No. 716,935. Patented Dec. 30, 1902.

H. E. PUTNEY.

CAR BRAKE MECHANISM.

(Application filed Mar. 22, 1902.)

(No Model.)

Fig. 1.

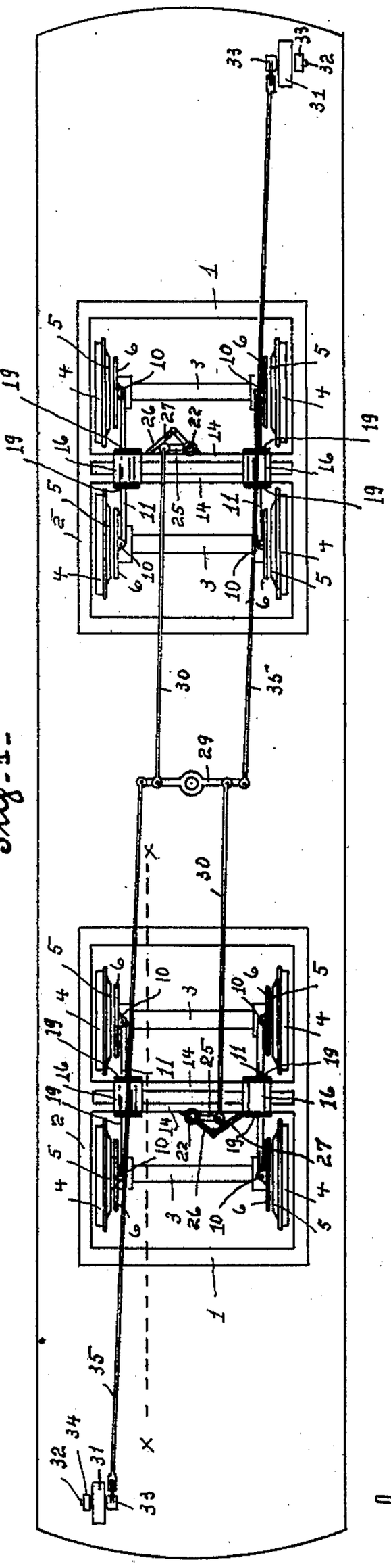

Fig. 2.

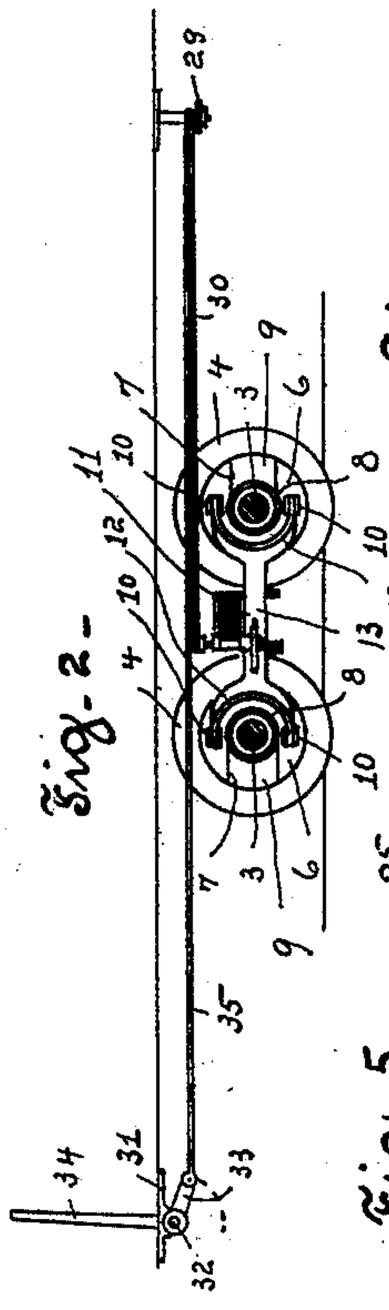

Fig. 3.

