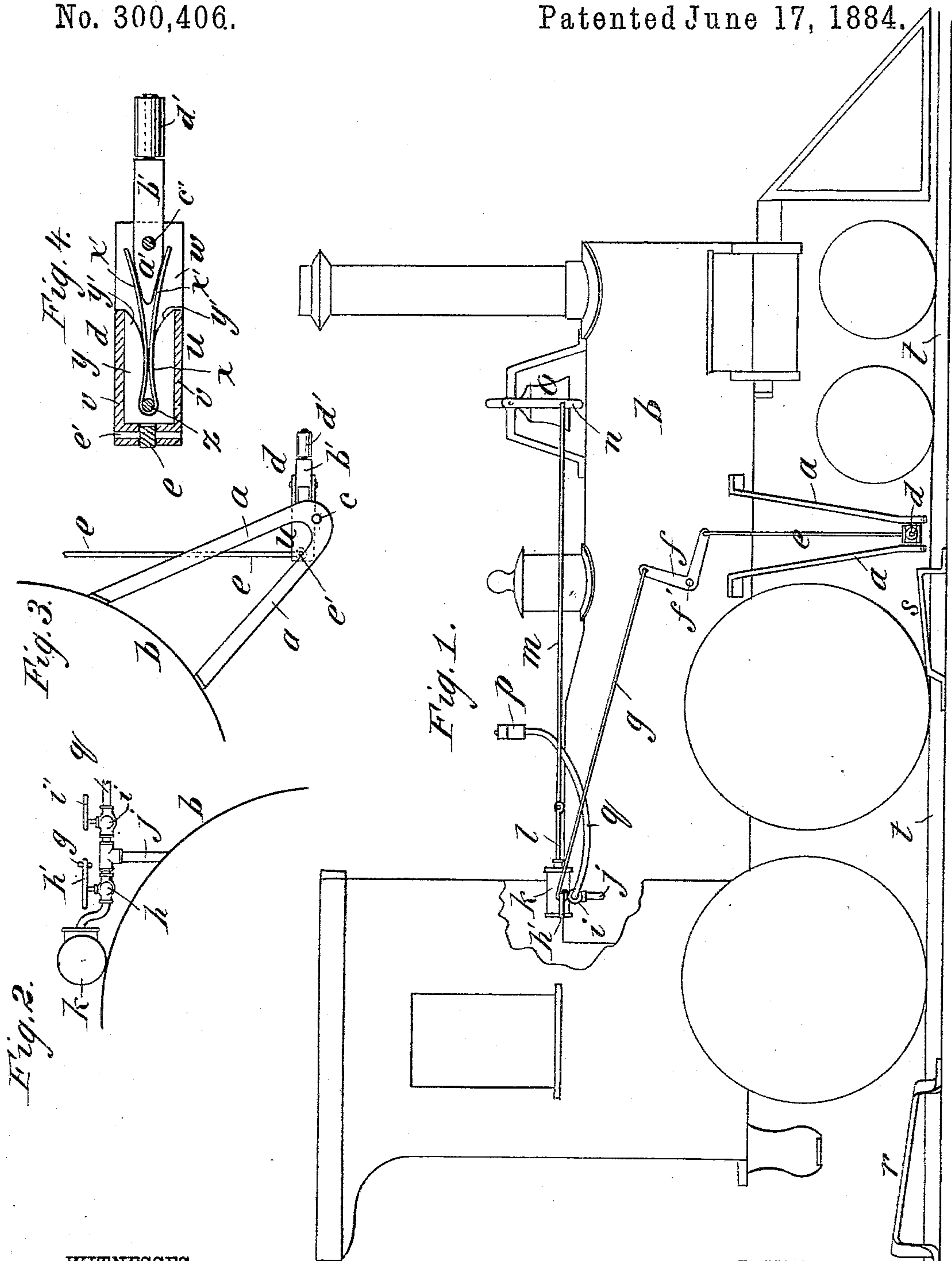


(No Model.)

J. J. STOETZEL.  
RAILWAY SIGNAL FOR LOCOMOTIVES.

No. 300,406.

Patented June 17, 1884.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

JOSEPH JOHN STOETZEL, OF LA SALLE, ILLINOIS, ASSIGNOR TO HIMSELF  
AND EDWARD P. FERAY, OF SAME PLACE.

