

W. WICKERSHAM.

Improvement in Time-Signals for Railroads.

No. 128,771.

Patented July 9, 1872.

Fig 1

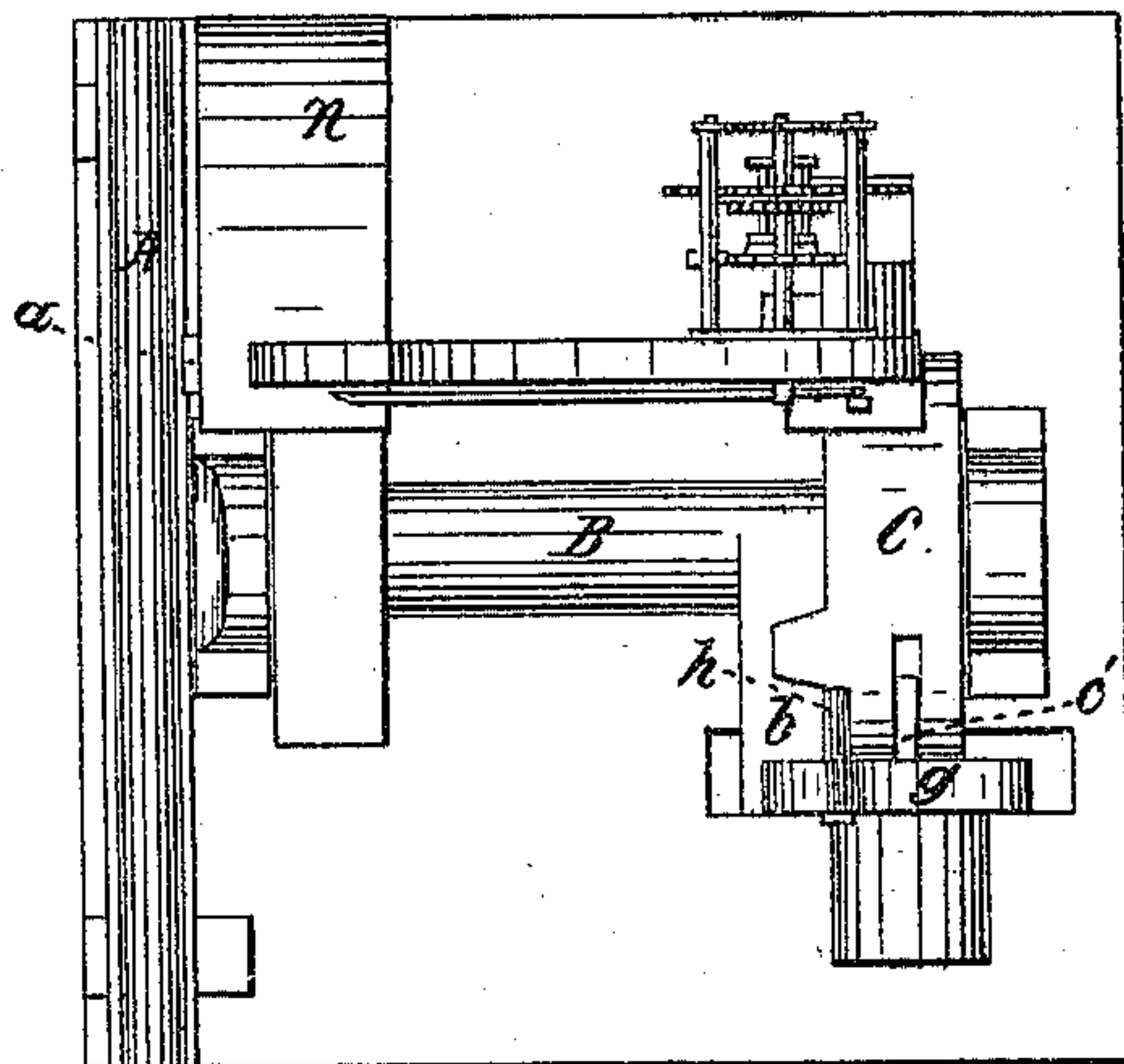


Fig 2

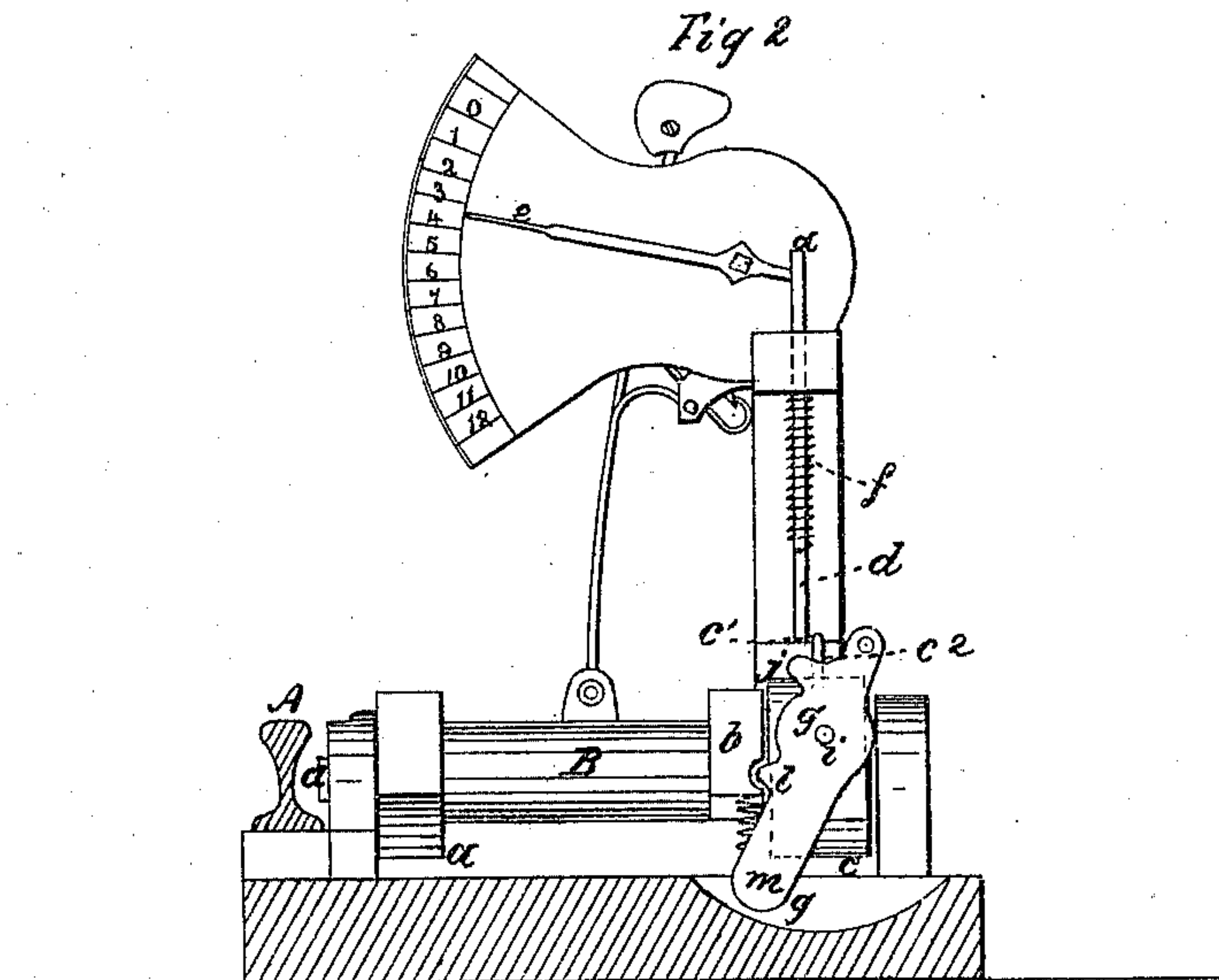


