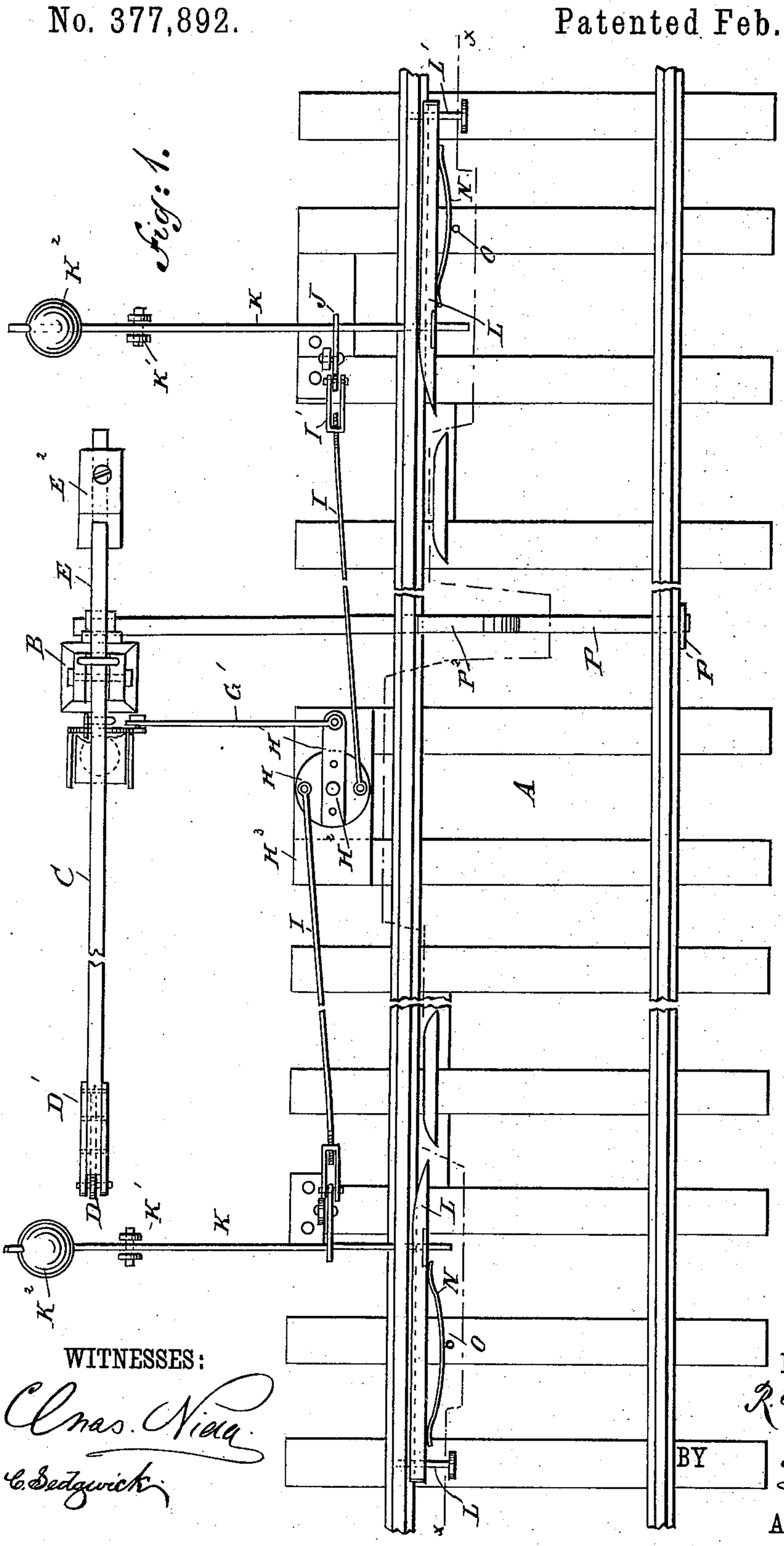
(No Model.) 3 Sheets—Sheet 1.

R. F. HAGEMAN.

RAILROAD SIGNAL.

No. 377,892. Patented Feb. 14, 1888.

Fig: 1.



