(No Model.)

W. G. PRICE.

STREET CAR BRAKE.

No. 582,371. Patented May 11, 1897.

Fig. 1.

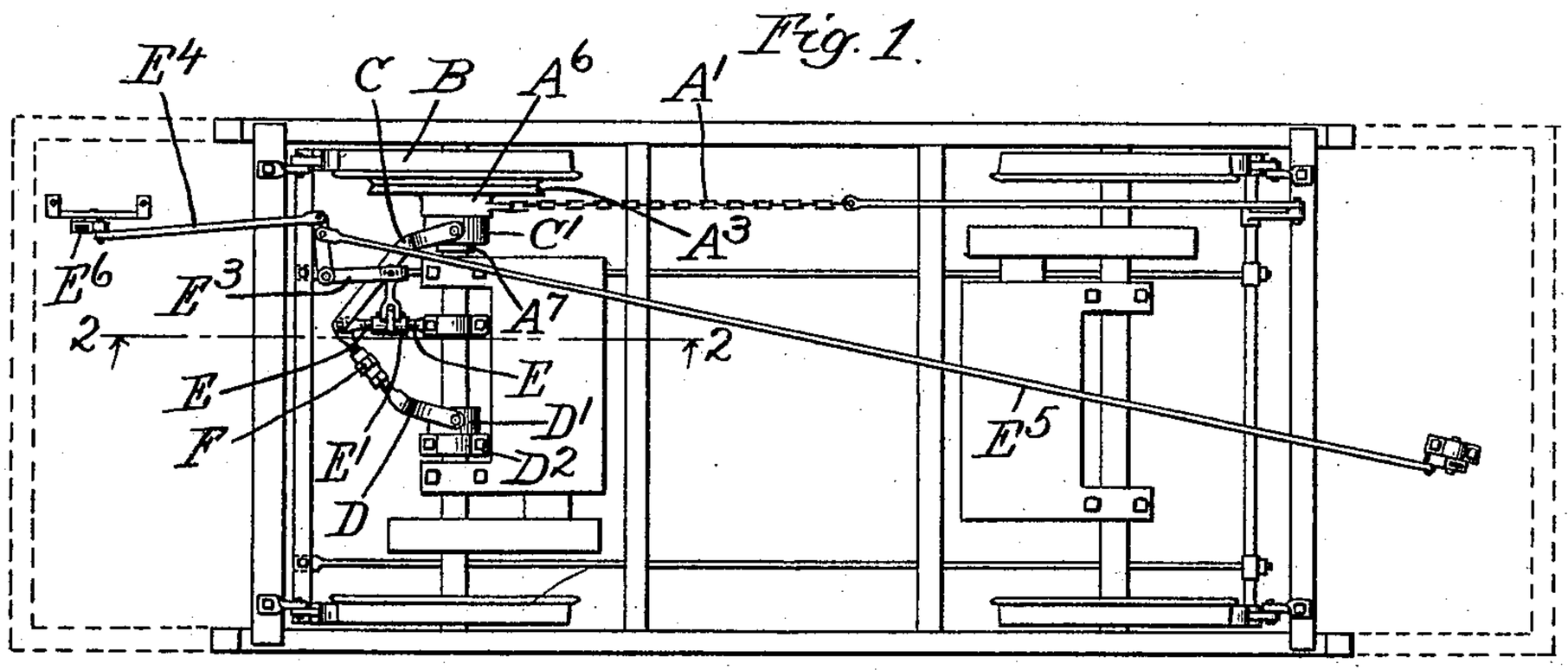


Fig. 2.

