No. 725,611. PATENTED APR. 14, 1903.

M. A. BORN.

AUTOMATIC BRAKE OPERATING MECHANISM.

APPLICATION FILED AUG. 28, 1902.

NO MODEL.

Fig. 1.

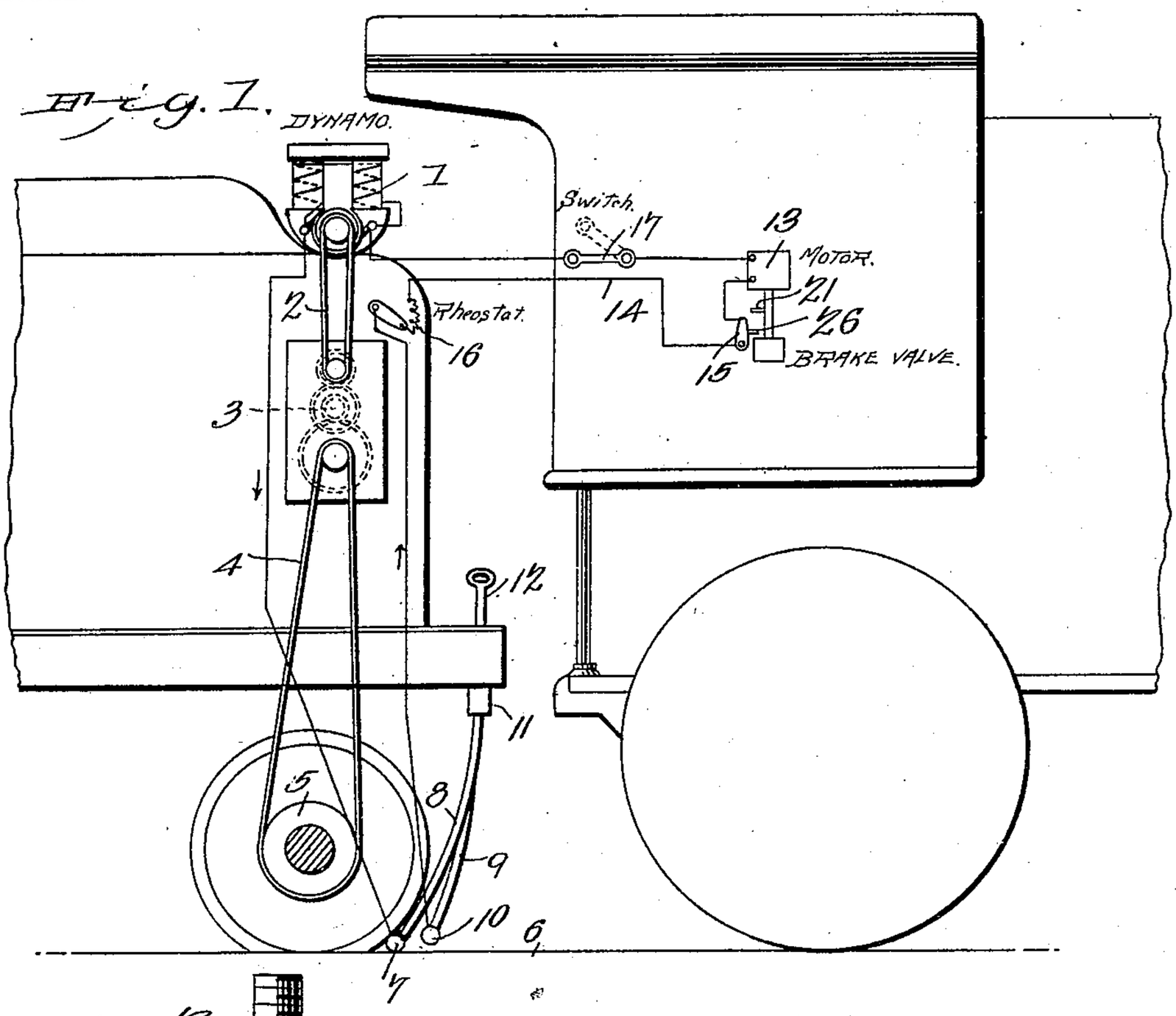


Fig. 2.

