

(No Model.)

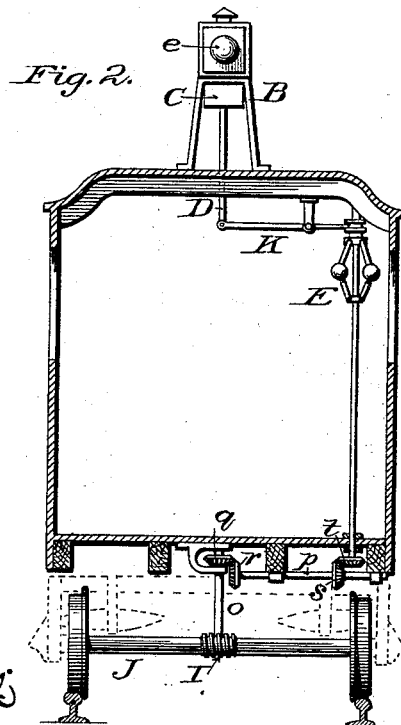
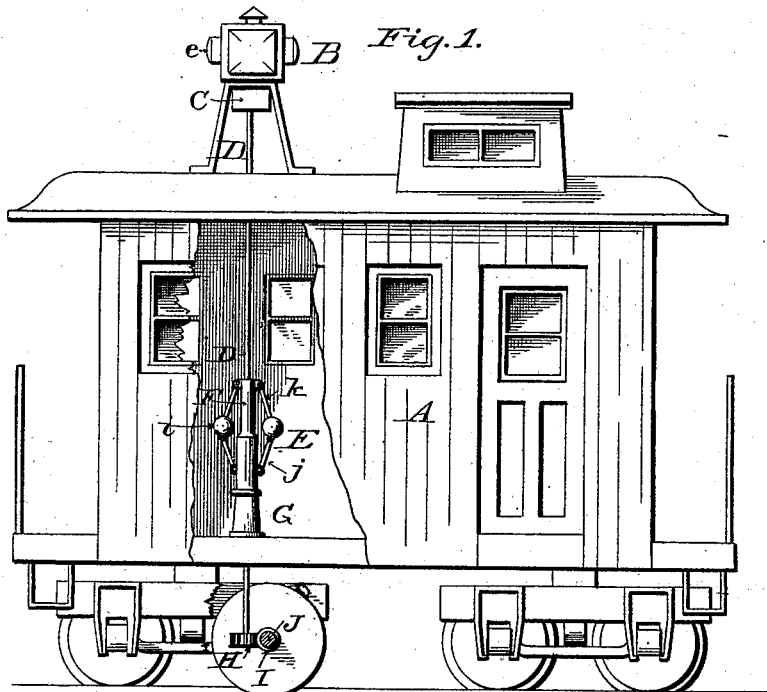
2 Sheets—Sheet 1.

D. M. BORNARTH.

CAR SIGNAL.

No. 305,043.

Patented Sept. 16, 1884.



Witnesses:

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

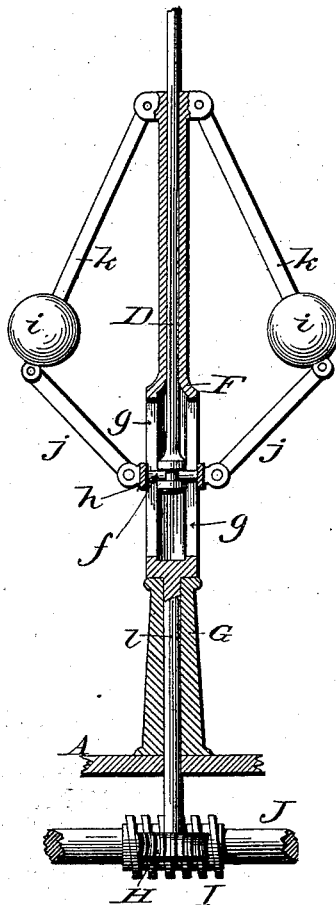


Fig. 4.

