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COMBINED SIGNALING AND TELEPHONIC INTERCOMMUNICATING SYSTEM  
FOR RAILROADS.

APPLICATION FILED JAN. 24, 1903.

NO MODEL.

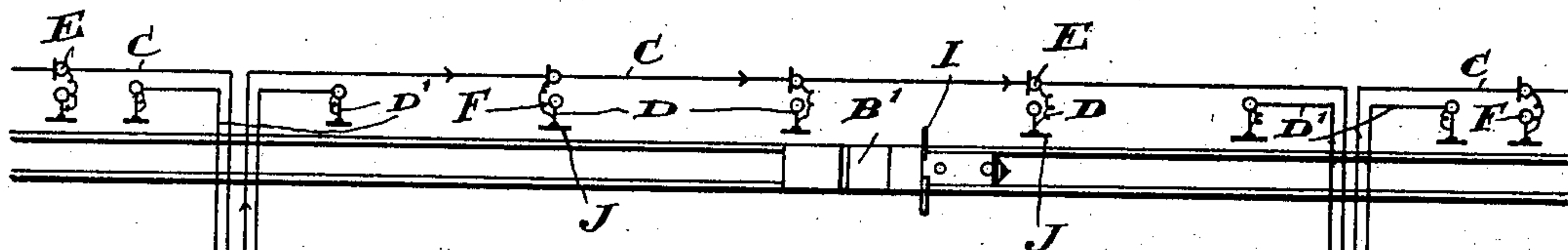


Fig. 1.

