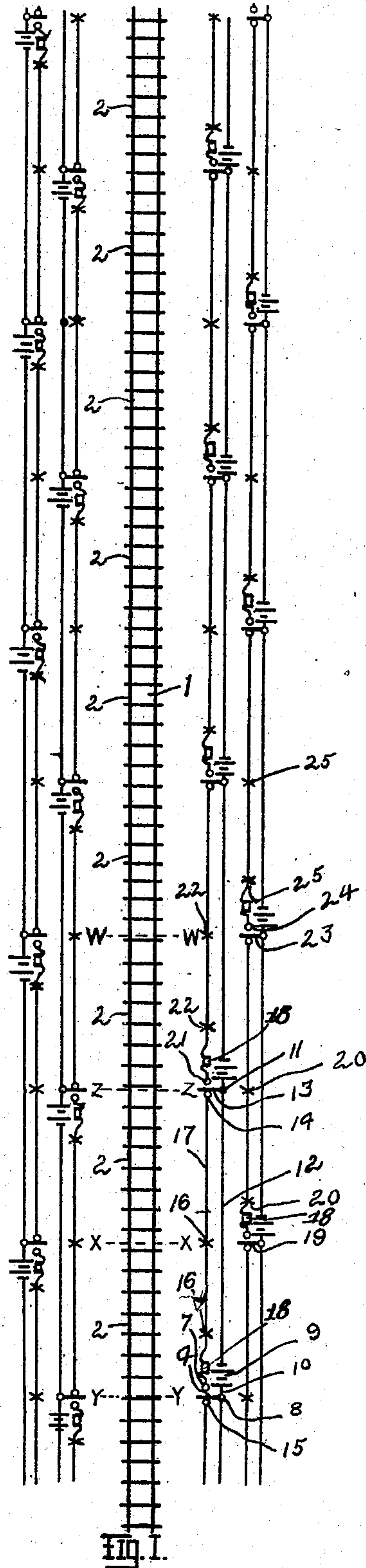


905,308.

W. H. HARRIS.
AUTOMATIC RAILROAD SIGNAL.
APPLICATION FILED DEC. 16, 1907.

Patented Dec. 1, 1908.
2 SHEETS—SHEET 1.



WITNESSES:
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2 SHEETS—SHEET 2.

