

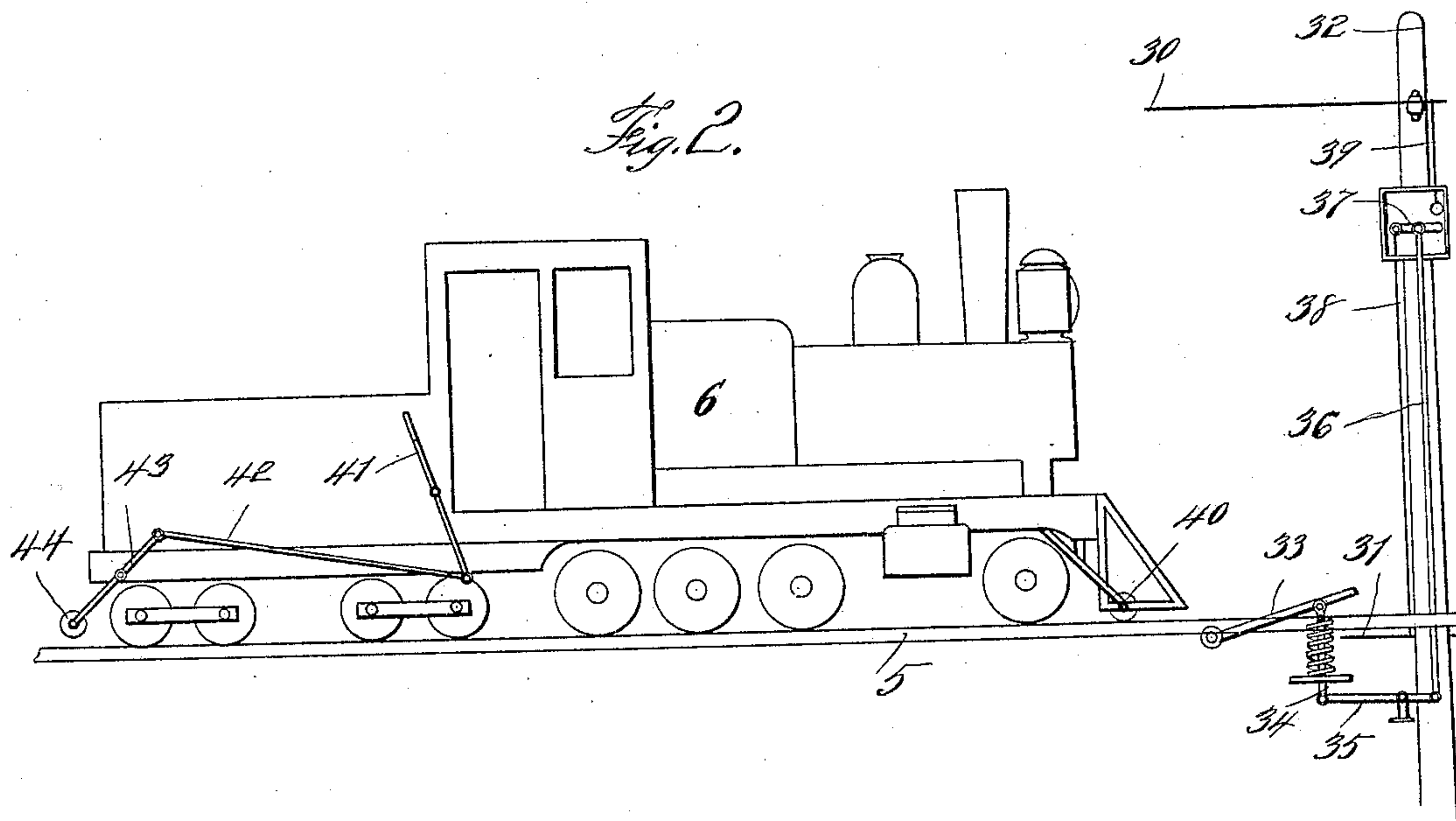
