

C. H. HUDSON.

Improvement in Signals for Railroads.

No. 129,135.

Patented July 16, 1872.

Fig. 2.

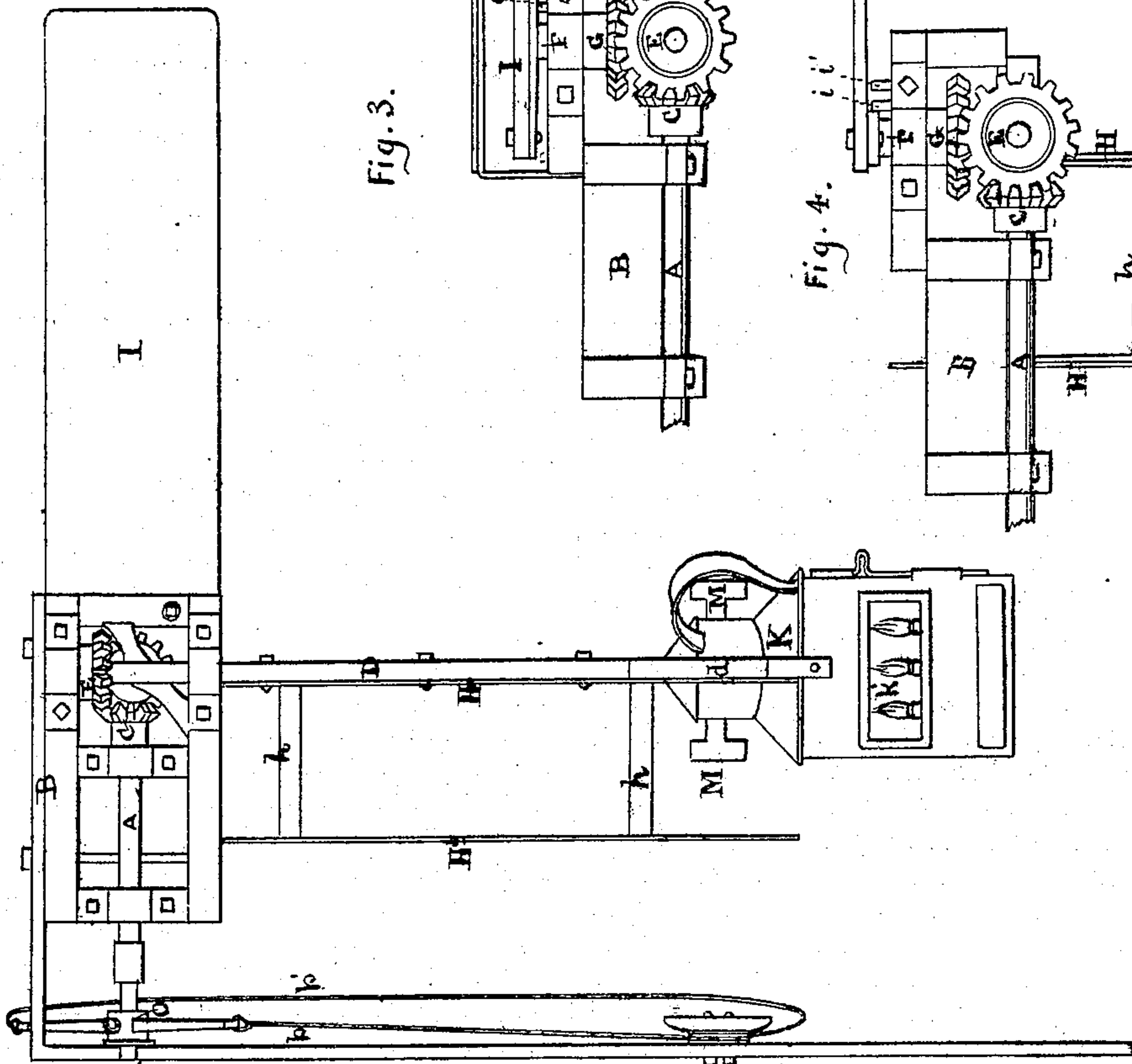


Fig. 1.