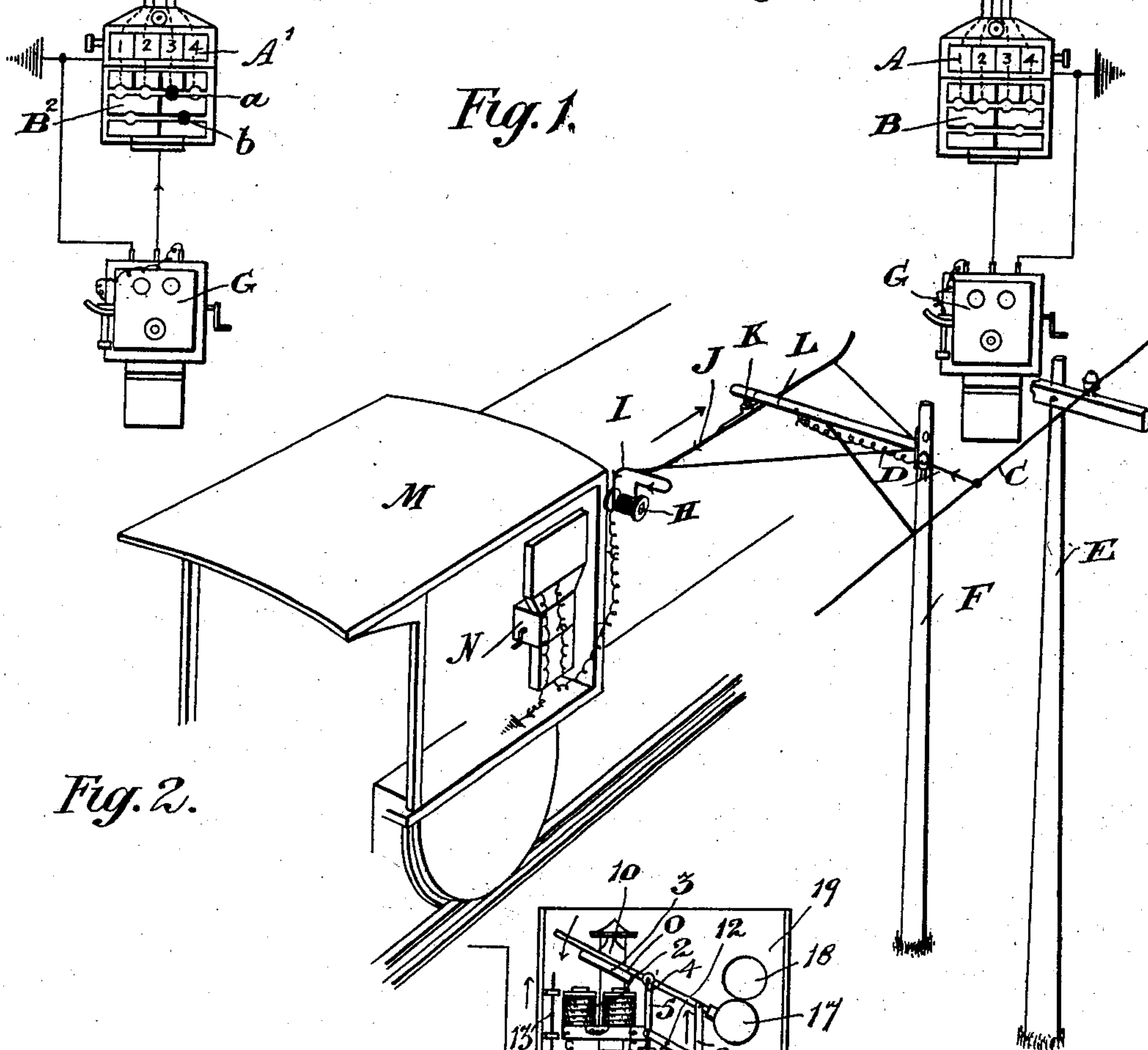


Fig. 2.

