3 Sheets—Sheet 1.

J. D. HUGHSON.

ELECTRIC RAILROAD SIGNAL.

No. 186,572. Patented Jan. 23, 1877.

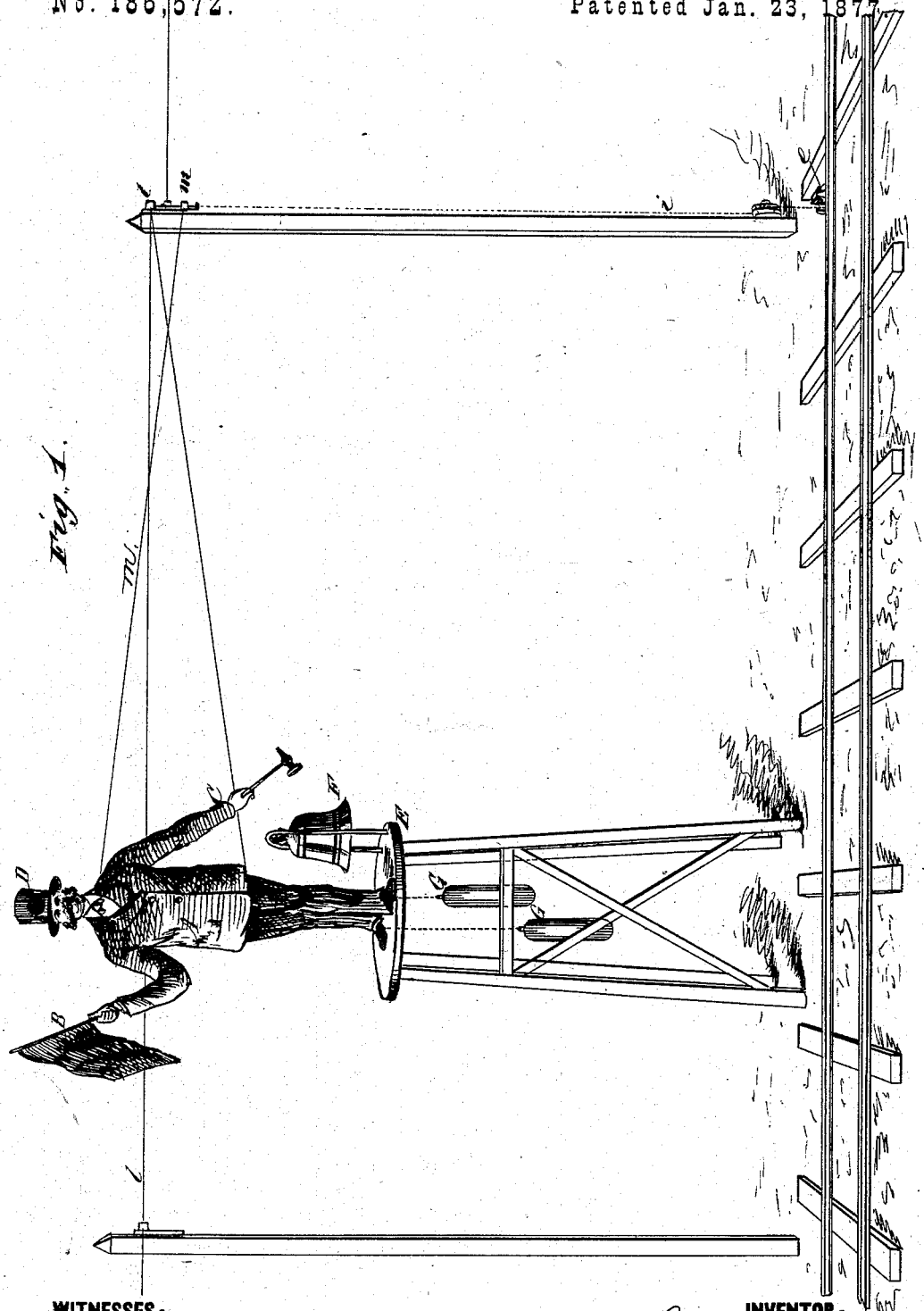

Fig. 1.

WITNESSES:

C. Neveux

John Gotthals.

INVENTOR:

J. D. Hughson

BY Munn & Co.

ATTORNEYS.