WITNESSES:

Chas. Nieda.

C. Sedgwick.

INVENTOR:

R. F. Hageman.

BY Munn & Co

ATTORNEYS.

(No Model.)

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R. F. HAGEMAN.

RAILROAD SIGNAL.

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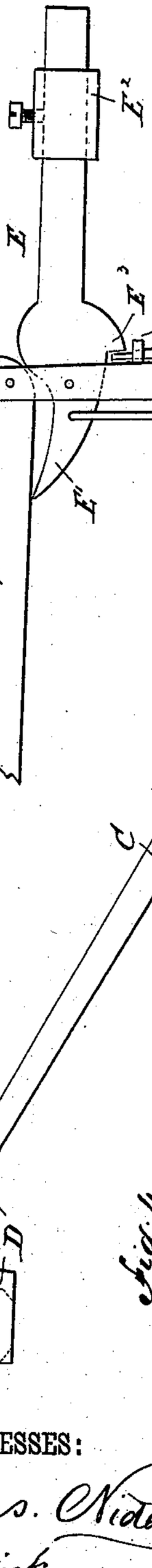

Fig. 3.

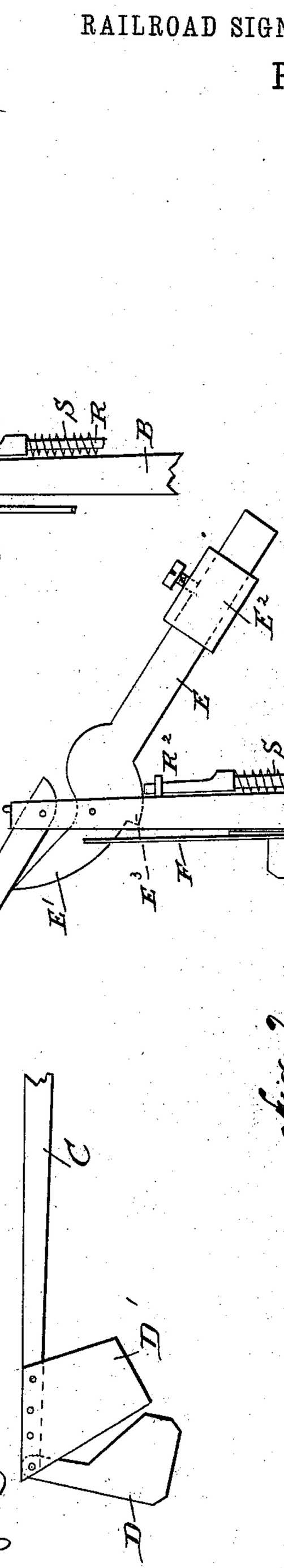

Fig. 4.