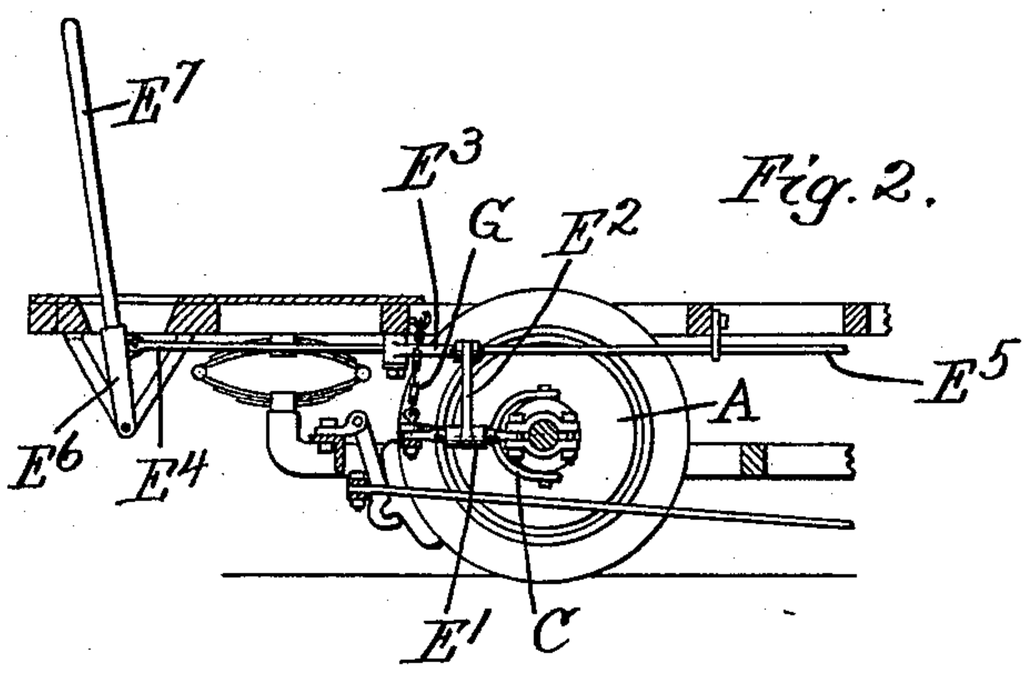


Fig. 5

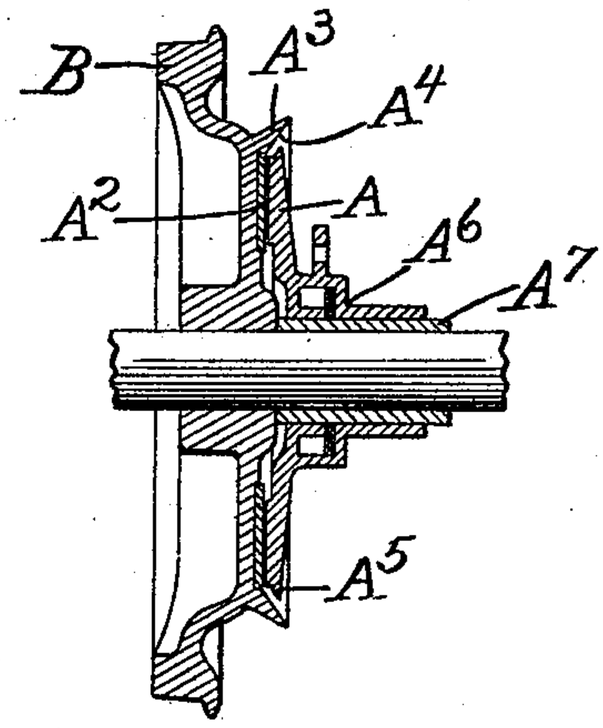


Fig. 3.