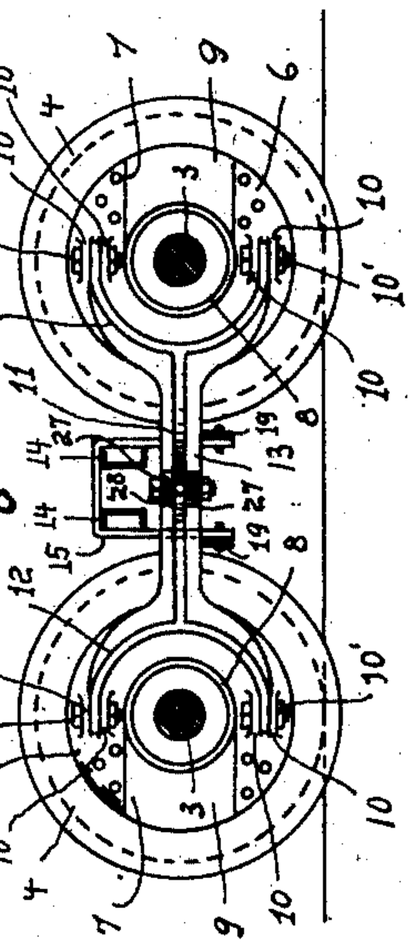

Fig. 4.

Fig. 5.

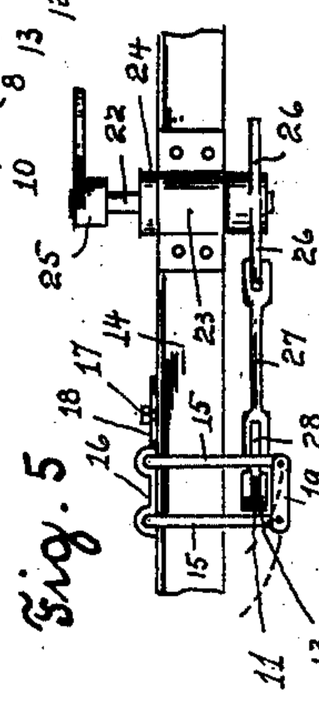

Fig. 6.

Fig. 7.

Fig. 8.

Witnesses—
Chas. A. Boake
Chas. W. Klauser

Inventor—
Herbert E. Putney
By Wilson & Martin
Attorneys.

UNITED STATES PATENT OFFICE.

HERBERT E. PUTNEY, OF TOLEDO, OHIO.

CAR-BRAKE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 716,935, dated December 30, 1902.

Application filed March 22, 1902. Serial No. 99,401. (No model.)

To all whom it may concern:

Be it known that I, HERBERT E. PUTNEY, a citizen of the United States, residing in Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Improvement in Car-Brake Mechanism, of which the following is a specification.

My invention relates to improvements in car-brake mechanism of the kind wherein brake-shoes are applied to friction-disks concentric to the axle or on the webs of the car-wheels.

In the specification of Letters Patent No. 664,589, dated January 1, 1901, I have shown and described an improved car-brake mechanism of the kind wherein brake-shoes concentric to the axles of a car-truck are secured to a pair of brake-bars movably mounted one on each side of the truck-frame parallel with friction-disks on the webs of the wheels, the bars being provided with means whereby they are simultaneously advanced in opposite directions to press the shoes against the disks or retracted to withdraw them therefrom. In practice I have found that by reason of the lateral play of the axles in their boxes necessary to the flexible and free movement of the trucks around curves a parallel relation between the shoes and disks is not constantly maintained, resulting in more or less imperfect contact between the shoes and disks and their unequal wear. Similar variation from the parallel relation of the shoes and disks is also caused by the springing of the bars under pressure.

One of the objects of my present invention is to provide brake-bars movably secured to the frame of the truck and having means for advancing or retracting the bars with shoes that are automatically adjustable when under the pressure of the bars to constant and full contact with the disks of the wheels whatever may be the variation from a parallel relation between the bars and the disks and from whatever cause arising.

A further object is to increase the efficiency of the brake by providing improved means of movably mounting the bars on the truck-frame.

A further object is to provide means of applying my invention to double as well as single truck cars.

With these objects in view my invention consists, primarily, of friction-disks concentrically secured to the axles of a car-truck, brake-bars movably mounted on the frame of the truck, shoes vertically hinged to the bars and supported thereby concentric to the axles and opposite the friction-disks, and means to move the bars to press the shoes on the disks and retract them therefrom.

