No. 671,556. Patented Apr. 9, 1901.

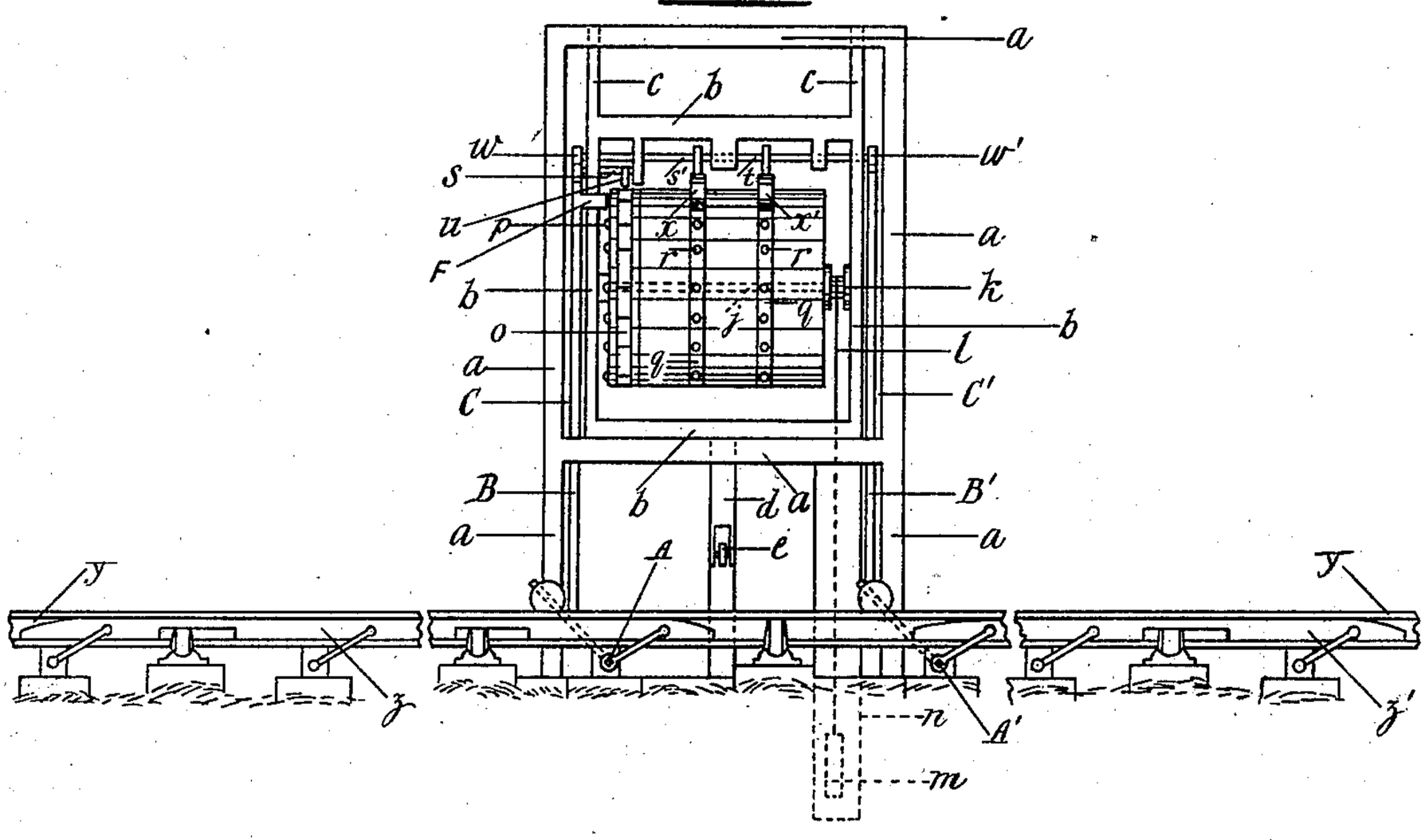
G. JEFFERIES.

