(No Model.)

G. DE B. PUYVALLÉE & J. A. MEUNIER.

ARRANGEMENT FOR NOTIFYING AND RECORDING WAY SIGNALS ON LOCOMOTIVES.

No. 589,272. Patented Aug. 31, 1897.

Fig. 1.

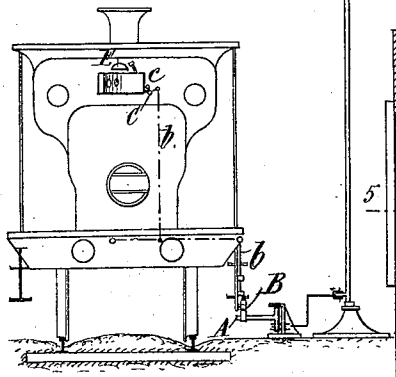


Fig. 4.

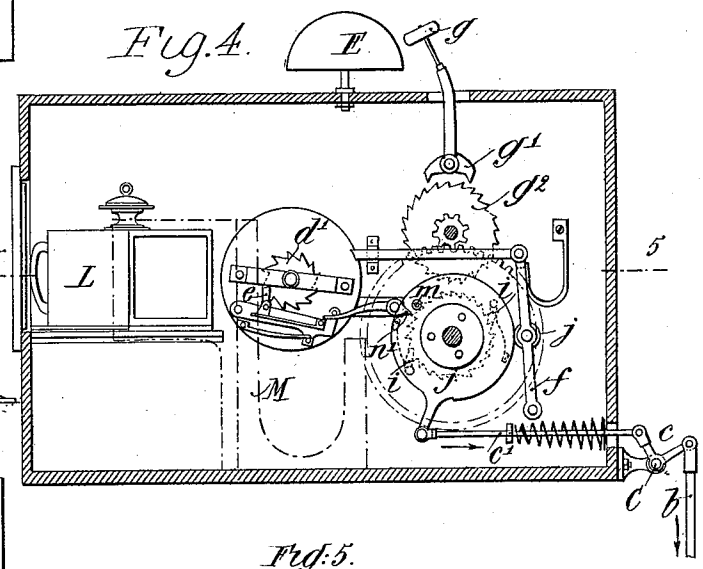


Fig. 2.

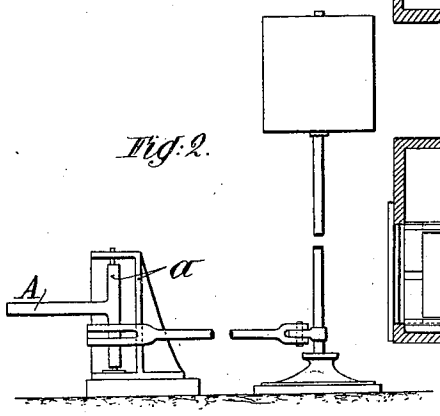


Fig. 5.

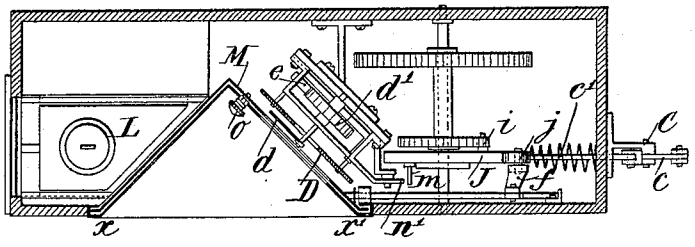


Fig. 3.

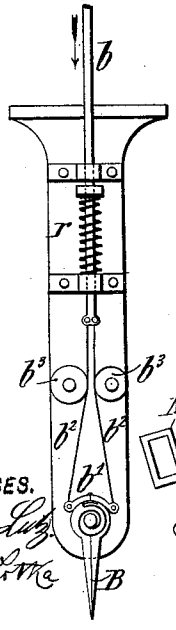
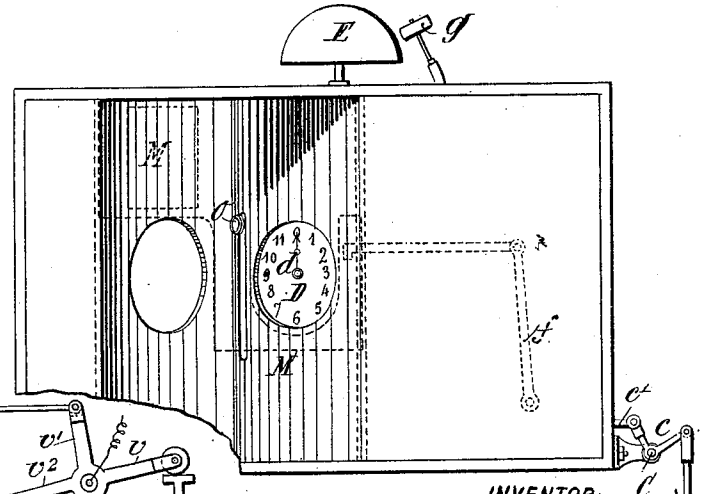


Fig. 6.



