(No Model.)

I. E. STOREY.

CARRIER SYSTEM.

No. 418,856. Patented Jan. 7, 1890.

Fig. 1.

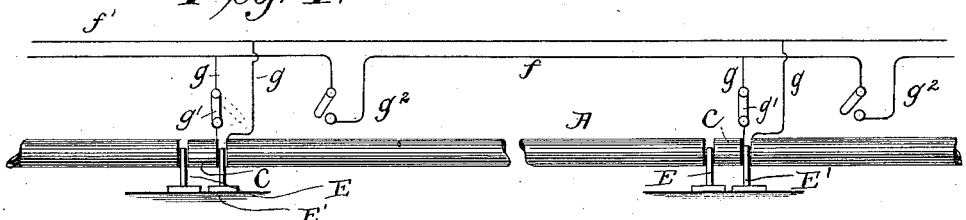


Fig. 2.

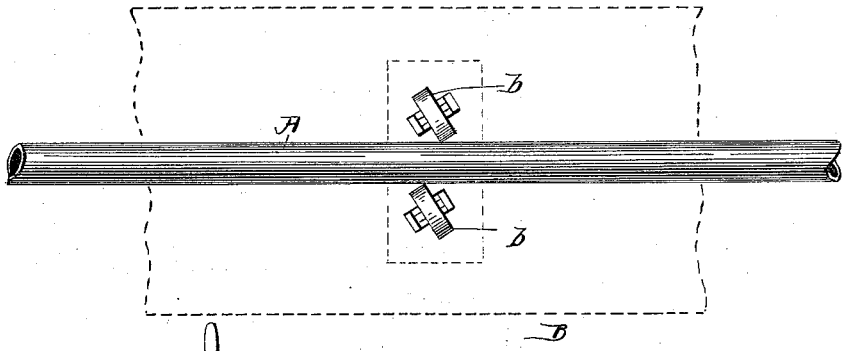


Fig. 3

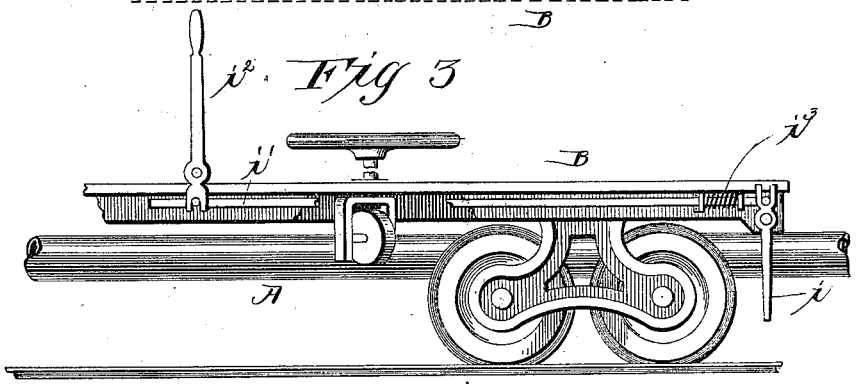
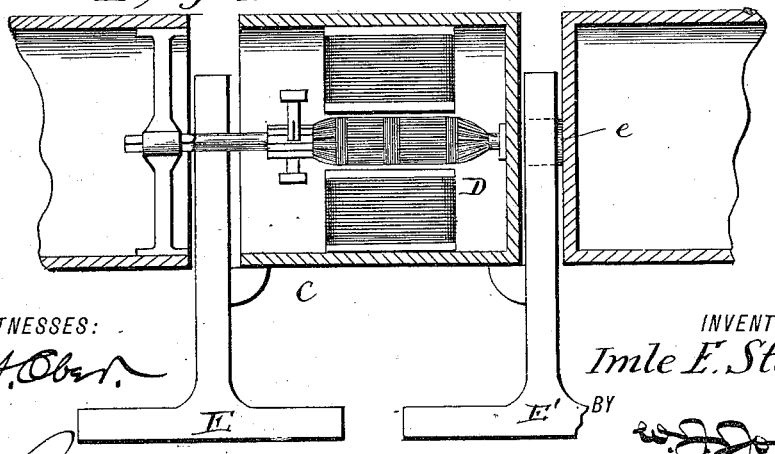


Fig. 4



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CARRIER SYSTEM.

SPECIFICATION forming part of Letters Patent No. 418,856, dated January 7, 1890.

Application filed April 25, 1889. Serial No. 308,597. (No model.)

To all whom it may concern:

Be it known that I, IMLE E. STOREY, a citizen of the United States, residing at Boulder, in the county of Boulder and State of Colorado, have invented certain new and useful Improvements in Carrier Systems, of which the following is a specification.

My invention pertains to carrier systems of that class in which the driving element is a rotating tube or bar and motion is given to the vehicle by means of friction-pulleys connected therewith, which impinge upon or against the rotating tube at an angle.

My invention is an improvement on this system; and it consists in novel mechanism for driving or rotating the tube by means of electricity.

My invention is designed to accomplish its object in the simplest manner possible and to perform the work with the greatest economy.

Referring to the accompanying drawings, Figure 1 represents, diagrammatically, the carrier-tube and the system of electrical distribution. Fig. 2 represents, conventionally, the tube, the roller-grip for the vehicle, and a portion of the vehicle in dotted lines. Fig. 3 represents a side elevation of a portion of a car or vehicle fitted with switch-operating mechanism; and Fig. 4 is a sectional view of portions of the tube, showing the manner of mounting the motor within the same and of its connection with the tube.

I will first describe, briefly, the system of which my invention is an improvement.

