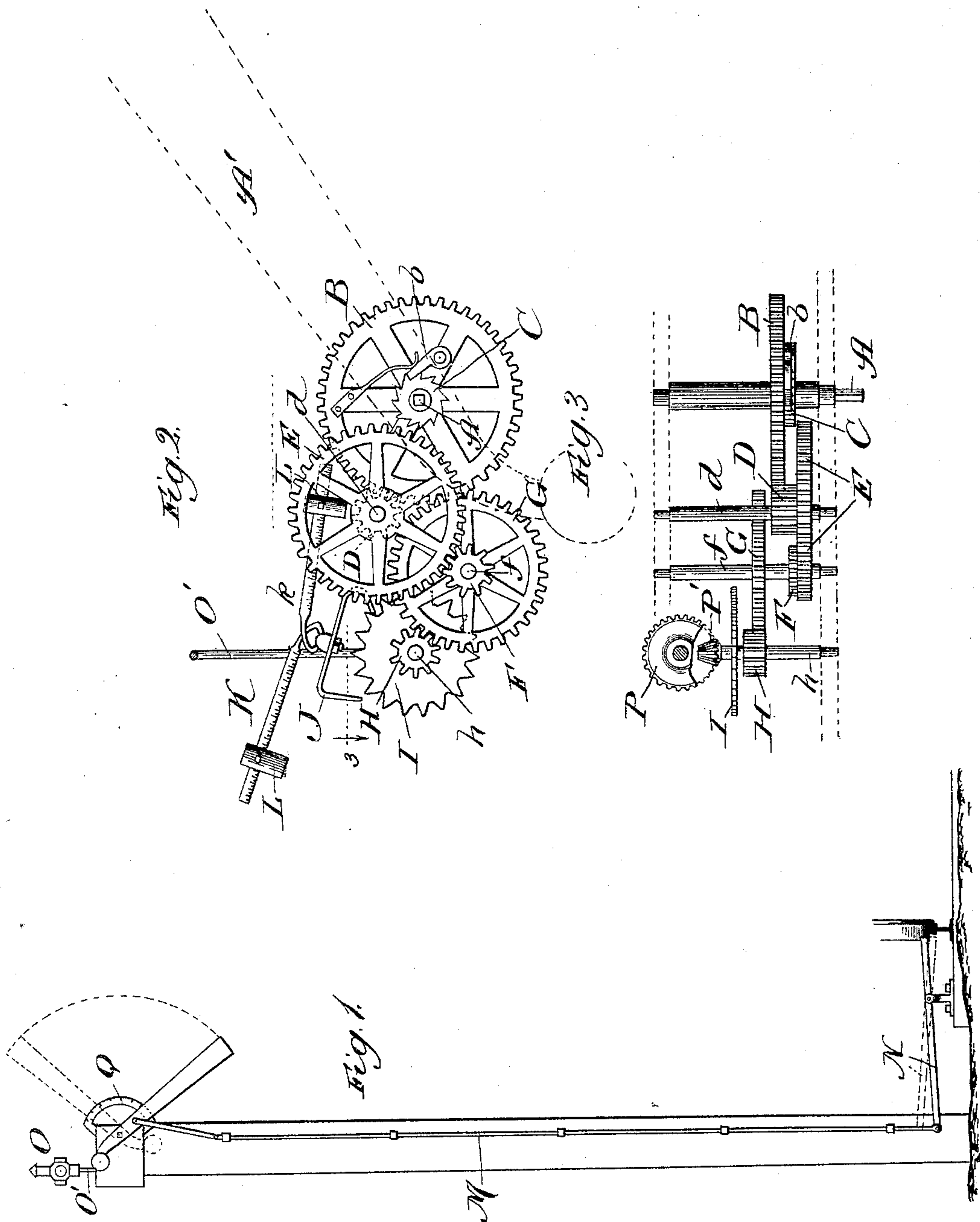


(No Model.)

M. N. JONES.  
RAILWAY TIME SIGNAL.

No. 454,478.

Patented June 23, 1891.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

MATHIAS N. JONES, OF ESCANABA, MICHIGAN.

## RAILWAY TIME-SIGNAL.

SPECIFICATION forming part of Letters Patent No. 454,478, dated June 23, 1891.

Application filed March 2, 1891. Serial No. 383,340. (No model.)

*To all whom it may concern:*

Be it known that I, MATHIAS N. JONES, a citizen of the United States, residing at Escanaba, Delta county, Michigan, have invented certain new and useful Improvements in Railway Time-Signals, of which the following is a specification.

The object of my invention is to make mechanism for the operation of the semaphores used for signaling purposes on railways that may be set to time the descent of the signaling-arm, so that it will occupy as many minutes in descending as may be desired and which will require no attention after it is once set; and my invention consists in the features and details of construction hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of a semaphore provided with my improvements. Fig. 2 is a side elevation of the semaphore mechanism by which the descent of the signaling-arm is regulated, and Fig. 3 is a plan view of the same.

In making my improved semaphore mechanism I make a shaft A, on which the signaling-arm A' is intended to be mounted. This shaft is supported in suitable frame-work similar to that in which clock mechanism is supported (shown in dotted lines in Fig. 3) and is provided with a gear-wheel B. Mounted on the shaft A is a ratchet-wheel C, which is so connected to the shaft as to rotate with it. The gear-wheel B, however, is mounted loosely on the shaft, but carries a dog b, which engages with the ratchet-teeth of the ratchet-wheel C, so that as the shaft and ratchet-wheel move in one direction they rotate the gear-wheel B with them, but do not rotate it as they are moved in the other direction. The gear-wheel B meshes with a pinion D, mounted on a shaft d, so that as it rotates it rotates the shaft d. A gear-wheel E is also mounted on this shaft, so as to be rotated with it. This gear-wheel intermeshes with a pinion F, mounted on a shaft f, which also carries a gear-wheel G. This gear-wheel intermeshes with a pinion H on a shaft h, which carries an escapement-wheel I. An escapement J is arranged over the escapement-wheel I and carries two arms K k. The arms K k carry weights L that may be adjusted back and forth on the arms, so as to regulate the speed with which

the escapement J will rock. This of course will regulate the speed of movement of all of the parts, so that they can be made to operate rapidly or slowly by moving the weights L in or out on the arms.

