(No Model.) 2 Sheets—Sheet 1.

C. A. HAMMOND.

MECHANICAL TRIP FOR RAILWAY SIGNALS.

No. 530,414. Patented Dec. 4, 1894.

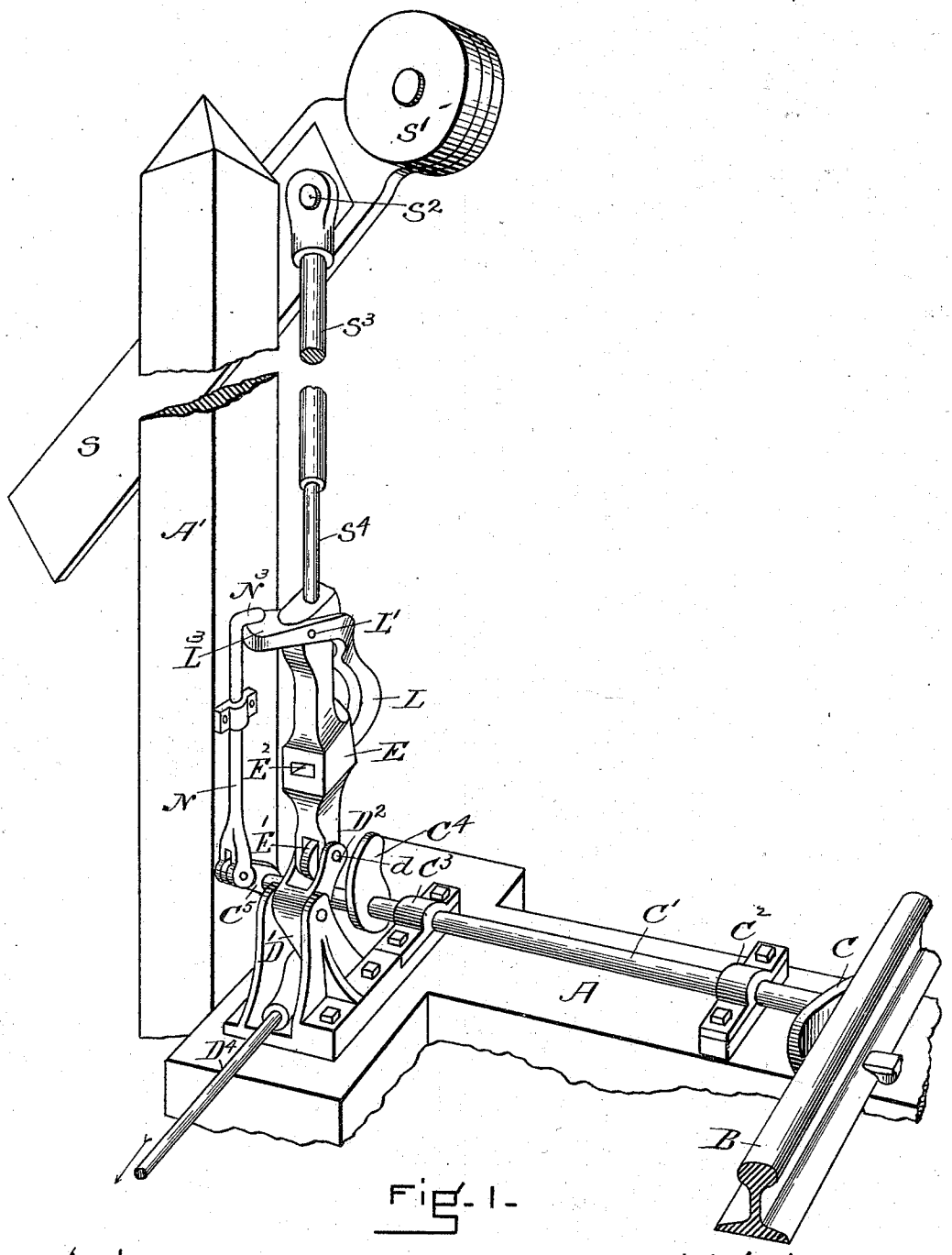

FIG. 1.

