(No Model.)

R. T. BOWNE.

RAILROAD TIME SIGNAL.

No. 569,953. Patented Oct. 20, 1896.

Fig. 4.

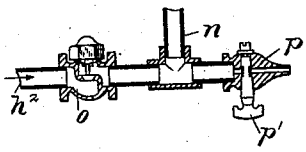
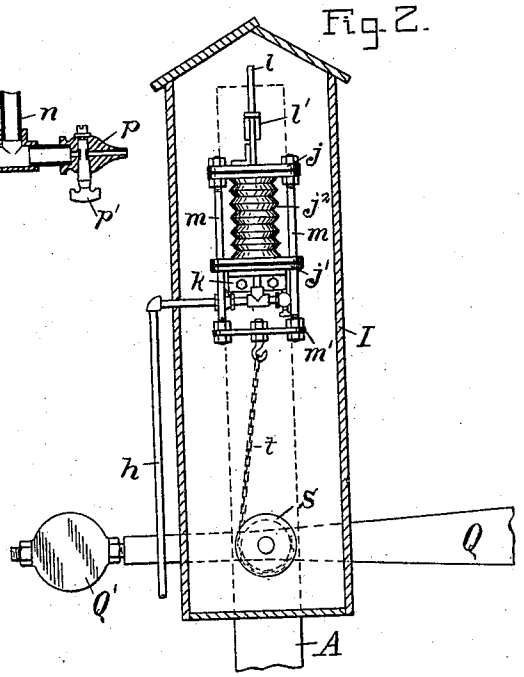


Fig. 2.



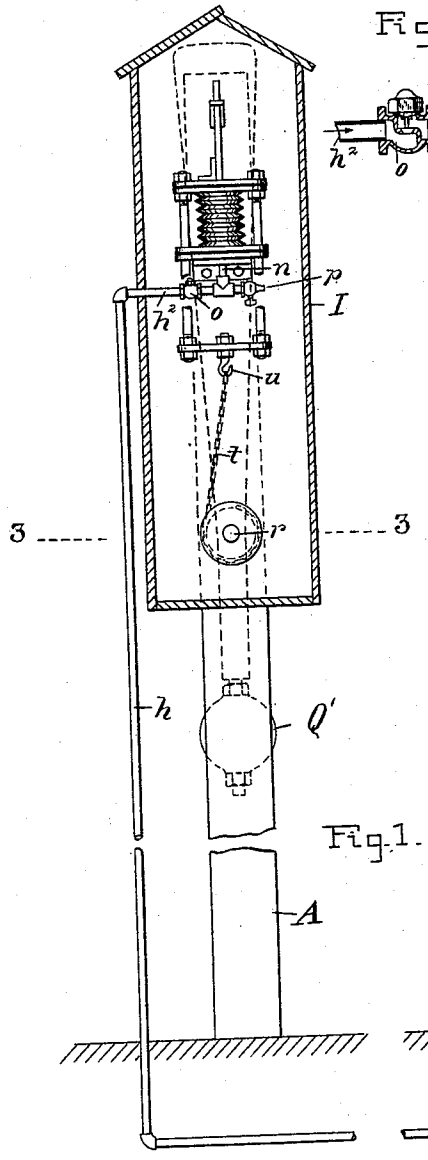


Fig. 1.

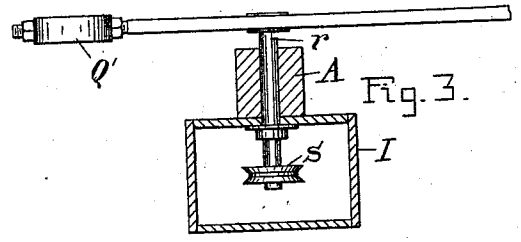


Fig. 3.

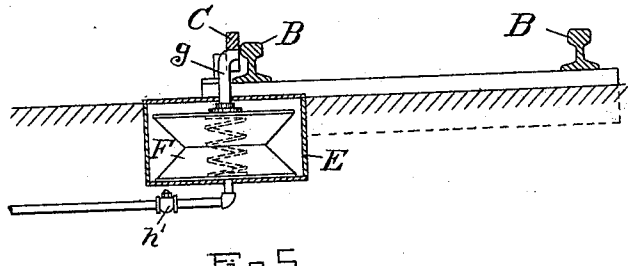
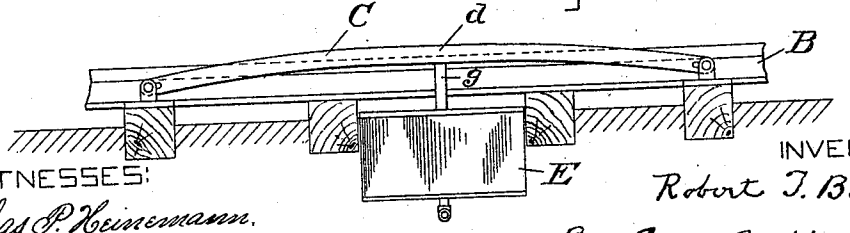


Fig. 5.



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RAILROAD TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 569,953, dated October 20, 1896.

Application filed March 31, 1896. Serial No. 585,590. (No model.)

