No. 610,386. Patented Sept. 6, 1898.

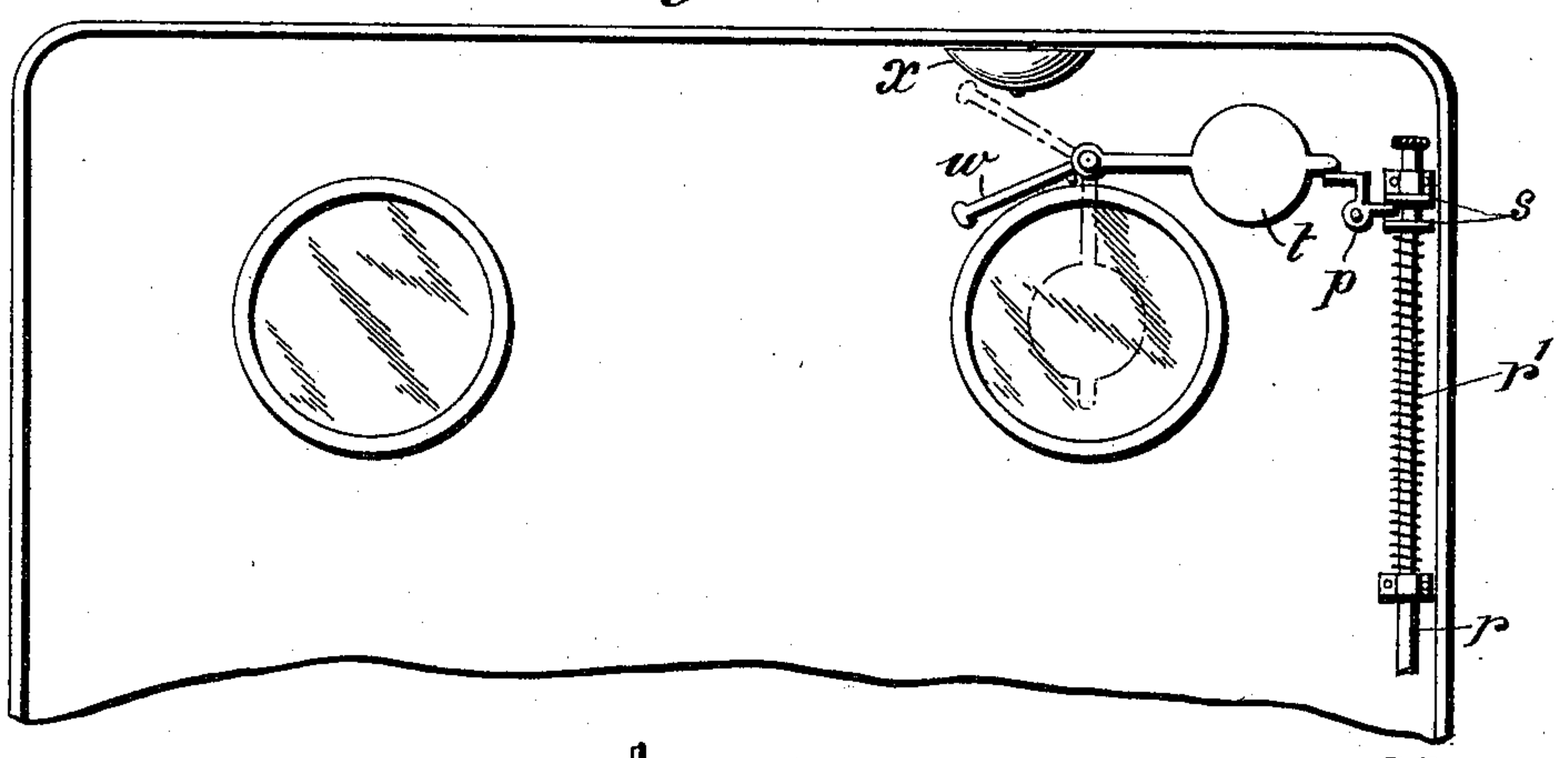
J. CRABTREE.