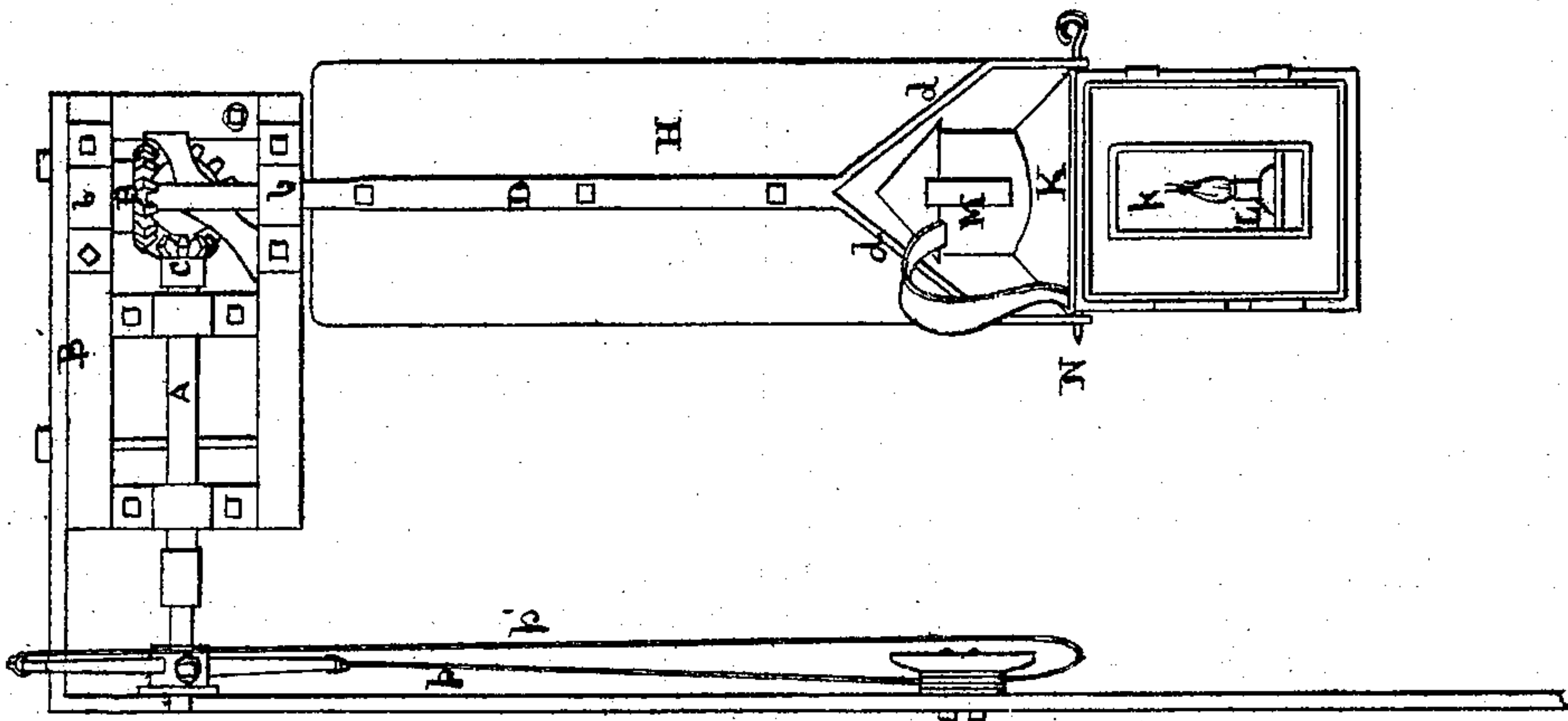


Fig. 3.

