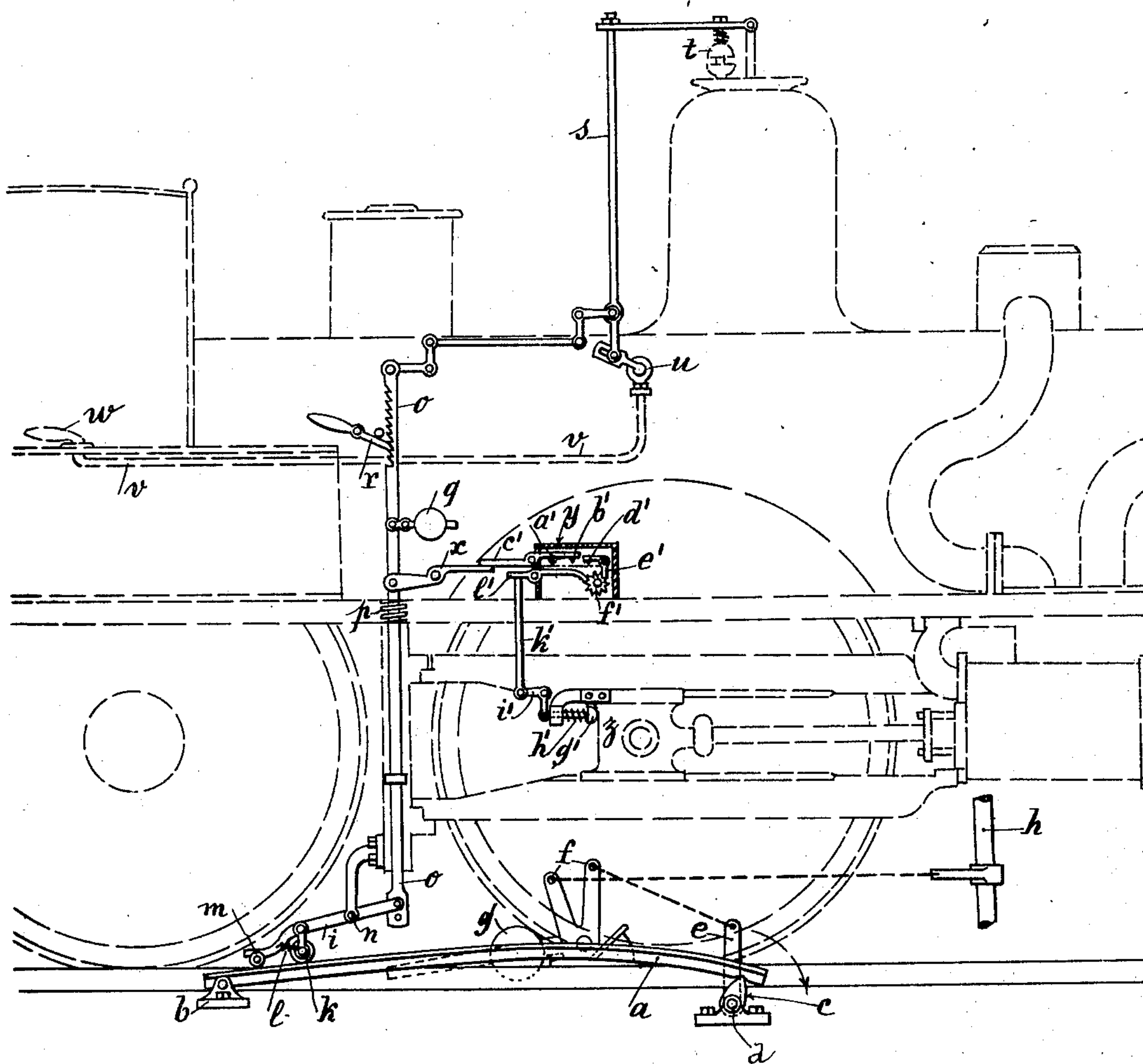


No. 736,445.

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I. REYNET.
AUTOMATICALLY OPERATED RAILWAY SIGNAL.
APPLICATION FILED DEC. 12, 1904.

NO MODEL.



Witnesses
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UNITED STATES PATENT OFFICE.

ISIDORE REYNET, OF MONTAUBAN, FRANCE.

AUTOMATICALLY-OPERATED RAILWAY-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 736,445, dated August 18, 1903.

Application filed December 12, 1901. Serial No. 85,723. (No model.)

To all whom it may concern:

Be it known that I, ISIDORE REYNET, a citizen of the Republic of France, residing at Montauban, Tarn-et-Garonne, France, have invented new and useful Improvements in Automatically-Operated Railway-Signals, of which the following is a specification.

This invention relates to an improved indicating and recording mechanism for closed railway-signals which also automatically operates the compressed-air brake and warns the driver by a whistle, such whistle continuing to sound until the driver replaces the mechanism in its normal position. The recording apparatus serves also for registering the speed, so that by this improved apparatus it is possible to ascertain, first, the distance the locomotive has traveled from the point at which the mechanism comes into operation to the point where it has passed beyond a closed signal; second, the speed at which the locomotive was traveling at the time of passing the said signal; third, the time during which the driver has left the whistle going—that is to say, till the return of the mechanism to the normal position.

