No. 837,613. PATENTED DEC. 4, 1906.

R. E. DIAL.

RAILWAY SIGNAL.

APPLICATION FILED AUG. 3, 1906.

Fig. 1.

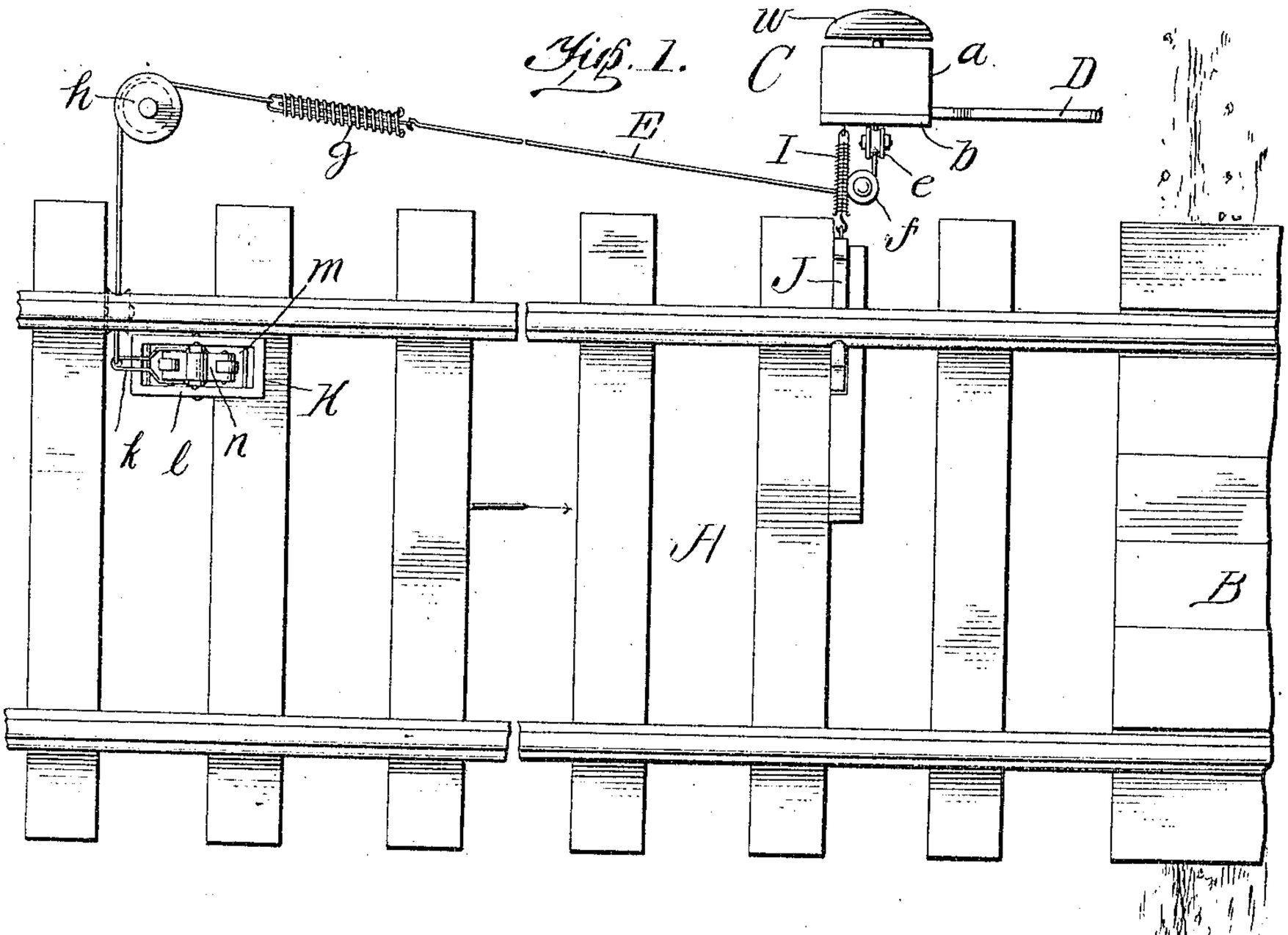

Fig. 2.

