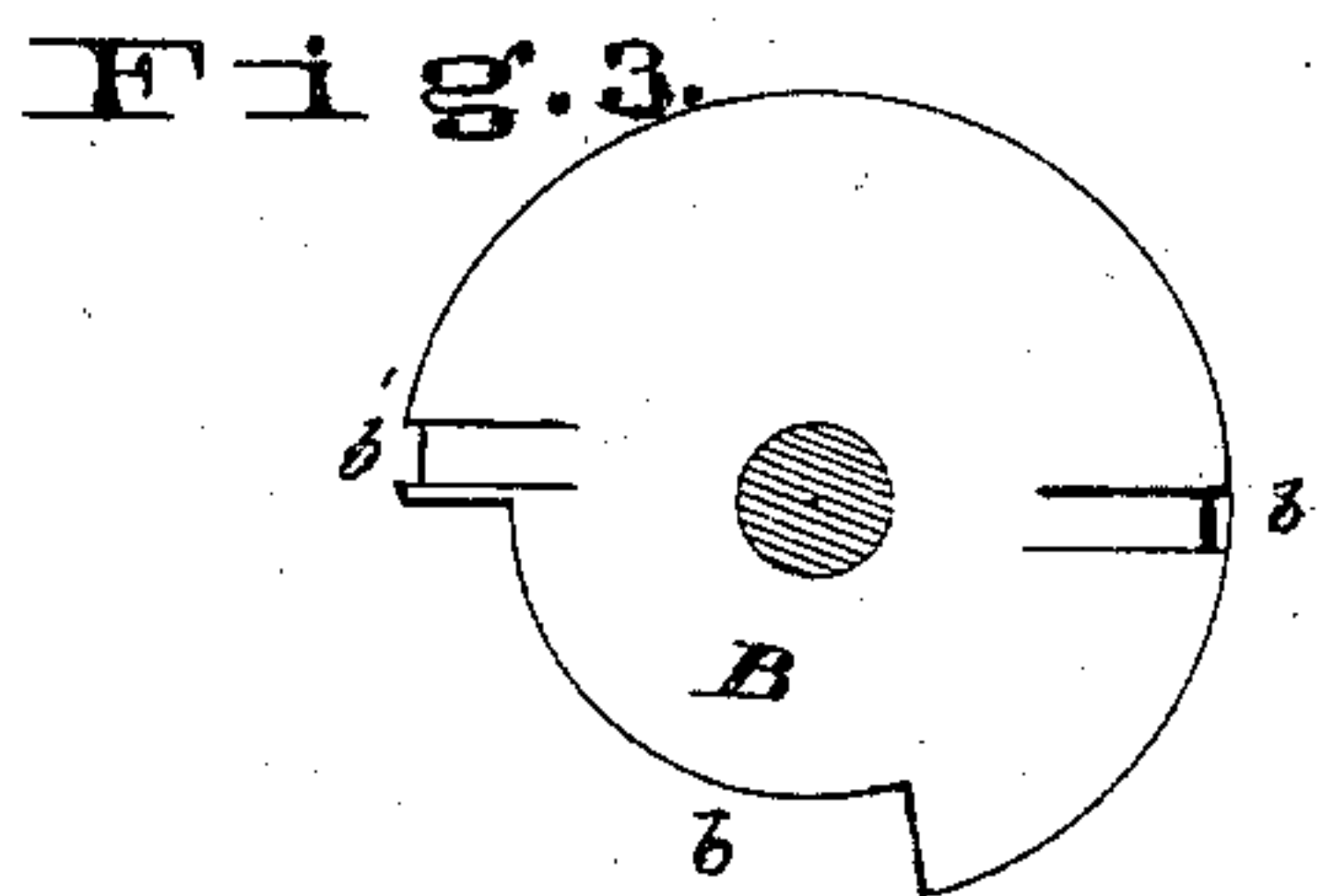