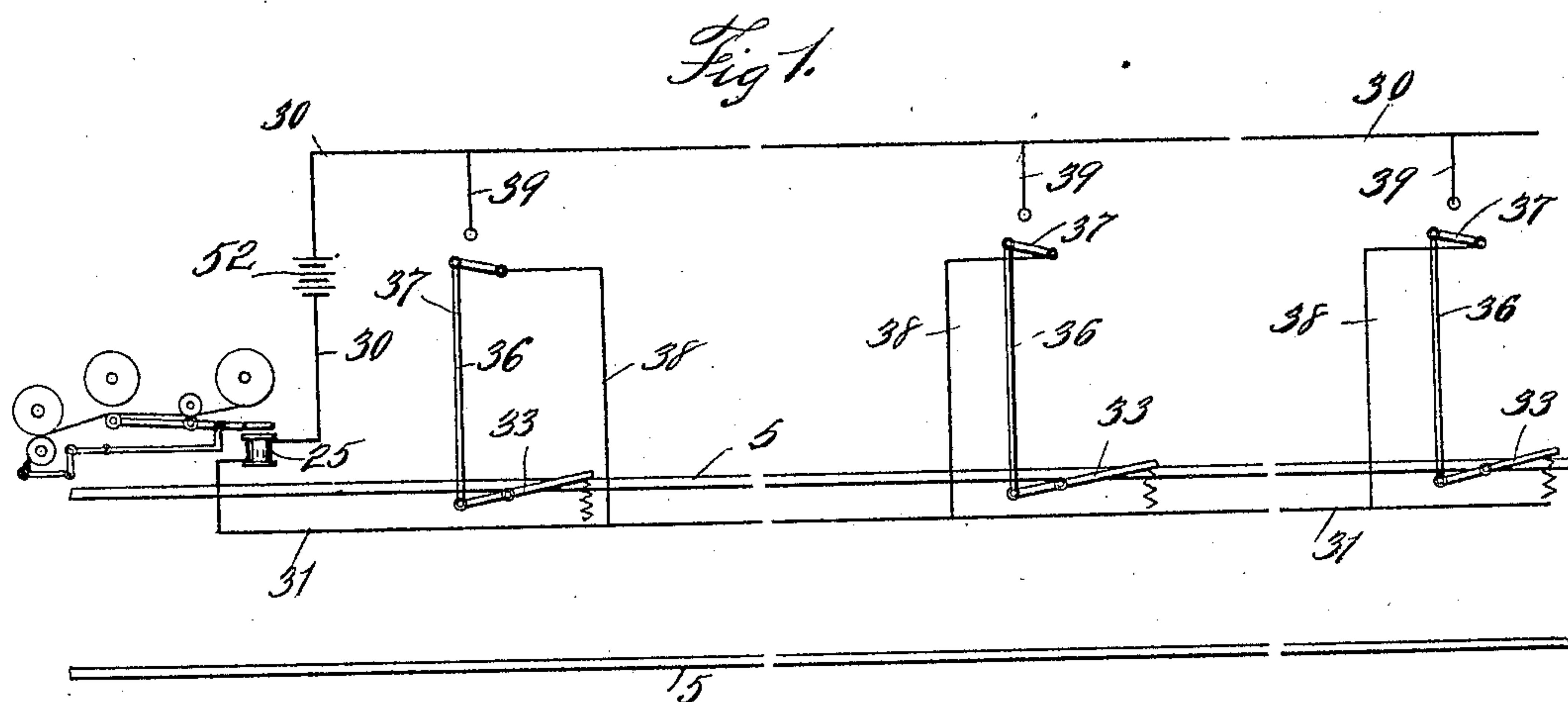
(No Model.)