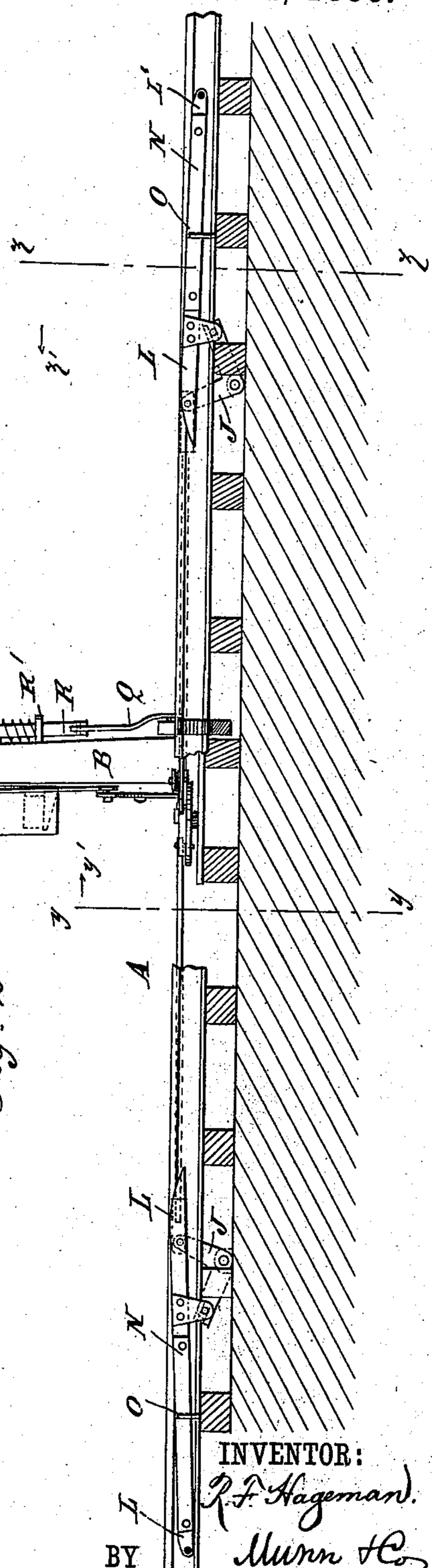

Fig. 2.

WITNESSES:

Chas. Nida.

C. Sedgwick

INVENTOR:

R. F. Hageman.

BY Munn & Co

ATTORNEYS.

(No Model.) 3 Sheets—Sheet 3.

R. F. HAGEMAN.

RAILROAD SIGNAL.

No. 377,892. Patented Feb. 14, 1888.

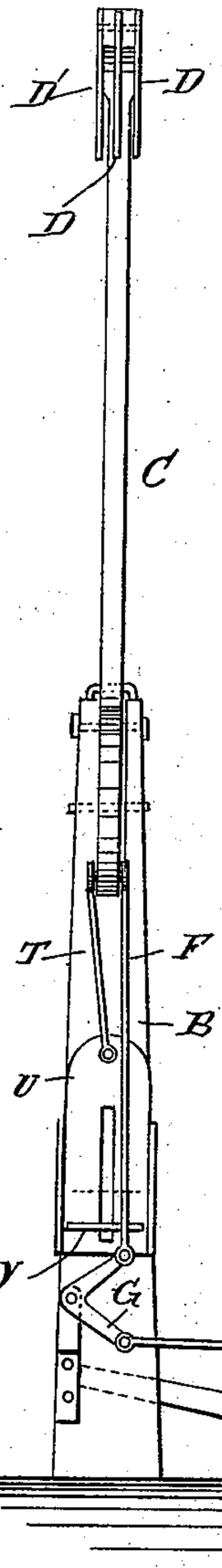

Fig. 5.

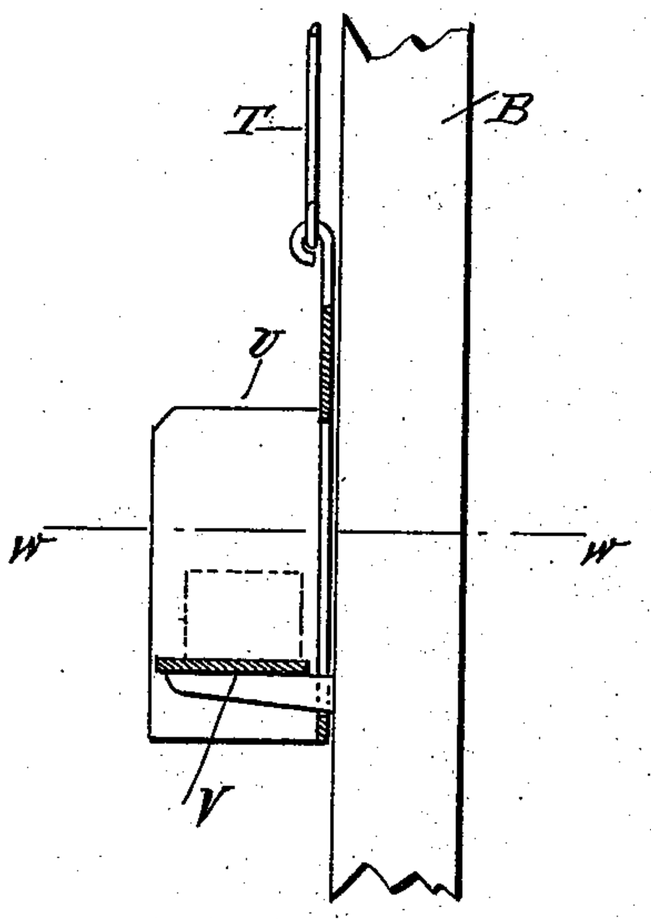

Fig. 7.