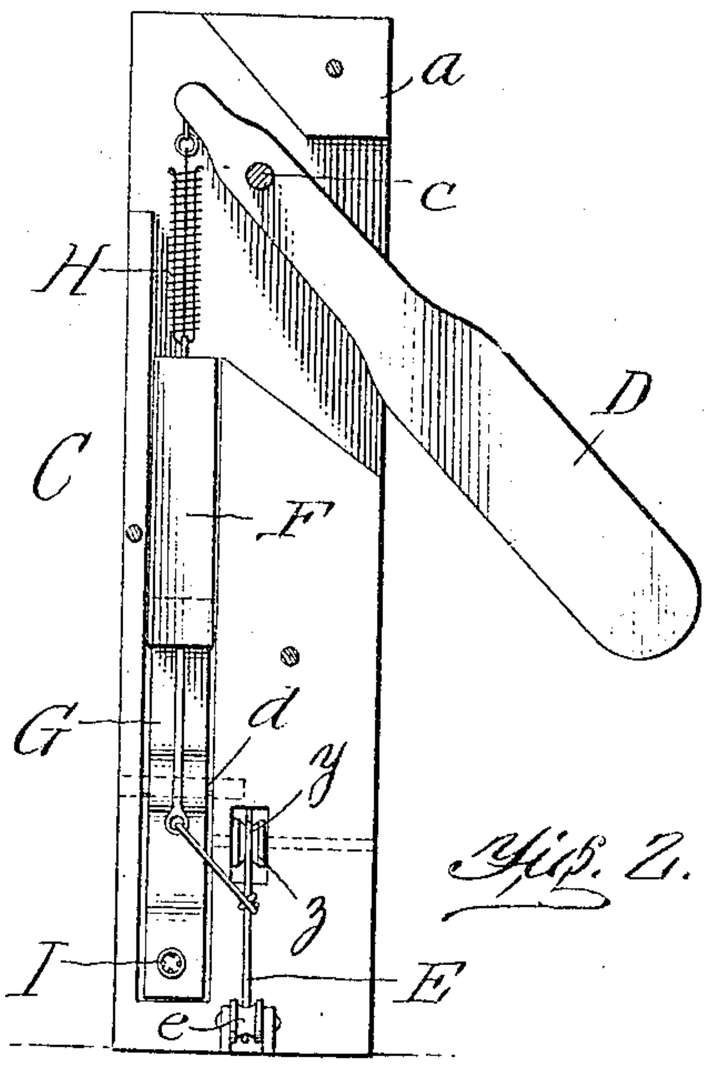

Fig. 3.