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Fig. 2

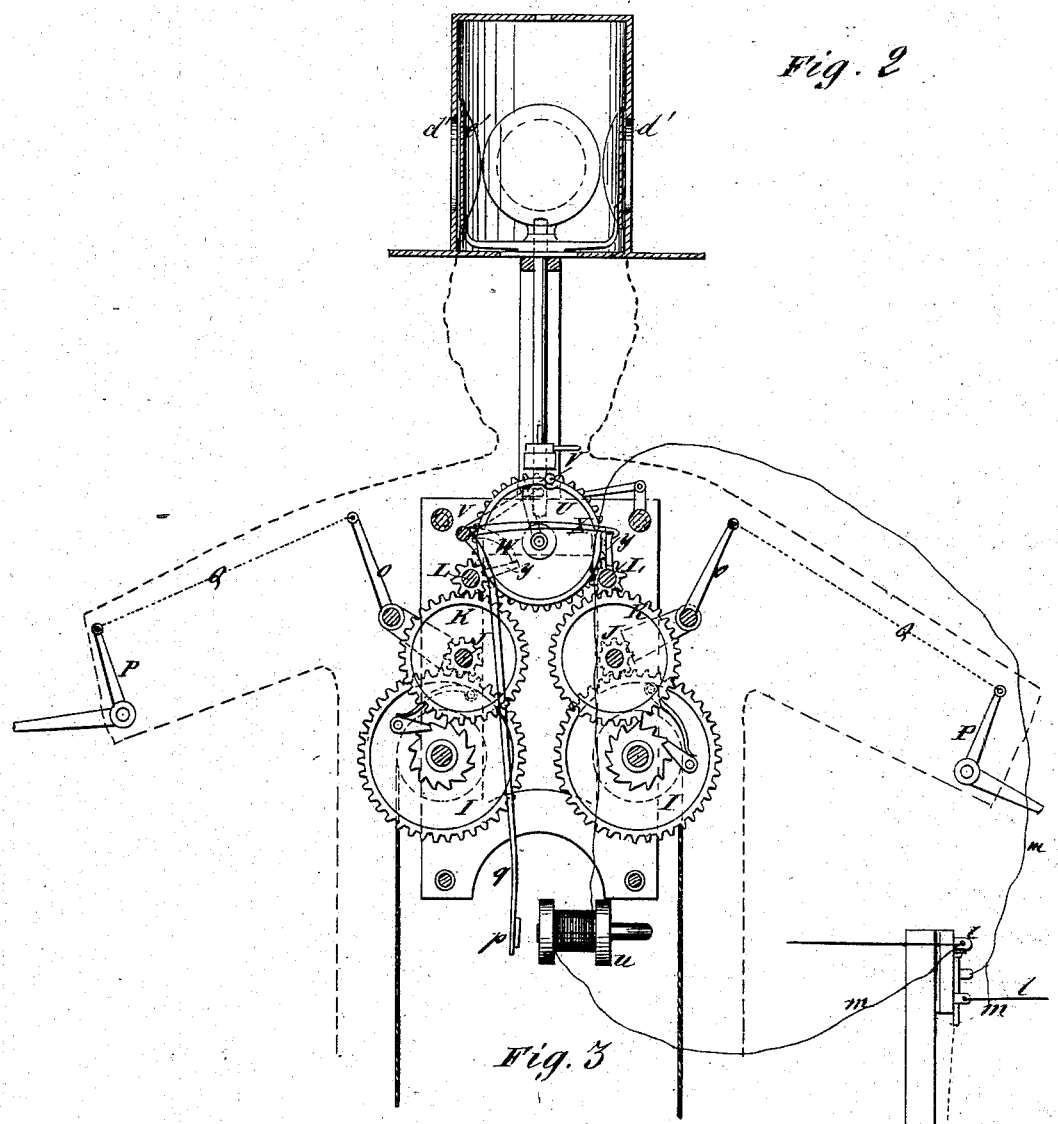
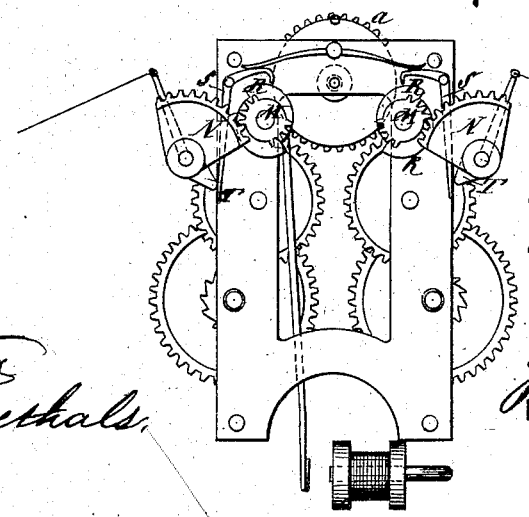


Fig. 3



WITNESSES:

C. Neveux

John Bothals.

INVENTOR:

J. D. Hughson

BY

Munn & Co.

ATTORNEYS.

3 Sheets—Sheet 3.

J. D. HUGHSON.

ELECTRIC RAILROAD SIGNAL.