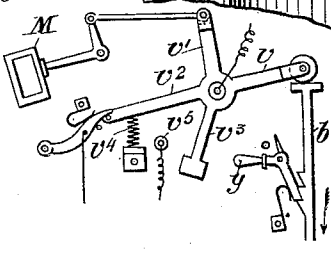


Fig. 7.

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UNITED STATES PATENT OFFICE.

GEORGES DE BENGY PUYVALLÉE AND JOSEPH AMBROISE MEUNIER, OF PARIS, FRANCE.

ARRANGEMENT FOR NOTIFYING AND RECORDING WAY-SIGNALS ON LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 589,272, dated August 31, 1897.

Application filed April 25, 1896. Serial No. 589,103. (No model.) Patented in France September 10, 1895, No. 250,178, and in Belgium September 10, 1895, No. 117,373.

To all whom it may concern:

Be it known that we, GEORGES DE BENGY PUYVALLÉE and JOSEPH AMBROISE MEUNIER, citizens of the Republic of France, residing in Paris, France, have invented a certain Improved Arrangement for Notifying and Recording Way-Signals on Locomotives, (for which we have obtained a French patent September 10, 1895, No. 250,178, and a Belgian patent September 10, 1895, No. 117,373,) of which the following is a specification.

The object of this invention is to place the signals of railway-lines and the locomotives traveling thereon into mechanical relation with each other, so as to warn the drivers when the signals are in a position notifying that the line is blocked and at the same time keeping a record of such notifications.

This invention also has for its object to enable trains to place the line-signals into a position notifying that the line is blocked, so as to protect their passage from the rear and to release these signals after they have passed over a sufficient distance of the line.

To make the matter clear and intelligible as regards the arrangement and operation of the mechanism devised for this purpose we will describe our invention with reference to the accompanying drawings, in which—

Figure 1 is an elevation, on a reduced scale, of the complete apparatus fitted in position on an engine. Fig. 2 is a detail view of the mechanism placed on the line and connected to a signal or disk. Fig. 3 is a detail view of the mechanism placed on the locomotive and adapted when actuated by the line mechanism to set in operation the notifying and recording device, which is placed on the locomotive in such a position that it may be seen readily and clearly by the engine-driver. Fig. 4 is a section, on an enlarged scale, of the notifying and recording device proper. Fig. 5 is a sectional plan on the line 5 5 of Fig. 4. Fig. 6 is a front elevation of this notifying and recording device. Fig. 7 is a modification of the notifying and recording device proper.

Each signal or disk on the line is connected by suitable intermediate gearing to a "stop-bar" A, Figs. 1 and 2, and adapted when the disk indicates that the line is blocked to take up its position at right angles to the rails of the line and opposite or against one such rail on such a level above it and at such a distance therefrom that it cannot be touched by any of the ordinary parts of the trains. It will be readily understood that the transmission-gear may vary according to the distance of the disk and its position relatively to the line. In all cases the stop-bar forms part of a vertical shaft *a*, mounted on pivots and inclosed in a case arranged on the ground or on a sleeper and secured thereto at a convenient variable distance in front of or in rear of the disk. Several stop-bars may be connected with the same disk and operated simultaneously by the operation of the disk. The stop-bar may be operated by hand by means of any suitable transmission-gear or in any other suitable manner.

Each locomotive is at a convenient part provided with a finger or tappet B, Figs. 1 and 3, the position of which in the transverse direction and the elevation at which it is situated are so calculated as to insure contact between it and the stop-bars of the line. The said finger is arranged to operate whether the locomotive be going forward or backward. For this purpose it is mounted on a spiral spring, Fig. 3, forming part of a fixed axis on which it oscillates, and it carries at its upper part a cross-piece *b'*, fixed centrally thereto, and having its ends connected by metal wires b^2 or the like, passing between two pulleys b^3 to a transmission-rod *b*, connected to a traction or pressure arm *c* of the notifying device proper.

When the stop-bar A strikes against the finger B in one direction or the other, one of the two connections b^2 is brought into play, engaging the rod *b* and putting the notifying device into operation. A spring *r* causes the rod *b* after each action to return to its original position by extending or expanding the connections b^2, while the special spring causes the finger to return to its vertical position.

It will be understood that the locomotive may be moving in either direction, as the finger will in both cases be operated by the stop-bar and the action of the latter will be transmitted to the rod *b*.