The signaling-arm, as above said, is mounted on the shaft A and a rod M, connecting with the signaling-arm, passes down to the ground and is pivotally connected with the lever N, which stands in proper position to have its outer end borne down by the passing of a car-wheel to throw the signaling-arm into its up position, as shown in dotted lines in Fig. 1. Other means, however, for moving the signaling-arm up by the passing of a train may be employed, if desired. The signaling-arm is so mounted on the shaft A that its outer end is sufficiently heavy to cause the shaft A to rotate as it moves to its down position. When the signaling-arm is thrown to its up position by the passage of a train, it turns the shaft A back with it; but the weight of its outer end immediately begins to turn the shaft A forward again and sets the train of gear mechanism in operation. The time that it will require for the signaling-arm to move to its down position again, after the passage of a train, depends upon the rapidity with which the mechanism above described moves in operation, and this depends upon the regulation of the escapement by moving the weights L in or out on the arms.

If it be desired that the signaling-arm shall not reach its down position until, say, fifteen minutes after the passage of a train, the weights L will be adjusted to that position which will cause the mechanism to operate slowly enough to require that length of time to move the signaling-arm from its up to its down position. If it be desired that the signaling-arm shall reach its down position in ten minutes or in five minutes after the passage of a train, the weights will be moved to that point where it will permit the mechanism to operate with sufficient rapidity to enable the arm to move down in such time. After the mechanism is once adjusted it requires no further attention or regulation. It never needs to be wound up. There are no springs about it, except that to hold the dog b in place. It is set in operation by the weight of the outer end of the signaling-arm, and it



is regulated in the rapidity of its movements by the escapement-carrying weights adjustable in or out. When a train approaches the semaphore and the engineer sees that the signaling-arm is down, he is informed that the last train passing the semaphore ahead of him must have passed at least fifteen minutes, or ten minutes, or five minutes before him, or at such time as the semaphore mechanism is adjusted to operate.

In order that it may be known at night that the signaling-arm is up or but partially down and thus inform an approaching engineer that a train has passed the semaphore a little ahead of him, I arrange colored lights O on a rod O', which carries a pinion P at its bottom, whose teeth intermesh with a beveled pinion P' on the shaft h. As this shaft rotates it causes the pinion P and the rod O' to also rotate, and thus displays revolving colored lights to the approaching engineer. When he sees these, he will be informed that a train has passed the semaphore ahead of him and that the signaling-arm has not yet reached its down position. When it does reach its down position, the lights will cease to revolve and the engineer will know that the track is clear ahead of him. Of course it will be understood that stops are provided to limit the up-and-down movements of the signaling-arm, so that it cannot be thrown too high nor fall too low. In order also that the engineer of a passing train may see at a glance, when the signaling-arm is not fully down, how many minutes have elapsed since the passage of a train, I arrange a quadrant Q, which is intended to be provided with figures or other marks indicating the minutes that the signal-arm has required to reach the particular mark opposite which it may happen to be after beginning its downward movement. If the time required for the signaling-arm to descend be fifteen minutes, and the engineer of a succeeding train should see that the signaling-arm is opposite the figure "8," for instance, he will instantly know that the preceding train passed the semaphore eight minutes before.

What I regard as new, and desire to secure by Letters Patent, is—

1. In semaphore mechanism, the combination of a signaling-arm mounted on a shaft rotatable by the weight of the signaling-arm when in its up position, a train of gear-wheels

rotatable by the rotation of the shaft on which the signaling-arm is mounted, and an escapement for regulating the speed of rotation of the gear-wheels, substantially as described.

2. In semaphore mechanism, the combination of a signaling-arm mounted on a shaft rotatable by the weight of the signaling-arm when in its up position, a train of gear-wheels rotatable by the rotation of the shaft on which the signaling-arm is mounted during the downward movement only of the signaling-arm, and an escapement for regulating the speed of rotation of the gear-wheels, substantially as described.

3. In semaphore mechanism, the combination of a signaling-arm mounted on a shaft rotatable by the weight of the signaling-arm when in its up position, a train of gear-wheels rotatable by the rotation of the shaft on which the signaling-arm is mounted, an escapement for regulating the speed of rotation of the gear-wheels, and a pivoted lever depressed by the passage of a train for moving the signaling-arm in its up position, substantially as described.

4. In semaphore mechanism, the combination of a signaling-arm mounted on a shaft rotatable by the weight of the signaling-arm when in its up position, a train of gear-wheels rotatable by the rotation of the shaft on which the signaling-arm is mounted, an escapement for regulating the speed of rotation of the gear-wheels, and a revolving light mounted on a rod rotatable by the rotation of a shaft on which one of the train of gear-wheels is mounted, substantially as described.

5. In semaphore mechanism, the combination of a signaling-arm mounted on a shaft rotatable by the weight of the signaling-arm when in its up position, a train of gear-wheels rotatable by the rotation of the shaft on which the signaling-arm is mounted, an escapement for regulating the speed of rotation of the gear-wheels, and a register visible to an approaching engineer indicating from the position of the signaling-arm the number of minutes which have elapsed since the passage of a train, substantially as described.

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Witnesses:

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