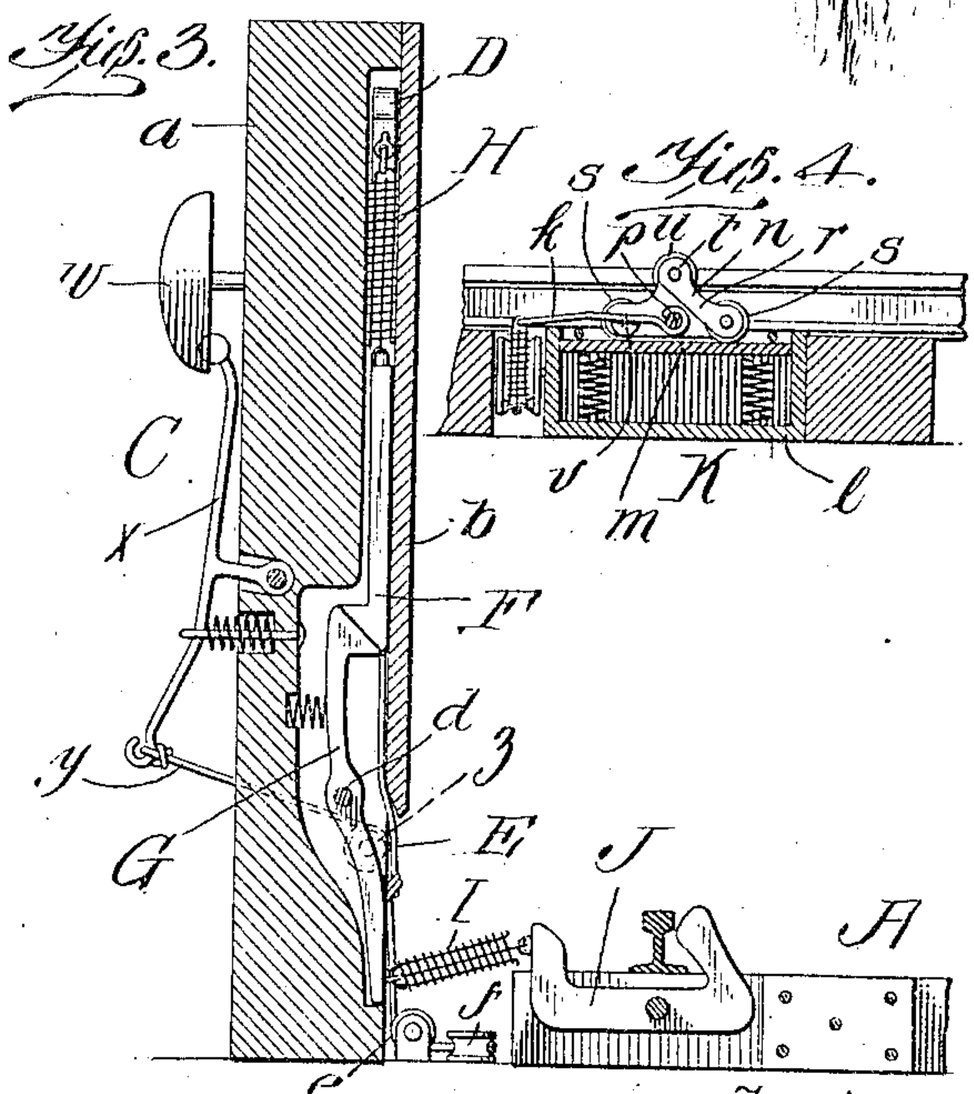

Fig. 4.

Witnesses

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ROBERT E. DIAL, OF FONTANET, INDIANA, ASSIGNOR OF ONE-HALF TO DAVID C. STREAN, OF FONTANET, INDIANA.

RAILWAY-SIGNAL.

No. 837,613. Specification of Letters Patent. Patented Dec. 4, 1906.

Application filed August 3, 1906. Serial No. 329,103.

To all whom it may concern:

Be it known that I, ROBERT E. DIAL, a citizen of the United States, residing at Fontanet, in the county of Vigo and State of Indiana, have invented new and useful Improvements in Railway-Signals, of which the following is a specification.

My invention relates to automatic railway-signals; and it contemplates the provision of a simple, inexpensive, and reliable signal apparatus adapted to be used at crossings, bridges, and curves, with a view of lessening the liability of accidents.

The invention will be fully understood from the following description and claims when the same are read in connection with the accompanying drawings, forming part of this specification, in which—

Figure 1 is a broken plan view illustrating the apparatus constituting the present and preferred embodiment of my invention as properly arranged relative to a crossing: Fig. 2 is an elevation of the semaphore-stand with the face-plate thereof removed. Fig. 3 is a transverse section illustrating the means for locking the semaphore-arm in its raised position and for enabling a passing train to unlock said arm, and Fig. 4 is a detail longitudinal vertical section of the device through the medium of which the semaphore-arm is raised or set.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is a railway.

B is a crossing intersecting the railway, and C is the semaphore-stand of my improvement, which stand is arranged in the embodiment illustrated adjacent to one side of the crossing B. The said stand C comprises an upright fixed body *a* and a face-plate *b*, detachably connected to said body *a*.

D is a vertically-swinging semaphore-arm pivoted at *c* in the stand C.

E is a cable, through the medium of which the semaphore-arm is raised or set.

F is a movable latch member connected to the cable E and adapted when drawn downward to be engaged and held by a complementary latch member G, presently described, and H is a spring arranged between and connected to the latch member F and the semaphore-arm D. The spring H is preferably of such strength that it will give when the latch member F is suddenly pulled downward by a fast-moving train, and then after the latch member F is engaged and held by the latch member G said spring H will contract, and thereby raise the semaphore-arm D to and retain the same in its raised position. In this way a sudden jerk on the cable E is effectually prevented from injuring the semaphore-arm D and its appurtenances.

The latch member G is pivoted at *d* in the stand C, and its lower arm is connected, through the medium of a tractile spring I, with one arm of a pivoted trigger J, the other arm of which normally rests adjacent to one of the rails of the railway, as best shown in Fig. 3. From this it follows that when a train passes the semaphore-stand C subsequent to the locking of the semaphore-arm D in its raised position one of the wheels of the train will, by engaging and rocking the trigger J, disengage the pivoted and spring-pressed latch member G from the latch member F, so as to enable the semaphore-arm D to gravitate to its idle position. (Shown in Fig. 2.)

The cable E for raising or setting the semaphore-arm D passes under a sheave *e* and around a sheave *f* and is provided at an intermediate point of its length with a tractile spring *g* for taking up slack. Beyond the spring *g* the said cable E passes around a sheave *h* and then inward with reference to the railway to the point where it is connected to the vertically-swinging lever *k* of the device K, through the medium of which one of the car-wheels of a train is enabled to set or raise the semaphore-arm D in its raised position. In addition to the vertically-swinging lever *k* the device K comprises a fixed casing *l*, Fig. 4, a vertically-movable spring-supported platform *m* in the casing *l*, and a swinging member *n*, pivoted in the casing at *p* and having arms *r*, carrying antifriction-rollers *s*, and an upwardly-extending arm *t*, carrying an antifriction-roller *u*, and also having one or more lugs *v* disposed under the lever *k*. The antifriction-rollers *s* of the swinging member *n* bear on the spring-supported platform *m*, and the antifriction-roller *u* is designed to be engaged and depressed by a wheel of a passing train. By virtue of the construction of the device K it will be apparent that when the swinging member *n* is engaged by a

wheel of a train traveling in the direction indicated by the arrow in Fig. 1 the member *n* will be swung toward the right, and consequently the lever *k* will be raised to set or raise the semaphore-arm D. When, however, the swinging member *n* is engaged by a wheel of a train traveling in the direction opposite to that indicated by arrow, the lever *k* will not be moved to set or raise the semaphore-arm D, this latter because the lug or lugs *v* on the swinging member *n* are disposed below the lever *k*, as clearly shown in Fig. 4.

