No. 777,451. PATENTED DEC. 13, 1904.

T. TEMPLEMAN & R. A. D. GOUGH.

DEVICE FOR APPLYING FOG SIGNALS TO THE RAILS OF RAILWAYS, FOR REMOVING THEM, AND FOR INDICATING THEIR POSITION, &c.

NO MODEL. APPLICATION FILED MAY 27, 1904. 2 SHEETS—SHEET 1.

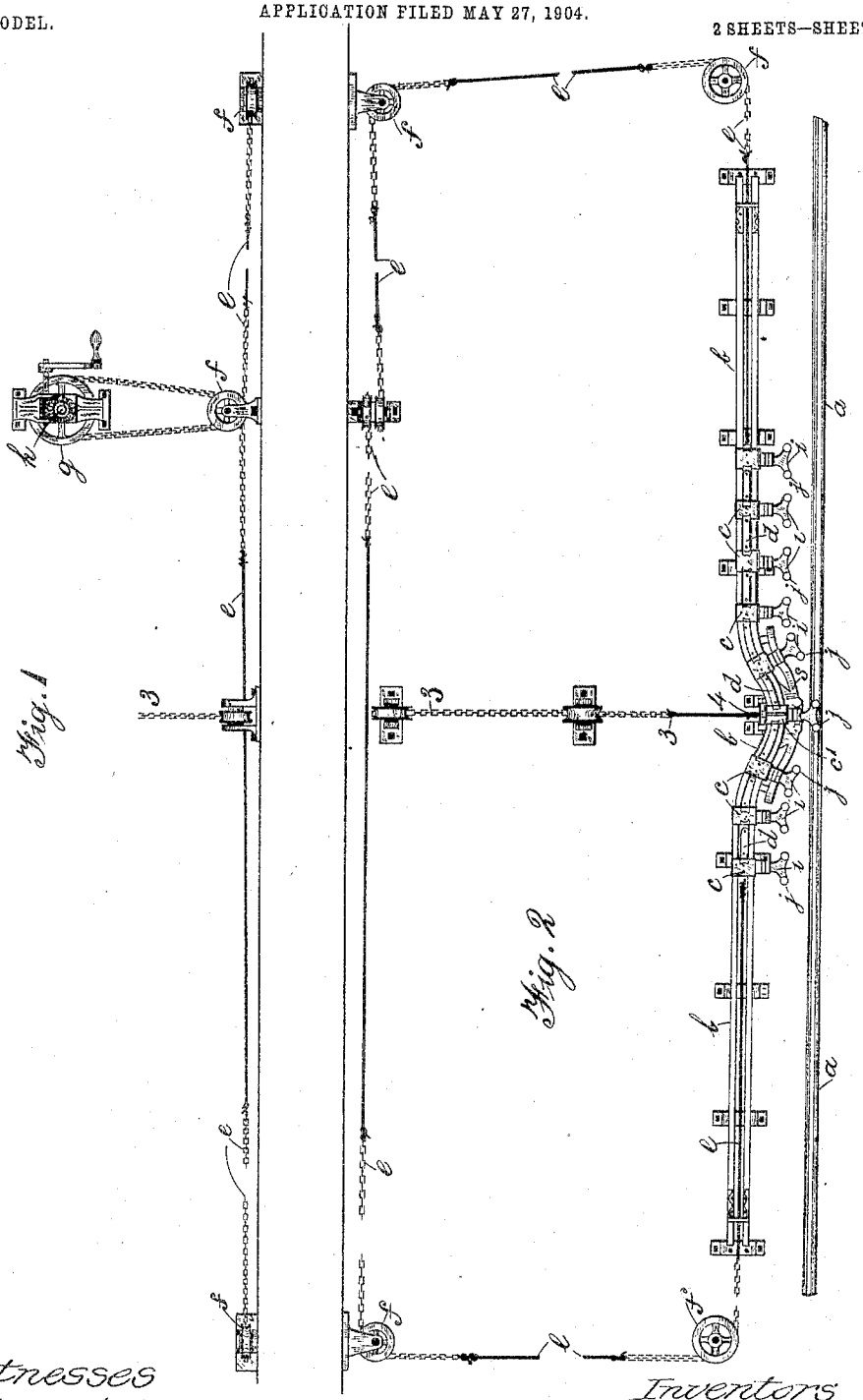


Fig. 1

Fig. 2

Witnesses