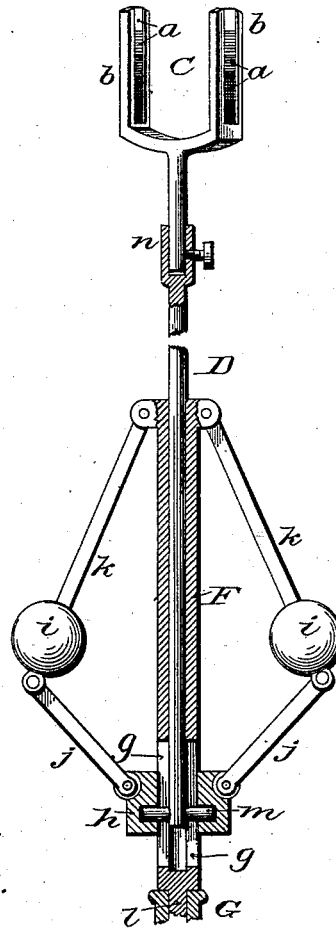
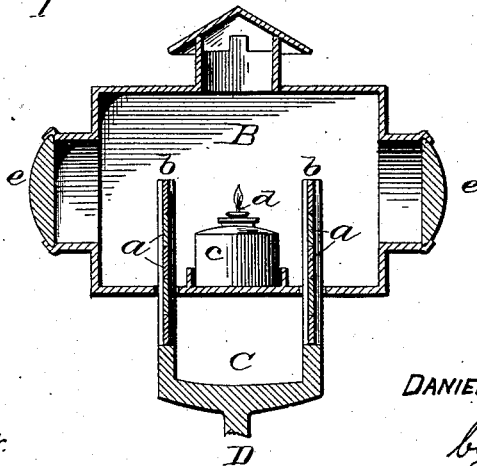


Fig. 5.



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UNITED STATES PATENT OFFICE.

DANIEL M. BORNARTH, OF SHAKOPEE, MINNESOTA.

CAR-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 305,043, dated September 16, 1884.

Application filed June 16, 1884. (No model.)

To all whom it may concern:

Be it known that I, DANIEL M. BORNARTH, of Shakopee, in the county of Scott and State of Minnesota, have invented certain new and useful Improvements in Car-Signals, of which the following is a specification.

My invention relates to automatic mechanism for indicating at a distance whether a train is in motion or standing still, and when in motion to indicate the speed, in order that the engineer of a following train may govern his engine accordingly, and that the engineer of each train may readily ascertain the speed of travel.

The invention is more particularly designed for use at night, but is susceptible also of day use.

Briefly stated, the invention consists in a slide bearing signals of predetermined colors and moved by a governor, which is rotated through suitable connection with a wheel or axis of the car, and by its movements causes one or another signal to be displayed, according to the rate of travel or the stopping of the car, the slide bearing ordinarily transparent colored sections, which are brought in front of the flame of the signal-lantern.

In the accompanying drawings, Figure 1 is a side elevation of a car provided with my improved apparatus in a preferred form, the side of the car being broken away to show the arrangement of parts; Fig. 2, a cross-section of a car, showing a slightly-modified arrangement of the mechanism; Figs. 3 and 4, sectional views of the governor mechanism on a somewhat larger scale; Fig. 5, a sectional view of the lantern, showing the slide.

It is at present customary for trains to carry at night lanterns of different colors, and arranged in certain prescribed ways, to indicate the character of a train, and to enable the engineer of the following train to know how to control his engine; but in case of stoppage or slowing up of the forward train the engineer of the following train has no means of ascertaining the fact until close to such forward train; nor has the engineer of either train any reasonable means of determining the rate at which the train is moving. The plan which I am about to describe affords a sure means of obtaining at all times the required information.

A indicates a caboose—such as is usually attached at the rear of a freight-train, or it may be a regular car of the train—provided with a signal-lantern, B, preferably above the roof of the car. The lantern may be a common bull's-eye lantern, the bull's-eye or lenses being, however, of colorless glass.

C indicates a slide carried by a rod, D, which is operated by a governor, E, receiving motion from a wheel or axle of the truck. The slide C is provided with a series of squares or sections, *a*, of glass or other transparent substance of different colors, arranged in a predetermined order, according to the code of signals in use upon the railroad where the device is used. Ordinarily I make the slide in the form of a yoke, or with two arms, *b b*, each carrying a series of the transparent squares *a*, as more plainly shown in Fig. 5, to pass the flame of the lamp. The slide is preferably arranged within, but may in some cases be placed outside of, the lamp. As shown in Fig. 4, the slide passes upward through the bottom of the lamp, the arms *b* passing on opposite sides of the oil-holder *c* and wick *d*, and occupying each a position between the flame and the bull's-eye or lens *e*. It will be readily understood that if the slide C be moved vertically while the lantern is lighted the squares or sections *a* will be successively brought into line with the flame and lens, and the lantern thus made to show the different colors, retaining one or another color just so long as the slide remains at rest with such color in line with the flame and lens or opening through which light escapes from the lantern. The order of colors will be such as will indicate successively the different conditions of the train, from absolute rest to highest speed, and there may be any desired number of intermediate graduations between these two extremes. The color indicating "rest" will be at the top or at the bottom of the slide, according to the direction in which the slide is to be moved by the governor under increase of speed—at the top if said movement is upward, and at the bottom if the movement is downward.