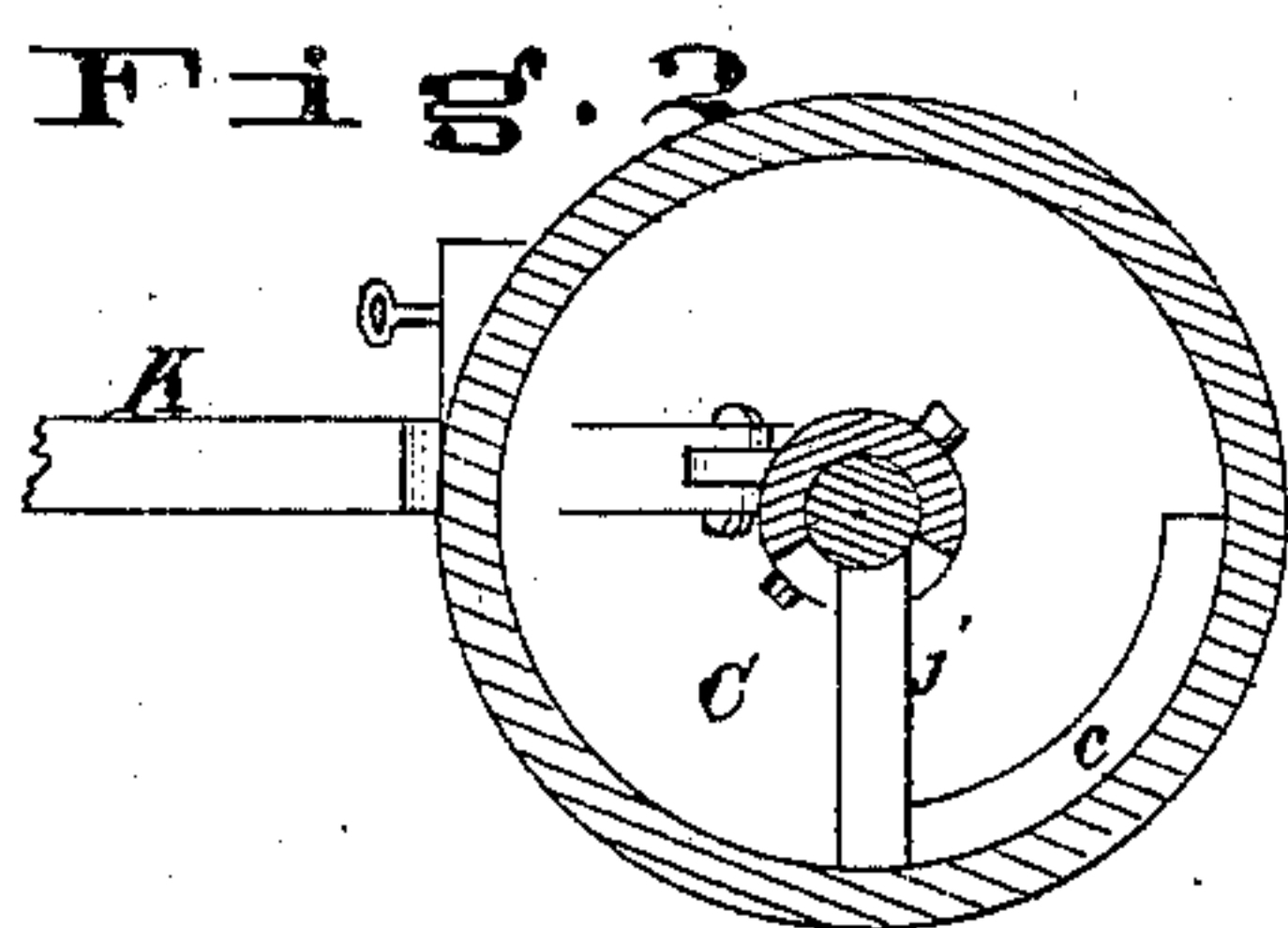