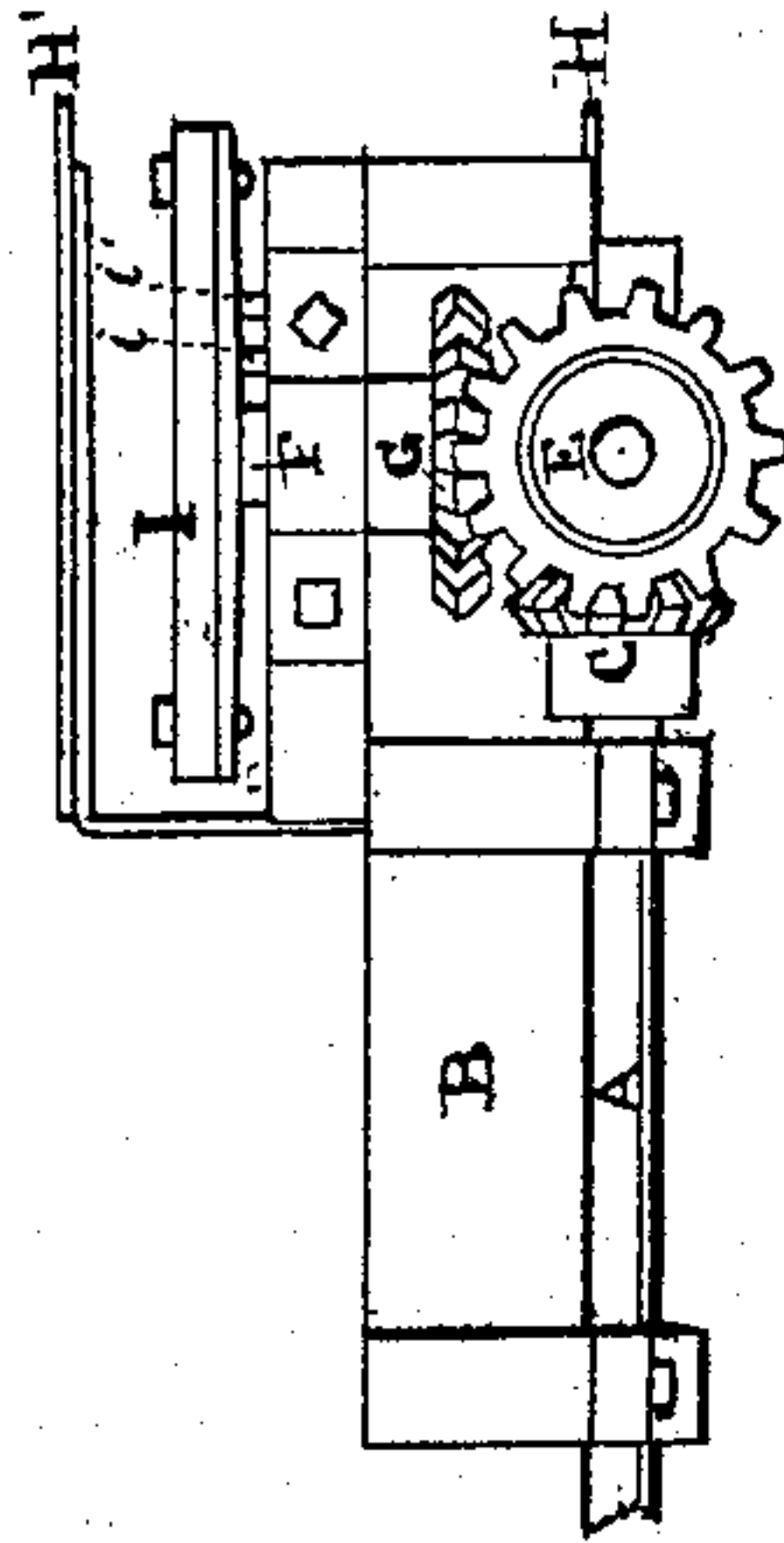
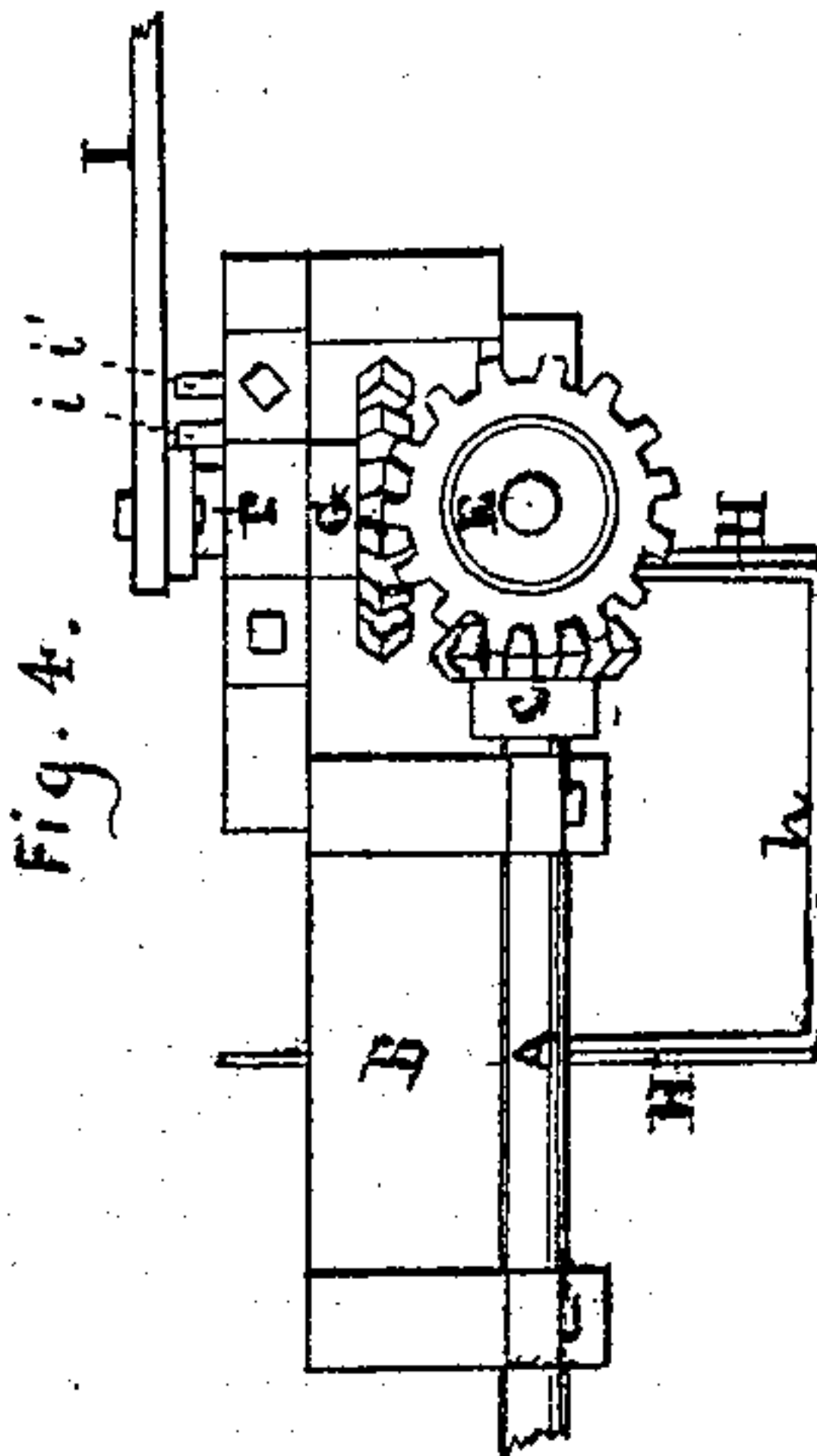