MECHANICAL SIGNAL INDICATOR FOR USE ON RAILWAY LOCOMOTIVE ENGINES.

(Application filed Oct. 31, 1896.)

(No Model.)

Fig. 1.



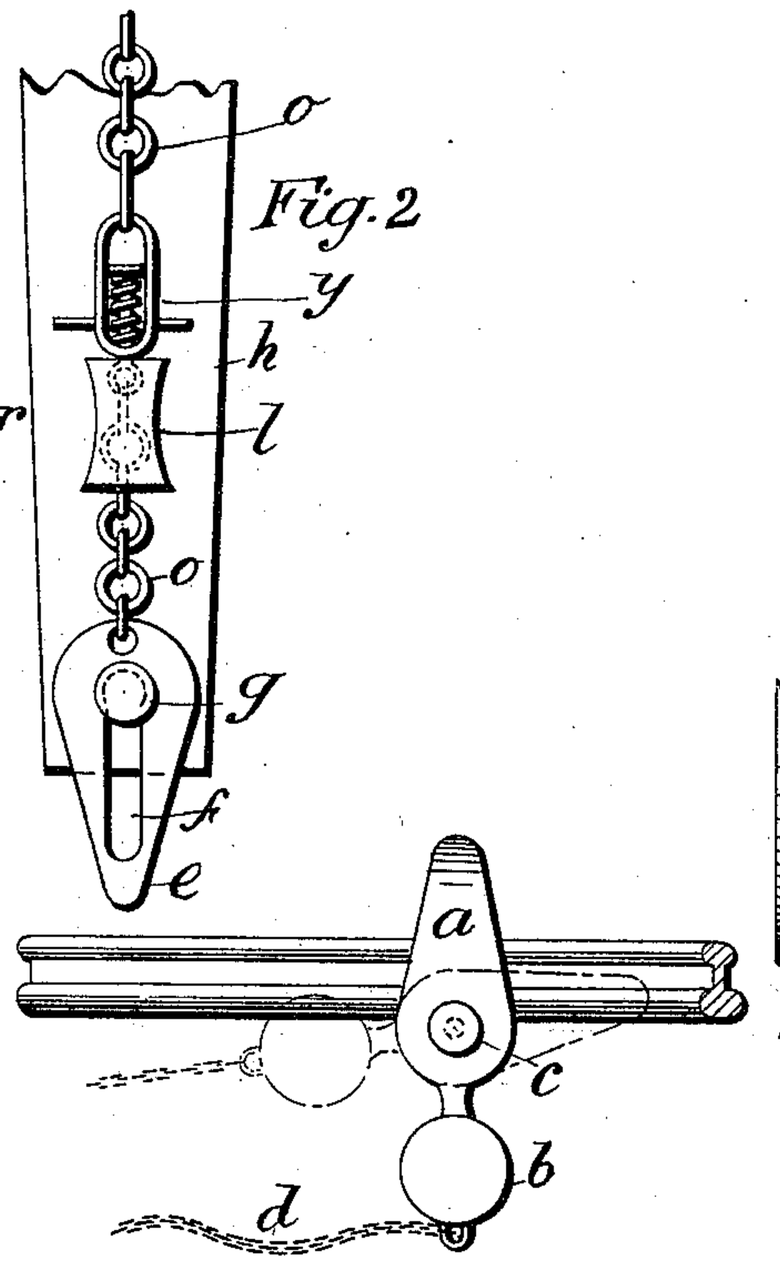
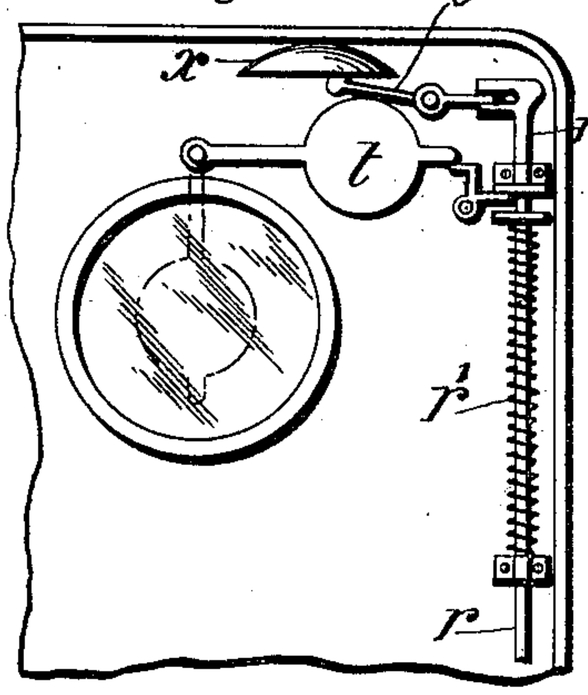
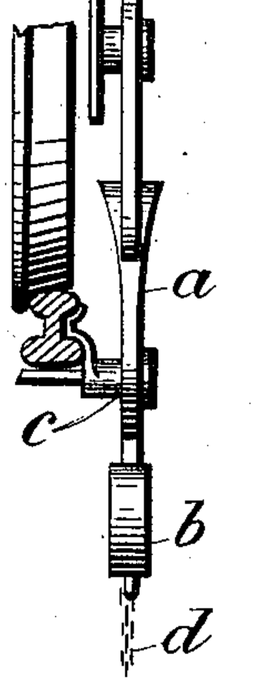