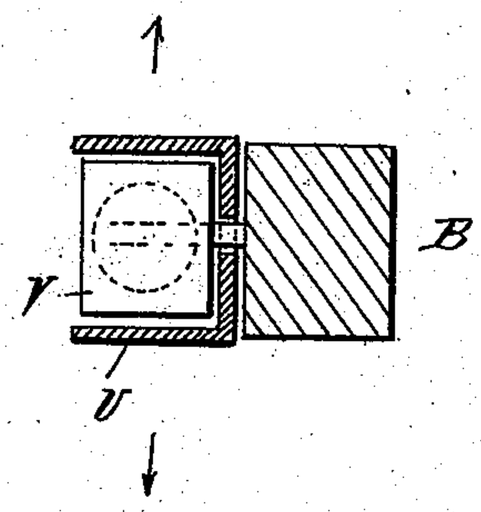

Fig. 8.

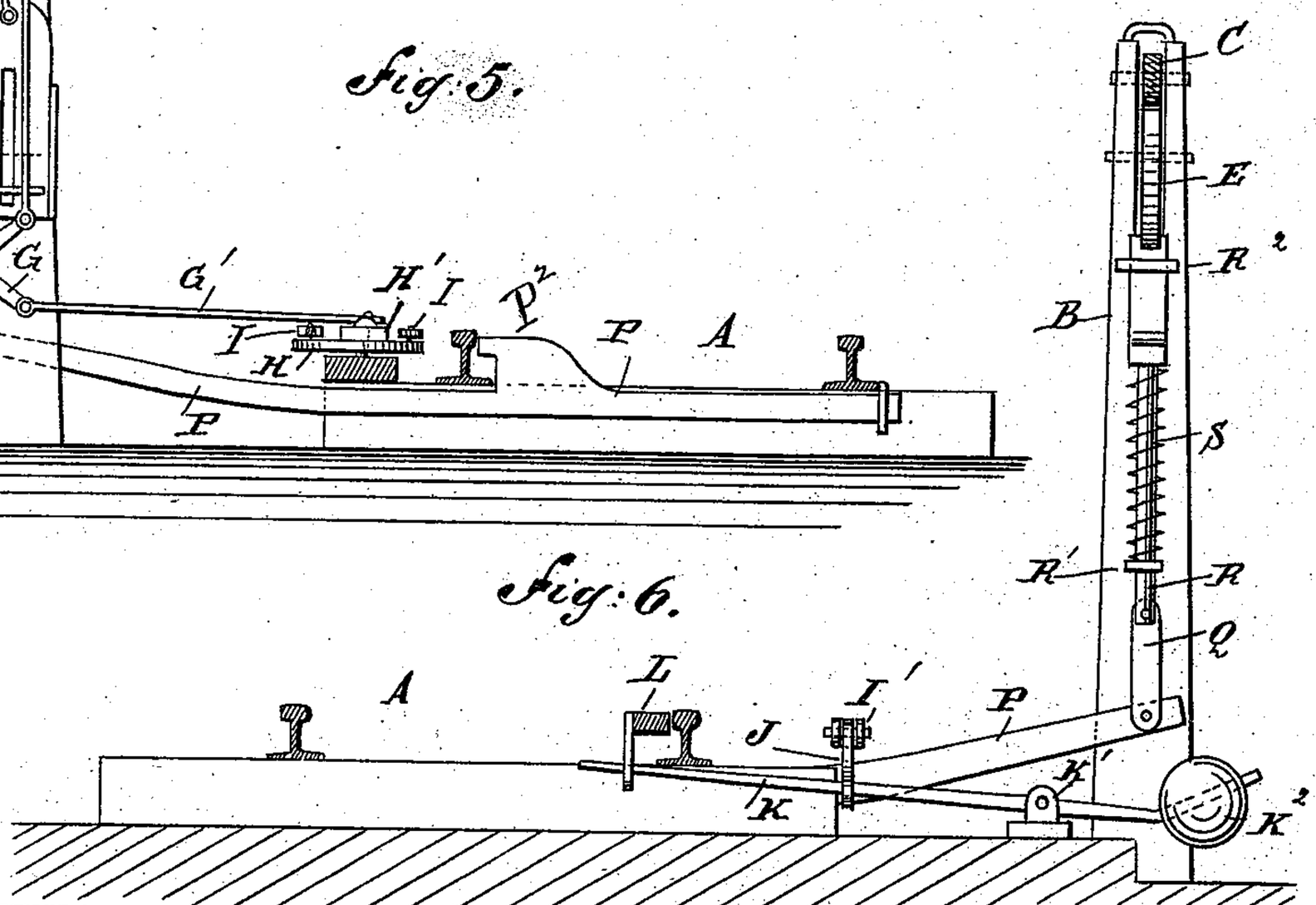

Fig. 6.

WITNESSES:

Chas. Nichols.

C. Sedgwick

INVENTOR:

R. F. Hageman

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

RANDOLPH FOSTER HAGEMAN, OF NEW MADISON, OHIO.

RAILROAD-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 377,892, dated February 14, 1888.

Application filed April 25, 1887. Serial No. 236,095. (No model.)

To all whom it may concern:

Be it known that I, RANDOLPH FOSTER HAGEMAN, of New Madison, in the county of Darke and State of Ohio, have invented a new and Improved Railroad-Signal, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved railroad-signal which is simple and durable in construction and automatic in operation, giving a danger-signal during the day or night when a train approaches a crossing from either direction.

The invention consists in the construction and arrangement of various parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improvement. Fig. 2 is a longitudinal sectional elevation of the same on the line *x x* of Fig. 1, showing the danger-signal in its normal position. Fig. 3 is a side elevation of the signal-arm and its connections in a lower or danger position. Fig. 4 is a side elevation of the signal in its lower or danger position. Fig. 5 is a vertical cross-section of my improvement on the line *y y* of Fig. 2, looking in the direction of the arrow *y'*. Fig. 6 is a similar view of the same on the line *z z* of Fig. 2, looking in the direction of the arrow *z'*. Fig. 7 is a sectional side elevation of the cover for the signal-lamp, and Fig. 8 is a sectional plan view of the same on the line *w w* of Fig. 7.