Furthermore, my invention consists of the novel construction, combination, and arrangement of parts hereinafter described, claimed, and illustrated in the drawings, in which—

Figure 1 is a diagrammatic view showing a double-truck car equipped with my brake. Fig. 2 is a partial section through one of the trucks on the line X X of Fig. 1. Fig. 3 is an enlarged view on the same line. Fig. 4 is a top plan view of a brake-bar with the brake-shoes and a portion of its operating mechanism hinged thereto. Fig. 5 is a side elevation of the operating mechanism of the brake-bars and showing adjustable hangers for movably supporting the brake-bars. Fig. 6 shows an end elevation of a modified form of hanger for supporting the brake-bars. Fig. 7 is a diagrammatic view showing my brake mechanism applied to a single truck, and Fig. 8 shows a side elevation of the hanger shown in Fig. 6.

In the drawings, 1 designates the trucks of the car, and 2 the truck-frame, which is supported by the car-axles 3. The axles are provided with traction-wheels 4, having formed on their inner sides annular disks or faces 5 concentric to the hubs of the wheels and adapted to operate as brake or friction surfaces for the brake-shoes, which latter consist of annular disks 6, mounted over the hubs opposite to each disk-face 5, formed upon the wheels. The brake-shoes 6 are provided with incuts 7 of a width to permit the removal of the shoes from or the mounting of them over the wheel-hubs, and the area of the central opening 8 of the brake-shoe is of a diameter to receive the hub of the wheel in the opening and provide for an annular space surrounding the hub. The incut in the brake-

shoe is closed by means of a plate 9, suitably bolted to the disk to complete the circle of the annular brake-shoe, and the contacting face of the brake-shoe is preferably lined with friction material 9′, suitably secured to the brake-shoe. Upon the rear face of the brake-shoes there are formed ears or lips 10, preferably arranged in horizontal parallel pairs diametrically above and below the axle and centrally perforated in vertical alinement.

11 designates brake-bars provided with lunar arms 12 on each end of the central portion 13. The ends of the arms 12 are vertically perforated for pivotal connection with the ears 10 and are hinged thereto by bolts 10′. Each of the bars 11 connect the brake-shoes of one side of a car-truck and are supported from the central cross-bars 14 of the truck-frame by means of hangers 15. Hangers 15 are mounted in pairs, as shown in Fig. 5, to oscillate in bearings 16, adjustably mounted upon the top of the central cross-bars of the truck-frame, and are secured thereto by means of bolts 17, inserted through the elongated slots 18, formed in the top of the bearing. Hangers 15 are pivotally connected by links 19, adapted to support a brake-bar 11, and the distance between these hanger-arms is sufficient to permit the free movement of the arms without contacting with the brake-bars.

In Figs. 6 and 8 there is shown as a substitute for hangers 15 a single hanger 15′, each arm of which is provided at the end with a bearing 20, formed to receive a cylindrical portion 21 of the brake-bar, and thereby permit the movement of the brake-bar to contact the brake-shoes with the wheel-disks.

22 designates arbors which are mounted in a vertical position in bearings 23, secured to the side of one of the cross-bars 14 of the truck-frame, and the arbors are held in position in the bearings by means of collars 24. To the top of the shaft there are secured crank-arms 25, and to the lower portion of the shaft there are mounted crank-arms 26, which are coupled to the brake-bar by means of links 27, pivoted at one end of the crank-arms and at the opposite ends to ears or lugs 28, integral with the brake-bars 11.