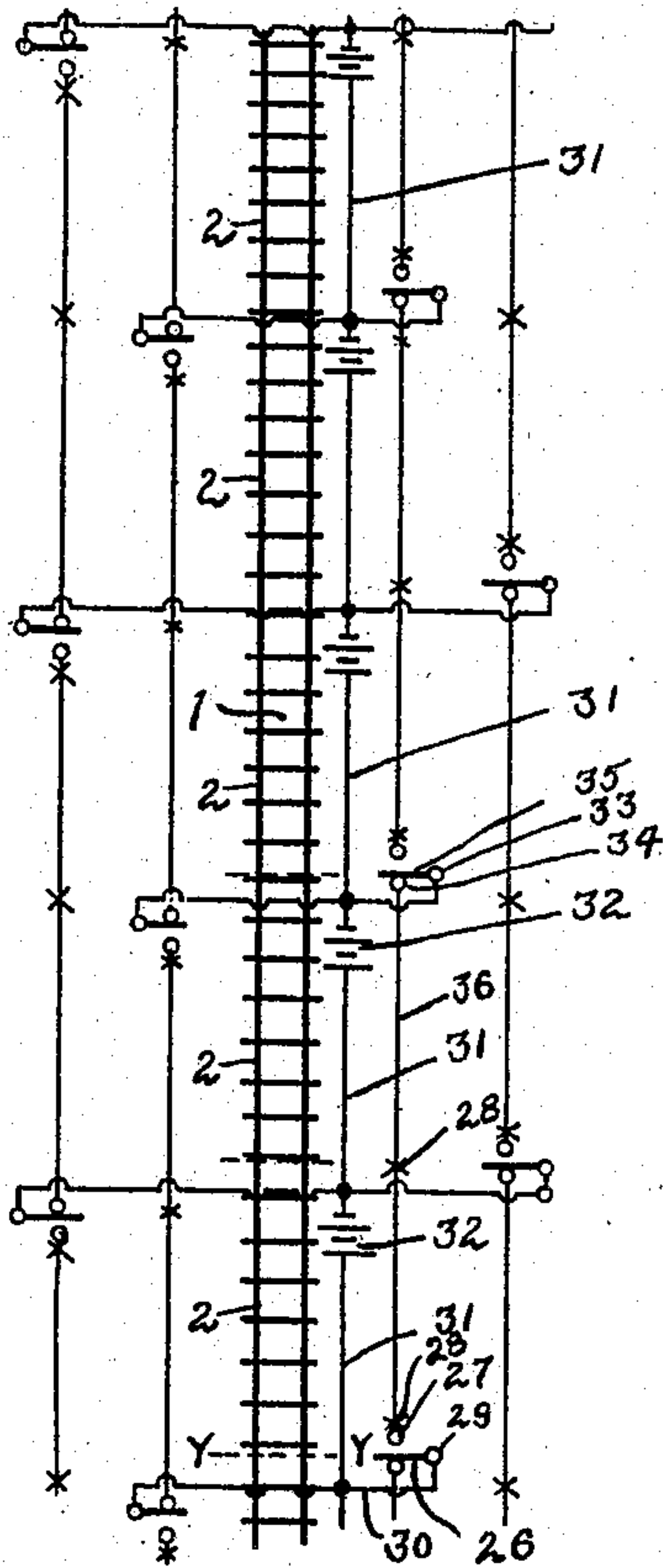


FIG. II.

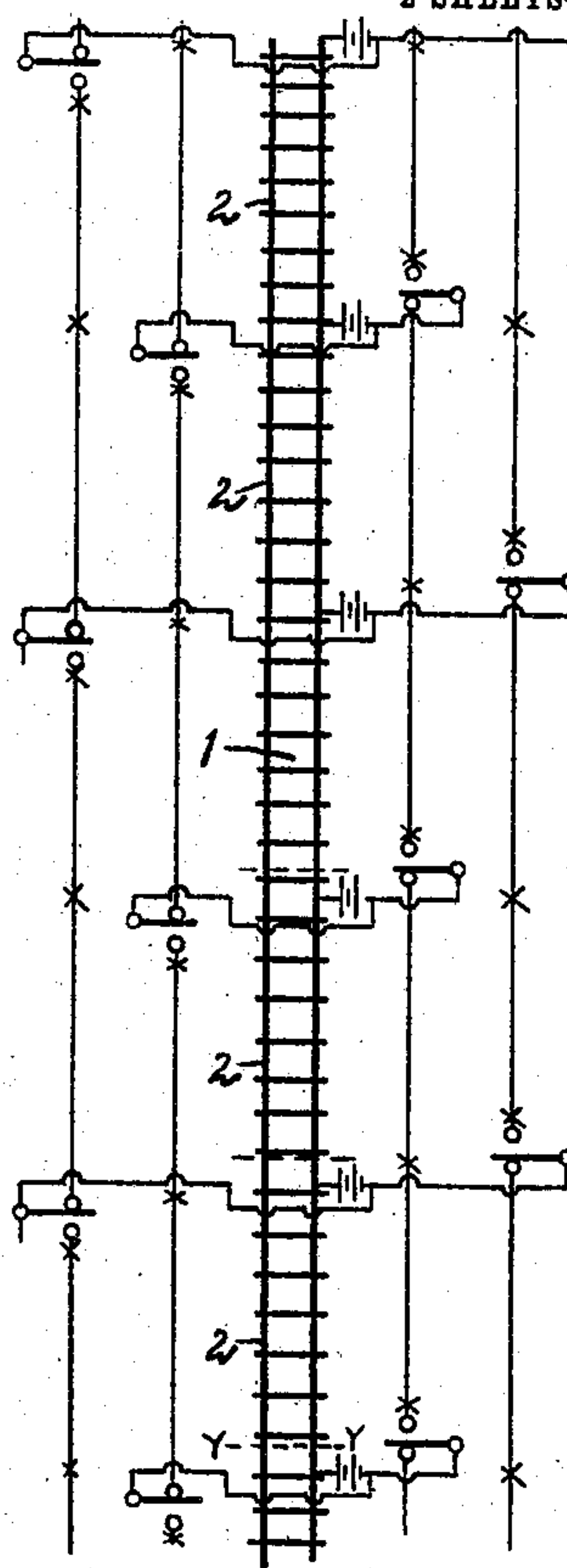


FIG. III.