The rod D, which carries slide C, is preferably connected with the governor, as shown in Fig. 4—that is to say, the rod is carried centrally through the upright revolving body F

of the governor, being free to move vertically therein, and is supported at its lower end by pins or studs *f*, passing through slots *g* in the body *F* from a collar, *h*, connected with the balls *i* of the governor by links *j*, the balls being suspended by arm *k* from the upper end of revolving body *F*. This revolving body *F* is formed with a shank or stem, *l*, which turns in a standard, *G*, secured to the floor or wall of the caboose or car, said stem continuing downward and through the floor, beneath which it is furnished with a worm-wheel, *H*, which, being fast upon the shank or stem *l*, causes the latter, and hence the body *F*, to rotate, and to carry with it the arm *k* and balls *i*, which latter, being thrown out by centrifugal force, rise, as is well understood. In thus rising the balls carry with them the links *j* and collar *h*, which in turn raises the rod *D* and slides *C*.

The size of the worm-wheel and worm or screw, the weight of the governor-balls, the length of the links, and other matters of proportion will be so arranged relatively as to insure a given rise or movement of the slide for a given increase of speed, the different sections *a* being spaced with reference to the movement of the slide, so that the change from one to the next shall be made whenever a given change of speed occurs. When the car comes to rest, the arms and balls fall to a vertical, or substantially vertical, position, carrying down the rod and slide until the proper signal is displayed, to indicate the fact that the car is not in motion.

It is obvious that, instead of employing the gearing here shown and described, the governor may be driven by belt, or by ordinary toothed gearing, or by friction-gear receiving motion from the tread of the car-wheel.

It will likewise be seen that the precise form of the governor is immaterial, and that it may be modified considerably without departing from the spirit of my invention—as, for instance, by providing the lower end of rod *D* with a cross-pin, *m*, having its ends extended into a groove or into sockets in the collar *h*, in which case, as the body *F* rotates and the pin passes through slots therein, it will be necessary to provide the rod *D* with a swivel, *n*, to prevent the slide *C* from rotating with the rod.

The apparatus, as above described, is well adapted where the whole can be conveniently arranged at the middle of the caboose or car; but it is often desirable to locate the mechanism at one end of the middle, or in a corner out of the way, though retaining a central position for the lantern. When such is the case, I employ, essentially, the same mechanism, but transmit motion from the worm-wheel *I* to the

governor through shafts *o* and *p* and bevel-pinion *q*, *r*, *s*, and *t*, or any well-known equivalent thereof, the rod *D* being in such case carried by one end of a horizontal lever, *K*, the opposite end of which is acted upon by the governor.

It will be readily seen that, instead of the precise arrangement of parts thus described and shown, various equivalent arrangements will speedily suggest themselves to the skilled mechanic, the invention being not confined to details, but consisting, broadly, in interposing between the lantern and the running-gear a governor, which, actuated by the running-gear, serves to place in front of the flame of the lantern a transparent body colored to give a predetermined signal, or, in case a lantern is not used, to display a signal without the aid of a light, the lantern-box or other suitable case serving to hide all but the desired signal. The sections *a* of slide *C* will be either of one or two colors, according to the signals in use or desired to be used upon any particular road.

Having thus described my invention, what I claim is—

1. In combination with a car, caboose, or other vehicle, a governor receiving motion from the running-gear thereof, varied and controlled by the speed of the vehicle, a lantern or light-giving body, and a slide actuated by the governor bearing different-colored transparent sections, and arranged to move in front of the light, substantially as described, and for the purpose explained.

2. In combination with a car or other vehicle, a governor connected with and driven by the running-gear thereof, and varied and controlled by the speed of the vehicle, and a signal connected with and carried into or out of sight by the governor, substantially as set forth.

3. In combination with a vehicle having a lantern, slide *C*, having transparent colored sections *a*, governor *E*, provided with worm-wheel *H*, rod *D*, connected with the governor, and worm *I*, secured to the axle *J*, and meshing with wheel *H*, all substantially as shown and described.

4. The combination, substantially as described and shown, of a vehicle provided with a lantern, *B*, slide *C*, having arms *b b*, provided with transparent sections *a*, rod *D*, carrying said slide, governor *E*, connected with and serving to move rod *D*, wheel *H*, and worm *I*, secured to the axle *J*.

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