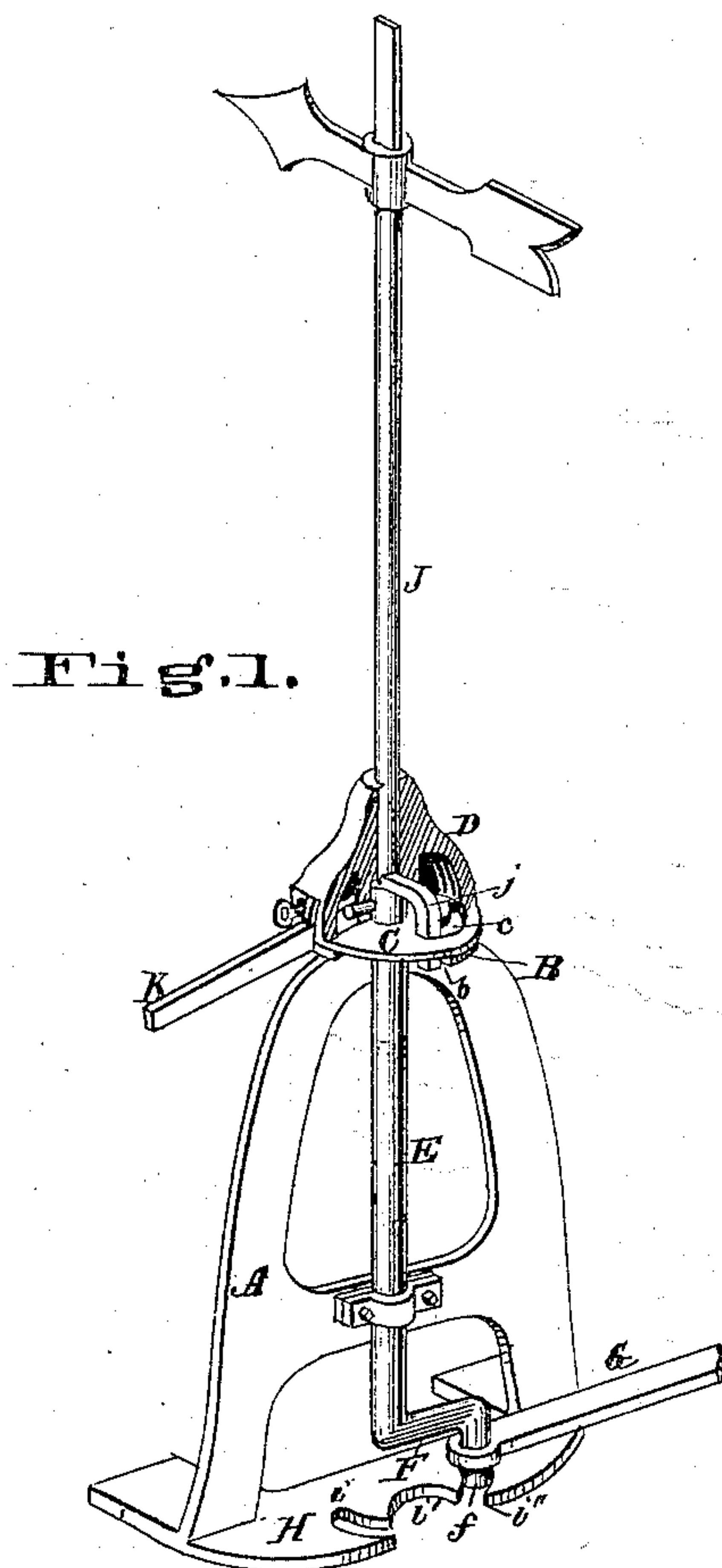