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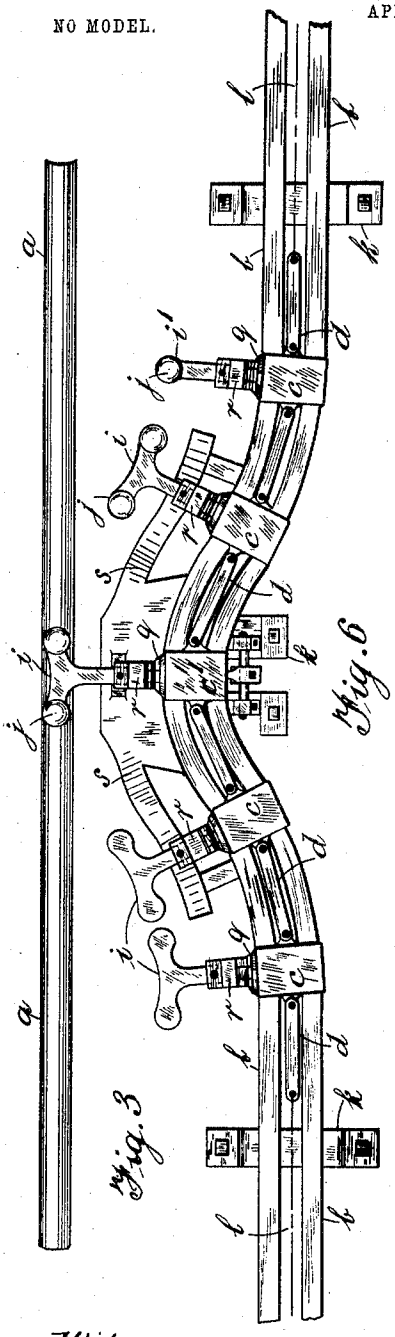


Fig. 3

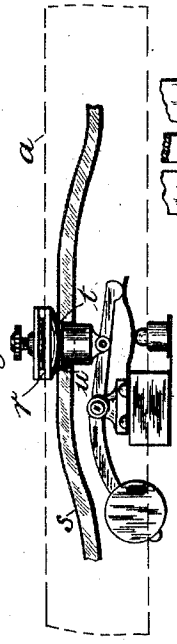


Fig. 6

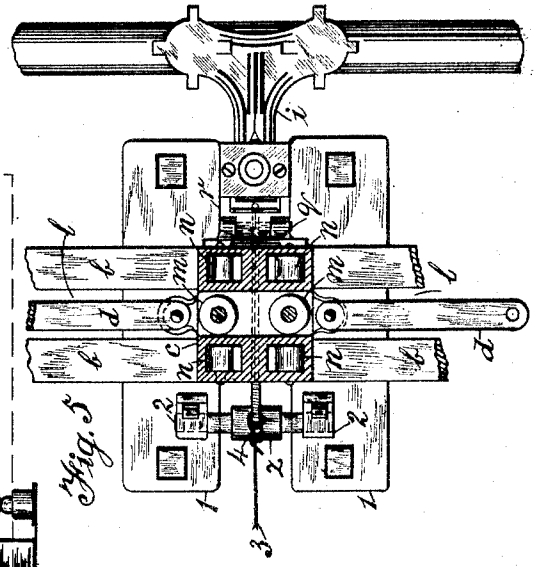


Fig. 5

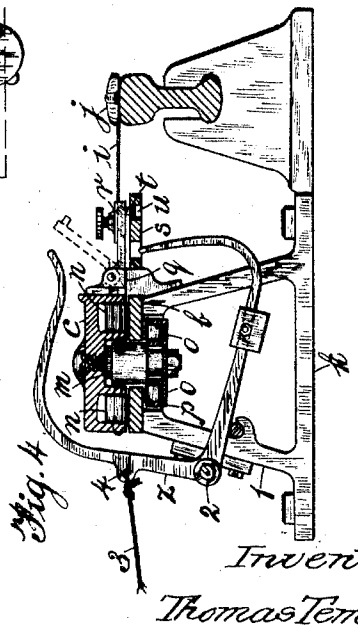


Fig. 4

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No. 777,451. Patented December 13, 1904.

UNITED STATES PATENT OFFICE.