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Fig. 5

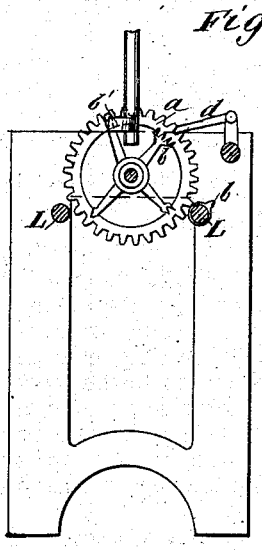


Fig. 4

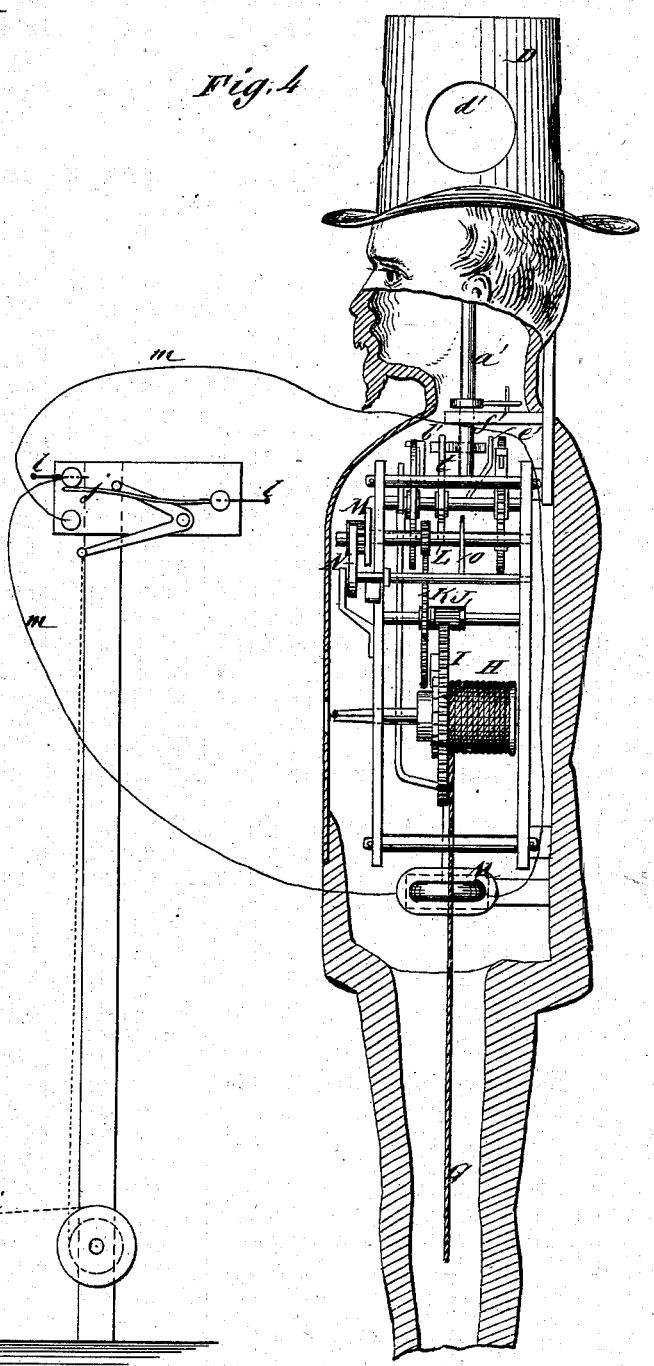
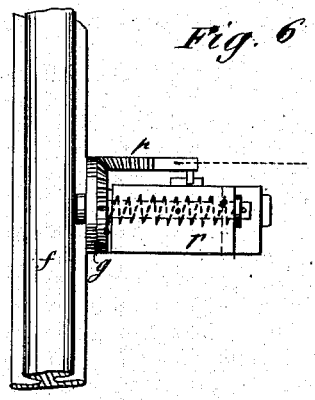
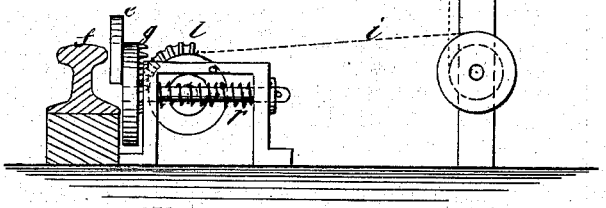


Fig. 6





WITNESSES:

C. Neveux

John Goethals.

INVENTOR:

J. D. Hughson

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JACOB D. HUGHSON, OF PRAIRIE CITY, ILLINOIS, ASSIGNOR TO HIMSELF AND G. W. HAMILTON, OF SAME PLACE.

IMPROVEMENT IN ELECTRIC RAILROAD-SIGNALS.