Fig. 2

Fig. 3.





WITNESSES.

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MECHANICAL SIGNAL-INDICATOR FOR USE ON RAILWAY LOCOMOTIVE-ENGINES.

SPECIFICATION forming part of Letters Patent No. 610,386, dated September 6, 1898.

Application filed October 31, 1896. Serial No. 610,690. (No model.)

To all whom it may concern:

Be it known that I, JOHN CRABTREE, a subject of the Queen of Great Britain and Ireland, residing at Bracebridge, in the county of Lincoln, England, have invented certain new and useful Improvements in Mechanical Signal-Indicators for Use on Railway Locomotive-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention for improvements in mechanical signal-indicators for use on railways relates to apparatus of that kind in which an indicator on the engine or vehicle is actuated by means of a projection mounted on the permanent way and raised and lowered with the usual signal, so that when the usual signal is raised to "danger" the projection is raised and comes in the path of a projection on the engine or vehicle and operates it and through it the indicator, and has for its object to entirely relieve the indicating mechanism on the engine or vehicle and the controlling mechanism on the permanent way from the shocks caused by the impact of the parts coming in contact and so to avoid any liability of fracture or failure of any part of the mechanism in operation.

A signal-indicator constructed according to this invention consists of a weighted pendulum or pivoted chuck mounted on the engine or vehicle and adapted to be hauled in out of the way and a corresponding weighted pendulum or pivoted chuck mounted on the permanent way to be normally in the path of the pendulum or chuck on the engine or vehicle and connected by a flexible connection, such as a chain, to the usual signal-rods, so that when the signal is lowered to "safety" the pendulum or chuck on the permanent way is rotated on its pivot to be out of the path of the pendulum or chuck on the engine or vehicle and of a weighted signal-arm held normally at "safety," a spring-catch for holding the said signal-arm normally at "safety," and a connection between the pendulum and the catch to withdraw the catch when the pendulum is operated.

In the accompanying sheets of illustrative drawings, Figure 1 is a front elevation of a mechanical signal-indicator fitted on a locomotive and constructed according to this invention, and Fig. 2 is a part side elevation of the same. Fig. 3 shows a slight modification of the indicator mechanism.

The chuck *a*, formed with a counterweight *b*, is mounted at *c* in suitable bearings fixed on the permanent way, so that normally the counterweight *b* tends to keep the chuck *a* raised, as shown in full lines in the drawings. The bearings and chuck are placed, preferably, just outside the rail, and the chuck projects when raised slightly above the level of the rail. The chuck *a* is connected by a flexible and slack connection *d* to the usual signal apparatus in such manner that on lowering the signal to "safety" the chuck is lowered only during the terminating motion of the signal-lever, while when the signal is at "danger" it is left perfectly free to swing.

