

(No Model.)

I. FISHER.

INTERLOCKING RAILWAY SWITCH AND SIGNAL.

No. 246,485.

Patented Aug. 30, 1881.

Fig. 1.

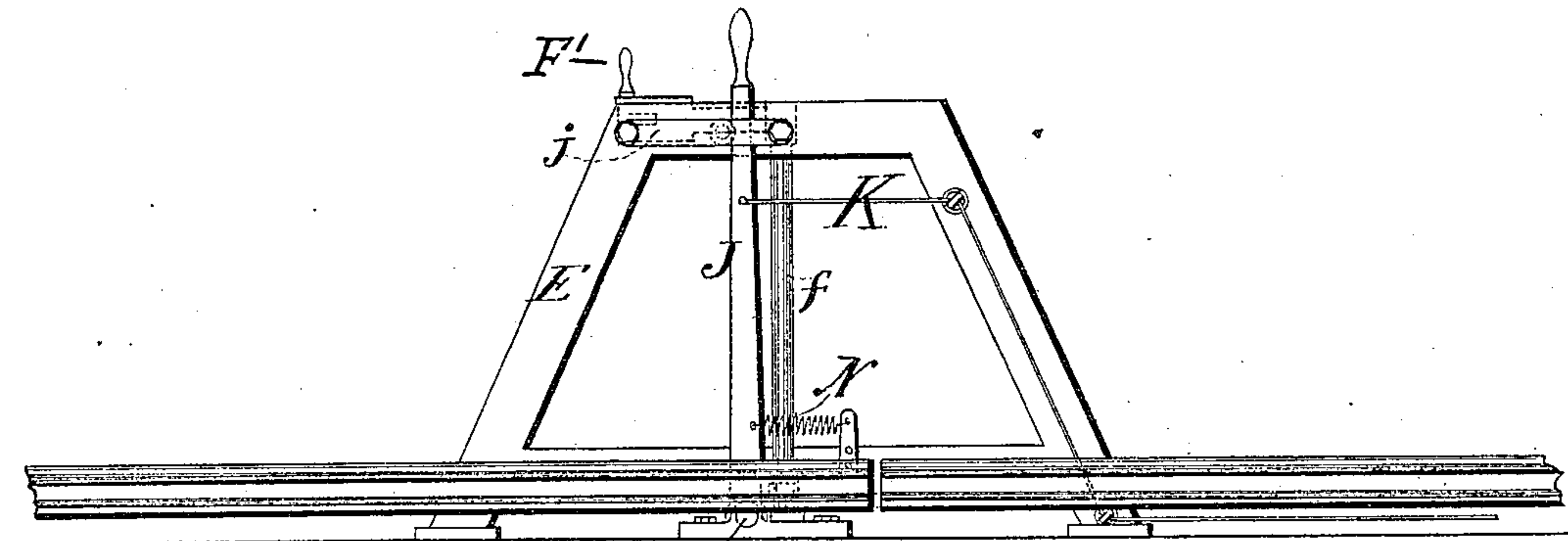


Fig. 2.