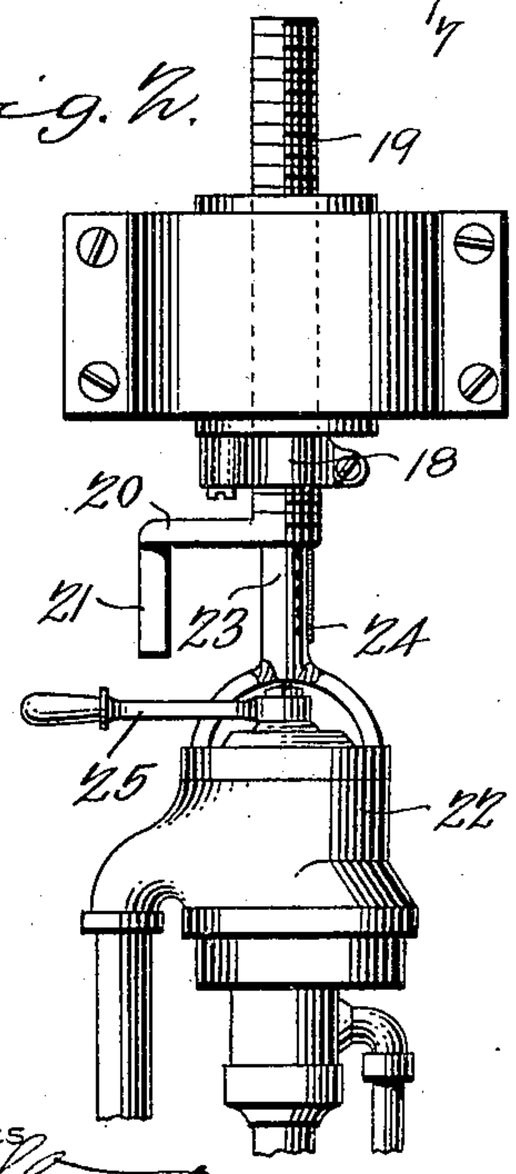
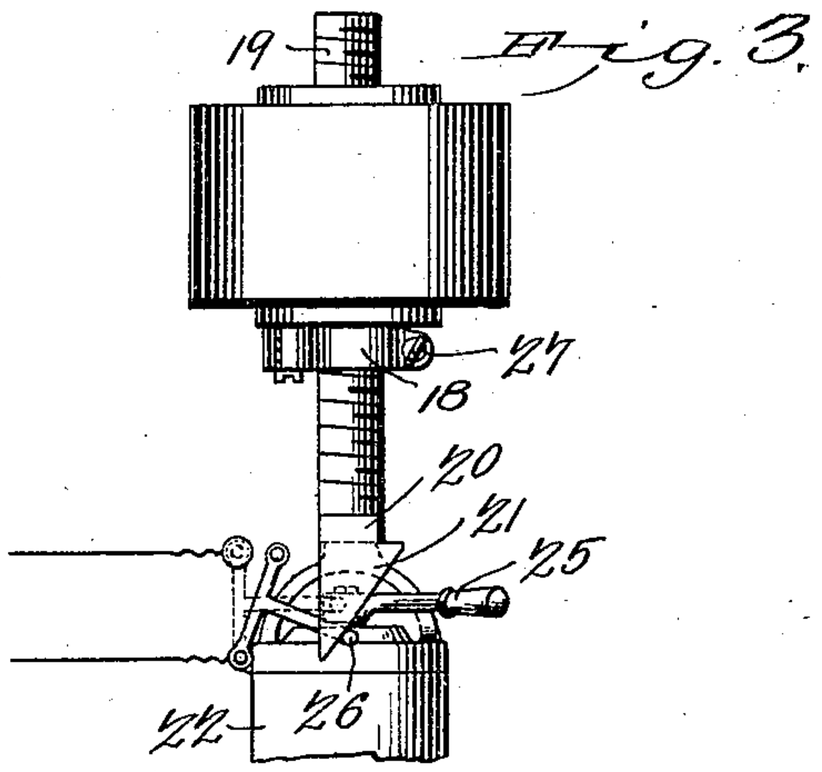


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

MARION A. BORN, OF LAWRENCEVILLE, GEORGIA, ASSIGNOR OF PART OF HIS RIGHT TO EARLY W. BORN, OF NORCROSS, GEORGIA, EDWARD W. VANCE, OF BUFORD, GEORGIA, MILTON HOPKINS LOUDON, OF KANSAS CITY, MISSOURI, DANIEL McCONVILLE, OF STEUBENVILLE, OHIO, AND EMMA BYLES, OF WASHINGTON, DISTRICT OF COLUMBIA.