On one side of the crossing of a railroad-track, A, is erected a signal-post, B, of suitable height, to which is pivoted at its upper end the signal-arm C, carrying at its outer end the signal D, pivotally connected with said arm C and adapted to swing freely on its pivot. When the signal-arm C is in its uppermost position, as shown in Fig. 2—that is, standing at an angle of about forty-five degrees to the post—then the signal D is inclosed in a casing, D', secured to the outer end of the arm C, being open at one end for the admission of said signal D. When the signal-arm C is in the position as shown in Figs. 3 and 4, then the signal D is swung outside of the casing D', and is thus visible from all sides, indicating that there is danger in crossing the railroad-track.

The signal-arm C is operated by one end, E', of the lever E, fulcrumed on the post B directly under the signal-arm C. The rear end of the lever E extends in an opposite direction from the signal-arm C, and is provided with a weight, E^2, held adjustably on the lever E by suitable means. The end E' of the lever E is pivotally connected by the link F with one arm of the bell-crank lever G, the other arm of said bell-crank lever being pivotally connected by the link G' with the arm H', secured to the disk H, turning on the vertical stud H^2, secured to a suitable plate fastened on two railroad-ties on the outside of one of the rails of the railroad-track A.

The arm H' extends lengthwise of the rails of the railroad-track A, and at right angles to said arm, and fastened on opposite sides of the disk H, are the rods I I, extending longitudinally in opposite directions from each other, and adapted to be operated by approaching trains coming in either direction toward the crossing. As the devices for operating said rods I are the same in construction, it suffices to describe but one, the two devices, however, being located at suitable distances from the crossing at each side along the track A.