2 Sheets—Sheet 1.

N. HENQUIN.
RAILWAY SIGNALING SYSTEM.

No. 575,065.

Patented Jan. 12, 1897.



WITNESSES

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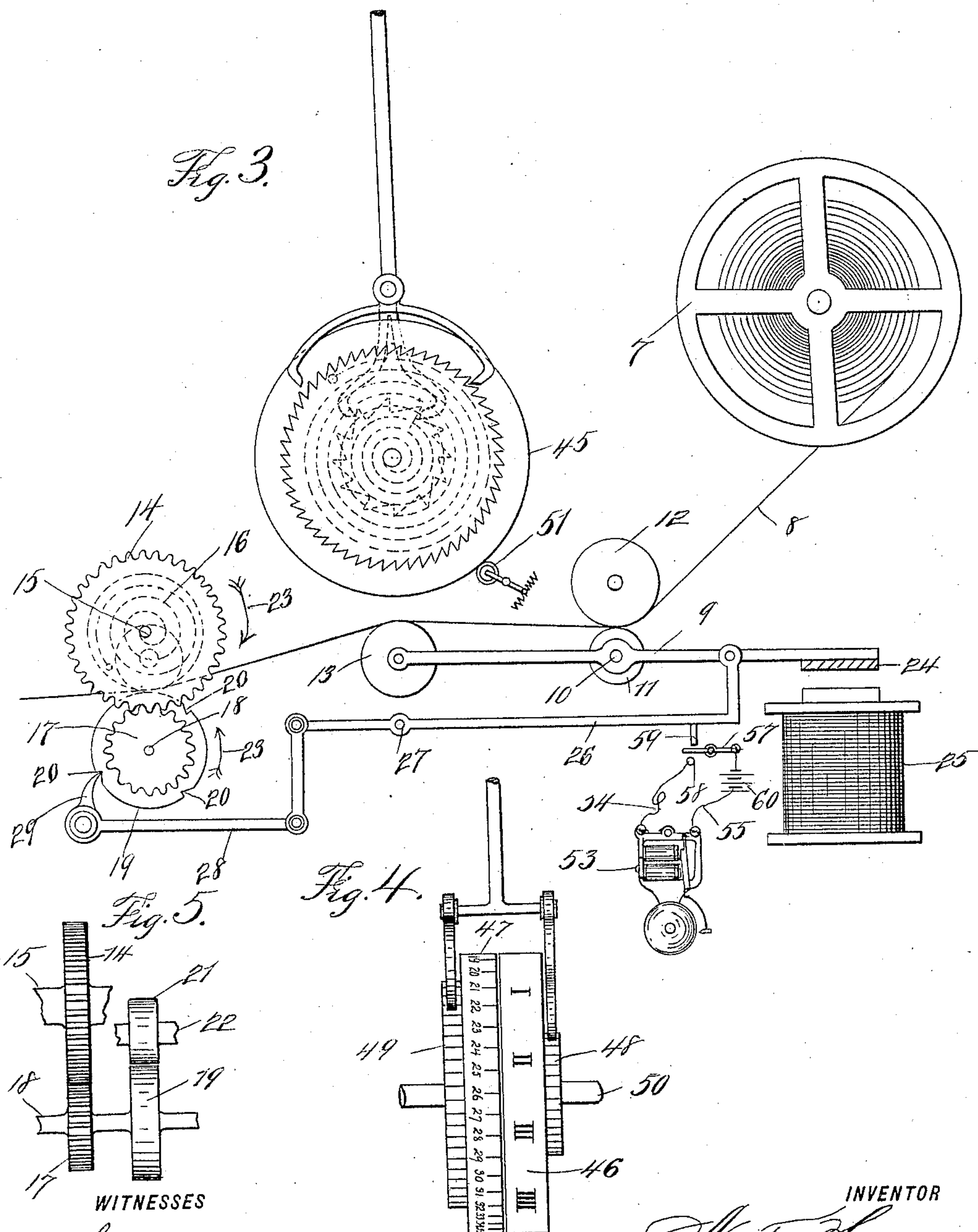
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RAILWAY SIGNALING SYSTEM.

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UNITED STATES PATENT OFFICE.

NESTOR HENQUIN, OF SCHENECTADY, NEW YORK.

RAILWAY SIGNALING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 575,065, dated January 12, 1897.

Application filed October 8, 1896. Serial No. 608,291. (No model.)

To all whom it may concern:

Be it known that I, NESTOR HENQUIN, a citizen of the United States, residing at Schenectady, in the county of Schenectady and State of New York, have invented certain new and useful Improvements in Railway Signal Systems, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to railway signal systems; and the object thereof is to provide an apparatus which is designed to signal from a starting-station to a station or stations along the line, or between two stations, the time of the departure of a train and the speed at which it is moving, this information being recorded on a suitable strip of paper or other material by means of an apparatus located at the station or stations, said apparatus being operated by the engine of the train by means of electrical devices which are arranged at suitable intervals along the track and which are placed in circuit by means of suitable conductors with the operating apparatus, whereby the time of starting a train and the speed thereof are recorded and whereby the speed of a train may be controlled over five or ten miles and the distance to the point of destination accurately indicated.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a diagrammatic view of a portion of a railway-track and my improved signaling apparatus, and showing also the method of operating the same; Fig. 2, a side view of a locomotive mounted on the track, and showing that part of the operating devices which are connected therewith; Fig. 3, a side view of the recording mechanism by which the time and the speed of the train are given; Fig. 4, a side view of the time and distance recording device, and Fig. 5 a side view of details of the construction employed for feeding the strip of paper or similar material.