A. W. CRAM.
Railway Switches.

No. 135,527.

Patented Feb. 4, 1873.



ATTEST,
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UNITED STATES PATENT OFFICE.

ALONZO W. CRAM, OF LITCHFIELD, ILLINOIS.

IMPROVEMENT IN RAILWAY SWITCHES.

Specification forming part of Letters Patent No. 135,527, dated February 4, 1873.

To all whom it may concern:

Be it known that I, ALONZO W. CRAM, of Litchfield, in the county of Montgomery and State of Illinois, have invented a certain Improved Railway Switch, of which the following is a specification:

This invention relates to a railway switch in which the connecting-rod is operated by a crank upon the lower end of a vertical shaft; and the first part of my invention consists in forming the signal-staff in two sections, the upper one of which carries the signal and turns one-fourth around, while the lower section ends in a crank, by which the switch is operated and turns one-half around, by which a crank one-half the usual length is made applicable to a two-throw switch; the second part of my invention consists in a plate projecting horizontally from the stand beneath the crank-end of the connecting-rod, said end of the rod resting upon the plate and being held up upon the crank-wrist thereby. The plate has indentations to receive the part of the crank-wrist beneath the connecting-rod when the switch is in either of its fixed positions, so as to hold the end of the said rod, and consequently the switch-rails firmly in place.

Figure 1 is a perspective view of my switch, half of the cap being removed to exhibit the parts beneath. Fig. 2 is a horizontal section above the lock. Fig. 3 is a plan of the fixed disk at the head of the stand, showing the arc-formed notch, whose ends limit the turning of the signal-staff to one-fourth of a rotation.

A is the switch-stand, having at top a fixed disk, B, over which is a turning-disk, C, attached to the cap D and to a vertical crank-shaft, E, at whose lower end is a crank, F, whose wrist *f* passes through a connecting-rod connecting the crank to the shifting-rails of the switch. H is a plate projecting horizontally from the stand, by which the crank-end of the rod G is sustained and kept on the crank-wrist. This plate has three indentations, *i i' i''*. The indentations *i i''* are to receive and firmly hold the wrist *f* when the switch is in either of its fixed positions, so that there will be no end movement of the rod G. The motion of the crank F is one-half of a full rotation, so that the sides of

that part of the indentation in which the wrist-pin rests when in fixed position are perpendicular to the direction of the rod and the force exerted by the car-wheels on the rails and rod.

To cause the wrist to enter these indentations in the proper direction, (on both sides,) it is necessary that the crank should move through a space of half a circle, or one hundred and eighty degrees, so as to be moving in a line parallel with the switch-rails when at point of reaching either of its fixed positions.

It is also proper that the signal should turn only one-fourth around, or ninety degrees, so that the broad side of the signal shall be shown in one position and an end view presented in the other position.

To accomplish this I separate the crank-shaft E from the signal staff or shaft J, and give the proper movement to the signal from the crank-shaft by the following means: Projecting outward and downward from the lower end of the signal-shaft J, which turns loosely in the cap, is an arm or horn, *j*, which extends down through a curved slot, *c*, in the disk C, and a similar slot or notch, *b*, in the disk B, so that the staff J shall be turned by the disk C, and its movement limited by the ends of the curved indentation or slot *b*. When the cap D, disk C, and shaft E are turned the horn *j* may remain at rest until the former have made one-fourth of a rotation, and the end of the slot *c* impinging against the horn carries it around one-fourth of a rotation, when it reaches the other end of the notch or slot *b* and is brought to a stand.

K is the lever by which the switch is turned, the lever being pivoted to the cap, and in the fixed positions dropping into the notches *b'*, where it may be locked down.

The indentation *i'* allows the removal of the rod G from the crank-wrist, when the said rod is disconnected from the switch-rails, and turned around at right angles to its proper position.

In place of the horizontal plate H four projections may be used, the spaces between which would constitute the notches *i i' i''*.

I claim—

1. The combination of the shaft E, crank F, and signal-staff J, having unequal rota-

tion, substantially as and for the purpose set forth.

2. The combination of the shaft E, crank F, fixed plate or disk B with indentation *b*, turning-disk C with slot *c*, and signal-staff J with horn *j*, substantially as and for the purpose set forth.

3. The combination of the crank F and notched holding-plate H, substantially as for the purpose set forth.

ALONZO W. CRAM.

Witnesses:

SAML. KNIGHT,
SANTE MIRAGOLI.