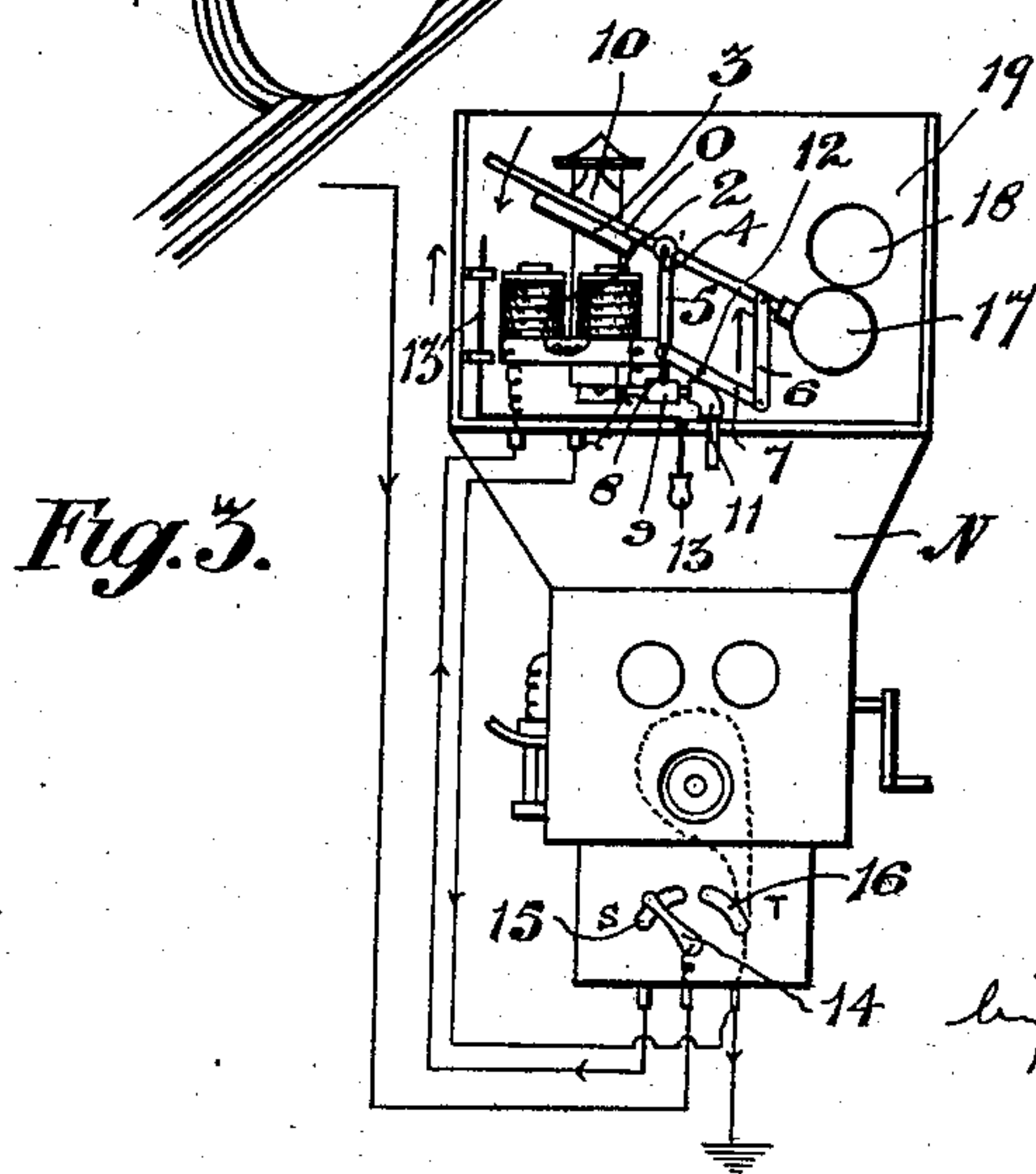


Fig. 3.

Witnesses.

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# UNITED STATES PATENT OFFICE.

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COMBINED SIGNALING AND TELEPHONIC INTERCOMMUNICATING SYSTEM FOR RAILROADS.

SPECIFICATION forming part of Letters Patent No. 744,655, dated November 17, 1903.

Application filed January 24, 1903. Serial No. 140,365. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN ALEXANDER WHYTE, assistant inspector, and GORDON CAMERON EDWARDS, gentleman, both subjects of the King of Great Britain, residing in the city of Toronto, in the county of York, in the Province of Ontario, Canada, have invented certain new and useful Improvements in a Combined Signaling and Telephonic Intercommunicating System for Railroads, of which the following is a specification.

Our invention relates to improvements in combined signaling and telephonic intercommunicating systems for railroads; and the objects of our invention are, first, to prevent collisions on railroads; secondly, to enable the engineer and station agent to communicate with each other when necessary, and, thirdly, to situate the means used for completing the circuit between the engineer's cab and the circuit above the road-bed; and it consists, essentially, of a main circuit to which are connected a series of shunt-circuits, a telephone, an annunciator, and a switchboard situated in the station and connected to said circuits, and a combined signaling and telephone instrument and switch placed in the engineer's cab, and means above the road-bed for completing the circuit between the telephone, annunciator, and switchboard in the station, and said combined signaling and telephone instrument and switch in the engineer's cab, and said main circuit and said shunt-circuits, as hereinafter more particularly explained.

Figure 1 is a diagrammatic view of our invention. Fig. 2 is a perspective view showing suitable means for establishing the circuit between the locomotive and the station. Fig. 3 is a view showing a combined signaling and telephone instrument for the engineer's cab.

In the drawings like characters of reference indicate corresponding parts in each figure.

In putting our invention into practice each station is provided with an annunciator A of any suitable construction and any suitable switchboard B, connected in any suitable manner to the main circuit C and shunt-circuits D. The main circuit C is carried in the usual manner on the poles E, and the shunt-circuits D are carried in the usual manner on

the poles F. Connected with the switchboards B are any suitable telephones G, situated in the station.

Suitably secured to, preferably, the locomotive-cab is a support H, to which is secured a contact-arm I, which when the cab is going in the direction indicated by arrow in Fig. 2 will come in contact with the contact-strips J, connected to the shunt-circuit D. The said contact-strips are supported in any suitable manner to the poles F, as by means of metallic hangers K, suitably secured to a bar L.

Situated within the locomotive-cab M at any convenient place is any suitable combined signaling and telephone instrument N.