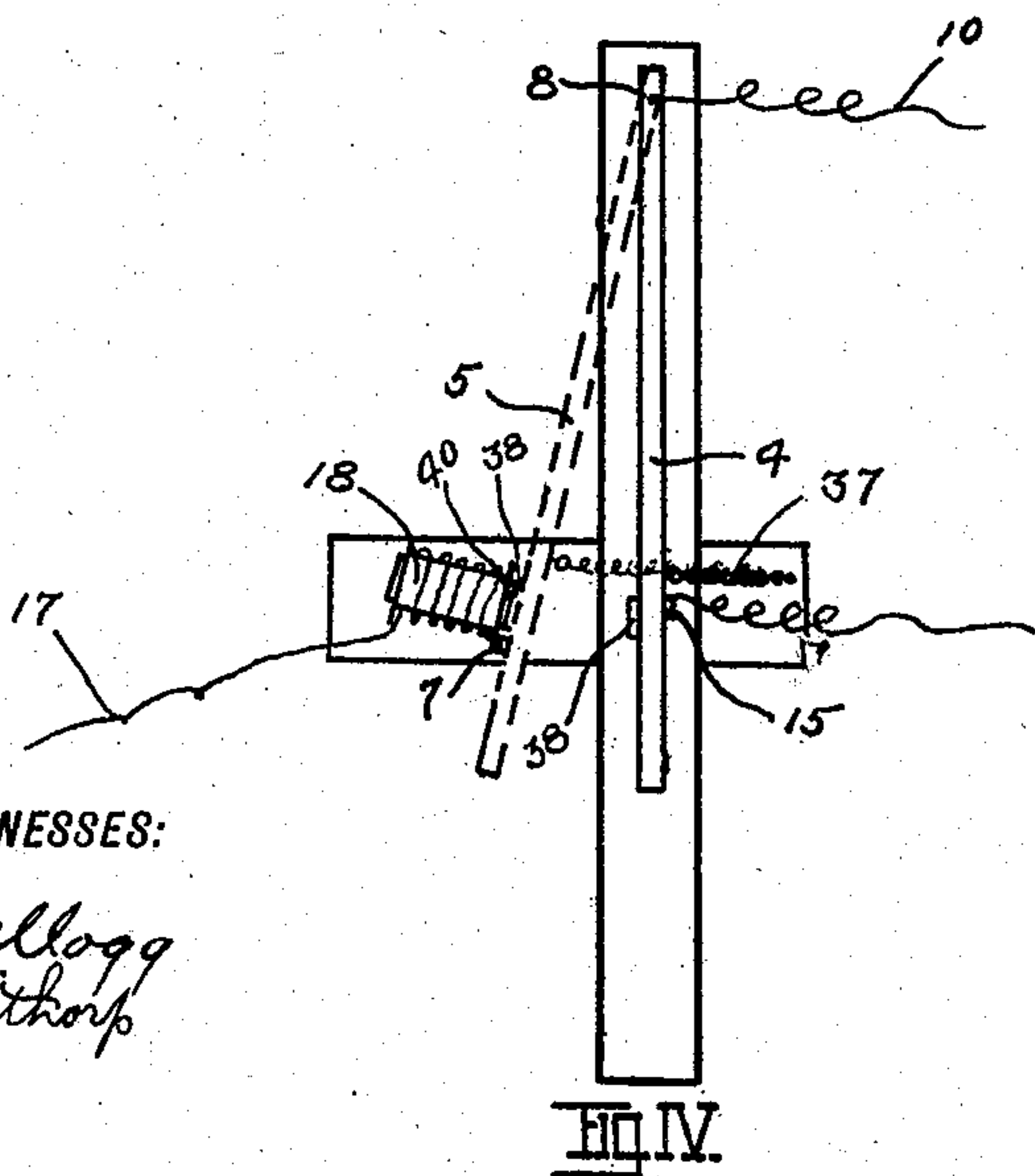


FIG. IV.

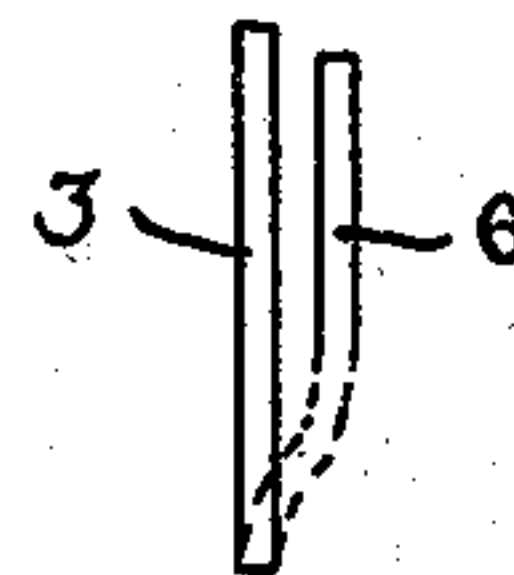


FIG. V.