RAILWAY FOG SIGNALING APPARATUS.

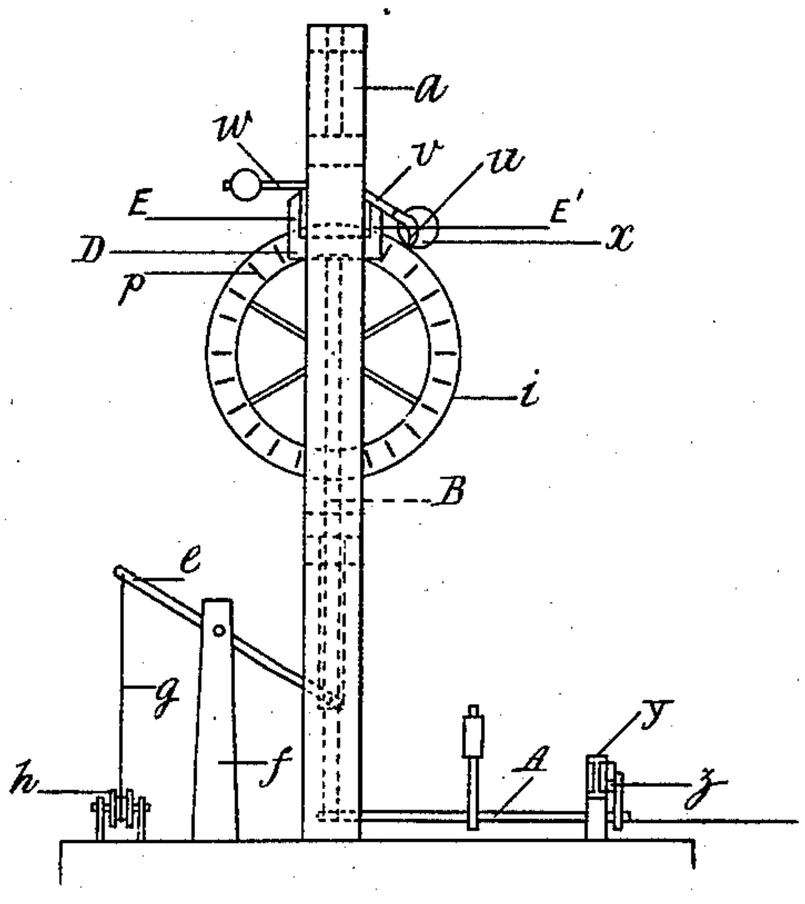
(Application filed Jan. 28, 1901.)

(No Model.)