To all whom it may concern:

Be it known that I, ROBERT T. BOWNE, a citizen of the United States, residing at Wimbledon, in the county of Harford and State of Maryland, have invented certain new and useful Improvements in Railroad Time-Signals, of which the following is a specification.

This invention relates to an improvement in railroad time-signals adapted to indicate to the engineer of a passing train the fact that a certain interval of time has elapsed since a preceding train passed in the same direction, in order that he may keep his train the proper distance from the said preceding train and thereby avoid rear collision.

The object of the invention is to provide a signal of the semaphore type which will be automatically set to the "danger" position by the wheels of a passing train, and which will slowly recede to the "safety" position in a predetermined period of time. To this end I have provided certain novel constructions and combinations of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a sectional elevation view of a portion of a track, the signal-post, box, and arm arranged alongside the track, and the intervening mechanism whereby a car passing along the track will automatically operate the signal-arm. Fig. 2 is a vertical section of the signal-box, showing the mechanism therein and the signal-arm in the horizontal or "danger" position. Fig. 3 is a horizontal section of the signal-box and adjoining parts, taken on the line 3 3 of Fig. 1. Fig. 4 is a section view, on an enlarged scale, of the horizontal section of the air-pipe containing the check-valve and nozzle for the escape of air. Fig. 5 is a side view of a track-rail, the compression-bar, and the air-supplying chamber connected therewith.

Referring to the drawings, the letter A represents a post or tower located alongside of the track-rails B. Parallel with and abutting against one of said rails is a compression-bar C, which is elevated or raised at its center *d* above the track-rail in position to be depressed by the tread of a car-wheel passing over it. Below the track-rail and under this bar is a box E, containing an air-supplying device F, which is connected to the center of the compression-bar by a rod *g*, and leading from the bottom of this air-supplying device is a small air-conducting pipe *h*. The depression of the bar C by a car-wheel will cause the air-forcing device F to be compressed and the air therein will be forced through the said air-conducting pipe, a check-valve *h'* in said pipe preventing the return of the air. On the post or tower A is a box or housing I, containing an expansion air-chamber having upper and lower heads *j j'*, of inflexible material, and a bellows-like bag j^2, of suitable flexible material, between the heads. The lower head *j'* is seated on an angle-plate or bracket *k* on one side wall of the box, and the upper head *j* is provided with a guide-rod *l*, movable vertically through an opening in another angle-plate *l'*. Two slide-rods *m* are rigidly attached to the said upper head *j* and move loosely through openings in the flanges of the lower head *j'*, and a cross-piece *m'* connects the lower ends of these slide-rods, thus forming a slide-frame. By this construction it will be understood that the lower head *j'* of the air-expansion chamber does not move, but that the upper head *j* and the slide-frame are vertically movable in order to allow for expansion and contraction of the air-chamber.

The air-pipe *h* has a horizontal upper part h^2, provided with a T-joint, connecting with a branch pipe *n*, which opens into the air-chamber j^2 through its bottom head *j'*. The air forced by the air-chamber F will thus be conducted by the pipe *h* to the expansion-chamber j^2 and cause its upper head *j* and the slide-frame to move vertically until the flexible bag is expanded to its fullest extent. The horizontal upper part of the air-pipe *h* also has a check-valve *o*, which opens to allow air to pass to the expansion-chamber j^2, but closes to prevent the air from returning back into the pipe, and a nozzle *p* has a small passage open to the atmosphere to allow the air in the chamber j^2 to escape slowly. This passage is controlled by a plug-valve *p'*, which may be set so as to increase or diminish the cross-section capacity of the passage through which the air escapes, so that the time for totally exhausting the air from said expan-

sion-chamber may be varied from one to ten minutes.

The semaphore or signal arm Q has a weighted end Q′ and is fixed to the outer end of a rock-shaft *r*, which passes through the post A into the box I. On the inner end of this shaft and within the box is a pulley *s*. A chain *t* has one end connected to the said pulley, on which it winds, and the other to a hook *u* on the slide-frame.

The operation is as follows: Normally the expansion-chamber j^2 is collapsed, as in Fig. 1, and then the signal-arm is at "safety" position. When by a passing train the chamber j^2 is filled with air and the sliding frame moves upward, the chain *t* will draw on the pulley *s* and unwind therefrom and cause it to make a quarter-revolution, and the signal-arm will thereby be turned to the horizontal or "danger" position, as shown in Fig. 2. The air in the chamber j^2 will then begin to escape very slowly through the nozzle *p* and allow the greater gravity of the weighted end Q′ of the signal-arm to gradually return said arm to the vertical or "safety" position, as in Fig. 1. The time within which the signal-arm will move from the "danger" position to "safety" position may be regulated by the valve *p′* and may be increased or diminished as circumstances require.

It is obvious the pulley might be a section of a wheel instead of a complete wheel; also a cord or wire may be used instead of a chain.

Having thus described my invention, I claim—

In a railroad-signal the combination of a flexible bellows-like bag having an upper and lower head; a vertically-movable slide-frame having two side rods, *m*, rigidly attached to the said upper head and the lower ends of said rods connected by a cross-piece, *m′*; a rock-shaft carrying a signal-arm, Q, provided with a counterweight; a pulley on said rock-shaft; and a chain connecting the said vertically-movable frame and pulley, as shown and described.

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

ROBERT T. BOWNE.

Witnesses:

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C. CALVERT HINES.