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES H. HUDSON, OF CHICAGO, ASSIGNOR OF ONE-HALF HIS RIGHT TO
F. H. TUBBS, OF GALESBURG, ILLINOIS.

IMPROVEMENT IN SIGNALS FOR RAILROADS.

Specification forming part of Letters Patent No. 129,135, dated July 16, 1872.

Specification describing certain Improvements in Railway Telegraph-Signals, invented by CHARLES H. HUDSON, of Chicago, in the county of Cook and State of Illinois.

My invention relates to improvements in telegraph or semaphore signals for use on railways; and the invention consists, first, in providing an improved apparatus which exhibits elongated rectangular plates of one color in a vertical position, so as to be plainly visible at a distance to the engineers of trains approaching in either direction of the road, while said vertical plates conceal from view a similarly-shaped arm of another color, which, through the operation of suitable mechanism, may be thrown out into a horizontal position, so as to be plainly visible, while the said vertical plates, which before concealed it, are in their turn, and by the same operation, turned so as to be concealed from view, whereby, through the position and color of the signal exhibited, the engineers or conductors of trains approaching the signal-station may know whether to stop at the station for orders or pass on without stopping. It also consists in providing a lantern for signaling at night, two opposite sides of which are provided with glass of one color and of a vertically-elongated shape, corresponding with the vertical plates of the day-signal in color, shape, and position; its other two opposite sides being provided with horizontally-elongated glasses of another color, so as to correspond in color, shape, and position with the horizontal arm of the day-signal, when arranged to operate by means of the same or other suitable mechanism, substantially as and for the same purpose as the aforesaid day-signal. It further consists in the combination of the aforesaid day and night signaling apparatus with suitable mechanism, to be hereinafter described, so that the same may be operated simultaneously, and by the telegraph-operator, without leaving the office, thereby providing a more certain signal to the engineers of approaching trains, denoting positively whether there are or are not orders awaiting them at the signal-office, than any such device heretofore in use, and thereby obviating the necessity for flag-men or other employés who perform like duties at telegraphic stations.

In the accompanying drawing, Figure 1 is a

side elevation, showing the vertical plates and vertical glass lights of the lantern in signaling position. Fig. 2 is a side elevation, showing the horizontal arm and horizontal glass lights of the lantern in signaling position. Figs. 3 and 4 are top-plan views of the operating mechanism.

