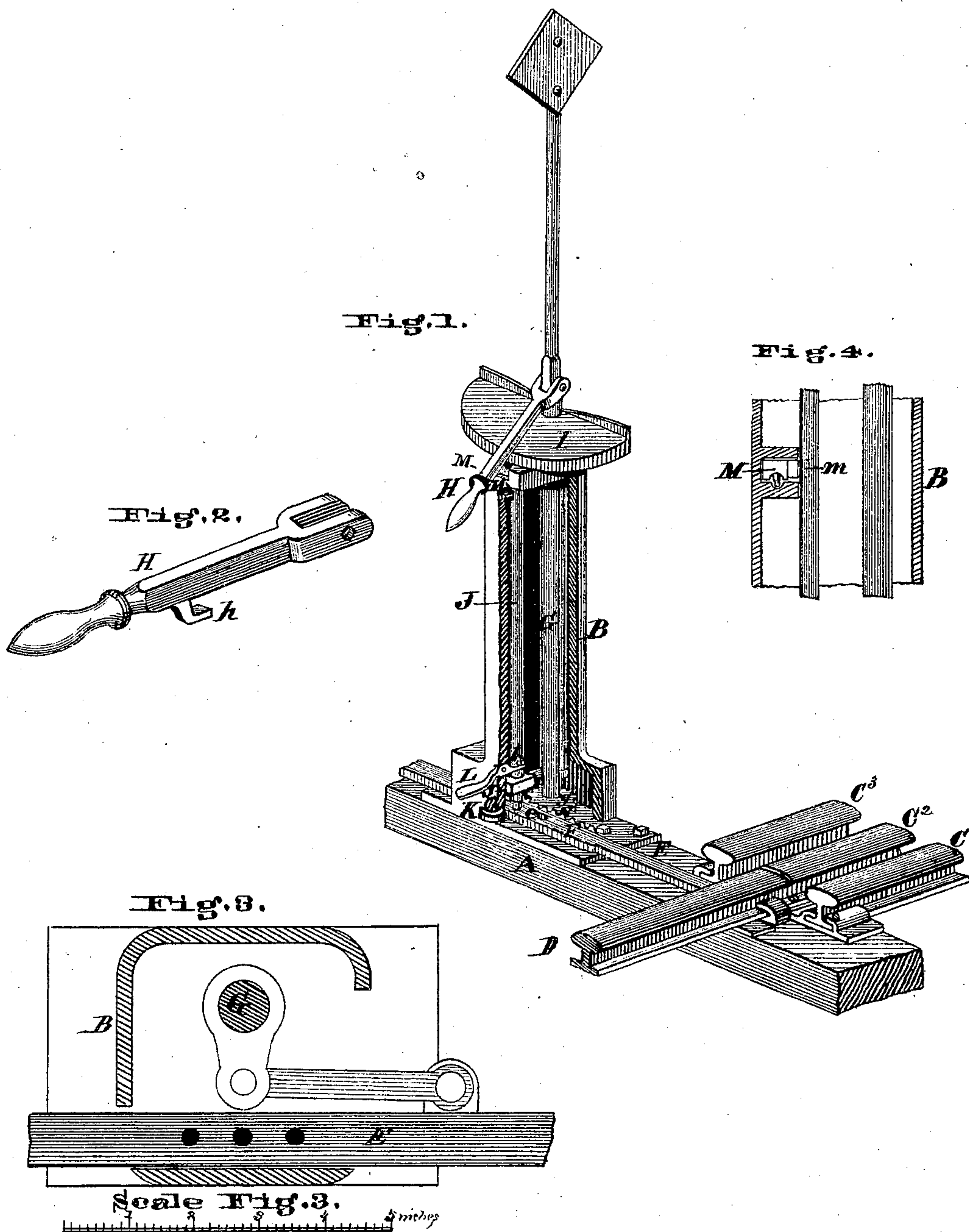


ALONZO W. CRAM.

Improvement in Railway Switches.

No. 124,118.

Patented Feb. 27, 1872.



ATTEST.

*Wm. C. Breckinridge*  
*Walter Allen*

INVENTOR,

*Alonzo W. Cram.*  
*By Knight & Co. Attys.*

# UNITED STATES PATENT OFFICE.

ALONZO W. CRAM, OF ST. LOUIS, MISSOURI.

## IMPROVEMENT IN RAILWAY SWITCHES.

Specification forming part of Letters Patent No. 124,118, dated February 27, 1872.

Specification describing certain Improvements in Railway Switches, invented by ALONZO W. CRAM, of the city and county of St. Louis and State of Missouri.

My improvement relates principally to the means employed to lock the switch or rack bar, which is done by a drop bar or bolt, the bar being again raised by a hand-lever or treadle to withdraw it from the bar and release the same. The rack upon the rack-bar engages with a pinion upon the lower end of the signal-staff, so that the turning of the latter operates the switch. A lock is associated with the drop-bar to lock the switch.

Figure 1 is a perspective view of my switch, part of the stand being broken away to exhibit the interior. Fig. 2 is an enlarged view of the lever. Fig. 3 is a plan, showing a modification in which a crank and connecting-rod take the place of the rack and pinion. Fig. 4 is a vertical section, showing the lock.

A is the sill, and B the stand. C C<sup>2</sup> C<sup>3</sup> are the fixed rails, and D the moving or switch rail, whose free end is attached to the switch or rack bar E. F is a rack on the bar E, said rack engaging with a pinion, g, upon the lower end of the signal-staff G. H is a lever, by which the signal-staff is turned. It is pivoted to the staff in such a manner as to admit of being raised or lowered, and has beneath a claw, h, which takes beneath the edge of a semicircular disk, I, to raise the same. From the lower side of the disk I descends the rod J, whose lower end enters one of the holes e in the rack-bar, and a hole in the base beneath it when the switch-rails D are in any of their proper positions, (in conjunction with either of the fixed tracks C C<sup>2</sup> C<sup>3</sup>.) J<sup>2</sup> is a guide to the rod J. K is an anti-friction roller bearing against the back of the rack-bar opposite to the pinion to hold the rack to its engagement with the pinion. L is a treadle, by which the drop-bar J may be

raised, the forked end of the treadle passing beneath a cross-pin, l, of the bar. By the use of the treadle, the disk I may be dispensed with, if desired. M is a lock-bolt, which enters a cavity, m, in the bar J to lock the switch by preventing the raising of the bar.

In Fig. 3 is shown a modification in which a connecting-rod and crank take the place of the rack and pinion F g, the devices being considered mechanical equivalents.

In most, if not all, switches now in use, there is at least one pivot-joint or cog-connection between the switch and the catch or lock that holds the switch in position, and consequently a little "lost play" in each connection causes a dangerous uncertainty in the movement of the switch-rail, which may be thus much out of place when the lever has come to the locking position or catch or notch. This constitutes an exceedingly common element of danger in switches.

I obviate the above imperfection by my device for locking the rack-bar E by means of a drop bar or bolt, J, and, as the rack-bar is attached firmly to the rail D and locked by the drop-bar to the base of the stand, the switch-rail is held fixedly and exactly in position.

I claim—

1. In combination with the rack-bar E e, staff G, and drop-bar J, the lock M for securing the bar J.

2. The combination of the rack-bar E e, drop-bar J, and lever H with the disk I, by which the bar can be raised at any position of the lever.

In testimony of which invention I have hereunto set my hand.

ALONZO W. CRAM.

Witnesses:

SAML. KNIGHT,  
C. H. MOULTON.