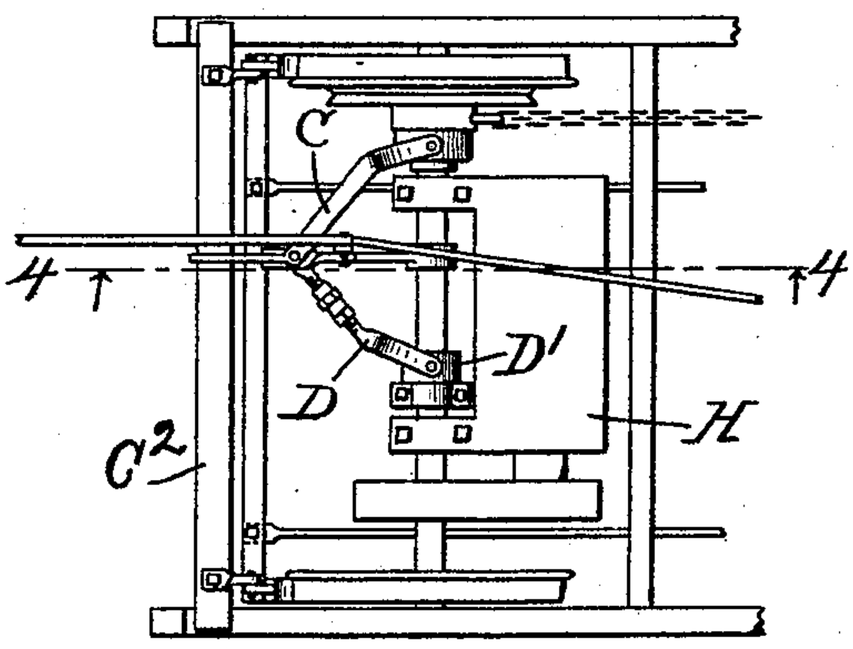
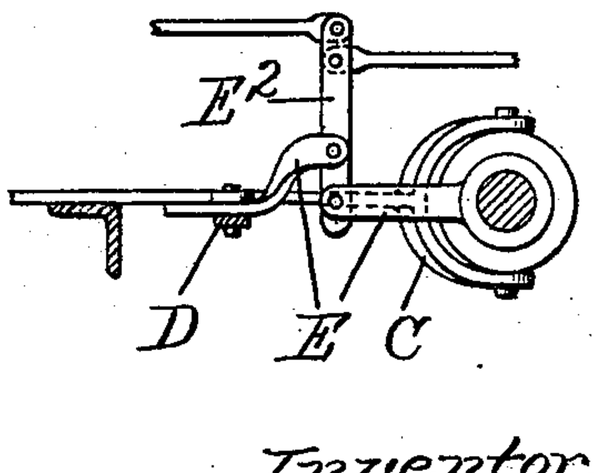


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM G. PRICE, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO MENARD K. BOWEN, OF SAME PLACE.

STREET-CAR BRAKE.

SPECIFICATION forming part of Letters Patent No. 582,371, dated May 11, 1897.

Application filed December 3, 1896. Serial No. 614,378. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. PRICE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Street-Car Brakes, of which the following is a specification.

My invention relates to brakes and braking mechanism for street-cars and other vehicles, and has for its object to provide a new and improved braking mechanism, of which the following is a description, reference being had to the accompanying drawings, wherein—

Figure 1 is a plan view of a car-truck provided with my improved brake mechanism. Fig. 2 is a section on line 2 2, Fig. 1, the electric motor being omitted. Fig. 3 is a plan view of car-truck, showing a modified form of my invention. Fig. 4 is a section on line 4 4, Fig. 3, with parts omitted. Fig. 5 is a section through the wheel and friction device.

Like letters refer to like parts in the several figures.

My present invention sets forth a brake mechanism operated somewhat similar to that described in my patent application, Serial No. 594,739, filed June 8, 1896, and is adapted to be used upon cars or the like where the construction is such as to make my former mechanism unnecessary. The present device is adapted to be used when there is plenty of room upon the car-axle for attaching the mechanism thereto.

The brake herein illustrated is operated by means of a friction-disk A, engaging an opposed moving part on the axle—as, for example, the wheel B—the brake-shoes being connected to the disk A by means of a power-transmitting device A′. The disk A is forced against the wheel through the agency of the arms C and D. The arm C is connected to a collar or sleeve C′, surrounding the axle and in proximity to the disk. The arm D is connected with the arm C, and is also connected with the sleeve D′, surrounding the axle and opposed to a fixed stop D^2.

It is of course evident that the manner of connecting the arms C and D with the axle may be varied. The outer parts of the arms C and D are also connected with the axle or with some stationary part of the car by means of a connection adapted to be varied in length. As illustrated in the drawings, a two-part piece or rod E is connected at one end to the arms and at the other end to the car-axle, and is provided with a mechanism for varying the relative position of its two parts. In Fig. 1 the adjacent ends of the two-part piece are threaded, one having a right-hand and the other a left-hand thread, the threads engaging the sleeve E′. An arm E^2 is connected with said sleeve, and is also connected with the bell-crank lever E^3, to the end of which are attached the rods E^4 and E^5, which are in turn connected to the sockets E^6 at the ends of the car, said sockets being constructed so as to receive the controlling-lever E^7. I prefer to provide one of the arms C and D with an adjusting device, which may consist simply of a turnbuckle F. The arms C and D are preferably loosely supported by means of the piece or chain G, connected with some part of the car. In Fig. 3 one of the arms—for example, arm C—is provided with a projection which rests upon the cross-piece C^2, thereby supporting the outer ends of both arms.

