E. F. VON DREDEN.

ELECTRIC TRAIN SIGNAL.

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Fig. 1.

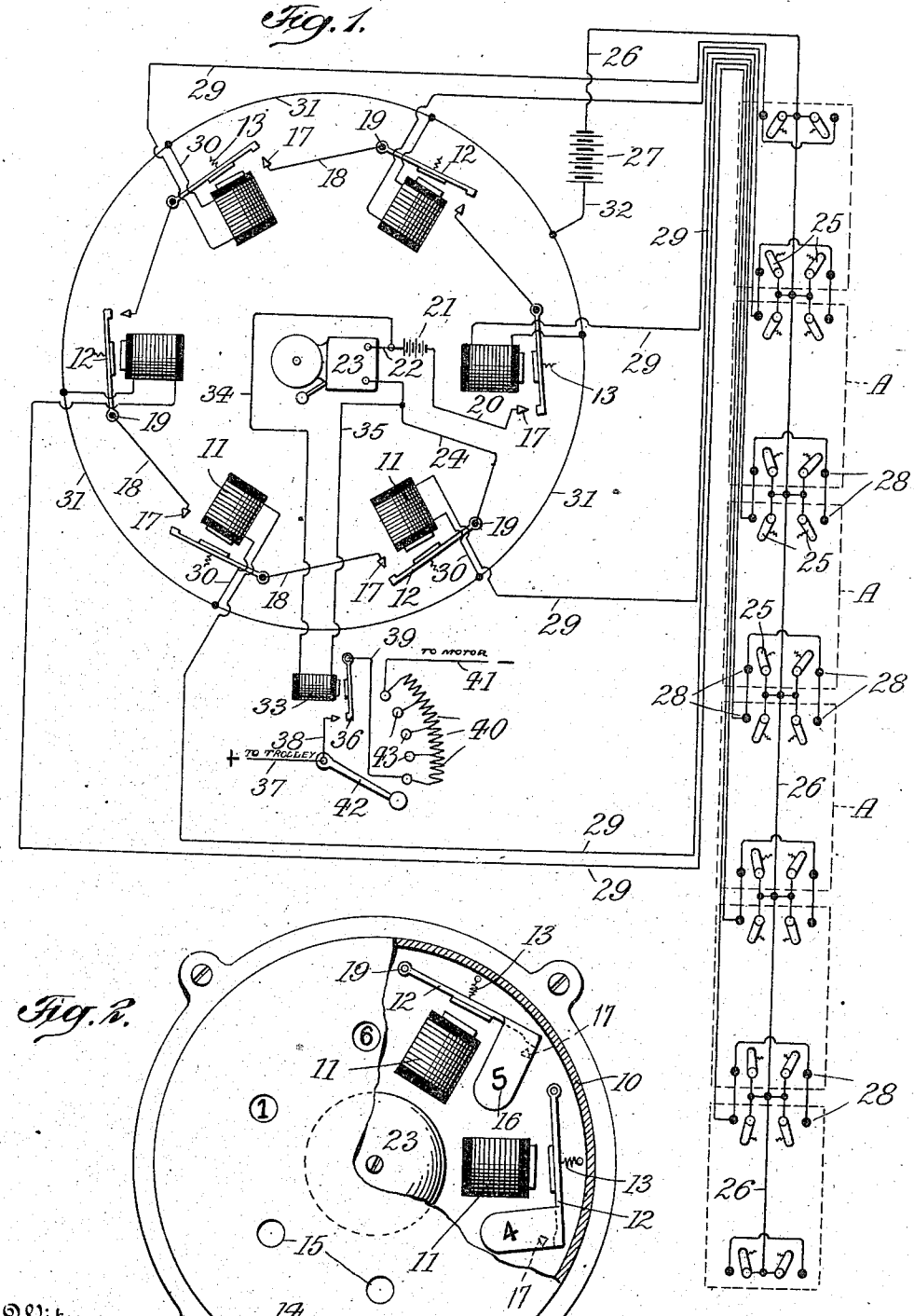

Fig. 2.

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ELECTRIC TRAIN-SIGNAL.

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To all whom it may concern:

Be it known that I, ERNST F. von DREDEN, a citizen of Germany, and resident of New York city, county and State of New York, have invented new and useful Improvements in Electric Train-Signals, of which the following is a specification.

This invention relates to a novel signal system for railway trains by means of which the motorman is informed that the doors of all cars have been properly closed and that the train is thus in condition to start.