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UNITED STATES PATENT OFFICE.

WILLIAM HENRY HARRIS, OF STARK, MONTANA.

AUTOMATIC RAILROAD-SIGNAL.

No. 905,308.

Specification of Letters Patent.

Patented Dec. 1, 1908.

Application filed December 16, 1907. Serial No. 406,736.

To all whom it may concern:

Be it known that I, WILLIAM HENRY HARRIS, a citizen of the United States of America, and a resident of Stark, in the county of Missoula and State of Montana, have invented certain new and useful Improvements in Automatic Railroad-Signals, of which the following is a specification.

The purpose of my invention is to protect a train and its passengers from collisions both from the front and the rear. For this purpose I have divided the main line into blocks in such a way that one set of block signals continually overlaps its succeeding set of block signals, thus leaving at least one set of signals ahead and in the rear of the train at all times.

The signal is put into operation by a pliable attachment placed on the forward right hand side above the engineer's cab, which hits against pivoted arm shaped rods at certain intervals, thus closing an electric circuit, the pivoted rod being held fast in its new position by an electro-magnet which remains magnetized until the train breaks the circuit as it leaves the block by hitting a second pivoted arm shaped rod which is carried to its corresponding fixed position and held there as long as the train is on this new block. The first circuit being now broken, the first pivoted arm falls back to its original position, thus adjusting itself for a second train that may happen along. As a set of block signals overlaps its succeeding set of signals, a pivoted arm is operated and a second set of signals established after the train has advanced half way up the first set of block signals. Thus when the signals of the first block are turned off as the train leaves it, there are still signals in the rear of the train due to this overlapping set of block signals.

With these and other objects in view for enhancing the value of automatic signaling my invention consists in the novel features of construction hereinafter fully described and concisely claimed.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which:

Figure I is a diagrammatic representation of the main line of a railroad being protected by my automatic signals. Fig. II is a

diagrammatic representation of the main line of a railroad being protected by my automatic signals in which a neutral wire is used, thus doing away with three wires shown in Fig. I. Fig. III is a diagrammatic representation of a main line of a railroad being protected by my automatic signals in which the neutral wire shown in Fig. II is done away with and the steel rails of the railroad are used for the same. Fig. IV is a diagrammatic representation of my towers to be used for making electric circuits in my automatic signals. Fig. V is a representation of my pliable attachment to be placed above the engineer's cab and which sets my pivoted arms into operation.

Similar letters refer to similar parts throughout the several drawings.

1 is a section of the main line of the railroad which I have divided into blocks 2. Let us suppose that a train enters from below going up the main track. As the engine passes the dotted line Y Y the pliable attachment 3 situated above the cab of the locomotive strikes the metallic pivoted arm 4 drawing it into the dotted position 5, and at the same time the pliable attachment 3 takes a position similar to that shown in dotted outline 6. The motion is stopped by the metallic stud 7 coming into contact with the metallic pivoted arm as shown in dotted outline 5, and thereby forms an electric circuit as follows: Starting at metallic stud 7 the current is conveyed through metallic pivoted arm as shown in dotted outline 5 to an electric metallic pivot 8, thence through storage battery or other source of power 9 by wire 10, thence to electric metallic pivot 11 by wire 12, thence through metallic pivoted arm 13 similar in every respect to metallic pivoted arm 4, thence through metallic stud 14 similar in every respect to metallic stud 15, thence through electric signals 16 by means of wire 17 to electro-magnet 18, having encircled electro-magnet 18 it finally returns to metallic plug 7, thus completing the circuit. As the current encircles the electro-magnet 18 the said electro-magnet 18 becomes magnetized and holds fast the iron armature 38 fixed to pivoted arm 4 so that the said metallic pivoted arm is held in dotted position 5 and thereby maintains the electric circuit formed at metallic plug 7. The train now advances to section X X where the pliable at-