Fig 3

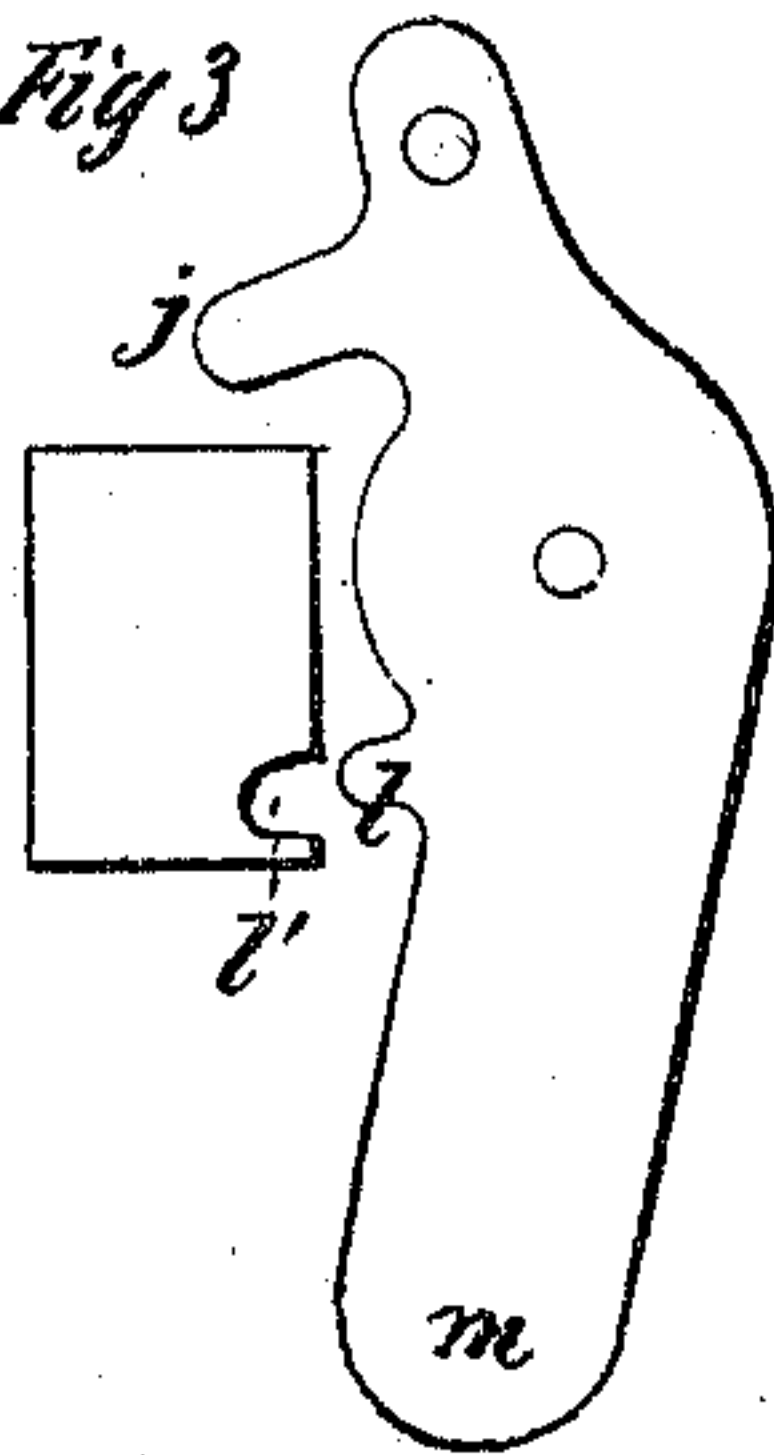
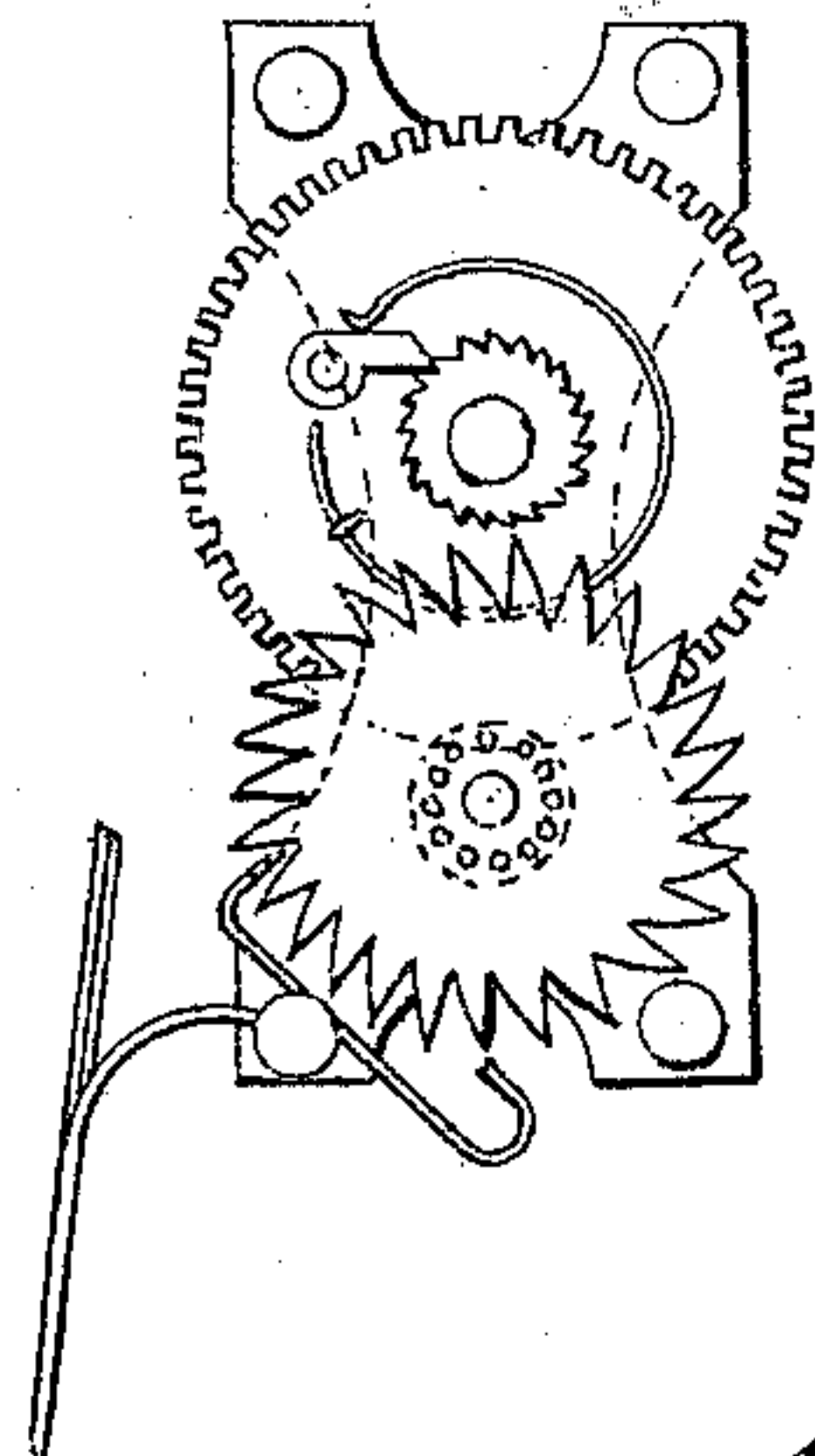