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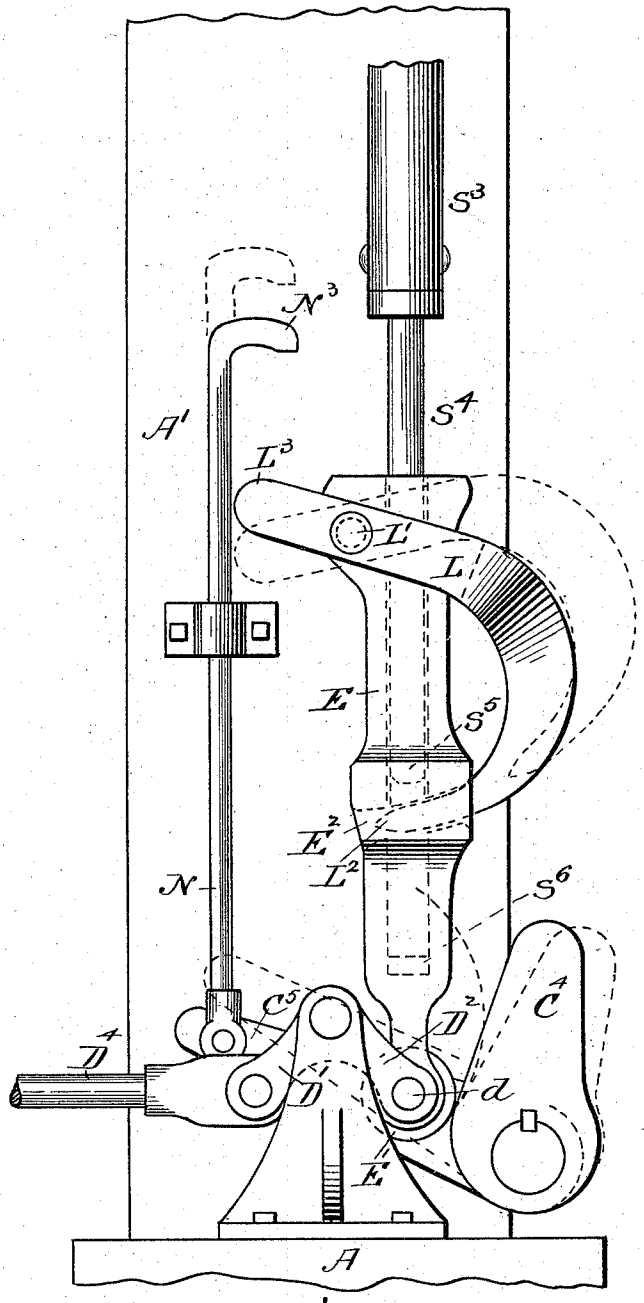

Fig. 2.

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CHARLES A. HAMMOND, OF BOSTON, MASSACHUSETTS.

MECHANICAL TRIP FOR RAILWAY-SIGNALS.

SPECIFICATION forming part of Letters Patent No. 530,414, dated December 4, 1894.

Application filed April 12, 1894. Serial No. 507,300. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. HAMMOND, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Mechanical Trips for Railway-Signals, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a device for causing a signal to return from a "safety" position to the normal or danger position by a mechanical device caused to operate by the wheels of a passing train, the operation to be immediately effected by the passage of any train, the object being to provide a means that is entirely independent of the signal man, and no negligence or forgetfulness on his part will have any effect upon setting the signal semaphore to danger, it being done absolutely and positively by the mechanical action due to the passage of a train. This object I attain by means of the mechanism shown in the accompanying drawings, in which—

Figure 1 is a view in perspective showing a signal device as arranged in connection with my invention, the signal being represented as at "safety." Fig. 2 is an elevation showing most of the parts.

In the best modern railway signal practice, it is very essential to provide efficient means by which signals which are moved by men stationed at a distance in signal towers or cabins, by means of levers and pipe connections, should be restored to their normal or danger position immediately upon the passage of every train, thus checking negligence or forgetfulness of the signal man, and preventing more than one train at a time from using or being governed by the same "clear" signal. In interlocking, after the switches or routes have been set, and in block-signaling after the proper signals or releases have been received from the next block-station, the signal-man in the tower, by reversing his lever, pushes the semaphore into the inclined or "safety" position. When in that position, any failure or break in the connections, will instantly restore the signal to its horizontal or "danger" position by the operation of its counterweights attached to the end of the semaphore itself. It will thus be seen that if the vertical rod at the signal post, which lifts the signal into the inclined position, be made in two pieces so that the upper portion will slide into the lower upon the withdrawal of a catch, the signal may be returned to its normal horizontal position by the tripping of the catch by a passing train, even though the signal man has not returned his lever to its original position. Up to the present time, however, experience has shown that no mechanical or electrical slot, as this device has been termed by signal experts, has been produced that will always, without fail, and under every conceivable condition, absolutely insure this result.

I will now briefly describe the mechanism by which my invention is put in practice.

A, is a bed piece to which all of the parts may be attached, and B an ordinary rail. A cam-piece C, is made essentially in the form shown in Fig. 1, and is placed in relation to the rail as shown; that is, it normally has a part projecting above the rail and in such a position that the wheels of a passing train will come in contact with it, and depress that part that is above the rail, the depression of which part will cause the shaft C′ to which the cam-piece is attached, to make a part rotation on its axis. The shaft C′ is firmly mounted in suitable housings C^2 C^3 and has at its outer end a cam C^4, the function of which will be explained farther on.