The invention is more particularly adapted to that system of trains, in which a guard is stationed on each platform for the purpose of controlling the ingress and egress of passengers and for giving a starting signal after the closing of the doors. With this system, it was the practice for one guard to signal to the succeeding guard by means of a bell rope, the signal thus eventually reaching the motorman. By my invention, the delay thus necessarily incurred is abrogated, a signal being directly given from each guard in such a manner that upon the reception of the last signal, the motorman is automatically informed that the train is to proceed.

In the accompanying drawing: Figure 1 is a diagram of a train signal embodying my invention, and Fig. 2 a sectional face view of the annunciator.

Briefly stated, my improved signaling device comprises an annunciator located preferably in the motorman's cage and containing a series of electro-magnets. Each electro-magnet is in circuit with one or more push buttons or switches which are arranged within easy reach of the guard, and which are actuated after the guard has closed the car doors. When all the electro-magnet armatures are attracted, they close an electric circuit which may actuate a visible or audible signal or it may automatically close the motor-circuit to start the train.

The numeral 10 indicates the casing of the annunciator which is located within the engineer's cage. Within casing 10 are inclosed a series of radially arranged electro-magnets 11 having pivoted armatures 12, which are normally drawn away from the magnets by springs 13. The face plate 14 of the annunciator is preferably provided with windows 15, through which numbers 16, carried by armatures 12, are exposed when the latter are attracted, such numbers indicating the numbers of the several guards which have closed the doors. Each armature when attracted, rests against a contact 17, which is by wire 18 conductively connected with the fulcrum 19 of the adjoining armature. One of the contacts 17 is, by wire 20, connected to a battery or other source of electricity 21, which is, in turn, by wire 22 connected to a gong 23, the latter being by wire 24, connected to the adjoining fulcrum 19.

With the arrangement shown, each car A is provided near each end with a pair of switches 25, the pivots of the switches of all cars being connected by a common wire 26 to one pole of a battery 27. The contacts 28 of each set of four adjoining switches 25, are by a wire 29 connected to one of the electro-magnets 11, the switches of each pair of adjoining cars being connected by suitable wire couplings (not shown). The electromagnets 11 are by branches 30 and wires 31, 32 connected to the other pole of battery 27. Wires 26 and 29 pass preferably through each car in the form of insulated cables, the ends of which are connected by suitable couplings after the cars have been coupled. The several conductors have only been diagrammatically shown in the drawings, said couplings being well known in the art.

In practice, each guard after having closed the doors of two adjoining cars, turns one of the switches 25, thereby closing an electric circuit, the current flowing from the switch through wire 29, electro-magnet 11, branch 30, wires 31, 32, battery 27, and wire 26 back to the switch, and thereby attracting the corresponding armature 12. After all switches have been closed by the guards, armatures 12 will close a circuit, the current flowing from battery 21 through wire 20, armatures 12 and wires 18, wire 24, gong 23 and wire 22 back to battery 21. In this way, the motorman will be notified that the train is ready for the start.

In addition to giving the signal, the train may be automatically started, as soon as the last guard has operated his switch, for which purpose, an electro-magnet 33 is arranged in shunt with gong 23, wires 34, 35, connecting said electro-magnet with wires 22, 24 respectively. Electro-magnet 33 when energized, will attract its armature 36, which will close the circuit of the electro-motor (not shown) through wires 37, 38, armature 36,

wire 39, controller-coils 40 and wire 41. The controller handle 42 is subsequently advanced by the motorman over contacts 43, in the usual manner. After the train has started, the guards release the switches, which are then by suitable springs returned into their inoperative positions.

I claim:

1. In an electric train signal, a plurality of electro-magnets, armatures controlled thereby, a circuit adapted to be closed by said armatures, means provided in each car for closing one of the electro-magnet circuits and means for indicating which circuits have been closed.

2. In an electric train signal, a plurality of electro-magnets, armatures controlled thereby, an electric circuit adapted to be closed by said armatures, signaling means in said circuit, means provided in the cars for closing the electro-magnet circuits and means for indicating which circuits have been closed.

3. In an electric train signal, a plurality of electro-magnets, armatures controlled thereby, contacts adapted to be engaged by the armatures, a conductor connecting the contact of one electro-magnet with the armature of the adjoining electro-magnet, said armatures, contacts and conductors constituting jointly an electric circuit, a signaling device controlled by said circuit, means provided in each car for closing one of the electro-magnet circuits and means for indicating which circuits have been closed.

4. In an electric train signal, a plurality of electro-magnets, armatures controlled thereby, contacts adapted to be engaged by the armatures, a conductor connecting the contact of one electro-magnet with the armature of the adjoining electro-magnet, said armatures, contacts and conductors constituting jointly an electric circuit, train-starting means controlled by said circuit, means provided in each car for closing one of the electro-magnet circuits and means for indicating which circuits have been closed.

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