In order to economize in operating expenses, we do not keep the current on in any of the circuits. In case the operator at station A' should wish to stop the train B' he would have to insert the plugs *a* and *b* in the usual switchboard B<sup>2</sup>. This operation establishes the current from the station into the main circuit C and the shunt-circuit D, as indicated by arrow, and it will be understood that immediately the contact-arm I comes in contact with the contact-strip J the current flows in the direction indicated by arrow in Fig. 2 through the wires and instrument therein shown and is grounded, and thus completed. Simultaneously the contact-arm I comes in contact with the contact-strip J the coils 2 are magnetized, thus drawing the armature 3, secured to the arm O, suitably pivoted at 4 to an arm 5, down in the direction indicated by arrow. This operation moves the links 6 and 7 upwardly in the direction indicated by arrow, thus depressing the rod 8 and opening any suitable valve 9, connected to a suitable whistle 10, thus causing said whistle to blow. 11 is any suitable pipe connection connecting the whistle with the source of steam-supply. The link 7 is suitably pivoted at 12. When the whistle blows, the engineer of course knows that he has been signaled and will stop his train and communicate with the station. The speed of the train will of course carry same beyond the contact-strip J. The engineer will be instructed to make connection with the station at the nearest point and communicate by telephone to the operator. As the whistle 10 is still blowing the engineer



may stop same by shoving the arm 13 upward in the direction indicated by arrow, thus moving the armature 3 out of contact with the magnets 2. This movement raises up the rod 5 8 and cuts off the steam-supply. The rod 13 of course falls back into normal position of its own weight. The switch 14 of the engineer's instrument must of course be in contact with the signaling contact-strip 15 when 10 he is not telephoning. In order to find out why he has been signaled to stop, the engineer moves the switch 14 into contact with the telephone contact-strip 16 and operates his bell, so as to notify the operator that he is 15 in communication with him. This operation will drop the indicator-number 3 at station A' and notify the operator there that the engineer is in communication with him. As soon as the operator and engineer are through 20 talking the engineer will move his switch 14 back into contact with the signaling contact-strip 15, so that he may be communicated with at any time. It will of course always be the operator's duty when through commu- 25 nicating with the engineer to remove the necessary plugs, so as to prevent the unnecessary stopping of other trains.

In order to render the signal doubly noticeable to the engineer, we secure to one end of 30 the arm O a preferably red-colored disk 17, which shows through opening 18 in the side of the casing 19, which incloses the whistle-operating parts. We of course may dispense with these parts without interfering with the 35 operation of our invention.

We do not confine ourselves to any particular construction of telephone or annunciator or switchboard for use in the station. Neither do we confine ourselves to any particular con- 40 struction of combined signaling and telephone instrument and switch for use in the engineer's cab, nor do we confine ourselves to any particular means for making contact between the locomotive and the main circuit 45 or shunt-circuits.

By means of our invention we may dispense with the usual semaphore and by means of a separate circuit D' signal the engineer, as before described.

50 What we claim as our invention is—

1. In a system of the class described, the combination with a line-wire; one or more branches connected therewith; fixed contacts connected with said branches; an annuncia- 55 tor; a switchboard, and a telephone, all con-

nected in series, situated in the station and connected with said circuits, of the following elements situated in the engineer's cab: a telephone; a whistle; electromagnets; arma- 60 ture therefor, means operated by said armature when the said electromagnets are energized, to admit steam to said whistle, a switch normally closing the circuit to said electromagnets, one of its fixed contacts being con- 65 nected with said electromagnets, and the other fixed contact of said switch being connected with said telephone, the said switch being operated to open the circuit with said electromagnets and close the circuit with said telephone in the cab after the engineer has 75 been signaled by the blowing of said whistle, and a contact-arm, connected to said switch and adapted to engage with the said fixed contacts in order to complete the circuit, as described. 75

2. In a system of the class described, the combination with a line-wire; one or more branches connected therewith and situated above the road-bed, on suitable poles; fixed 80 contacts connected with said branches and supported on said poles; an annunciator; a switchboard, and a telephone, all connected in series, situated in the station and connect- 85 ed with said circuits, of the following elements situated in the engineer's cab: a tele- phone; a whistle; electromagnets; armature 85 therefor, means operated by said armature when the said electromagnets are energized, to admit steam to said whistle, a switch nor- 90 mally closing the circuit to said electromagnets, one of its fixed contacts being connected with said electromagnets, and the other fixed contact of said switch being connected with 95 said telephone, the said switch being operated to open the circuit with said electromagnets and close the circuit with said telephone in the cab after the engineer has been signaled by the blowing of said whistle, and a contact- 100 arm I, secured to the side of the cab, and connected with said switch and adapted to engage with said fixed contacts in order to complete the circuit, as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JOHN ALEXANDER WHYTE.  
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Witnesses:

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