AUTOMATIC BRAKE-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 725,611, dated April 14, 1903.

Original application filed March 11, 1902, Serial No. 97,779. Divided and this application filed August 28, 1902. Serial No. 121,347. (No model.)

To all whom it may concern:

Be it known that I, MARION ALEXANDER BORN, a citizen of the United States, residing at Lawrenceville, in the county of Gwinnett and State of Georgia, have invented a new and useful Automatic Brake-Operating Mechanism, of which the following is a specification.

This invention relates to electrically-actuated brake-operating mechanism.

The object of the invention is in a simple, feasible, and thoroughly practical manner to operate the air-brakes of two trains on the same track running in like or opposite directions when they shall have approached each other to a predetermined distance, thereby in a positive manner obviating danger of accident.

Generally stated, the invention consists in the employment of a continuous exposed conductor disposed adjacent to one of the rails or tracks and adapted by a traveling contact suitably connected with a source of electrical energy carried by the cab or engine to receive a current of electricity of a predetermined resistance, the brake-operating mechanism to be responsive only to a current of a determined tension. Thus, for example, if it be desired to render the brake-operating mechanism operable by a current of, say, ten ohms resistance the apparatus will remain inactive until a part of the conductor is reached where the current has such resistance, whereupon the apparatus will respond and perform the function for which it is designed.

The invention consists, further, in the novel construction and combination of parts of an air-brake-operating mechanism for railway-cars, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like numerals of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof, and in these drawings—

Figure 1 is a view in elevation, showing in outline a portion of a locomotive cab and tender, exhibiting diagrammatically the manner in which the apparatus of this invention is associated therewith. Fig. 2 is a view in side elevation of the air-brake-operating mechanism. Fig. 3 is a view similar to Fig. 2, taken at right angles thereto.

In carrying the invention into effect there is provided a suitable source of electric energy, preferably a dynamo 1, which is driven by a belt 2 from a train of multiplying-gears 3, actuated from a belt or the like 4, engaging a pulley 5, located, in this instance, on the front axle of the tender. As is well known, the armature of a dynamo has to make about two thousand four hundred revolutions a minute before a current of electricity will be generated, and under ordinary conditions, as when a train is running at a speed of from five to ten miles an hour or somewhat greater, the dynamo would be inoperative for the purposes designed, and to obviate this defect the multiplying-gear is employed, so that under relatively low rates of speed of travel the dynamo will be rendered efficient. Of course if the desired speed can be imparted to the dynamo-armature when an engine is running at the rate of four or five miles an hour it will be obvious that when running at the rate of forty or fifty miles an hour the speed of rotation of the armature would be excessive, and to obviate this the train of gear can be arranged in the usual or any preferred manner to control the speed of the armature under all conditions, and as such arrangements are common and well known detailed illustration thereof is deemed unnecessary, especially as the precise arrangement employed forms no part of the present invention.

The current from the dynamo is transmit-

ted to a bare conductor 6, disposed adjacent to one of the tracks, (not shown,) through the medium of a trolley-wheel 7, carried by one member, 8, of a two-part trolley, the other member, 9, of which carries a trolley-wheel 10, that travels on the rail constituting the return. The members 8 and 9 of the trolley are slidably connected with but insulated from a hanger 11, mounted in a bearing (not shown) in the floor of the tender, the upper end of the hanger being provided with a handle 12, by which the position of the trolleys may be shifted according to the direction in which the train may be running, any suitable means being employed for holding the handle in its adjusted position.

The circuit 14, that connects the traveling contacts or trolley-wheels 7 and 10, includes the dynamo 1, motor 13, a brake-operating switch or cut-out 15, and a rheostat 16, and, if desired, an additional switch 17 may be included in the circuit to cut out the motor when desired.