In the drawings forming part of this specification, reference being made to Figs. 1 and 2, I have shown at 5 the rails of a railway-track, and in Fig. 2 an engine 6, which is mounted thereon, and at the starting-station or at any station along the line I provide a recording

apparatus, for the purpose herein specified, which consists of a suitably-supported reel 7, on which is wound a strip of paper or similar material 8, and below or adjacent to the reel 7 is mounted a lever 9, which is pivotally supported at 10, and on the shaft or pivot-pin 10 is mounted a roller 11, and directly over the roller 11 is another roller 12, and the strip 8 is passed between the rollers 11 and 12 and over a bearing-roller 13, which is mounted at one end of the lever 9, and at a suitable distance from the roller 13 and in line with the rollers 12 and 13 is mounted a gear-wheel 14.

The gear-wheel 14 is mounted on a shaft 15, to which is secured one end of a spiral spring 16, the opposite end of which is secured to said gear-wheel, said spiral spring being shown in dotted lines in Fig. 3, and below the gear-wheel 14 is a corresponding gear-wheel 17, and the gear-wheel 17 is mounted on a shaft 18, on which is also mounted a wheel 19, which is provided with three notches or recesses 20, which are formed in the perimeter thereof and at equal distances apart, and directly over the wheel 19 is a corresponding wheel 21, which is mounted on a shaft 22, which is adapted to bear upon the wheel 19, and the strip 8 is passed between wheels 19 and 21, and in the operation of the apparatus the spring 16 revolves the wheels 14 and 19 in the direction of the arrows 23, and in this operation the tape or strip 8 is pulled from the reel 7 by the wheels 19 and 21, as will be readily understood.

The end of the lever 9 opposite the roller 13 is provided with an armature 24, and below said armature is an electromagnet 25, and pivotally connected with the lever 9, between the armature 24 and the roller 11, is a lever 26, which is fulcrumed at 27 and which is connected with a crank-lever 28, to one end of which is secured a dog 29, which is adapted to operate in connection with the notches or recesses 20 in the wheel 19 on the shaft 18.

Connected with the electromagnet 25 are two conducting-wires 30 and 31, the base of which extends along the track and is supported above the same by poles or posts 32, and the other is carried along the track adjacent to one of the rails thereof, and the poles or posts 32 are arranged along the track at regular intervals, and adjacent thereto, at

intervals varying from five to fifteen or twenty miles, are levers 33, with one end of which is connected a spring-supported rod 34, to the lower end of which is connected one end of a lever 35, the other end of which is connected with a rod 36, which extends upwardly adjacent to the posts or poles 32, and the upper end of which is connected with a lever 37, one end of which is provided with a conducting-wire 38, which connects with the conductor 31, and the opposite end of the lever 37 is adapted to make contact with a wire 39, which is connected with the conductor 30. This construction is best shown in Fig. 2, and in practice the forward end of the engine or the cow-catcher thereof is provided with a roller 40, which is adapted to depress the free end of the lever 33 as the engine passes thereover, and connected with the engine adjacent to the cab is a lever 41, which operates a rod 42, which is connected with a lever 43, the lower end of which carries a lever 44, and the lever 41 is adapted to be operated by the engineer so as to depress the lever 44 in such manner that it too will also operate the lever 33.

In Fig. 1 the connection of the lever 33 with the rod 36 is slightly different from that shown in Fig. 2, but the operation will be substantially the same, and in Fig. 1 the posts or poles 32 are omitted.

The time and speed recording devices are shown at 45 in Fig. 3 and also in Fig. 4, and these devices consist of two metallic wheels 46 and 47, the wheel 46 being provided on its perimeter with twelve figures or characters representing the hours of the day and at the outer side thereof with a ratchet-wheel 48, and the wheel 47 is provided with sixty figures, which correspond with the minutes in each hour, and being also provided on its outer side with a ratchet-wheel 49. The wheels 46 and 47, with their respective ratchet-wheels 48 and 49, are mounted on a shaft 50, and this mechanism is substantially the same as that of an electric clock, and the details of the construction thereof further than above set out are not given for the reason that they form no part of this invention, but it will be understood that the wheels 46 and 47 constantly revolve, and adjacent to the perimeter of these wheels is an inking-roller 51, which may be of any desired construction, and which is adapted to ink the characters or figures on the wheel 46 and also the figures on the wheel 47.