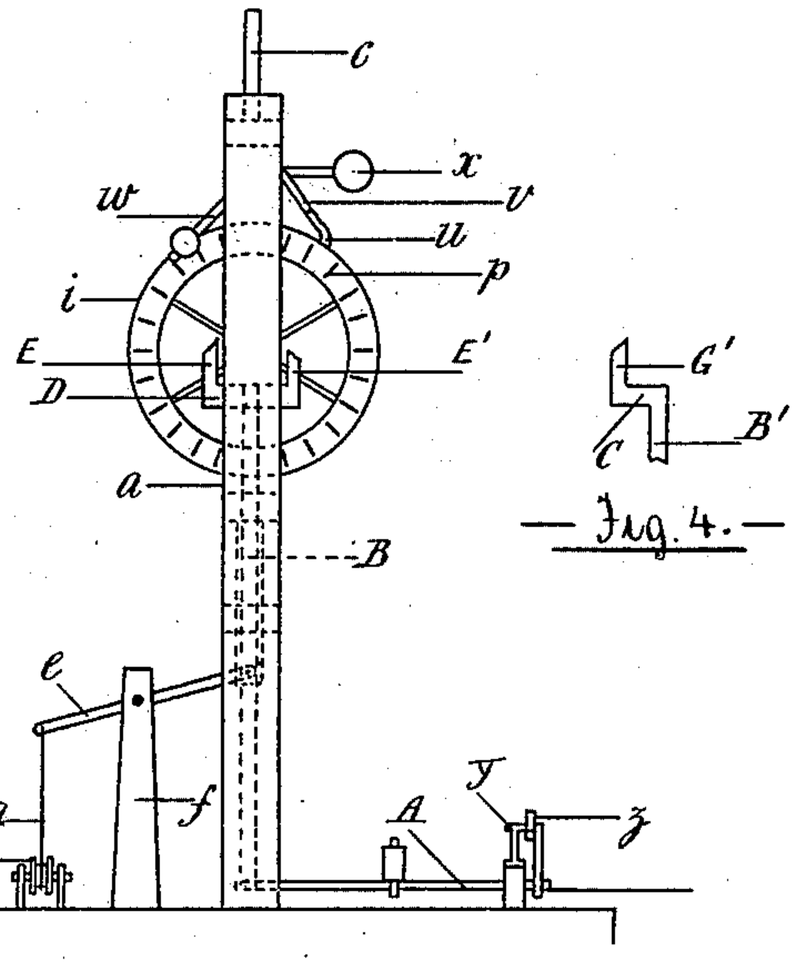
— Fig 1. —



— Fig. 2. —



— Fig. 3. —



— Fig. 4. —

Witnesses:-
William Crossley
Jonas Watson

Inventor
George Jefferies
per Hughes & Young
Attorneys.

UNITED STATES PATENT OFFICE.

GEORGE JEFFERIES, OF STOWMARKET, ENGLAND.

RAILWAY FOG SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 671,556, dated April 9, 1901.

Application filed January 28, 1901. Serial No. 45,157. (No model.)

To all whom it may concern:

Be it known that I, GEORGE JEFFERIES, a subject of the Queen of Great Britain and Ireland, residing at the railway-station Stowmarket, in the county of Suffolk, England, have invented new and useful Improvements in Railway Fog Signaling Apparatus, of which the following is a specification.

This invention relates to improvements in railway fog signaling apparatus, the object being to provide means for bringing the detonators into position for use by means operated from the signal-box, so that the passing train will cause two explosions when the distant and home signals are against and obscured or hid from the driver.

In carrying my invention into effect I proceed in or in about the following manner, in which—

Figure 1 is a front view; Figs. 2 and 3, side views respectively of the apparatus in and out of action, and Fig. 4 a side view of a detail.

Alongside the railroad I provide a vertical framing *a a a a*, within which is free to slide up and down the inner frame *b b b b*, having guides *c* to move freely through openings in the upper cross-bar of frame *a a a a* and having also a guide *d* to slide easily through the bottom cross-bar of the said frame *a a a a*. To the lower end of the guide *d* is pivoted one end of the lever *e*, which itself is pivoted at some point between its ends to a support *f*, the other end of the lever being connected with a wire or the like *g*, running over a pulley *h*. This wire *g* is continued into the signal-box, where it is operated by a wheel, lever, windlass, or other suitable means so as to raise or lower the inner frame *b* as and when required. Within the frame *b* is the drum *i*, carried on a shaft *j* and having a pulley *k*, over which is wound a chain or equivalent *l*, having a weight *m* at the free end which can move up and down in the shaft *n*. At one end of the drum *i* are ratchet-teeth *o* and also a ring of outstanding stop-pins or staples *p*. Circumferentially around the drum *i* are provided two rings *q* of detonators *r*, and above the drum *i* are the three shafts *s*, *s'*, and *t*. On the shaft *s* is a spring-pawl *u* to engage with the ratchet-teeth *o*. The shaft *s* also carries the arm *v* and the shaft *s'* the weighted arm *w* and the striking-hammer *x*. The shaft *t* carries the weighted arm *w'* and the second striking-hammer *x'*, the hammers *x* and *x'* being in the planes of the rings *q*. Alongside one of the rails *y* are pivoted the rocking bars *z z'*, each of which has sloping ends and is kept normally above the rail *y* by weighted rods A A'. To the rods A A' are linked the lower ends of the slides B B', which are free to work up and down through the bottom cross-bar of the frame *a* and within the spaces C C', between the side bars of the outer frame *a* and the inner one *b*. The slide B has a cross-piece D at its upper end and two uprights E and E', the former of which is the longer of the two. This slide B also carries the inward-projecting arm F, which extends into the plane of the pins *p*. The other slide B' has at its upper end the horizontal arm G and the vertical one G'. The arms E and G' are respectively in the planes of the weighted arms *w* and *w'* and the arm E' is in the plane of the arm *v*.

