

upon a record ribbon or tape, substantially as described. 2nd. In apparatus for giving printed receipts and keeping a record of the amounts for which receipts have been given, the combination of a series of type discs having upon their peripheries two complete sets of figures, the corresponding figures in the two sets being upon diametrically opposite points of the discs, so that two impressions may be taken from each disc at the same time, substantially as described. 3rd. In apparatus for acknowledging and recording payments, the combination of a series of type discs adapted to be depressed, so as to be brought into contact with the paper upon which a payment is to be acknowledged, the said discs being mounted upon separate shafts, so that they can be operated independently by means of suitable setting discs, and means for carrying a ribbon or tape or paper upon which the amounts of the various payments are to be recorded, and for bringing the said ribbon or tape into contact with the type discs, so that the figures thereon corresponding to the figures of the payment to be acknowledged will be recorded, substantially as described. 4th. Apparatus for acknowledging and recording payments having a series of type discs with corresponding figures on diametrically opposite points, and a frame carrying a ribbon or tape of record paper in such a manner that when a handle connected with the said frame is depressed the record paper will be brought into contact with the type discs, which latter will then be depressed to cause the corresponding type on the diametrically opposite side to be brought into contact with the paper upon which the acknowledgement is to be printed, substantially as described.

No. 39,300. Electric Heating Apparatus for Railway Trains. (*Appareil de chauffage électrique pour voitures de chemin de fer.*)

Mark Wesley Dewey, Syracuse, New York, U.S.A., 13th July, 1892; 6 years.

Claim.—1st. The combination, with an electrically propelled vehicle, working conductors supplied with direct current along the path of said vehicle, conductors on the vehicle in contact with the working conductors and the electric motor for propelling the vehicle, and controlling devices connected with the vehicle conductors, of a shunt circuit of the vehicle conductor around the said motor and its controlling devices, a second electric motor and controlling devices in said shunt circuit, a second shunt circuit around both motors and their controlling devices, a pulsator operated by the second motor and primary coil of an inductional transformer in the second shunt circuit, a secondary circuit of low resistance in circuit with the secondary coil of said transformer, one or more electric heating devices included in the secondary circuit, and means for cutting one or more of said heating devices out of circuit. 2nd. The combination, with an electrically propelled vehicle, the supply conductors on the vehicle and the electric motor for propelling the vehicle, and controlling devices connected with the said supply conductors, of a shunt circuit of the said supply conductors, a second electric motor in said shunt circuit, a pulsator operated by the second motor, and primary coil of a transformer in shunt circuit, a secondary circuit including the secondary coil of said transformer, and one or more suitable electric heating devices in said secondary circuit. 3rd. The combination, with a vehicle, the conductors on the vehicle connected with a source of direct current, and a translating device and means for controlling the same connected in circuit with said conductors, of a shunt circuit around both the said translating and controlling devices, an electric motor in the shunt circuit, a pulsator operated by the motor and primary coil of a transformer in shunt circuit, a secondary circuit including the secondary coil of the transformer, and one or more electric heating devices in said secondary circuit. 4th. The combination, with a vehicle, the conductors on the vehicle connected with a source of direct current, and a translating device and means for controlling the same in circuit with said conductors, of a shunt circuit around both the translating and controlling devices, an electric motor and adjustable resistance in the shunt circuit, a second shunt circuit around said motor and adjustable resistance, a pulsator operated by the motor and a primary coil of a transformer in the second shunt circuit, a secondary circuit of low resistance, including the secondary coil of the transformer, and one or more electric heating devices in said secondary circuit. 5th. The combination, with a vehicle, the conductors on the vehicle connected with a source of direct current and a translating device, and controlling devices therefor in circuit with said conductors, of a shunt circuit around said devices, an electric motor and a rheostat in the shunt circuit, a second shunt circuit around said motor and rheostat, a pulsator operated by the motor, and a primary coil of a transformer in the second shunt circuit, means for regulating the current flowing through said primary coil, a secondary coil of low resistance, including a secondary coil of the transformer, and one or more electric heating devices in said secondary circuit. 6th. The combination, with an electrically propelled vehicle, working conductors supplied with direct current along the path of said vehicle, conductors on the vehicle in movable contact with the working conductors, and the electric motor for propelling the vehicle and its controlling devices in circuit with the vehicle conductors, of a shunt circuit on said vehicle around the motor and its controlling devices a second electric motor and adjustable resistance in said shunt circuit, a second shunt circuit around both motors and their controlling devices, a pulsator operated by the second motor, a primary coil of a transformer and regulating device in the