A battery 52 is placed in the circuit formed by the conductors 30 and 31, and the roller 40, which is connected with the engine, is always in position to operate the lever 33, while the roller 44 is under the control of the engineer and is intended to be operated at certain times or under certain conditions, and as the engine starts from the station the lever 33 is depressed by the roller 40, and this operation forces one end of the lever 37 into connection with the wire 39, and the circuit

is completed. The armature 24 on the lever 9 is drawn downwardly, the roller 13 on said lever is forced upwardly, so as to bring the tape or strip 8 into contact with the wheels 46 and 47, and at the same time the dog 29 is released from the wheel 19, and the spring 16 revolves the wheels 14 and 17, and this operation revolves the wheels 19 and 22 and draws the tape or strip 8 from the reel 9. By this operation the time of the starting of the engine is printed upon the tape or strip 8, and this operation is repeated each time that the engine reaches one of the levers 33, as will be readily understood, and the speed and location of the engine can thus be accurately determined at any time.

When trains are run in sections, or one train started a few minutes after the other, the engineer of the second train operates the lever 41 so as to depress the roller 44, and this operation, as will be understood, results in making two separate records on the tape or strip 8, the time being recorded twice in quick succession, the object of this arrangement being to indicate that another train is operating the first, and it will be apparent that the speed and location of the second train can also be accurately determined at any time or as it progresses along the line.

I also provide an electric alarm or bell 53, which forms a part of the apparatus hereinbefore described and which is shown in Fig. 3, said alarm device or bell being of any preferred form and construction and being designed to operate each time that the engine passes one of the points at which the levers 33 are located. This alarm or bell is provided with two conductors 54 and 55 in the usual manner, one of which is connected with one end of a lever 57 and the other with a binding-post or other suitable support located at 58, and when the lever 26 is depressed, as hereinbefore described, an arm 59, formed thereon, would depress the free end of the lever 57 and thus close the circuit in which the alarm device or bell 53 is located, and in which is also located a battery 60, and said alarm will be operated, as will be readily understood, and by means of this device the speed at which the train is moving may be determined, the distance between the point at which the levers 33 are located being known.

My improved signal system is simple in construction and operation and perfectly adapted to accomplish the result for which it is intended, and it is evident that changes in and modifications of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages.

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

1. In a railway signal system, the combination with a time and speed recording apparatus, which is adapted to be operated by an electromagnet, of two wires extending along

the track, and connected with said magnet, in one of which is placed a battery, said track being provided at regular intervals with circuit closing and breaking devices which are adapted to be operated by the engine, said engine being provided with a device which is always in position to operate said circuit closing and breaking devices, and with another device which is under the control of the engineer by which said devices may be operated, substantially as shown and described.

2. A railway signal system consisting of a combination of a railway-track, an engine mounted thereon, a reporting apparatus having a suitably-supported reel, a strip of paper mounted thereon, a lever secured below said reel and adjacent thereto, a roller, a pin adjacent to said roller, a second roller over said latter roller adapted to have the strip passed therebetween, a roller mounted at one end of said lever a gear-wheel in line with the said adjacent roller a shaft carrying said gear-wheel, a spiral spring mounted thereon a second gear-wheel meshing with said first, a second shaft bearing latter wheel, a wheel mounted on said second shaft being provided therein with notches or recesses, a corresponding wheel over the same, a shaft bearing said lat-

ter wheel, an armature secured to the lower end of said lever, an electromagnet mounted below said armature, a second lever pivotally secured adjacent to said armature, a crank-lever engaging the same, a dog mounted thereon at one end thereof and adapted to operate in connection with said notches or recesses, conducting-wires in connection with said electromagnet the base conductor extending along said track on suitable supports, the other said conductor being secured adjacent to one of the rails, other levers mounted on the track at a predetermined distance apart, a spring-supported rod in connection with the same, a rod in connection with the same extending upwardly therefrom, conducting means on the end thereof and means on the forward part of said engine for engaging the same all of the said parts being combined substantially as and for the purpose described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 3d day of October, 1896.

NESTOR HENQUIN.

Witnesses:

JOHN D. MILLER,
CLOVIS HENQUIN.