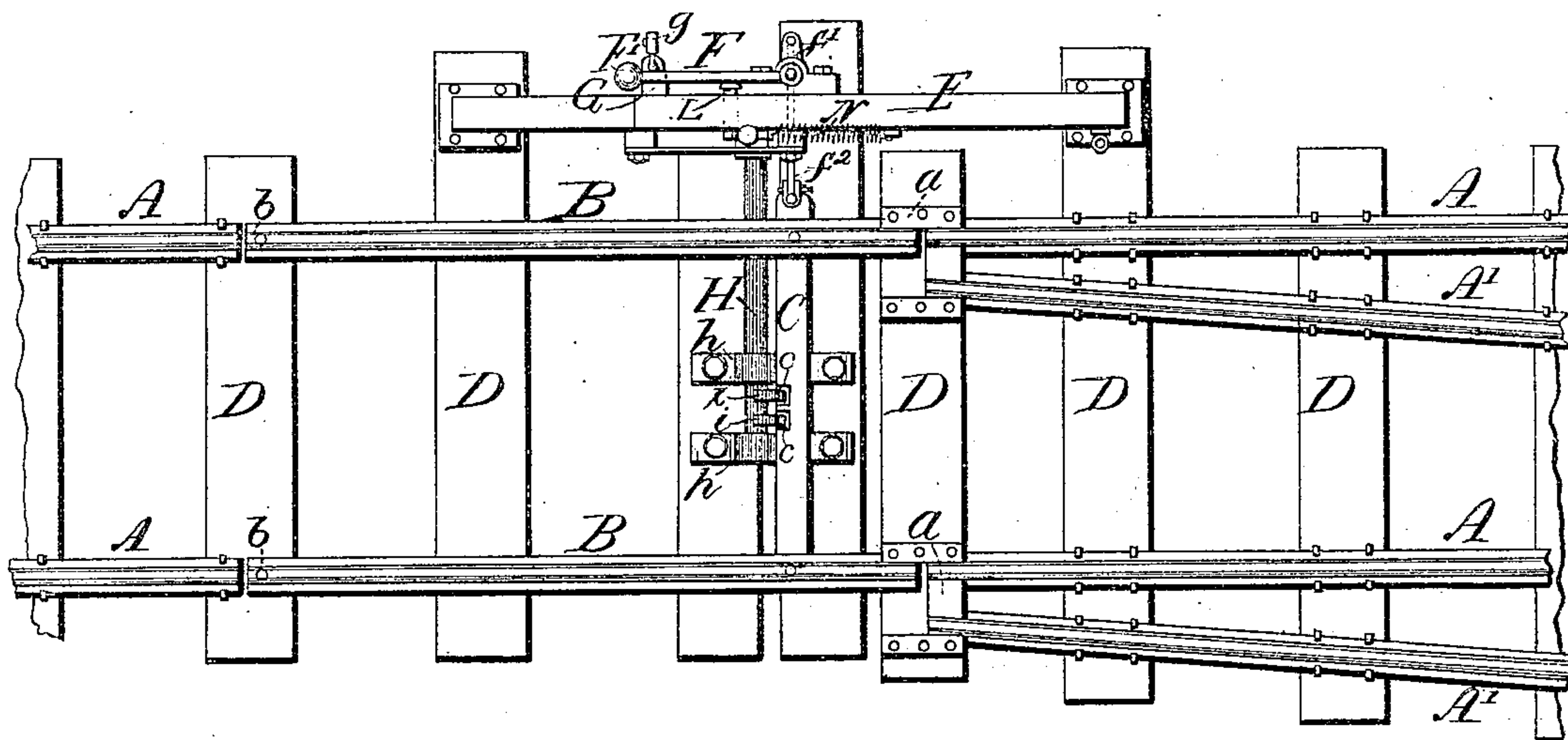
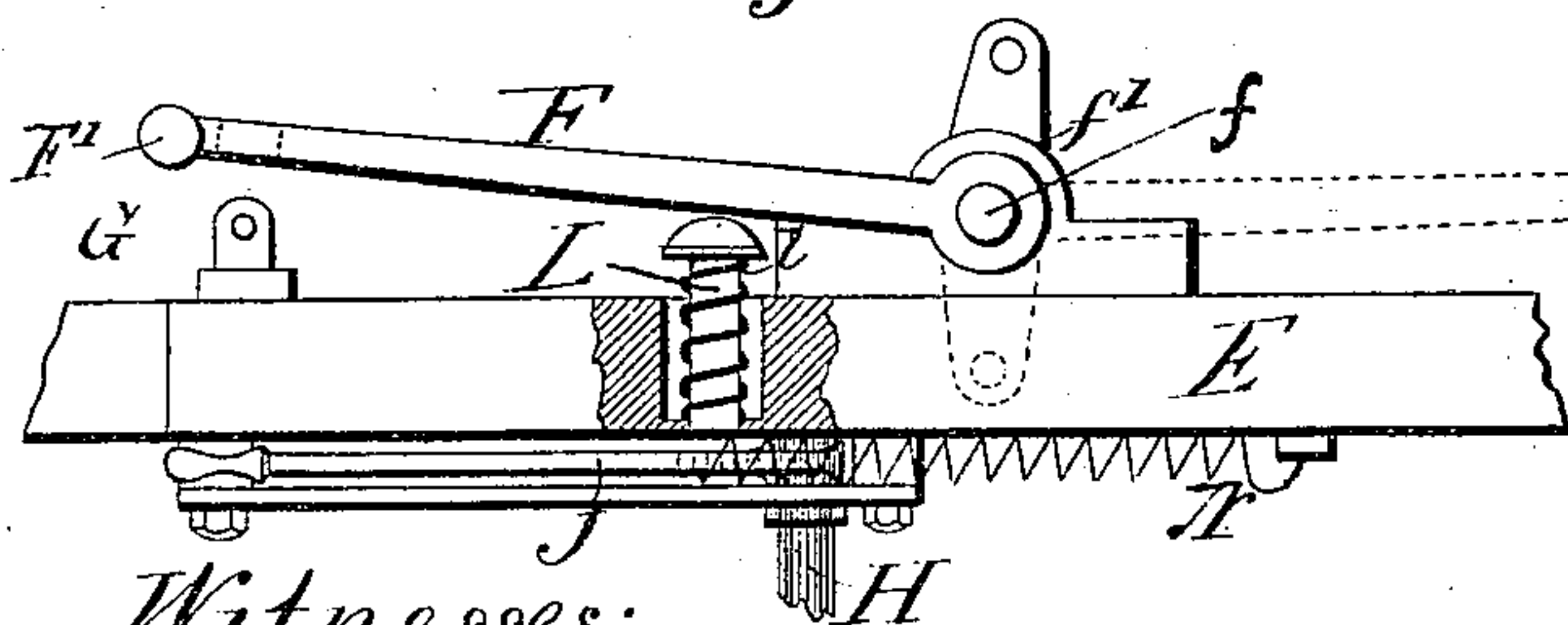