It consists of a tube or bar A, which is rotated throughout its length by any suitable power applied at one end of the system. It is necessary, therefore, to expend as much power at all times as is necessary to keep the whole tube in rotation.

The vehicles (represented in the drawings by B) are provided with one or more grips, consisting of steel rollers *d b*, which are flexibly or pivotally connected with the vehicle. These rollers are brought to bear upon the tube, and they are arranged to stand at an angle thereto, as shown in Fig. 2, so that one edge will bite into the tube when pressure is applied. The tube therefore acts in the capacity of a large worm or screw, and as it rotates the car is carried along at a speed depending upon the rotation of the tube and the angle at which the rollers are set.

My invention deals with the power for rotating the tube. Generally speaking, it consists of dividing the tube into sections of any convenient length—say two hundred feet or more—and driving each section by an electric motor located within the tube at one end of each section. The invention also comprehends the system of electrical distribution whereby the motors are successively cut in and out as their services are required. Between every two sections of the tube is placed a short stationary section C, of sufficient length to accommodate an electric motor D and of the same diameter as the main tube. The ends of the tubes adjacent to the motor-section are supported in any suitable manner. I have shown brackets E E′, resting upon the ground or frame-work and extending up between the heads of the tube and motor sections. A bearing is formed in the end of each bracket, which receives in one instance a pintle or stud *e*, forming the axle of one of the tube-sections, and in the other instance the shaft of the motor, which passes through the bearing and is rigidly and centrally connected with the other tube. The other end of the motor-shaft has its bearing in the head of the motor-section of the tube. When the system is working, the motor-section stands still. The armature of the motor, however, rotates and imparts its rotary motion to the tube-section, with which it is rigidly connected.

The electrical distribution system comprises a central generating-station (not shown) located at one end of the line. From this station lead the two main-circuit conductors *f f′*, extending the full length and alongside of the tube. At each motor-section branch circuits *g g* are led off from the mains to the motor. These circuits contain a switch *g′* for cutting in and out the motor which they feed. A short distance beyond the section one of the main conductors is fitted with a switch g^2. This same construction of branch circuits and switches is repeated at each motor-section.

The vehicles are fitted with a pivoted fin-

ger i, which normally projects downward and is adapted to strike the switch-arms g' or g^2, and either open or close the circuit which they control. The arm i is arranged to be tilted out of range of the switch-arms. The mechanism for accomplishing this consists of a rod i', running along the car and adapted to be thrust forward and back by means of an operating-lever i^2. This motion is imparted to the finger i by means of a pin connected with the rod i' and working in a slot or bifurcation in the lever i, as shown. A spring i^3 is provided for maintaining the finger in its normally-vertical position. I contemplate providing the vehicles with two of these fingers—one at each end—and operate them by a single lever i^2, as will be obvious. The purpose of two fingers is to facilitate the movement of the vehicle in both directions.

To carry out my invention with the greatest facility, each vehicle should be provided with two sets of grips b b—one set located at each end of the car. The operation of the system is as follows: Let us suppose the circuit g g leading to each motor of the system is closed and that the switches g^2 are open. Starting at one end of the system, we will suppose the motor, which operates the first section, is running. The vehicle grips the tube and is carried along the first section until the finger i strikes the switch g' and moves it into the position shown in dotted lines, thus cutting out the motor driving the first section and stopping said section. Immediately after operating the switch g' the finger i strikes switch g^2 and closes the circuit to the motor beyond. This motor then commences to rotate the second section, and the car is carried onward. The same operation of cutting out and in the motors successively is repeated throughout the line. If there is only one vehicle operated on the system, but one tube will be required. In that case the vehicle in returning to the starting-point has simply to reverse the position of its grip-rollers b, and the last section which the car is on will be allowed to continue its rotation and carry the car back to the first switch g^2. This switch is found to be closed and the finger i opens it, thus cutting out the motor at the rear of the vehicle. Switch g' is next operated, and the circuit of the motor immediately in front of the car is completed, thus providing for the movement of the vehicle over the next section. These operations are repeated at each motor-section throughout the line. If a number of cars are operated on the system, one following close behind the other, the first car over the line will not open the switches g' but will close the switches g^2; hence after the first vehicle has passed over the whole line all the motors in the system are running, and consequently all the sections are running. The vehicles may then operate without the use of the fingers i, and they may be thrown upward by lever i^2 out of reach of the switches.

Having thus described my invention, I claim—

1. In a carrier system, the combination, with a tube such as described, divided into sections, of a motor located within each of the alternate sections, said motor being adapted to rotate one of the adjoining sections, as set forth.

2. In a carrier system, the combination, with a tube such as described, divided into sections, of an electric motor located within each of the alternate sections, said motor being adapted to rotate one of the adjoining sections, as set forth.

3. In a carrier system, a tube divided into long and short sections alternating with each other, the long sections being rotatable and the short sections stationary, in combination with motors located within each short section, the motors being connected, respectively, with and adapted to rotate the rotatable or long sections.

4. In a carrier system, a tube divided into sections, an electric motor for and adapted to drive each section, an electric circuit including each motor and switching devices, whereby each motor may be cut in and out of circuit, as described.

5. In a carrier system, a tube divided into sections, an electric motor for and adapted to drive each section, an electric circuit including each motor, switching devices, whereby each motor may be cut in and out of circuit, all in combination with a vehicle adapted to be driven by the power transmitted from the tube, and switch-operating devices connected with the vehicle to cut the motors in and out of circuit, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

IMLE E. STOREY.

Witnesses:
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