When the apparatus is not required to be used, the wire *g* is so operated from the signal-box as to raise the inner frame *b* within the outer one *a*, as shown in Fig. 3. When, however, it is desired to put the apparatus in position to be set in action by a passing train, the wire *g* is operated so as to lower the inner frame *b* and bring its lower cross-bar onto the lower cross-bar of the outer frame *a*. Then on a train passing over the first rocking bar *z* it depresses it and causes the rod A to partly rotate and by its linked end push up the slide B. The rising of the slide B brings the short arm E' into contact with the arm *v* and lifts the spring-pawl *u* from the ratchet-tooth it happens to be in at the time. This allows the weight *m* to move around the drum *i* sufficiently to bring two of the detonators *r* into striking position. Simultaneously one of the pins or equivalent *p* is caught by the inwardly-pointing projection F and so prevents for the time being the pawl *n* entering the next ratchet-tooth. The upward movement of the slide B also causes the longer arm E to push up the weighted arm *w* and depress the hammer *x* and so explode the detonator on which it falls. Before the trailing wheels of the engine or tender have passed off the first rocking bar *z* the leading wheels

will have passed onto and depressed the second rocking bar z', causing the rod A′ to partly rotate and by its linked end push up the slide B′. The upward movement of the slide B′ causes its vertical arm G′ to push up the weighted arm w' and depress the hammer x', thus exploding the second detonator on which it falls. When the engine or train has passed over both rocking bars $z\ z'$, these bars will be raised into their normal position and the slides B and B′ lowered by the action of the weighted arms A and A′. Simultaneously the projection F will be removed from under the particular pin p resting on it, and the drum i will turn somewhat, so that the pawl u will enter the next one of the ratchet-teeth o and so bring two more detonators into position ready for explosion by the next depression of the rocking bars $z\ z'$, in which position the various parts may remain unless it is required to put the apparatus out of operative position by raising the inner frame b.

The apparatus can be cased in or otherwise protected in any suitable manner.

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

Railway fog signaling apparatus comprising the following essential parts, that is to say, an upright outer frame alongside the railroad: an inner frame slidable up and down within the said outer frame: a horizontal drum carried by a shaft crossing the said inner frame: rings of detonators around the exterior of the said drum: ratchet-teeth near one end of the drum: stop-pins projecting from one end of the drum: a spring-pawl to engage with the said ratchet-teeth: an arm for disengaging the said pawl: a shaft carrying the said pawl and arm: a shaft above one half of the drum: a weighted arm on the said shaft: a striking-hammer on the said shaft: a shaft above the other half of the drum: a weighted arm on the said shaft: a striking-hammer on the said shaft: means for partly rotating the said drum as each ratchet-tooth is released by the pawl: means for raising the said inner frame and its accessories out of its active position: rocking bars alongside one of the rails: weighted rods to keep the said bars normally above the rail: slides on each side of the inner frame: links to connect the lower ends of the slides to the inner ends of the weighted rods: an arm at the upper end of each slide for lifting in succession the weighted arms and simultaneously lowering the striking-hammers onto the proper detonators: an arm on one of the slides to disengage the pawl: and a projection on the same slide to retain the drum in a certain position, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE JEFFERIES.

Witnesses:
THOMAS SIMPSON,
WILFRED ALEXANDER MAW.