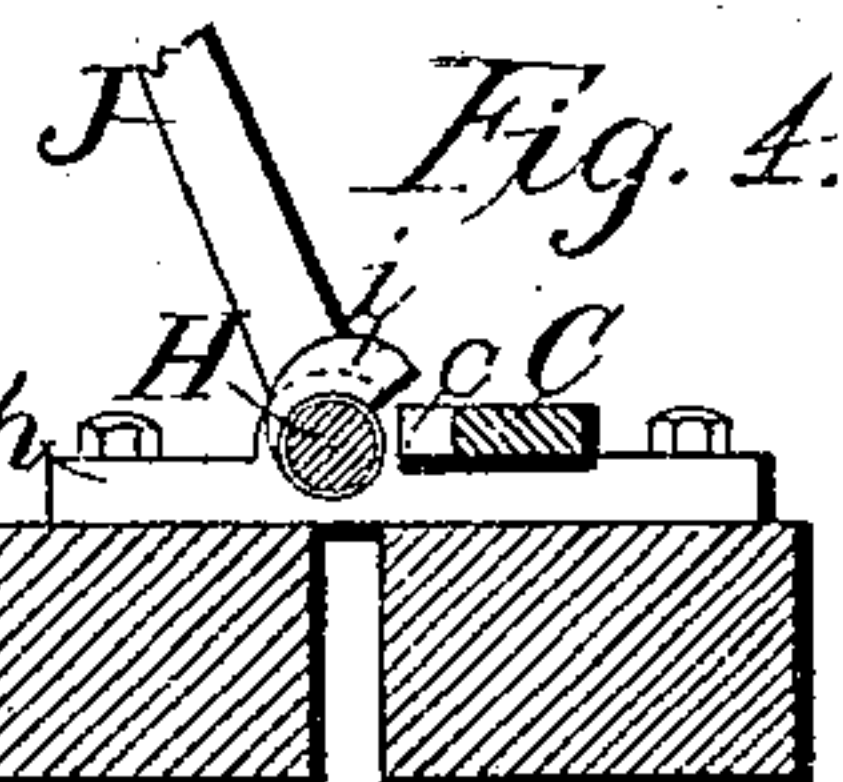