In order that the said invention may be readily understood, the accompanying drawing shows in side elevation the improved device applied to a locomotive, the latter being shown in dotted and the former in full lines.

As will be seen from the figure, the mechanism firmly secured to the locomotive is combined with an operating-lever *a*, pivoted to a support *b* and appropriately curved and reposing upon a cam *c*, which latter lifts when the signal is closed, while when the line is clear the said operating-lever has no action on the mechanism carried upon the engine. This lever *a*, as also the cam, is placed between the rails, and the cam is mounted upon a spindle *d*, carrying a lever *e*, which latter is connected by a chain or the like to a two-arm lever *f*, with counterpoise *g*. The second arm of the lever *f* is connected by a wire or chain with a horizontal arm of the signal-post *h*.

In the vertical plane of the lever *a* is arranged beneath the locomotive the contact-making member, which is formed of a lever *i*, furnished with two rollers *k m*, of which the former is carried by a strap pivoted to the le-

ver *i*, and when coming into contact with the lever *a* it compresses a spring *l*, so as to reduce the shock, while the second roller *m* then also comes into contact with the lever *a*. The rollers *k* and *m*, as also the lever *i*, are thus lifted, and as the lever is pivoted at *n* to a fixed point it causes a vertical rod *o* to descend against a spring *p*, which ordinarily tends to keep the rod *o* in its raised position. A counterpoise *q* facilitates the ascension of the rod *o*, which latter is at its upper extremity formed with ratchet-teeth in which a pawl *r* engages, which is fitted with a handle for releasing the mechanism for the purpose of returning it to the normal position.

The upper extremity of the rod *o* is connected with another vertical rod *s* through the intervention of suitable bell-cranks and a link. This rod *s* receives the same motions or impulses as the rod *o* and with its upper end actuates an alarm-whistle *t*, fixed to the steam-dome, while with its lower extremity it actuates an escape-tap *u* of the conduit *v* of the air-reservoir of the brake. This conduit is fitted with a stop or safety cock *w*, adapted to regulate the supply, its handle being locked and incapable of being regulated by the driver.

To the rod *o* is articulated a lever *x*, adapted to oscillate about the middle of its length in such a manner as to conveniently operate a punch, as will be described hereinafter. With the parts above described there is obtained during the passage of the locomotive over the lever *a*, (the latter being supposed to be in a corresponding position to the closed signal,) first, the operation of starting the alarm-whistle; second, the actuation of the air-brake, which effects the slowing of the train by reason of the predetermined regulation of the cock *w*.

The system of alarm mechanism is completed by the registering of the number of operations of the apparatus. The registering or recording apparatus is formed of a box *y*, placed opposite the lever *x*, previously mentioned, and also as near as possible in the vertical plane of the cross-head *z* of the piston when the latter is at the rear end of its stroke. In the said box *y* is placed a suitable clock-movement, which unrolls a paper strip *a'* or diagram marked in kilometers or the like and

hours—that is to say, adapted to give the time passed between two punchings. Upon this paper is maintained suspended a stylus *b'*, connected with a lever *c'*, actuated by the previously-mentioned lever *x*. This stylus is arranged to trace a line each time the alarm mechanism is operated, the line being continued during the entire period of action. Upon the same paper strip *a'* is arranged a punch *d'*, which may, for example, have a square section and be actuated by means of a pawl *e'* and ratchet-wheel *f'*, with ten teeth, whereby the ratchet and pawl, and consequently also the punch *d'*, are actuated at each complete revolution—*i. e.*, every ten teeth. The said pawl is itself actuated by one tooth at each revolution of the wheel of the locomotive through the intermediary of the cross-head *z*, which at the end of each rear stroke strikes against a tappet *g'*, mounted upon a spring-spindle *h'*, articulated to a bell-crank lever *i'*, which operates a pusher-rod *k'*. The latter oscillates a lever *l'*, engaged in the teeth of the ratchet *f'*, previously mentioned, and causes it to advance one tooth at each push of the piston cross-head. The punch *d'* indicates upon the band of paper the speed of the train at the moment when it passed the closed signal.

It is obvious that locomotives actually fitted with other types of speed-register mechanism may equally receive my system of operating mechanism. In this case the rod *o* will be prolonged as far as the top of the indicator and acts on the latter like the part *s*

acts on the whistle *t*. (Shown in the annexed drawings.) For this application the register receives a supplementary pencil or pen, which marks the paper band at each descending motion of the rod *o*, as before described.

Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

The improved alarm and registering mechanism for closed signals which automatically controls the slowing or the stopping of the train, characterized by the combination with an oscillating lever *a* kept in its operative or elevated position when the signal is closed, by a cam *c* moved into its required position at the same time with the signal, with a rod *o* kept elevated, in its position of rest, by means of a spring *p* and a counterpoise *q* and adapted to be lowered by the contact of two rollers *k* and *m* with the previously-mentioned lever *a*; the rod being kept lowered by a pawl engaged in the toothed portion and bringing into action an alarm-whistle *t* and at the same time opening a communication-cock from the compressed-air reservoir, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 15th day of October, 1901.

ISIDORE REYNET.

Witnesses:

VICTOR MATRAN,
EDMOND LECOUTURIER.