THOMAS TEMPLEMAN, OF SLOUGH, AND RICHARD ASHWIN DROPE GOUGH, OF UXBRIDGE, ENGLAND, ASSIGNORS OF ONE-THIRD TO GEORGE NICHOLLS-PRATT, OF UXBRIDGE, ENGLAND.

DEVICE FOR APPLYING FOG-SIGNALS TO THE RAILS OF RAILWAYS, FOR REMOVING THEM, AND FOR INDICATING THEIR POSITION, &c.

SPECIFICATION forming part of Letters Patent No. 777,451, dated December 13, 1904.

Application filed May 27, 1904. Serial No. 210,140. (No model.)

To all whom it may concern:

Be it known that we, THOMAS TEMPLEMAN, of Montague Road, Slough, in the county of Buckingham, and RICHARD ASHWIN DROPE GOUGH, of 129 High street, Uxbridge, in the county of Middlesex, England, subjects of the King of Great Britain, have invented certain new and useful improvements in devices for applying fog-signals to the rails of railways, for removing them, and for indicating their position to the person operating the apparatus, of which the following is a specification.

Our invention relates to improvements in devices by which fog-signals are placed on or removed from railways by a signalman at a distance with certainty and safety and indication is given that the detonator is either applied to the rail of the railway or not; and the objects of our improvements are, first, to provide means by which fog-signals can be applied to or removed from the rail of a railway by a man at a distant point; second, to enable a series of fog-signals to be applied to the rail one after another, and, third, to automatically display a signal at the point where the signalman is stationed, showing when the fog-signal is placed on the rail or removed.

We attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the ropes and pulleys by which the mechanism is manipulated. Fig. 2 is a general plan of the entire apparatus on a small scale. Fig. 3 is a plan upon a larger scale, of the device for placing the detonators upon the rail and removing them. Fig. 4 is an end view, upon a still larger scale, of one of the traveling carriers upon which the detonators are fitted. Fig. 5 is a plan of the same. Fig. 6 is a side view of the device for automatically electrically signaling to a distant point when the detonator is on or off the rail.

Similar characters refer to similar parts throughout the several views.

In Figs. 1 and 2, *a* is one of the rails of a railway, *b* is a guide fixed at a sufficient distance from the main rail *a*, and *c c c* are small carriers or carriages traveling upon the guide *b*. Any desired number of the carriers *c* may be used, and they are connected together by chains or links *d*, so that they form a flexible train of carriages. To both ends of the chain of carriers are attached chains or ropes *e*, which after passing to any desired distance are guided around pulleys *f* and are ultimately attached to a driving-pulley *g* under the control of a signalman in any desired position. The pulley *g* can be turned in either direction by an endless screw and worm-wheel and handle at *h*, (or by equivalent devices,) so that the entire chain of carriers *c* can be slowly drawn along the guide *b* in either direction, as desired. The carriers *c*, Fig. 2, are fitted with light removable arms *i*, upon which ordinary detonators *j* are fixed, two detonators being shown upon each arm. Opposite the point where the detonators are to be placed upon the rail *a* the guide *b* is curved gradually in toward the rail, (see Fig. 2,) so that at the point of the curve nearest the rail the detonators upon the carrier (marked *c'*) at that point can rest upon the rail *a*.

The details of the carriers and of the means for automatically placing the detonators carried by them upon the rail are more clearly shown in Figs. 3, 4, and 5. The guide consists of two flat bars *b b*, fixed upon supports or chairs *k* and having a space *l* between them, in which move two vertical rollers *m m*, turning upon studs in the carriage *c*, and horizontal rollers *n n*, above the bars *b*, turn upon pivots in the upper part of the carriage *c*. Similar rollers *o o* are shown below the bars *b b*, carried by a box or plate *p*, screwed upon the lower side of the carriage *c*. These horizontal rollers *n n o o* prevent the carrier or carriage *c* from rising or falling on the rail *b*. Upon the inner end of the carrier *c* a bracket *q* is provided, to which is hinged a

plate *r*, into the outer end of which the arms *i*, which carry the detonators *j*, are fitted and held. These arms are made of light material, such as tin-plate, having ribs stamped upon them to increase their rigidity.

