indicated by

the arrow, the guide-lips are carried to the other side of the cam by means of the screw-threads, and to the groove *b*. This groove having a periphery true with that of the flanges *c* *c'* and axle *a*, no reciprocating motion is imparted to the frame *d*, &c.; hence the slide remains in its normal position, showing danger.

Having thus fully described my invention, what I desire to claim as new and secure by Letters Patent is—

1. In a railway-car signal, the combination, with a car-axle, of a cam capable of imparting a reciprocating motion to a rod connected with the piston of an air-pump when said axle is revolving in one direction and capable of holding said connecting-rod stationary when said axle is revolving in the opposite direction, an expanding air-chamber, and a slide, substantially as herein described, and for the purpose specified.

2. In a railway-car signal, the combination, with a car-axle, of a cam consisting of a double-threaded screw terminating in two circumferential grooves, *b* and *b'*, one of which grooves is concentric and the other eccentric to the

axle and the flanges *c* and *c'*, the frame, as *d*, provided with two guide-lips, as *e* and *e'*, adapted to follow the faces of the screw, the guide-arms, as *g*, arranged on said frame to ride on the periphery of the flanges *c* and *c'*, a connecting-rod connecting said frame with the piston of an air-pump, an expanding air-chamber, and a slide arranged to be actuated by said air-chamber, the whole to operate substantially as herein described, and for the purpose specified.

3. In a railway-car signal, the combination, with a car-axle having a double-threaded screw-cam, substantially as herein described, of a frame provided with guide-lips adapted to follow the grooves of the screw, means for connecting said frame with an air-pump, an expanding air-chamber, and a slide, as herein shown, the whole to be operated by the rotary motion of the axle, substantially as herein described, and for the purpose specified.

GUSTAVUS G. WAGNER.

Witnesses:

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