Each of the rods I is provided on its outer end with an adjustable head, I', pivotally connected with one arm of the bell-crank lever J, operating with its other arm the lever K, extending at right angles to the rails of the railroad-track A, being pivoted at K' and provided at its outer end with a weight, K^2. The inner end of the lever K extends through a suitable slot in one of the rails of the railroad-track, and is connected with the inner end of the lever L, placed alongside of the rail at the inside and being pivoted to said rail at L'. A spring, N, presses against the inside of the lever L, so as to hold the latter in close contact with the side of the rail, said spring N resting with its middle against a pin, O, secured to one of the railroad-ties. The lever L is held in close proximity to the inside of the rail at its free end near the top of the rail.

At right angles to the railroad-track A, between the levers L and near the post B, is placed a transverse lever, P, pivoted at one

outer end to the under side of the outer rail of the railroad-track A, the other end of the lever P extending to one side of the post B and being pivotally connected with the adjustable link Q, extending upward and being pivoted to the lock-bolt R, adapted to move up and down in the bearings R′ and R², secured to one side of the post B. A spring, S, coiled on said lock-bolt R, rests with one end against the bearing R′, and with its other end against a shoulder formed on said bolt R. The extreme upper end of the bolt R is adapted to engage a shoulder, E³, formed on the under edge of the weighted lever E.

The operation is as follows: The lever L is held in close proximity to the inside of the rail, and in such a position that the flange of the car-wheel passing over said rail depresses the front end of the lever L, whereby the lever K is set in motion and actuates the bell-crank lever J, which, by its connection by the rod I with the disk H, turns the latter on its pivot H², whereby the arm H′ of the disk H imparts a downward-swinging motion by means of the link G′ to the bell-crank lever G. The latter, by the link F, pulls on the end E′ of the lever E, so that the weighted end of the latter is raised, while the end E′ swings downward and permits the signal-arm C, by its own weight, to swing downward into a horizontal position, as shown in Figs. 3 and 4. The signal D, which has been inclosed in the casing D′, now swings outward from the same by its own weight and becomes visible, thus signaling approaching danger—that is, the approach of the train which has passed over the lever L in the direction toward the crossing.

When the weighted lever E is pulled down to its horizontal position by the link F, as above described, then the shoulder E³, on passing over the upper end of the bolt R, depresses the latter until the upper end of the bolt engages the notch formed by said shoulder E³, thus preventing the return motion of the weighted lever E until the bolt R is withdrawn. This is done as soon as the locomotive approaches the post B or the crossing and passes over the raised part P² of the lever P, which raised part P² extends upward and level with the inside of the rail, so that the flange of the first car-wheel depresses said lever, which thus imparts a downward motion to the bolt R by the connection of the latter with said lever P by the link Q. As soon as the bolt R is withdrawn from the notch E³ in the weighted lever E, then the weight E² causes said lever to assume its normal position, thus raising its free end E′, and with it the link F, and causing the bell-crank lever G to turn the disk H to its normal position, as shown in Fig. 1. Said disk, by its rod I, imparts an upward motion to the bell-crank lever J, so that the latter pushes the front end of the lever L upward and raises said lever to its former position, as shown in Fig. 2. The signal-arm C is carried upward by this downward movement of the weighted end of the lever E, and the signal D swings inward into the casing D′, thus becoming invisible. The spring S on the bolt R presses the latter upward against the under edge of the weighted lever E, so that the bolt engages very readily the notch formed by the shoulder E³ and holds said lever E in a locked position until the car-wheels operate on the lever P, as above described.

At night I employ a lamp, which is placed on the bracket V, secured to one side of the post B at a suitable distance above the ground. This lamp is inclosed in a casing, U, and is not visible as long as there is no danger in crossing the railroad-track; but as soon as a train approaches and passes over the lever L, which lever then pulls by its connections on the weighted lever E, then the latter, on account of being connected by the link T with said casing U, pushes the latter downward until the lamp on the bracket V is visible, thus signaling an approaching train. When the link F pushes the end E′ of the lever E upward, then the casing U is also moved upward and again incloses the lamp.

If a double track is used, then one of the levers L is on one track and the other lever is arranged on the other track; but both levers operate the same signal-arm C, as above described.

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

1. In a railroad-signal, the combination, with two levers located at opposite sides of the crossing and pivoted to the inside of the rail, of a weighted lever operated by said pivoted levers when the flanges of the wheels of a train of cars pass over said levers, a signal-arm operated by said weighted levers, and a signal held on the outer end of the signal-arm, substantially as shown and described.

