



# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN RAILROAD-SIGNALS.

Specification forming part of Letters Patent No. 166,024, dated July 27, 1875; application filed June 4, 1875.

*To all whom it may concern:*

Be it known that I, RICHARD H. MOORE, of Groesbeck, Hamilton county, Ohio, have invented a new and useful Railway-Signal, of which the following is a specification:

This invention relates to that class of signals which consist, essentially, of a bell or gong, located either at a station or road-crossing, and adapted to be struck or rung by suitable tappets or other appliances, with which the wheels of the approaching train come in contact; and my improvement comprises an arrangement of devices which, while insuring the utmost promptness and reliability in announcing the approach of a train, are entirely inactive when the train is receding.

By this arrangement there is no possibility of the train ever sounding a false alarm, which would, of course, frustrate the very object of the apparatus, and convert it into an agent of danger.

In the accompanying drawings, Figure 1 is a perspective view of my improved railway-signal, the operative parts being shown in their normal positions. Fig. 2 is a perspective view, showing the position the operative parts assume when acted upon by the car-wheels. Fig. 3 is a vertical section, showing the position the tappet assumes when struck by the wheels of a train moving away from the station or crossing. Fig. 4 is a plan of the bell-striking apparatus.

A A' represent the two rails of a track, and B a station or crossing. Located outside of the track, and at any suitable distance from the station or crossing, say from a quarter to half a mile, is a pit, C, in one corner of which is rigidly secured a housing, D, whose base *d* is bolted to the sills or floor of said pit. Fitted within this housing, and adapted to have a vertically-reciprocating movement, is a shaft, E, to whose upper end is pivoted, at *e*, the tappet F, having a lateral projection, G, whose exposed face is beveled at *g*. The tappet F is recessed or notched at *f*, to receive the shank *h* of a buffer, H', which may be composed of wood, india-rubber, or compressed leather. The object of this buffer is to prevent the operative parts being injured by the violent impact of the car-wheels. The buffer is secured in its proper position by a pin or bolt, I. J

is a small pit or excavation made alongside the track A, to allow the proper motion of tappet F G, as hereinafter explained. The shaft E is recessed longitudinally at K, to receive a plate-spring, L, whose upper or free end bears against a spur, *l*, at the heel of tappet F, in such manner as to maintain said tappet in a vertical position, except when it is deflected to the left by the wheels of a train leaving the station or crossing. Engaging with a suitable notch or bearing, against a shoulder on the shaft E, is the free end of a spring, M, whose fixed end is secured to the floor of pit C. The free end of this spring traverses a longitudinal slot, *d'*, in the housing D, and the stress of said spring acts to elevate the shaft E with its hinged tappet F G. Projecting from shaft E, at right angles to track A, is an arm, N, that traverses a slot, *o*, in the cap O of the housing. Attached to the outer end of this arm is a rod, chain, or wire, *n*, that communicates with a bell-crank, P, from which another wire or rod, *p*, extends to a second bell-crank, P'. These two bell-cranks are, respectively, pivoted to the pit-wall at *c c'*. Extending upwardly from bell-crank P' is a wire, Q, which communicates with an elevated bell-crank, R, the latter being pivoted at *s* to a bearing, *s'*, secured to the top of the post S. From this last-mentioned bell-crank R a wire, T, extends to the bell-ringing apparatus. This bell-ringing or gong-sounding apparatus is fitted to a cap, plate, or bracket, U, which surmounts a post, *u*, the latter being located at any suitable or convenient distance from the pit C. Projecting vertically from bracket U is a shaft, *u'*, that supports the bell or gong V, the position of the latter being indicated by the circular dotted lines in Fig. 4. Fitted within plate U are two stirrups, W W', of which one stirrup, W, acts as a pivot for the hammer X of the bell V, while the other stirrup, W', has secured to it one end of a coiled spring, Y, whose other end is fastened to the hammer X, with which, also, the wire T communicates.

Z may represent one of the wheels of an approaching train.

*a* represents a guard-rail, applied just inside of rail A, so as to insure the wheel Z acting upon the tappet F G.

In constructing this alarm it is desirable that the location of pit C shall be sufficiently remote from the station or crossing to give timely intimation of an approaching train. This distance may vary from a few hundred yards to a quarter or half a mile, according to circumstances and surroundings.

When the housing D is fitted in the pit, care must be taken to have the beveled surface *g* of the tappet F G presented away from the station or crossing, in order that the alarm shall signal only approaching trains. Having observed this simple precaution, the fitting up of the rest of the apparatus is a very easy matter, it being necessary only to see that the wire T is of such a length as to insure the spring Y holding the hammer X in contact with the right side of the bell V, as seen in Fig. 4.

If a train now approach station or crossing B in the direction shown by arrow in Fig. 2, it is evident that the wheel Z will strike beveled surface *g*, and thus gradually, but at the same time quickly, depress the tappet F and its supporting-shaft E, the spring M readily yielding to allow this depression to take place. This depression of shaft E serves, through the instrumentality of arm N, bell-cranks P P' R, and wires Q T, to swing the hammer X to the left, as indicated by the dotted lines in Fig. 4, and thus strike one blow upon the bell.

As the pressure of the passing car-wheel is exerted but for a moment upon the tappet F, it is evident that the spring M will instantly restore the shaft E and its attachments to their normal or elevated positions as soon as said tappet is free from the wheel; which having been accomplished, the spring Y swings the hammer X to the right, and strikes a second blow upon the bell or gong. This act of automatically depressing and elevating the shaft E, so as to strike two distinct blows for the passage of each wheel, gives ample warning of the rate of movement and size of the approaching train.

When a train departs from the station—as, for example, in the direction indicated by arrow in Fig. 3—the car-wheel Z', striking the buffer H, simply deflects the tappet F to the left without depressing the shaft E, and, consequently, no false alarm is sounded by the

cars. The moment the tappet F G is relieved from the pressure of the car-wheel the stress of the spring L causes the member F to turn upon its pivot *e*, so as to resume the vertical position.

Instead of the plate-spring M for operating the shaft E, the latter may rest upon an elliptical or other spring, or said shaft may be sustained and restored by means of a helical spring coiled around it; or said shaft may be restored to its normal position by a weighted cord and pulley. Similarly, the tappet F G may be maintained in position by means of any other suitable form of spring, or by a weighted cord or chain.

When the station is located near a curve the wire T, instead of following the track, may be stretched in a direct line across the fields, and thus save a quantity of wire and supporting-posts and sheaves, and also in friction.

It is understood that the pit C is to be closed as soon as the apparatus is set up, which closure may be effected with a hinged door, the opening of which would allow access to the pit, either for lubricating, inspecting, or adjusting any of the operative parts. By simply removing the screw I an old and worn buffer may be readily removed, and an unused one substituted for it. A swinging-bell, supported upon a coiled spring or other suitable bearings, may be substituted for the fixed one V.

It is, of course, intended that the device shall be in duplicate at each station, so as to give intimation of trains approaching from either direction.

I claim as my invention herein—

The combination, substantially as herein described, of housing D *d'*, vertically-acting shaft E *e*, tappet F G *g l*, spring L, retractor M, and arm N, together with the accessories P P' *p Q R T*, or their equivalents, for sounding an alarm upon a bell or gong, V, so as to give intimation of an approaching train, substantially as set forth.

In testimony of which invention I hereunto set my hand.

RICHD. H. MOORE.

Attest:

GEO. H. KNIGHT,  
JOHN C. HEAD.