## RAILWAY-SIGNAL FOR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 300,406, dated June 17, 1884.

Application filed July 17, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH JOHN STOETZEL, of La Salle, La Salle county, and State of Illinois, have invented a new and Improved Automatic Railway-Signal for Locomotives, of which the following is a full, clear, and exact description.

My invention relates to that class of railway-signals that are operated by the passage of the locomotive; and the object of the invention is to provide a signal of simple construction which shall be positive and unfailing in its action, and which may readily be adjusted to signal the coming of a train by either the bell or whistle of the locomotive at the will of the engineer and without leaving his place in the cab.

The invention consists in a contrivance of an arm pivoted to swing vertically and arranged on the locomotive so as to be automatically moved up and down by contact with the fixed inclined rails or ways set at suitable points along the side of the track, the pivoted arm being connected by an angle lever and rods with the valve of a small steam-cylinder for driving a piston therein, having rod-and-lever connections with the bell of the locomotive, for ringing the bell twice for every stroke of its connected piston. The valve-connecting rod of the angle-lever may almost instantly be disconnected from the valve of the bell-ringing cylinder and be connected with the valve controlling the steam-supply to the whistle of the locomotive, so that either bell or whistle signal may be operated automatically at different points along the line, as desired.

The invention includes also special constructions of the signal-arm to guard against its breakage by contact with obstructions along the track, and to work with minimum friction along the inclined ways by or from which the signal steam-supply valves are operated, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of a locomotive-engine in part and a portion of the track with

my improvements applied. Fig. 2 is a rear view of a portion of the locomotive-boiler, showing the bell-operating steam-cylinder in end view and the double valves controlling the steam-supply to the bell and whistle, respectively. Fig. 3 is a rear view showing the signal-arm in side elevation, and Fig. 4 is a sectional plan view of the signal-arm on a larger scale.

In any suitable support—such as a couple of bracket-arms, *a*, here shown connected rigidly to the boiler *b* of the locomotive—I pivot at *c* the signal-operating arm *d*, so that it is free to rock vertically on pivot *c*, and to the inner end of signal-arm *d*, I connect pivotally, at *e*, the lower end of a rod, *e*, which connects with one arm of an angle-lever, *f*, pivoted at *f'* to the side of the boiler *b* or other convenient part of the engine. A rod, *g*, connects the other arm of the lever *f* with either of the steam-supply valves *h* or *i*, which connect with a pipe, *j*, leading from the boiler. The valve *h* is arranged to control a supply of steam from pipe *j* to the small cylinder *k*, having any suitably-constructed valves and piston, which latter connects by its rod *l* with a rod or bar, *m*, which, in turn, connects with a crank-arm, *n*, on the rock-shaft of the bell *o*, so that by the reciprocation of the rod *m* the bell will be sounded twice for every complete stroke of the piston in cylinder *k*. The steam-whistle *p* connects by a pipe, *q*, with the valve *i* for a steam-supply when required. Any suitable direct connection of the rod *g* with the valves *h* or *i*, for opening and closing them by the movements of angle-lever *f*, may be used, a preferred arrangement being the arms *h'* or *i'*, which connect rigidly with the stems of the plugs of valves *h* or *i*, respectively, and the connection of rod *g* with the arms *h'* or *i'* is intended to be such as will readily allow the rod *g* to be disconnected from and connected with either arm, for working either valve *h* or *i* and the connecting bell or whistle, as occasion requires; and this transfer of rod *g* from one valve-arm, *h'* or *i'*, to the other may readily be made by the engineer without leaving his place in the cab.

For working the signal-arm *d* to open and close the valves of the bell or whistle signals,



I arrange the inclined rails or ways *r s* at the side of the railway-track *t*, so that as the locomotive passes the outer end of arm *d* will be moved downward by riding beneath the inclined head of way *r*, and will be next moved upward by riding over the top of the inclined head of way *s*, which will cause the rod *e* to be raised and lowered successively, to move angle-lever *f* for opening and closing the valves *h* or *i*, as above described.