2. In a railroad-signal, the combination, with two levers located at opposite sides of the crossing and pivoted to the inside of the rail, of a weighted lever operated by said pivoted levers when the flanges of the wheels of a train of cars pass over the said levers, a signal-arm operated by said weighted lever, a signal held on the outer end of the signal-arm, and a spring-bolt adapted to lock said weighted lever in a horizontal position, substantially as shown and described.

3. In a railroad-signal, the combination, with two levers located at opposite sides of the crossing and pivoted to the inside of the rail, of a weighted lever operated by said pivoted levers and the flanges of the wheels of a train passing over said levers, a signal-arm operated by said weighted lever, and a signal held on the outer end of the said signal-arm, a spring-bolt adapted to lock said weighted lever in a horizontal position, and a transverse lever operated by the flanges of the car-wheels and located between said rails near the crossing, and adapted to unlock said bolt from said weighted lever, substantially as shown and described.

4. In a railroad-signal, the combination, with a post located at one side of the crossing, of a signal-arm pivoted to said post and extending across the crossing, a signal held on the outer end of said arm, a lever pivoted to said post below the signal-arm, and having its inner end engaging the under side of the signal-arm and its outer end provided with a weight, substantially as herein shown and described.

5. The combination, with a signal-arm and a casing rigidly secured on the outer end of said arm, of a signal pivoted on the outer end of said arm and held between the sides of said casing when said signal-arm is in an inclined uppermost position and held free from said casing when the signal-arm is in a horizontal position, substantially as shown and described.

6. In a railroad-signal, the combination of the pivoted lever L, the spring N, for holding the lever in contact with the inside of the rail, the pivoted and weighted lever K, connected to lever L, the signal-arm C, and intermediate mechanism between the weighted lever K and the signal-arm, substantially as described.

7. In a railroad-signal, the combination, with the lever L, of the weighted lever E, operated by said lever L, the signal-arm C, operated by one end of said lever E, and the signal D, pivoted on the outer end of said signal-arm C, substantially as shown and described.

8. In a railroad-signal, the combination, with the lever L, of the lever E, operated by said lever L, the signal-arm C, operated by one end of the lever E, the signal D, pivoted on the outer end of said signal-arm C, and the casing D′, rigidly secured to the outer end of the signal-arm C and adapted to receive said signal D when said signal-arm C is in its uppermost position, substantially as shown and described.

9. In a railroad-signal, the combination, with the weighted lever E, having the shoulder E^3, of the signal-arm C, operated by said weighted lever E, the casing D′, rigidly secured to the outer end of said signal-arm C, the signal D, pivoted to the extreme outer end of said arm C and adapted to be inclosed by said casing D′ when the signal-arm C is in its uppermost position, and the spring-bolt R, adapted to engage said shoulder E^3, so as to hold the lever E in a horizontal and locked position, substantially as shown and described.

10. In a railroad-signal, the combination, with the weighted lever E, having the shoulder E^3, of the signal-arm C, operated by said weighted lever E, the casing D′, rigidly secured to the outer end of said signal-arm C, the signal D, pivoted to the extreme outer end of said arm C and adapted to be inclosed by said casing D′ when the signal-arm C is in its uppermost position, the spring-bolt R, adapted to engage said shoulder E^3, so as to hold the lever E in a horizontal and locked position, and the transverse lever P, adapted to unlock said spring-bolt R from the shoulder E^3, substantially as shown and described.

11. In a railroad-signal, the combination, with the lever L, of the weighted lever K, connected with said lever L, the bell-crank lever J, connected with said lever K, the rod I, connected with said bell-crank lever J, the horizontal disk H, connected with said rod I, the bell-crank lever G, connected with said disk H, and the weighted lever E, connected by a link with said bell-crank lever G, substantially as shown and described.

12. In a railroad-signal, the combination, with the post B, provided with the bracket V, for supporting a lamp, the weighted lever E, and means for pulling the said lever downward, of the casing U and link T, for connecting the casing to said lever E, substantially as herein shown and described.

RANDOLPH FOSTER HAGEMAN.

Witnesses:
J. E. THOMAS,
O. M. SNODGRASS.