Fig. 3.



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UNITED STATES PATENT OFFICE.

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INTERLOCKING RAILWAY SWITCHES AND SIGNALS.

SPECIFICATION forming part of Letters Patent No. 246,485, dated August 30, 1881.

Application filed January 24, 1881. (No model.)

To all whom it may concern:

Be it known that I, ISRAEL FISHER, a citizen of the United States, residing in Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Interlocking Railway Switches and Signals, of which the following is a specification.

My invention relates to the mechanism which is employed for the purpose of actuating railway-switches and the signals for indicating the position of the same to the engineer of an approaching train.

The object of the invention is to enable the movable switch-rails to be secured in their normal position—that is to say, in line with the main track—by means of a locking apparatus actuated by a suitable hand-lever, which is so arranged with reference to the lever by which the rails of the switch are moved and to the mechanism for actuating one or more signals as to render it impossible for the switchmen to unlock the movable rails without first placing the distant signal or signals guarding the main line in position to indicate “danger” to an approaching train; and moreover, that so soon as the switch-rails shall have been moved ever so little out of line with the rails of the main track it shall be impossible to restore the said distant signal or signals to a position of safety until the said rails have been again moved back into line with the main track and securely locked in that position.

In the accompanying drawings, Figure 1 is a vertical elevation of a switch-operating mechanism embodying my improvements. Fig. 2 is a plan view of the same; and Figs. 3 and 4 are detached and enlarged views, partly in section, of certain portions of the mechanism.

In Figs. 1 and 2, A A are the rails of the main track, and A' A' are the rails of a branch track or siding.

B B are the movable rails of the switch, each of which is pivoted at one end, as shown at b b, while its opposite end is free to move upon the chairs or head-blocks a a, into which the ends of the stationary rails A A and A' A' are securely fastened. The movable rails B B are held parallel to each other and at a fixed distance apart by means of a connecting-bar or

bridle, C, which is firmly secured to both of the rails by bolts or otherwise, as shown in the figure.

The rails of the track, both fixed and movable, are supported upon a series of cross-ties or sleepers, D D. An upright frame or switch-stand, E, is secured by bolts or otherwise to the said sleepers, and the levers for moving and locking the switch are attached thereto.

The shifting of the movable rails B B from the main track to the side track, and vice versa, is effected by means of a crank-lever, F, which is provided with a handle, F', and which is secured to an upright shaft, f, the latter being secured to the frame E by mounting it in suitable journals or bearings at its upper and lower ends. The short crank-arm f' projects at right angles from the lower end of the upright shaft f at a point at or near the horizontal plane of the movable rails B B, and a pitman-rod, f², is pivoted at one end to this crank-arm and at the other to the bar C. A lug or staple, G, is affixed to the switch-stand E, which enters into and passes freely through a corresponding slot in the arm F when the latter is in its normal position, as shown in Fig. 2. This arrangement enables the lever F to be securely fastened in its normal position by means of a pin or padlock, g, which is passed through the eye of the lug or staple G, as shown in Fig. 2. The manner in which the switch-rails are shifted by means of this mechanism will be hereinafter explained.

The locking mechanism consists of a horizontal shaft, H, which is mounted in strong bearings, h h, firmly secured to the cross-ties which support the rails. Two projecting cam-shaped toes, i i, are forged upon the shaft H, as seen in Figs. 2 and 4, which, when the shaft H is in its normal position, enter into two corresponding rectangular recesses, c c, formed in the edge of the bar C, to which the movable rails B B are secured, as hereinbefore explained.

The shaft H has an upright lever, J, firmly secured to it, which is movable to and fro within a suitable guide, j, affixed to the switch-stand E.