attachment 3 hits metallic pivoted arm 19 and
 by an identical process as above described
 signals 20 are put into operation. Upon ad-
 vancing to section Z Z the pliable attachment
 5 3 hits metallic pivoted arm 13 carrying it to
 metallic plug 21, thus putting out signals 16
 and establishing signals 22. As pivoted arm
 13 is pushed to metallic plug 21 thereby
 breaking circuit in which signals 16 and elec-
 10 tro-magnet 18 are located, the pivoted arm 4
 being released by electro-magnet 18 falls back
 to its original position aided by spring 37.
 Arriving at section W W the pliable attach-
 ment 3 hits metallic pivoted arm 23 carrying
 15 it by an identical repetition of the first piv-
 oted arm operation to metallic plug 24, put-
 ting out signals 20 and establishing signals
 25. Thus we see the train is protected in
 advance by signals 25 and in its rear by sig-
 20 nals 22. In a similar manner the train will
 proceed up the track and by means of the
 over lapping block wires there will at all
 times be signals ahead and in the rear. In a
 similar manner a train entering from above
 25 will put on signals so that they will be at all
 times established in its head and rear direc-
 tions by means of the pivoted arms and pli-
 able attachment on the right side of the
 track and locomotive respectively as the
 30 train proceeds down the track.

In Fig. II, I accomplish exactly the same
 result and at the same time I simplify my
 wiring system and power supply. Thus the
 train upon arriving at section Y Y as the
 35 train goes up the track closes a circuit by
 means previously described. The pliable at-
 tachment 3 having carried the metallic piv-
 oted arm 26 to metallic plug 27, the electric
 signals 28 are set in operation in the follow-
 40 ing manner. Starting at metallic plug 27
 the current is conveyed through metallic
 pivoted arm 26 to electric metallic pivot 29,
 thence by wire 30 to neutral wire 31, thence
 through storage battery or other source of
 45 power 32, thence to electric metallic pivot
 33, thence to metallic plug 34 by means of
 metallic plug 35, thence through wire 36 and
 signals 28, thence through electro-magnet
 system as previously described the current
 50 returns to metallic plug 27. As the train
 advances up track 1 the signals are identic-
 ally operated as previously described thus
 having head and rear signals at all times.

In Fig. III the operation is identically as
 55 described in Fig. II with the exception that
 the metallic rails of the track 1 are used for
 the neutral wire 31.

Having thus described my invention, the

following is what I claim as new therein,
 and desire to secure by Letters Patent. 60

1. In a system of the class described, the
 combination of a source of electrical supply,
 of a circuit connected with said source, train
 actuated means for closing said circuit, sig-
 naling devices and two metallic pivoted 65
 arms in said circuit, one metallic pivoted
 arm being adapted to be held by said electro-
 magnet by means of an iron armature on
 said pivoted arm, the other pivoted arm be-
 ing adapted to break said circuit and simul- 70
 taneously close a second circuit.

2. In a system of the class described, the
 combination of a system of railroad blocks,
 each block over lapping its successors, a
 source of electrical supply, of a circuit con- 75
 nected with said source, train actuated means
 for closing said circuit, electro-magnet sig-
 naling devices and two metallic pivoted
 arms in said circuit, one metallic pivoted
 arm being adapted to be held fast by said 80
 electro-magnet by means of an iron armature
 on said pivoted arm, the other pivoted arm
 being adapted to break said circuit and
 simultaneously form a second circuit.

3. In a system of the class described, the 85
 combination of several sources of electrical
 supply of several circuits connected with
 said source, one return wire being used for
 all of said circuits, train actuated means for
 closing each of said circuits, signaling de- 90
 vices and two metallic pivoted arms in each
 of said circuits, one metallic pivoted arm be-
 ing adapted to be held fast by said electro-
 magnet by means of an iron armature on
 said pivoted arm, the other pivoted arm be- 95
 ing adapted to break said circuit and simul-
 taneously close a second circuit.

4. In a system of the class described, the
 combination of several sources of electrical
 supply, of several circuits connected with 100
 said sources, steel railroad rails being used
 as return wire for all of said circuits, train
 actuated means for closing each of said cir-
 cuits, signaling devices and two metallic
 pivoted arms in each of said circuits, one 105
 metallic pivoted arm being adapted to be
 held fast by said electro-magnet by means of
 an iron armature on said pivoted arm, the
 other pivoted arm being adapted to break 110
 said circuit and simultaneously close a sec-
 ond circuit.

WILLIAM HENRY HARRIS.

Witnesses:

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CHARLES L. F. KELLOGG.