The means for effecting automatic shifting of the air-brake lever, and thus the application of the air-brakes, to effect stoppage of the engine, so far as the application of the air-brakes is concerned, may be of various constructions, and in this instance is effected by providing the commutator-cylinder of the motor with a split nut 18, which is threaded to engage a threaded tubular stem 19, extending through the core of the armature, the stem being provided at its lower end with an outward-extending arm 20, carrying an angular head 21. The brake-valve casing 22 is provided with a stem 23, projecting upward into the tubular stem 19, and is provided with a spline 24 to engage a keyway cut into the stem 19 in the usual manner. Under this arrangement it will be seen that as the motor-armature revolves, the stem 19, being held against rotation by reason of the coaction between the spline and the keyway, will be forced downward, and as soon as the angular head 21 contacts with the air-brake lever 25 the latter will be shifted, and thus apply the air-brakes. By the time the head 21 has effected complete opening of the air-brake valve it will contact with an outstanding angular arm 26, carried by the switch 15, thereby throwing the latter and opening the circuit and stopping the motor. The members of the split nut are held clamped around the stem 19 by a thumb-nut 27, and when the stem is to be moved upward to be in position for again operating the brake-lever the thumb-nut is loosened to permit the sections of the split nut to be moved out of engagement with the stem. The latter is then pushed upward to its normal position and the nut again clamped around it. It is to be understood that the mechanism described will in no way interfere with the manual operation of the air-brake lever.

The operation of the device is as follows: Suppose it be desired to render the apparatus responsive to a current of ten ohms resistance in a stretch of conductor, say, one mile long. The rheostat 16 will be adjusted to this resistance, and the apparatus will then be ready to perform its function. As soon as the engine starts to run the dynamo will begin to generate electricity and the current will pass to the conductor 6. Should an engine or train be on the same track and be running in like or opposite directions, (it of course being supplied with a similar apparatus,) as soon as it reaches a part of the conductor where the resistance is ten ohms the circuit will be completed and the motor will be operated to effect opening of the air-brake.

While the dynamo is herein shown as the source of electrical energy, it is to be understood that a storage battery may be employed in lieu thereof, and as this will be readily understood detailed illustration thereof is deemed unnecessary.

It will be seen from the foregoing description that although the device of this invention is exceedingly simple of construction it will in practical operation be thoroughly efficient for the purpose designed.

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

1. An air-brake-operating mechanism for trains running on the same track, comprising a controlled source of electrical energy on each train, a continuous conductor, means for energizing a circuit including only a portion of the conductor, a circuit including a rotary motor, an air-brake system, and means actuated by the motor for operating the valve thereof.

2. An air-brake-operating mechanism for trains running on the same track, comprising a continuous bare conductor, a source of electrical energy in circuit therewith, traveling contacts, a circuit connecting the contacts and including a rotary motor, an air-brake system, and means operated by the motor to operate the air-brake valve.

3. An air-brake-operating mechanism for trains running on the same track, comprising a continuous bare conductor, a source of electrical energy in circuit therewith and including means for determining the resistance of the conductor to the current traveling contacts, a circuit connecting the contacts and including a motor, an air-brake system, and means operated by the motor to actuate the air-brake valve.

4. An air-brake-operating mechanism for trains running on the same track, comprising a source of electrical energy, a motor and switch in circuit therewith, traveling contacts in circuit with the source of electrical energy and the motor, lead and return conductors with which the contacts engage, a resistance included in the circuit, an air-brake system, and means actuated by the motor to operate the valve of the said system.

5. An air-brake-operating mechanism for

trains running on the same track, comprising a source of electrical energy and lead and return conductors, traveling contacts to engage the said conductors, a circuit including a motor, a switch, a resistance, and the source of electrical energy and contacts, an air-brake system, and means actuated by the motor to operate the system.

6. An air-brake-operating mechanism for trains running on the same track, comprising a source of electrical energy, and lead and return conductors, trolleys in circuit with the source of electrical energy and engaging with the conductor, a circuit including a motor and a switch, and means actuated by the motor first to operate the air-brake lever and then to throw the switch.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

M. A. BORN.

Witnesses:
C. I. DOYLE,
J. H. JOCHUM, Jr.