second shunt circuit, a secondary circuit, including the secondary coil of said transformer, and one or more electric heating devices on the vehicle in the secondary circuit. 7th. The combination, with a vehicle, working conductors supplied with direct current along the path of said vehicle, the conductors on the vehicle, and a translating device and controlling devices, therefor in circuit with said vehicle conductors, of a shunt circuit around said devices, an electric motor and a rheostat in the shunt circuit, a second shunt circuit around said devices, motor, and rheostat, a pulsator operated by the motor and a primary coil of a transformer in the second shunt circuit, means for regulating the current flowing through said primary coil, a secondary circuit of low resistance, including a secondary coil of the transformer, and one or more electric heating devices in said secondary circuit. 8th. The combination, with a vehicle, and a line working conductor arranged along the path of said vehicle, of a closed electric circuit to be moved with the vehicle, including a conductor of lower resistance than the line conductor, movable contacts connected with the terminals of said low resistance conductor and in contact with the said line working conductor, a portion of the line working conductor between the terminals and supplied with electric current from a suitable source, for the purpose set forth. 9th. The combination, with a vehicle, and a line working conductor arranged along the path of said vehicle, of a closed electric circuit to be moved with the vehicle, including a conductor on the vehicle, terminals of said conductor disposed one in advance of the other and in contact with the line working conductor, and a portion of the line working conductor between the terminals, and supplied with electric current from a suitable source for the purpose set forth. 10th. The combination, with a vehicle, and a continuous line working conductor arranged along the path of said vehicle, of a low resistance conductor on the vehicle supplied with electric current, terminals of said vehicle conductor disposed one in advance of the other in contact with the line working conductor and the portion of the said line conductor between the said terminals, for the purpose set forth. 11th. The combination, of an electrically propelled vehicle, a continuous line working conductor arranged along the path of said vehicle, an electric motor propelling said vehicle, an electric connection between said motor and working conductor, a shunt circuit around the motor on the vehicle, a primary coil of a transformer in said shunt circuit, means to regulate the current flowing through the shunt circuit, a secondary circuit including the secondary coil of the transformer, terminals of the secondary circuit in contact with the line conductor, and a portion of the line working conductor between the said terminals, for the purpose set forth. 12th. The combination, of an electrically propelled vehicle, a continuous line working conductor arranged along the path of said vehicle, an electric motor propelling said vehicle, an electric connection between said motor and working conductor, a shunt circuit around the motor on the vehicle, a pulsator and a primary coil of a transformer in said shunt circuit, means to regulate the current flowing through the shunt circuit, a secondary circuit including the secondary coil of the transformer, terminals of the secondary circuit in contact with the line conductor, and a portion of the line working conductor between the said terminals, for the purpose set forth. 13th. The combination, of an electrically propelled vehicle, a continuous line working conductor arranged along the path of said vehicle, an electric motor propelling said vehicle, an electric connection between said motor and working conductor, a shunt circuit around the motor on the vehicle, a pulsator and a primary coil of a transformer in said shunt circuit, means to regulate the current flowing through the shunt circuit, an electric motor operating the pulsator, a secondary circuit including the secondary coil of the transformer, terminals of the secondary circuit in contact with the line conductor, and a portion of the line working conductor between the said terminals, for the purpose set forth. 14th. The combination of an electrically propelled vehicle, a continuous line working conductor arranged along the path of said vehicle, an electric motor to propel said vehicle, an electric connection between said motor and working conductor, a shunt circuit around the motor on the vehicle, a pulsator and a primary coil of a transformer in said shunt circuit, means to regulate the current flowing through the shunt circuit, an electric motor operating the pulsator, a secondary circuit including the secondary coil of the transformer and a plurality of heating devices, terminals of the secondary circuit in contact with the line conductor, a portion of the line working conductor between the said terminals forming one of said heating devices, and means for cutting in or out of circuit one of the said heating devices independent of the other heating device in circuit, for the purpose set forth. 15th. In an electric railway, a line working conductor, a travelling vehicle, an electric motor to propel said vehicle, an electrical connection between said vehicle and working conductor, an inductional transformer on the vehicle, a secondary circuit of low resistance, an electric heater to heat said vehicle in the secondary circuit, and means to control the current passing through the transformer independently of the motor. 16th. In an electric railway, a line working conductor, a travelling vehicle, an electric motor to propel said vehicle, an electrical connection between said motor and working conductor, a current transformer on the vehicle in electrical connection with the working conductor, a secondary circuit of lower resistance than the working conductor, an electric heater to heat said vehicle in the secondary circuit, and means to control the current passing to the transformer independently of the motor. 17th. The combination of a vehicle, a line working conductor arranged along