Fig 4



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN TIME-SIGNALS FOR RAILROADS.

Specification forming part of Letters Patent No. 128,771, dated July 9, 1872.

Be it known that I, WILLIAM WICKERSHAM, of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Signal for Railroads; and I do hereby declare that the following is a full and exact description thereof, the drawing and letters of reference thereon making a part of this specification.

### *Nature and Purpose of my Invention.*

The purpose of my invention is to indicate how long since a train of cars has passed by the point where the signal is placed. This is accomplished by arranging a horizontal shaft at one side of the road with an arm on one end, extending close to the rail, so that the wheel in passing over the rail will throw the arm down, thereby turning the said shaft, which has at its other end another arm at the opposite side, which is raised when the first-named arm is thrown down, and outside of this arm is a lever fitted movably on the same shaft in such manner that when the arm is thrown up one end of the lever will be thrown up, while the other end is connected to a rod, which is attached to an index, in such manner as to cause the index to raise up when the arm next to the rail is pressed down by the car-wheel. The rod connected to the index is also connected with clock-work, by which it and the index are caused to move uniformly down, and figures on a dial-plate indicate the number of minutes that the index has been moving from its upper position; or, what is the same thing, the number of minutes since the last train has passed. The first feature of my invention relates to a device for holding said shaft and its arms in the position to which they are moved by the car-wheel a sufficient length of time for the train to pass; and consists in a latch automatically moved in such manner as to lock one of the arms on said shaft when moved from its first position and holding it until the said latch is released. The second feature of my invention relates to the device for securing and releasing the latch which holds said arm in its upper position, while the index can immediately commence its downward movement notwithstanding the arm which raises it remains stationary for a while; and consists of a lever fitted onto said shaft and provided at one end with a projec-

tion over said arm, by means of which it is caused to turn when said arm rises, and, at the same time, so arranged that by the momentum given by said arm it will rise higher than the arm, by means of which the latch is locked; or said lever may rise only to the same height as the arm and the arm fall a little way before the latch secures it, so that the lever is high enough to lock the latch and hold it a sufficient length of time for the purpose described.

In my drawing, Figure 1 shows a top view of my signal embracing most of the parts. Fig. 2 shows the latch and its relation to the arm which it locks and the lever which moves the index-rod down, the index and dial, &c., in an end elevation. Fig. 3 shows the arm in its lowest position, which moves the lever connected with the index. Fig. 4 shows the clock-work, which regulates the movement of the index.