The semaphore S is mounted in the usual manner on the signal post A and is provided with a counterweight S′. The lifting rod S^3 S^4 S^5 is pivoted at S^2 to the semaphore. The lower end S^5 of the rod fits loosely into a vertical passage made in the standard E. (See dotted lines Fig. 2.) A transverse passage is made through the standard E at E^2 intersecting the vertical passage in which the rod S^3 S^4 S^5 plays. The lower end of the standard E is forked to receive a friction roller E′ and is adapted to fit into the forked end D^2 of the bent-lever D′ D^2. The pin *d* serves to connect the forked end D^2 of the bent-lever D′ D^2 to the forked end of the standard E, and also as an axle for the roller E′.

L is a curved let-off lever pivoted to the standard E by a pin L′. The upper end of the lever L is preferably mortised so that it may be better attached to the standard E although a curved lever attached to one side of the

standard E would work. The lower end L^2 of the curved lever L is adapted to enter the transverse passage E^2 in the standard E and thus close the vertical, or rod passage in the same, as shown. The upper end L^3 of the lever L projects so as to be in the path of action of the bent end N^3 of the tripping rod N which is connected to the arm C^5 of the rod C'.

D^4 is a rod by which the signal man operates the bent lever D' D^2 and through it sets the semaphore.

The mode of operation of my device is as follows: Suppose that the parts stand as shown in Fig. 1 with the semaphore at "safety" or inclined as shown, the rod S^3 S^4 S^5 that holds up the semaphore resting upon the lower end L^2 of the curved lever L^3 L L^2 within the cross passage E^2 of the standard E. Now if a train passes, the wheels will come in contact with the cam-piece C and depressing it cause the shaft C' to make a part rotation and acting through the arm C^5 draw down the let-off rod N, the bent rod N^3 of which will draw down the end L^3 of the curved lever L^3 L L^2 thus withdrawing the end L^2 from under the rod S^3 S^4 S^5 and leaving it free to drop. This action will allow the semaphore S to return to the horizontal position indicating danger. To re-set the semaphore to "safety," the signal man draws the rod D^4 Fig. 1, in the direction indicated by the arrow. This causes the standard E to be lowered down to the position shown in Fig. 2, in which case the transverse passage E^2 will be below the lower end S^5 of the rod S^3 S^4 S^5 as it drops as low as dotted line at S^6 (it being held in this position by the semaphore in its horizontal position). Now the end L^2 will enter the passage E^2, by the action of gravity, and then the signal man forces the rod D in a direction opposite to the arrow. Then the bent lever D' D^2 will assume the position shown in Fig. 1 and the standard E will be raised up taking with it the rod S^3 S^4 S^5 causing the semaphore to indicate "safety;" that is, to take its inclined position as shown in Fig. 1.

In the act of raising the standard E and its connected parts, the friction wheel E' pressing against the cam C^4 forces it over into the position indicated by dotted line Fig. 2. This rotates the shaft C' sufficiently to restore the cam piece C to its normal position as shown in Fig. 1. The same movement of the shaft C' will cause the arm C^5 to take the position shown by dotted lines and will also raise up the let-off rod N N^3.

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

1. In a railway signal device, the combination with the lower of two standards or parts of a rod operating the signal (the upper part sliding within the lower part), of a pivoted curved lever or catch and a curved transverse slot in said lower standard, within which slot one end of said lever or catch enters, in order to sustain the upper part of said operating rod when both upper and lower parts move together, or to allow the upper part, thus supported, to fall within the lower part when the upper end of said lever or catch is tilted so that its lower end is withdrawn from said transverse slot, said lever or catch being unequally balanced, whereby its lower end by force of gravity constantly tends to enter the said slot, substantially as and for the purpose set forth.

2. In a railway signal device, the combination of a telescopic lifting rod; a lever or catch for holding said rod in extended position; a horizontal shaft extending from the signal post to the railway track and having a track cam, and an operating cam for setting the apparatus in working position; a tripping rod connected to and operated by said shaft; a bell crank controlled by the signal man and connected to and adapted to operate the signal lifting rod; and a friction wheel carried by said bell crank at its point of connection with the signal rod, the combination being and acting substantially as hereinbefore set forth.

3. In a railway signal device, the combination with a telescopic standard E and rod S^3 S^4 S^5, adapted to support a semaphore, and a semaphore, of the curved lever L fitting the curved slot E^2, the tripping rod N, the operating mechanism connecting said tripping rod with the track-cam C, and the friction-wheel E' and operating cam C^4 for setting said mechanism in working position when the semaphore is put to indicate danger, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 19th day of March, A. D. 1894.

CHARLES A. HAMMOND.

Witnesses:
FRANK G. PARKER,
FRANK G. HATTIE.