The rail or way *r* is so constructed that while its greater intermediate portion is adapted to have contact with the arm *d* its end portions are disposed out of the plane of movement of the arm, to allow the latter to pass under the rail or way *r* and be disengaged therefrom, after having been depressed by the intermediate surface of the rail or way. These following inclined ways *r s* are to be set at or near railway crossings or curves, at bridges, tunnels, or at any signal-points of danger along the track; and when the bell is to be rung the ways *r s* will be set at sufficient distance apart to allow supply of steam to cylinder *k*, to continue the ringing of the bell only as long as required; and as in the use of the whistle-signal the sounds are generally of short duration, the succeeding ways *r s* will be set closer together than for the bell-signal, while for either bell or whistle signal the duration of the sounds may be controlled at will by spacing the ways *r s* accordingly, as will readily be understood.

The signal-arm *d* is made, preferably, in rectangular cross-sectional form, and with a casing, *u*, with the side plates, *v*, made shorter than its top and bottom plates, *w*, to allow free play sidewise of the arms *x'* of the spring *x*, which latter I prefer to make of one piece bent over double, and I secure the spring *x* in the casing *u* by a fixed slotted block, *y*, the slot in the block being sufficiently large at the inner end to receive the pin *z* and the bend of the spring, the slot then contracting toward its mouth to about the combined thickness of the two arms *x'* of the spring, and from thence gradually rounding outward at *y'* at each side, to form a seat for the spring-arms *x'* as they are forced either way by the pointed inner end, *a'*, of the outer portion or bar, *b'*, of the signal-arm; which bar *b'* is pivoted at *c'*, so as to swing freely either way on the pivot, and in horizontal plane. The outer end of bar *b'* carries a revolving anti-friction roller, *d'*, which relieves the friction of contact with and insures easy and smooth working of the signal-arm *d* over the ways *r* and *s* for moving the valves *h i* of the signal devices.

The spring *x* may be substituted by two springs—one at each side of the bar *b'*—and the tension of the spring or springs *x* is to be regulated so as to hold bar *b'* in line with casing *u* when the bell or whistle signal is being operated by the ways *r s* while permitting bar *b'* to give way or swing backward or forward on its pivot *c* in case said bar *b'*

should accidentally strike an obstruction on or alongside the track *t*, and to return to normal position again, thereby preserving the parts of the signal-arm *d* and its connection to the bell and whistle *o p* against injury, which would render the whole signal device inoperative.

I do not limit myself to the precise construction and arrangement of the parts as herein shown and described, as practical variations may be made within the scope of my invention, which it is believed has many advantages over the common methods, and may be cheaply made and applied, and is not liable to get out of order.

I do not abandon or dedicate to the public any patentable features set forth herein and not hereinafter claimed, but reserve the right to claim the same either in a reissue of any patent that may be granted upon this application or in other applications for Letters Patent that I may make.

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

1. The combination of the signal-arm *d*, ways *r s*, angle-lever *f*, rods *e g*, valves *h i*, cylinder *k*, connections *l m n* to the bell *o*, whistle *p*, and pipe *q*, substantially as and for the purpose set forth.

2. The combination of signal-arm *d*, ways *r s*, angle-lever *f*, rods *e g*, valve *h*, cylinder *k*, and connections *l m n* to the bell *o*, substantially as shown and described.

3. The combination of signal-arm *d*, ways *r s*, angle-lever *f*, rods *e g*, valve *i*, pipe *q*, cylinder *k*, and whistle *p*, substantially as and for the purpose set forth.

4. The combination, with the ways *r s*, angle-lever *f*, and rods *e g*, connecting with the bell and whistle signals, substantially as specified, of the signal-arm *d*, adapted to be rocked in vertical plane on its pivot *c* by contact with ways *r s*, and also having a head-bar, *b'*, pivoted to swing in horizontal plane for clearing obstructions, substantially as shown and described.

5. The signal-arm *d*, constructed with a casing, *u*, pivoted at *c* to swing vertically in supports on the locomotive, and with a head-bar, *b'*, pivoted to casing *u*, so as to swing in horizontal plane, substantially as shown and described.

6. The combination, with the pivoted vertically-swinging signal-arm casing *u*, of the pivoted horizontally-swinging head-bar *b'* and spring or springs *x*, substantially as shown and described.

7. The signal-arm *d*, constructed with a casing, *u*, having sides *v* shorter than its top and bottom plates *w*, the pivoted head-bar *b'*, carrying the anti-friction roller *d'*, the slotted block *y*, the bent spring *x*, and the pin *z*, substantially as shown and described.

JOSEPH JOHN STOETZEL.

Witnesses:

N. W. CUMMINGS,  
J. F. COLE.