A is the rail. B is a shaft, having an arm, *a*, close to the rail, so formed and arranged that when the car-wheel passes over the rail it will strike the end of this arm and throw it down somewhat below the top of the rail. *b* is another arm, at the other end of the shaft B and on the opposite side, so as to raise up when the other is thrown down. *c* is a lever, fitted on the end of the shaft B, outside of the arm *b*, and has a projection extending over the arm *b* in such manner that the end of the lever, outside of the arm *b*, will move up when said arm moves up. The other end of this lever is attached to the rod *d*, the upper end of which is attached to the index and to the clock-work, and all these parts described are so formed, arranged, and connected that when the arm *a* is thrown down by the car, which, running over it, the index will be thrown to its highest position, from which position it will be moved down by the spring *f*, but its movement will be regulated to turn by the clock-work. *g* is a latch to latch into the arm *b* and hold it in its upper position until the lever *c* and the index therewith connected has moved down a little way, (from the position *c*<sup>1</sup> to *c*<sup>2</sup>), as, in the position *c*<sup>2</sup>, the projection *h* can pass over the top of the lever *c*, thereby releasing the arm *b* from the latch and allowing it to fall to its lowest position, ready to be moved up again by the next train of cars. The latch *g* is hung



on a pin, *i*. It has a projection, *j*, which extends over the arm *b*, by means of which the latch is raised to the position which locks the arm, which is done by the tooth *l* projecting into a notch, *l'*, in the arm. The tendency of this arm would be to fall to its first position, which it could do, by turning the latch, if this was not prevented by the projection *h* being intercepted by the lever *c*, which moves down slowly; but when low enough for the projection *h* to pass over it the latch will turn round, allowing the projection *l* to withdraw from the notch in the arm *b*, and the arm will then fall to its first position; meantime, the lever *c* and the index connected with it will gradually move to their lowest position. The figures on the dial will indicate, as the index *e* passes by them, the number of minutes since the last train passed.

The operation of my index may be described as follows: The arm *a* is thrown down by the first car-wheel of the train passing over it, causing the arm *b* to rise up, carrying with it the lever *c*, which, by the momentum given it, rises to the position of *c*<sup>1</sup>. The lever *c* carries with it the rod *d*, raising the index *e*, at the same time, to the position (0) zero. The spring *f* being compressed by the downward movement of the rod *d*, its constant tendency is to bring the index to 6, its lowest position. The rate of this movement is regulated by clock-work, with which the rod *d* is connected, as well as with the index. When the arm *b* is in its lowest position the latch *g* stands, or rather hangs, as shown in Fig. 3, with the projection *l* so far back that the arm *b* can pass up clear of it. Now, it will be seen that, when the arm *b* rises up, as it must do when the arm *a* is thrown down by the car-wheel, it will first strike the projection *j*, which will cause the latch to revolve on the pin *i*, throwing the tooth *l* into the notch in the arm *b*, while the arm *h* catches on the lever *c*, which is thrown higher than the arm *b* to the position *c*<sup>1</sup>, thereby locking the latch in the arm *b* and preventing its falling to its lower position; but as the clock-work permits this lever *c* gradually to fall, it does fall until it reaches the position *c*<sup>2</sup>, when the projection *h* passes over its top,

which allows both the latch and the arm *b* to fall to their first position, the end *m* having sufficient weight to hold it (when not acted upon by the arm) in a perpendicular position. After the release of the projection *h* the lever *c* and the index therewith connected continue to move down until they reach their lowest position; unless, while they are progressing downward, another train of cars passes; in which case they would again be raised to their highest position, as before described, the index commencing again its downward movement, indicating, as it descends, the number of minutes that the train has passed by which raised it to its zero position.

There is another point of difficulty which I found it necessary to overcome in order to the introduction of the signal. I refer to the possibility of men or boys stepping on the arm *a*, making the index indicate the passage of a train when no train had passed. To prevent this I place the guard-spring *n* over the arm *a*, strong enough to support the weight of a man, or two men, if need be, yet not strong enough to prevent the car-wheel from operating it properly.

Having thus explained my invention, I will state my claim as follows:

1. I claim the locking device, consisting of the pin *k* of the oscillating latch *g* and the projection *c*<sup>1</sup> of the lever *c*, when operated by the arm *b*, by which the latch *g* is automatically locked in its upper position, and so retained for any desirable time, as and for the purpose set forth.

2. I claim the lever *c*, operated by the arm *b* so that it will move further than said arm by the momentum imparted to it, and so connected with the time-index as to allow the clock-work to be set in motion, and said lever *c* to move down for some time before disengaging the latch *g* and the arm *b* from its upper position, substantially in the manner and for the purpose set forth.

WILLIAM WICKERSHAM.

Witnesses:

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BENJ. FREEMAN.