Within a central portion of the length and width of the car-body there is suitably supported a crank-arm 29, coupled to the top crank-arms 25 by means of connecting-rods 30. In each end of the car below the floor there is suitably secured thereto bearings 31, in which is mounted a shaft 32, provided with a crank-arm 33 on one end of the bearing and a detachable lever-arm 34 at the opposite end of the bearing which projects through the floor of the car within convenient reach of the motorman, and the crank-arm 33 is connected to the centrally-arranged crank-arms 29 by means of connecting-rods 35 from each end of the car and connected to opposite arms 25, whereby the partial movement of each lever or of both will set the brakes. Thus constructed in operation when the lever 34 at either or both ends of the car are pulled toward the car the crank-arm 33, by means of the rods 35, pull on arm or arms 29, thereby pulling the crank-arms 25 by means of the connecting-rods 30. The crank-arms 25 move the crank-arms 26, which being coupled by links 27 to the brake-bars 11 move the latter outward until the brake-shoes are brought into contact with the wheel-disks, and whatever may be the variation from a parallel relation between the brake-bars and the wheel-disks under the pressure of the brake-bars each brake-shoe will be automatically adjusted on its hinges to full-face contact with the face of its wheel-disk and will maintain such contact as long as pressure is applied to the brake-bars, however the relation between the wheel-disk and brake-bars may be varied during such pressure, whereby full and perfect contact between the shoes and the friction-disks is automatically maintained as long as there is any pressure on the brake-bars, thereby increasing the effectiveness of the brake and avoiding unequal wear of the faces of the shoes and the disks. A reversal of the lever 34 will reverse the movements of the levers and connecting-rods and withdraw the brake-bars, and thereby withdraw the brake-shoes from contact with their respective disks. By means of the adjustable bearing 16, mounted on the central cross-bars of the truck-frame, the brake-bars may be adjusted to withdraw the brake-shoes the desired distance from their disks when the hangers 15 are in the vertical position they would assume by gravity. Thus adjusted, the brake-bars and shoes will automatically return to their normal position by gravity, when the operating-lever on the platform of the car is released.

In Fig. 7 is shown my brake mechanism applied to a single-truck car, in which, without departing from the principle of construction and operation as hereinbefore described, the parts are modified to suit the enlarged wheel-base and the increased length of the truck-frame, but not otherwise, except that the connecting-rods 30 extend from the operating-lever on the platform (not shown) to a central disk 36, mounted on a vertical arbor suitably supported on the cross-bars 14 of the truck-frame, to the lower end of which arbor below the cross-bars are secured the crank-arms 26, which operate the brake-bars, as shown for double-truck cars.

While I have herein shown and described the brake-bars as mounted on hangers adapted to oscillate, it is apparent that brake-bars having brake-shoes hinged thereto may be otherwise movably mounted to the frame of the truck and may be actuated by the same or other means than herein shown to press the shoes on their wheel-disks and that the automatic adjustment of the shoe to the disk

is not dependent on either. In the use of the hinged shoe I therefore do not limit myself to any special means of movably mounting the brake-bars or actuating them.

What I claim to be new is—

1. In a car-brake mechanism, the combination with friction-disks secured concentric to the axles of a car-truck; brake-bars movably mounted on the frame of the truck, and means to laterally move the bars toward and from the disks, of brake-shoes vertically hinged to the brake-bars and supported thereby concentric to the axles opposite the friction-disks, and automatically adjustable to the disks when pressed thereon by the brake-bars.

2. In a car-brake mechanism, the combination with friction-disks secured concentric to the car-axles, of brake-bars movably mounted in parallel position, one on each side of the truck-frame and having shoe-supporting arms at the ends; annular brake-shoes vertically hinged to the arms of the brake-bars, concentric to the car-axles and opposite the wheel-disks, and adapted to contact therewith, and means to move the brake-bars to press the shoes on the disks and to withdraw them therefrom.

3. In a car-brake mechanism, the combination with friction-disks concentrically secured to the axles of a car-truck, of pivoted hangers adjustably mounted on the central cross-bars of the truck-frame; brake-bars movably suspended by the hangers in parallel relation on opposite sides of the truck-frame, the brake-bars being provided with lunar arms at their ends; brake-shoes vertically hinged to the ends of the brake-bar arms and supported thereby concentric to the axles of the car-truck adjacent to and facing the friction-disks, and means to move the brake-bars to contact the shoes with the disks and retract them therefrom.

In witness whereof I have hereunto set my hand this 19th day of March, A. D. 1902.

HERBERT E. PUTNEY.

Witnesses:
F. S. MACOMBER,
A. L. BAUMGARDNER.