Specification forming part of Letters Patent No. **186,572**, dated January 23, 1877; application filed July 11, 1876.

To all whom it may concern:

Be it known that I, JACOB D. HUGHSON, of Prairie City, in the county of McDonough and State of Illinois, have invented a new and Improved Railroad-Signal, of which the following is a specification:

My invention comprises a flag, bell, and light-signal geared with weight or spring-power for working them, and having stop contrivances and an electric tripping device, all so that the passing train will trip the stop mechanism and allow the power to work the signals a given time, after which they will be stopped, and be ready for the next train.

Figure 1 is an elevation of my improved signal. Fig. 2 is a sectional elevation of the same. Fig. 3 is a front elevation of the power mechanism. Fig. 4 is a transverse section, and Figs. 5 and 6 are details.

Similar letters of reference indicate corresponding parts.

A represents the case of the machine, which I propose to make in the form of a man, having a flag, B, in one hand, and a bell-hammer, C, in the other, and having a hat, D, contrived for the lantern-case.

The machine will stand on a frame or post, E, of any required height, and a bell, F, will be arranged in suitable position to be struck by the hammer when the machine is set in motion.

The motive power is represented, in this case, by the cords and weights G and the drums H; but spring or other power may be used.

There are two trains of gears, I, J, K, and L, each having its own power, and turning the mutilated pinions M, which alternately gear with and disconnect from the segments N, for working the arms O, which work the flag and the bell-hammer through the bell-cranks P and connecting wires or cords Q.

With each pinion M there is a kind of lever-escapement for stopping them after they disengage from the segments, and holding them ready for engaging the segments when they swing back to the starting-point to regulate the motion, the said escapement consisting of the cam or notched wheels R and the pawl-levers S. The pawls catch the notches of the cam-wheels R at the moment the mutilated portions of the pinions M release the segment-wheels, and hold the pinions until the studs T release them by striking them at the moment the segments return to the starting-point, to which they gravitate as soon as released by the pinions. The pinions then start forward again, and again engage the segments, and cause them to raise the flag and the hammer.

There is a stop-motion to arrest the driving-powers after the machine has run a sufficient length of time, consisting of the disk U, lever-pawls V W X, and arms Y, the arms being on the shafts of the pinions L, to be stopped by the pawls W and X, which are let act by the dropping of the pawl V into the notch in the face of the disk U, and thus stop the powers.

The disk is employed for holding the stop-pawls out of action the length of time the machine is required to run, which is while the disk makes one revolution, being turned the length of one tooth of wheel *a* to each revolution of pinion L by a single tooth, *b*, on the shaft of said pinion. A pawl, *d*, prevents the wheel *a* from turning back.

The pawls V W X are caused, by the passing train, to be raised, to let the machine work and signal the train, in the following manner: The car-wheels actuate a short lever, *e*, alongside of one of the rails, some distance in advance of the signal, which, by means of the segmental wheels *g h* and cord *i*, shifts the switch *j* of an electrical circuit from the main-line connection *l* to the connection *m*, with a line by which the current passes momentarily through the helix, and attracts the armature *p* of lever *q*, connected to the axis of the said pawls V W X, and thus raising them, so that the machine is set in motion by the weights.

The spring *r* returns the lever *e* to its normal position when the train has passed, and the switch shifts back and connects with the main line, again breaking the connection with the helix *n*, and allowing the pawls to fall; but the pawls are prevented by the disk U from falling far enough to stop the machine until the disk has made a revolution, and its notch for the pawl V has returned to the po-

sition for the pawl to fall in it. Thus the machine will continue to make the signals a certain length of time after the train has passed.

When the machine starts, the arm *t* on the axis of the disk U turns shaft *a'*, by means of arm *b'*, a quarter of a revolution, and thus turns the metal shades *c'* of the lantern away from the red glasses *d'*, so that the lamp shows danger-signals while the train passes, and just before the machine stops the arm *e'* turns the shades back by the arm *f'*, and shuts off the danger-signal.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of impelling-train I J K L, mutilated pinion M, segment N, lever O, and the escapement R S T, substantially as specified.

2. The stop-pawls V and W, or X, or both, notched disk U, wheel *a*, tooth *b*, armature *p*, lever *q*, and helix *n*, combined with one or more impelling-trains and rocking levers O, substantially as specified.

3. The revolving disks C' in the lantern-case D, having colored lights *d'*, shaft *a'*, with arms *b'* and *f'*, and arms *t* and *e'* of the stop-disk shaft, combined and arranged substantially as specified.

4. The main line *l*, signal-line *m*, switch *j*, lever *e*, and connecting devices *g h i*, combined and arranged, with the rail *f* and the signal, substantially as specified.

JACOB D. HUGHSON.

Witnesses:
C. W. HAMILTON,
W. A. HAMILTON.