Instead of using a screw device for controlling the position of the arms C and D, any suitable mechanism may be used. For example, in Figs. 3 and 4 the two parts of the two-part piece E have their adjacent ends pivoted to the piece E^2, so that a movement of the piece E^2 changes the relative position of the said parts.

It will be seen that in my present construction the outer ends of the arms or parts by which I control the position of the friction device are loosely connected with the car, frame, or truck. This mechanism may be used upon street-cars operated by electric motors when the motors are connected to the axle in such a manner as to allow space on the axle, so that the arm D may be connected therewith. I have shown such an electric motor at H; but of course other constructions than that shown may be used.

In Fig. 5 I have shown a peculiar construction of the friction device. The friction-disk A is opposed to a washer A^2, said washer being interposed between the disk and car-

wheel. A projecting annular flange A^3 is connected with the car-wheel and projects over the disk A, as shown. This flange is preferably provided with a slanting or beveled surface A^4. The disk A is also preferably provided with a projecting flange A^5. This construction prevents water from getting between the disk and its opposed surface. I prefer to use an oil-friction, or, in other words, to oil the washer which is interposed between the disk and car-wheel, as I find that if water is allowed to get between the friction-disk and its opposed surface when an oil-friction is used the friction will be materially decreased and will not be sufficient to perform the work. The flange A^3 prevents the water from entering between the disk and its opposed surface. The water that falls upon the outer surface of the disk drops from the projecting flange A^5 onto the beveled surface A^4, and hence falls to the ground without entering between the disk and the wheel. The disk A is preferably provided with a hub A^6, and is mounted upon a sleeve A^7, connected with the car-axle, said sleeve projecting beyond the hub, so as to engage the motor and prevent it from crowding the disk. It will also be noticed that I suspend the actuating device for the disk from the car-axle, thus preventing the relative motion between the car body and axle from affecting the operation of the brake.

When a friction device similar to the one herein shown is used, the distance which the friction device must be moved to release it from its opposed surface is exceedingly small. It therefore follows that if the controlling apparatus for the disk is connected with the car-body, so as to be affected by the relative movement of the car-body and the car-axle, such relative movement may move the parts, so as to disengage the disk from its opposed surface, thereby rendering the braking mechanism inoperative. This relative movement may also displace the parts, so that the movement of the operating-lever on the car may not be sufficient to bring the disk against its opposed surface so as to operate the brake. The evil results above referred to are due to the fact that there must be a gain of power between the operating-lever on the car and the friction-disk in order to produce a practical device. This of course necessitates a relatively great movement of the lever to obtain a small movement of the disk. It is of course evident that other forms of friction devices may be used—as, for example, friction-cones and the like.

I have described the several parts of my device in detail; but it is evident that such parts may be varied in form, construction, and arrangement without departing from the spirit of my invention, and I therefore do not wish to be limited to the construction shown.

It is of course evident that a track-brake or any other description of brake may be used in connection with my operating mechanism.

The use and operation of my invention are as follows: When the car is moving and the parts of the brake mechanism are in a normal condition, the brake-shoes are out of contact with the wheel, and the friction-disk is also out of contact with its opposed surface. When it is desired to stop the car, the operating-lever E^7 is moved, and such movement is conveyed through intermediate connecting devices to the sleeve E′, so as to rotate said sleeve. If the operating-lever is moved in such a manner that the rotation of the sleeve shortens the two-part piece E, the outer ends of the arms C and D will be moved toward the axle, thereby forcing apart the ends associated with the friction-disk and stop. Since the end of the arm D is opposed to the fixed stop D^2, this movement of said arms will cause the end of the arm C to press against the disk and force it against its opposed surface. The disk will then be rotated, and the chain A′ will be actuated so as to force the brake-shoes against their opposed surfaces. The brakes are released by moving the operating-lever E^7, so as to lengthen the two-part piece E. In Figs. 3 and 4 the position of the arms C and D is controlled by a system of levers instead of by a screw device. The construction shown, for example, in Fig. 1 is illustrative of the idea which is to be taken as much broader than this particular form—that is to say, the connection between the parts C′ and D′ can be made in various other ways—and the essence of that portion of the construction is that the two parts should be connected by a single piece or by a system of pieces or parts so constructed and related that the two parts C′ D′ or their equivalents are connected by a variable bridge or arch—that is to say, by a bridge or arch which can be varied so as to vary the distance between the two connected parts C′ D′ or their equivalents.