With a view of sounding an alarm when the semaphore-arm D is raised, I provide the gong *w*, the spring-pressed lever-hammer *x*, fulcrumed on the stand C, and the subcable *y*, connected to the lower arm of the lever-hammer and passed over a sheave *z* and connected to the cable E. Thus it will be seen that when the cable E is drawn to set or raise the semaphore-arm D the gong *w* will be struck and audible notice given of the approach of a train.

While I have shown but one device K and one cable E, it is obvious that in practice two of the devices K and two of the cables E will be employed, the said devices K being arranged at opposite sides of the crossing B and at suitable distances therefrom, and the device K at the right of the crossing being so arranged that its lever *k* will be elevated by the wheel of a train traveling in the direction opposite to that indicated by the arrow in Fig. 1. It will be noticed, however, that when two devices K and two cables E are employed it is necessary to employ but one trigger J, inasmuch as each train in passing the semaphore-stand C will effect the release of the arm D, so as to permit the said arm to gravitate to its idle position.

In the practical operation of the apparatus shown a train moving in the direction indicated by arrow in Fig. 1 swings the member *n* of the device K toward the right, and thereby raises the lever *k*, so as to pull the cable E and draw the latch member F down into engagement with the latch member G and at the same time cause the lever-hammer *x* to strike the gong *w*, so as to sound an alarm. The parts remain in the positions stated until the train reaches the trigger J, when the latch member G will be disengaged from the latch member F and the semaphore-arm D permitted to gravitate or swing down to its lower position.

My novel apparatus is not restricted to use in connection with crossings, but, on the other hand, may be used to advantage for apprising an engineer of a train, at one side of a curve through a deep cut, of the proximity of another train at the opposite side, with a view of preventing a head-on collision. The apparatus may also be obviously used to advantage in connection with bridges and trestles, the cable E in that event being so arranged as to raise or set the semaphore-arm D when any part of a bridge or trestle falls, so as to inform the engineer of an approaching train of the danger.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a definite understanding of the said embodiment. I do not desire, however, to be understood as confining myself to the said specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a railway signal apparatus, the combination of a semaphore-stand, a semaphore-arm mounted thereon, a latch member connected with the semaphore-arm, a cable connected with the latch member, a device located at a distance from the semaphore-stand and comprising a casing, a spring-supported platform therein, a vertically-swinging lever connected with the casing and also connected with the cable, and a swinging member bearing upon the platform and having a portion disposed under the vertically-swinging lever, a latch member arranged to engage and hold the first-mentioned latch member when the latter is drawn through the medium of the cable, and a trigger connected with the second-mentioned latch member and arranged to be actuated by a passing train.

2. In a railway signal apparatus, the combination of a semaphore-stand, a semaphore-arm mounted thereon, a latch member connected with the semaphore-arm, a latch member arranged to engage and hold the first-mentioned latch member when the semaphore-arm is raised, a trigger connected with the second-mentioned latch member and arranged to be actuated by a passing train, gong mounted on the semaphore-stand, a spring-pressed hammer-lever fulcrumed on the semaphore-stand, a cable connected to the first-mentioned latch member, a connection intermediate the hammer-lever and said cable, and a device located at a distance from the semaphore-stand and comprising a casing, a spring-supported platform therein, a vertically-swinging lever connected with the casing and also connected with the cable, and a swinging member connected with the casing and bearing upon the platform and having a portion disposed under the vertically-swinging lever.

3. In a railway signal apparatus, a device comprising a casing, a spring-supported platform therein, a vertically-swinging lever, and a swinging member connected with the cas-

ing and bearing upon the platform and having a portion disposed under the vertically-swinging lever.

4. In a railway signal apparatus, the combination of a movable semaphore, a cable connected therewith, and a device comprising a vertically-swinging lever connected with the cable, a spring-supported platform, and a swinging member bearing upon the platform and having a portion disposed under the vertically-swinging lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ROBERT E. DIAL.

Witnesses:
G. ED. TALLEY,
ROBERT GIBBS.