A represents a horizontal shaft, which may be passed through the wall of the telegraph-office, so that one end is within the office and the other projected outward from the wall sufficiently far to render the signaling apparatus thereto attached plainly visible at a distance up and down the line. This shaft A is properly journaled in bearings within the office, and also in bearings secured to a projecting frame, B, without the office. On the outer end of the shaft A is secured a crown or bevel wheel, C. D is a perpendicular shaft properly journaled in bearings *b b* secured to the outer end of the frame B. This shaft D projects downward beyond the frame B, its lower end being divided into V-shaped arms *d d*, for the purpose hereinafter described. On the upper end of shaft D is secured a bevel-wheel, E, which gears with the wheel C on shaft A. F is a short horizontal shaft journaled in bearings secured to the frame B and placed at right angles to shaft A. To the inner end of this shaft F is secured another bevel-wheel, G, which gears with the wheel E. H H' represent two parallel elongated plates. The one, H, is secured to the vertical shaft D, the other, H', is secured to one side of H by braces or bars *h h*. I represents a similarly-shaped arm or plate, one end of which is secured to the outer end of shaft F so as to rotate with it. *i i'* are two stop-pins projecting from the frame B, and so arranged as to come in contact with the inner end of the arm I and prevent it rotating further than a horizontal position in one direction, or a vertical position in the other. The plates H H' are painted white; the arm I is green; but any other distinctive colors may be used to denote the different signals. K is a lantern, two opposite sides of which are furnished with vertically-elongated glasses *k*, and the other two sides with horizontally-elongated glasses *k'*. These glasses are made to correspond in shape, color, and position with the plates H, H', and I. A lamp, L, having a sufficient number of burners, is placed with-

in the lantern, and ventilators M are provided and so arranged as to allow the smoke, &c., to escape at either side *k*, instead of immediately from the top of the lantern, so as not to discolor the signal plates or arms. This lantern is removable. When in position for signaling at night it is secured to the shaft D between the arms *d d* by means of a rod, N, which is passed through the arms *d* and sides *k'* of the lantern. By withdrawing this rod N the lantern may be removed from the shaft. O represents a double-crank lever secured to the inner end of the shaft A, to the ends of which cords *p p'* are attached, extending down convenient to the operator's hands. This lever may, however, be secured to the shaft outside of the building and the cords led inside in any convenient manner; or any equivalent of the lever and cords may be used, as found desirable.

The operation of the apparatus is as follows: When the telegraph-operator desires to stop a train which he knows to be approaching the station he pulls the cord *p*. This turns the shaft A, and thereby the wheel C, gearing with the wheel E, causes the shaft D to turn, and with it the vertical plates H H' are turned into the position shown at Fig. 2. At the same time, through the wheel E gearing with the wheel G, the shaft F is turned, and with it the arm I rotates until the latter is brought into the horizontal position shown at Fig. 2, the stop *i* preventing its further rotation in that direction, and thereby indicating to the operator within the building that the signal is in the proper position. The horizontal bar is thus brought into position so as to be plainly visible to approaching trains, while the plates H H' are rendered practically invisible through having their edges only presented to view in either direction of the road. In this position the signal remains until the expected train is thereby stopped and the orders waiting it are given. The operator then pulls the cord *p'*, which reverses the motion of the gear-wheels and shafts, turning the plates H H' into signaling position, and by the same operation bringing the arm I from the horizontal to a vertical position and concealing it from view between the plates H H', the stop *i'* preventing further rotation and indicating to the operator that

the vertical signal is in proper position to indicate to approaching trains that there are no orders for them, so that they may pass on without stopping. In this latter position the signal remains until another expected train has to be stopped, when the operation is repeated, as before described. At night the lantern K is attached to the shaft D in the manner described and operated in the same manner, its vertical glass lights corresponding with the plates H H' in shape, position, and color, and its horizontal lights corresponding with the arm I in shape, position, and color, so that the same signals are plainly visible by night as by day.

With a signaling apparatus so constructed and operated it must be obvious that danger of mistake resulting from the transmission of orders through several agents before they are put into execution is obviated; and also that by such a device two conflicting signals cannot be exhibited at the same time; nor can a wrong signal be given without throwing the direct responsibility upon the telegraph-agent who has charge of the running of trains on his section of a railway.

Claims.

1. The plates H H' and arm I, of different colors, operated simultaneously in the manner described, so that when the vertical plates are turned into signaling position the arm I is, by the same operation, brought from a horizontal to a vertical position and concealed from view, and so that when the arm I is raised into signaling position the same operation turns the vertical plates so as to be concealed from view, substantially as and for the purpose specified.

2. The plates H H', arm I, and lantern K, arranged to operate by one motion simultaneously by means substantially such as described, so that two distinct signals, each exhibiting a radically different position and showing a different color, are in their turn made plainly visible by day or by night, substantially as and for the purpose specified.

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Witnesses:

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