The rod *b* is connected at its upper end to a bell-crank lever *c*, pivoted at C (see Fig. 4) and connected by a rod, chain, or the like *c'* to a disk J, loose on its axis. On this disk are spring-pawls *i*, engaging with a ratchet-wheel formed in one with a large toothed wheel gearing with a pinion fixed to an escapement-wheel g^2, coöperating with an escapement *g'*, carrying a hammer *g* for sounding a gong E. The disk J also carries an eccentric part constituting a cam and adapted when rotated to act on a roller *j*, mounted on a lever *f*, so as to engage a rod or bolt, which when the apparatus is at rest locks a shutter M.

The disk J also carries a pin or stud *m*, which when rotated acts on a small spring-controlled finger *n'* and by means of a pawl *e'*, carried by a part subject to the action of the said finger and of a ratchet-wheel *d'*, causes a needle *d* to be turned on the face of the dial D, Figs. 5 and 6, arranged outside the casing of the apparatus, as hereinbefore described.

The movement of the rod *b* caused by the finger B meeting the stop-bar A causes the disk J to describe an angular movement producing three results: first, to start the ringing of the alarm, which is caused by the hammer *g* striking on the gong E; second, to release the shutter M, the red-glass slide of which is then adapted to come in front of the lantern, and, third, to cause the indicating-needle *d* to move forward on the dial D. Thus the locomotive when passing to the right of a disk or signal which had been placed to indicate that the line is blocked receives an indication both by sound and sight of the state of the line, while at the same time the indication so received is registered on the dial. After each such indication received by the locomotive and when the driver has done what is necessary to stop or to slacken his engine he reëngages the shutter M by raising it by means of the button *o*, as shown in Fig. 5, situated near the dial D, so as to cause the lantern to show a white light again.

As a modification of the notifying and registering device proper the arrangement shown in Fig. 7 may be used. In this arrangement the rod *b* operates at its upper end a four-armed lever $v\ v'\ v^2\ v^3$, which is subject to the action of a spring v^4. The lowering of the rod *b* when the finger B comes in contact with the stop-bar A displaces the lever by acting on its arm *v* and causes the following results to take place: The arm *v'* of the lever acts on the red-glass shutter M, which is placed in front of the lantern carried by the apparatus, the lever-arm v^2 works the toothed gear operating the needle *d*, turning on the face of the indicating-dial D, and the lever-arm v^3 is placed on an electric contact v^5, so as to close the circuit of an electric bell suitably devised in place of the gong E, already described. The liberation of the apparatus is obtained by means of a lever *y*, which is operated by the engine-driver in order to release the rod *b* and to cause the parts to return to their normal position.

We claim—

1. The combination with a frame or casing, a shaft, a gong, means for sounding the gong from the shaft, an indicator, a disk carried on the shaft, operating mechanism for the indicator, a pin on the disk and capable of actuating the indicator-operating mechanism, and a rod connected to the disk and capable of moving the same, substantially as described.

2. The combination with a frame or casing, of an indicator, means for operating the indicator, a shaft carried by the frame or casing, a disk on the shaft, a pin fixed to the disk and engaging the indicator-operating mechanism, and means for operating the disk, substantially as described.

3. The combination with a frame or casing having an opening and a shutter slidable to close the opening, of a shaft carried by the frame or casing, a disk carried by the shaft and having an eccentric periphery, a lever mounted on the frame or casing and actuated by the disk, a rod connected to the lever and slidable to permit movement of the shutter, and means for operating the disk, substantially as described.

4. The combination of the bracket or support, a spring-pressed rod slidable thereon, a tappet pivoted to the support, a flexible connection extending from the tappet at each side of its pivot to the said slidable rod, and a spring connected to the said tappet to keep it in a central position substantially as described.

5. A locomotive-engine provided with a signal, an operating means connected to said signal and projecting from the engine to be actuated by a suitable part on the track, and an indicator located on the engine and connected to the signal-operating means whereby the number of times the signal is operated will be recorded or indicated upon the indicator, substantially as described.

6. A locomotive-engine, provided with a lamp, a colored slide or shutter adapted to register with the lamp, a locking and releasing device for said shutter, and operating means connected to said locking device and projecting from the engine to be actuated by a suitable part on the track, substantially as described.

7. A locomotive-engine, provided with a lamp, a colored slide or shutter adapted to register with the lamp, a locking and releas-

ing device for said shutter, operating means connected to said locking device and projecting from the engine to be actuated by a suitable part on the track, and an indicator connected to the operating means to show the number of actuations thereof, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

GEORGES DE BENGY PUYVALLÉE.
JOSEPH AMBROISE MEUNIER.

Witnesses:
LÉON FRANCKEN,
CLYDE SHROPSHIRE.