I claim—

1. A brake mechanism for vehicles comprising a friction device on the axle for actuating the brakes, a fixed stop on said axle, a variable bridge interposed between the friction device and fixed stop, an actuating device connected at one end with said bridge, and at the other end with a part which bears a fixed relation to the car-axle with reference to the movement of the car-axle along the length of the car-body.

2. A brake mechanism for vehicles comprising a friction device on the axle, for actuating the brakes, a fixed stop on said axle, two parts interposed between said friction device and said fixed stop, said parts movably connected together at or near their outer ends, an actuating device connected at one end with the axle or a connected part and at the other end with said parts so as to move them with relation to each other when operated and thereby move the friction device to an operative position.

3. A brake for vehicles comprising a friction-disk opposed to a moving part on the

axle, an operative connection between the friction-disk and the brake-shoes, a fixed stop, two intermediate parts, one associated with the friction-disk and the other with the fixed stop, said intermediate parts pivotally connected together near their outer ends, an actuating mechanism for separating the ends of said two parts, said actuating mechanism connected at one end with some part of the car and at the other end with said parts and interposed between the axle and the ends of said two parts.

4. A brake for vehicles comprising a friction-disk opposed to a part on the car-axle and operatively connected with the brake-shoes, a fixed stop on the car-axle, two parts interposed between said disk and said fixed stop, an actuating mechanism for separating the ends of said parts so as to force the disk against its opposed surface, said actuating mechanism connected with the car-axle between the ends of said two parts.

5. A brake mechanism for vehicles comprising a friction device on the axle for actuating the brakes, a fixed stop on said axle, two parts interposed between said friction device and said fixed stop, said parts movably connected together, an actuating device connected with the car-axle, said actuating device associated with said parts so as to move them with relation to each other and thereby move the friction device to an operative position, the outer ends of said two parts being loosely connected with some part of the car, frame or truck.

6. A brake for vehicles comprising a friction-disk opposed to a moving part on the axle, an operative connection between the friction-disk and the brake-shoes, a fixed stop, two intermediate parts, one associated with the friction-disk and the other with the fixed stop, said fixed parts pivotally connected together near their outer ends, an actuating mechanism for separating the ends of said two parts, said actuating mechanism interposed between the axle and the ends of the said two parts, an adjusting device associated with said two parts by which they are adjusted when the pieces become worn.

7. A brake mechanism for vehicles, comprising a friction device on the axle adapted to actuate the brakes, a fixed stop connected with said axle, a movable part associated with said friction device, two arms or parts interposed between said friction device and said stop, one of said arms being connected to said movable device, a connection between the outer ends of said parts or arms, a two-part piece connected to the outer end of said arms or parts at one end and connected with the axle at the other end, and a device associated with said two-part piece and adapted when operated to move said two parts to and from each other.

8. A brake mechanism for vehicles comprising a friction device on the axle for actuating the brakes, a fixed stop on said axle, two parts interposed between said friction device and said fixed stop, said parts movably connected together, an actuating device adapted to be operated by mechanism under the control of the operator on the car associated with said parts, said actuating device and said parts being suspended from the axle so as to be substantially unaffected by the relative movement of the axle and car-body.

9. A brake mechanism for vehicles comprising a friction device, consisting of a friction plate or surface operatively connected with the brakes and opposed to a moving part on the axle, a projecting beveled annular flange on said moving part and surrounding said friction disk or surface, the beveled part of said projecting flange being opposed to said disk so as to receive water or other material that may fall upon the disk and deflect it away from said disk so as to prevent such water or other material from entering the space between the disk and its opposed surface.

10. A brake mechanism for vehicles comprising a friction device, consisting of a friction plate or surface operatively connected with the brakes and opposed to a moving part on the axle, a projecting beveled annular flange on said moving part and surrounding said friction disk or surface, the beveled part of said projecting flange being opposed to said disk so as to receive water or other material that may fall upon the disk and deflect it away from said disk so as to prevent such water or other material from entering the space between the disk and its opposed surface, said disk provided at its periphery with a beveled edge or portion said beveled edge or portion being on the side of said disk which makes contact with the opposed frictional surface.

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