The chuck *e* on the engine has a long slot *f*, through which passes a strong pivot *g*, mounted in a support *h*, fixed under the foot-plate on the under frame of the engine, preferably behind the foot-steps. The pivot *g* is fixed at such a height that when the chuck rests on the pivot it is supported at about the level of the permanent way-rails and hangs a little outside the rail, where it will come in contact with the chuck *a* when the chuck is in its raised position.

The upper end of the chuck *e* is connected, by means of a chain *o*, to the slide-rod *r*, actuating the spring-catch *p*, that is adapted to hold the signal-arm *t* on the engine in its raised position. The chain *o* is provided with a spring-link *y* to lessen the shocks and passes through the bell-mouthed guide *l*.

The spring-catch consists of a slide-rod *r*, forced upward by a helical spring *r'*, surrounding the rod and bearing on one of the bearings of the slide-rod and on a collar *s* on the rod. The collar *s* holds the pivoted lever-catch *p* in position.

The signal-arm *t* on the engine is preferably pivoted above the glass window or lookout on the driver's side of the engine and in its normal position is horizontal, with its end resting on the lever-catch *p*.

When the chuck *e* on the engine comes in

contact with the chuck *a* at the side of the permanent way, the chuck *e* is, by the movement of the chuck on the engine, diverted to one side on its bolt or pivot and pulls the chain *o*, drawing down the rod *r*, with its collar *s*, and retracting the end of the catch *p*, and so releasing the signal-arm *t* on the engine, which arm by its own weight drops right in front of the glass window or lookout, as shown in dotted lines. The arm *t* is also provided with a hammer *w*, that when the arm drops at the same time strikes a bell or gong *x*, fixed in a suitable position, the visible and audible signal both indicating to the driver that the signal worked from the signal-box is at "danger." The driver can immediately replace the arm *t* in the horizontal position, where it will be again supported by the catch *p*, ready to indicate when the next signal is at "danger."

The chuck on the engine can when desired be raised by the engineman by means of the connecting-chain *o* to the extent of the length of the slot in the chuck and sufficiently high to place it out of gear, where it is then supported clear of the projection connected with the fixed signal at the side of the permanent way.

The object of the whole appliance as described is to indicate to the driver on the engine, particularly during foggy or stormy weather, when the signals worked from the signal-box are at "danger."

The pendulums or chucks being pivoted and being loosely and flexibly connected to their mechanism, the force of impact between them is not communicated to the said mechanism, which is thus extremely reliable in operation. The catch being very sensitive is operated by a very small motion of the chuck, due to the impact, and releases the indicator-arm, which can easily be replaced by hand.

The connection of the permanent way-chuck or pendulum with the usual signal mechanism is such that normally the pendulum is free to swing in either direction on its pivot, so as to lessen the shock of the blows.

It will be readily understood that this indicator may also be situated on the guards or brake-van, or it may be used to indicate when the mail-bag or parcel catching apparatus of an express train is to be put out to catch up parcels or mail-bags and for other similar purposes.

In the modification shown in Fig. 3 the bell-hammer *z* is attached directly to the slide-rod *r*, so that the bell is struck even though the signal-arm is not in place, and thus gives audible warning that the signal is at "danger."

What I claim, and desire to secure by Letters Patent, is—

1. In a railway signal-indicator, a slotted chuck or pendulum adapted to be raised and lowered on its pivot and free to swing on its pivot and situated on the locomotive or car running on the rails and in a position corresponding to a projection on the permanent way and connected to indicator mechanism and capable of being operated in either direction.

2. The combination with a slotted chuck or pendulum capable of being deflected in either direction by engagement with a projection on the permanent way and of being raised out of engagement with the said projection of a signal-arm pivoted above a lookout, of a spring-catch holding the signal-arm up and of a chain with spring-link connecting the pendulum to the catch.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN CRABTREE.

Witnesses:
JOHN W. MACKENZIE,
PERCY GORDON BROOKS.