To the lever J is attached a wire, chain, or cord, K, which extends to and operates the distant signal or signals which guard the main

line. These may be of any suitable construction, and may be situated at any required or convenient distance from the switch. When the lever J is in an upright position, as shown in Figs. 1 and 2, the toes *i i* enter into the recesses *c c*, and by this means the movable rails B B are securely locked in their proper position. The lever J itself is also secured in its position by means of a horizontal spring-bolt, L, which passes through the frame or stand E, and is forced to project a sufficient distance in front of the lever J to prevent the latter from being moved by means of the crank-arm F, which presses upon its head, as seen in Fig. 2.

The operation of the apparatus is as follows: Let it be supposed that the mechanism is in the position shown in Figs. 1 and 2, which is the normal position, the movable rails being set in line with the main track and the switch and rails both locked. If, now, it is desired to shift the movable rails B B into line with the rails of the siding A' A', the switchman first removes the pin or padlock *g*, when the pressure of the spring *l* upon the head of the bolt L withdraws the said bolt from the path of the lever J, and at the same time pushes the lever F a short distance into the position shown in Fig. 3. The lever J, being thus set free, is next pulled over to the left, into the position shown in Figs. 3 and 4. This movement of the lever J performs two operations. In the first place it causes the distant visual signal of the main line to be moved into a position indicating danger by means of a connecting wire or chain, K, and in the second place it lifts the toes *i i* out of the recesses *c c*, so as to permit of the horizontal movement of the bar C; but it will be apparent that the bar C cannot be thus unlocked without previously exhibiting the said distant signal, and thus indicating "danger" to the engineer of any train which may approach upon the main line. The crank-arm F may now be moved through an arc of one hundred and eighty degrees, into the position indicated by the dotted lines in Fig. 3, which operation will move the switch-rails B B, by means of the pitman *f*², into line with the rails A' A' of the side track. As long as the movable rails remain thus in line with the siding it will be impossible for the switchman to change the indication of the main-line distant signal, as the lever J cannot be restored to its normal position until the recesses *c c* have been brought back to a position opposite the toes *i i*. When, however, by means of the crank-arm F the movable rails are restored to their normal position, the toes *i i* are free to enter into the recesses *c c*, and thus lock the switch-rails in position. This latter movement is preferably

effected automatically by means of a spring, N, attached to the lever J. By the same operation the danger-signal at the distant point is reversed and withdrawn, so as to denote "safety" to an approaching train. It will be understood, however, that this movement of the signal cannot be effected until the movable rails have been locked in their proper position by the toes *i i*, for until this operation has taken place the lever J cannot be brought to an upright position.

Owing to the peculiar construction of my improved locking apparatus it is not possible for the switch-rails to be unlocked, much less moved from their proper position, without the previous exhibition of a danger-signal upon the main line at a sufficient distance to warn an approaching train of the condition of the track. If by any accident the switch-stand E and the apparatus connected therewith should be entirely carried away or destroyed, as by an accident occurring to a passing train, the switch-rails would still remain locked and the position of the track would be maintained.

The signal employed in connection with my invention may be either mechanical or electrical. In the latter case a circuit-closer is provided, which is held closed by the lever J when it is in an upright position, but not otherwise.

I claim as my invention—

1. In an interlocking switch and signal actuating mechanism, consisting of a reciprocating bar attached to the movable rails of the switch and a rocking bar for interlocking therewith, the combination, substantially as hereinbefore set forth, of a crank and shaft for actuating said reciprocating bar, a lever for actuating said rocking bar, and spring-bolt, which is projected into the path of said crank, whereby the locking of the last-named lever is automatically effected by the locking or fastening of said crank.

2. The combination, substantially as hereinbefore set forth, of the movable rails of a switch, a rigid bar or rod connecting the same, a lever for moving said rails, movable toes for locking said connecting-bar and rails in their normal position, an independent lever for moving said toes, a connection for operating a distant signal, and a bolt for securing said independent lever, which is actuated by the switch-lever when fastened in its normal position.

In testimony whereof I have hereunto subscribed my name.

ISRAEL FISHER.

Witnesses:

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JOHN BROWN.