A supplementary guide-bar *s* is shown in Figs. 2, 3, 4, and 6 fixed between the rail *a* and the guide *b* opposite the point where the detonators are to be dropped upon the rail *a*, and upon the guide-bar *s* travels a curved projection *t*, (shown in Figs. 4 and 6,) below the outer end of the hinged plate *r*. The guide-bar *s* is curved gradually up, (as shown in Fig. 6,) so that as the carrier *c* travels along the plate *r* and the detonators are first raised until they are above the level of the rail *a*, and the projection *t* then moves along the outer bar *s* until it has reached the point where the detonators are to be deposited, and it then descends gradually into an opening *u*, Figs. 4 and 6, through the bar *s*, allowing the plate *r* to descend and the detonators to rest upon the rail *a*. In the same way when the movement of the carrier *c* is continued the plate *r* and arm *i* are first raised and are then moved away from the rail.

It is advisable to provide a sufficient number of "dummy" carriages at the end of the chain of carriages, so that the rope or chain *e* may be kept in its proper central position above the guide *b* when the last of the effective or operating carriages has reached the proper position to lay its detonators upon the rail *a*. The pulling action of the rope *e* would otherwise be imperfect in passing around the curved parts of the guide *b*.

In Fig. 6 the curved projection *t* is shown at the moment when the carriage has placed the detonator upon the rail *a* and the projection *t* has sunk into the opening at *u* in the guide *s*, its weight depressing the movable piece *v*, which itself depresses a weighted lever *w* and in doing so makes electrical contact between the spring-contact *x* and the fixed contact *y* and completes a circuit, which indicates in the signalman's cabin that the detonator is on the rail. When the hinged plate rises and the detonator is removed from the rail, the lever *w* rises and breaks the circuit, and the indicator will show that the detonator is off.

In Figs. 4 and 5 *z* is an arm hinged to the support 1 at 2 and connected with the signal-wire 3 at 4. When the signal-wire 3 is pulled, the end of the lower arm of *z* is raised and raises the plate *r* and the detonator *j*. When the signal-wire is released, the weighted lever *z* falls and lets down the hinged plate *r* and the detonator, the upper arm of the lever *z* insuring this result.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. Mechanism for applying fog-signals to rails of railways, removing them, and indicating their position on or off the rail, the combination with the main rail *a*, of a curved guide *b*, a chain of carriers *c* running on guide *b*, and connected by links *d*, a hinged plate *r* on the carrier *c*, detonators *j*, a rope or chain *e*, pulleys *f*, and means at *g* for moving the carriers *c*, and a guide-bar *s* and a hinged plate *r*, for placing the detonators on the rail *a* or removing them, a projection *t* upon the hinged plate *r*, an opening *u* in guide *s* receiving movable piece *v*, weighted lever *w*, electrical contacts *x* and *y*, and electrical connections with an indicator in a distant signal-box, curved arm *z*, hinged to support 1, signal-wire 3, hinged plate *r* and detonator, which are raised when the signal-wire is pulled, and lowered when the signal-wire is released, substantially as set forth, and shown in the drawings.

2. In combination with the main rail *a*, the curved guide *b*, the chain of carriages or carriers *c*, connected by links *d*, the hinged plate *r* and detonators *j*, the rope or chain *e*, pulleys *f*, and actuating-gear *g* for moving the carriages or carriers *c*, and the guide-bar *s* actuating the hinged plate *r*, substantially as set forth and shown.

3. In combination with the curved guide *b*, chain of carriers *c* connected by links *d*, hinged plate *r* and detonators *j*, and separate guide-bar *s*, the hinged plate *r* and projection *t*, opening *u* in guide-bar *s*, movable piece *v*, weighted lever *w*, electrical contacts *x* and *y*, and electrical connections with indicator in a distant signal-box, substantially as set forth and shown.

4. In combination with the curved guide *b*, carriages *c*, hinged plate *r*, arm *i* and detonators *j*, the arm *z* hinged to support 1, signal-wire 3, curved lower lever-arm of *z* the outer end of which raises the hinged plate *r* and detonator, when the signal-wire is pulled, and lowers them when the signal-wire is released, substantially as set forth and shown.

In witness whereof we have hereunto set our hands in the presence of two witnesses.

THOMAS TEMPLEMAN.
RICHARD ASHWIN DROPE GOUGH.

Witnesses:
ARTHUR E. EDWARDS,
ALFRED T. BRATTON.