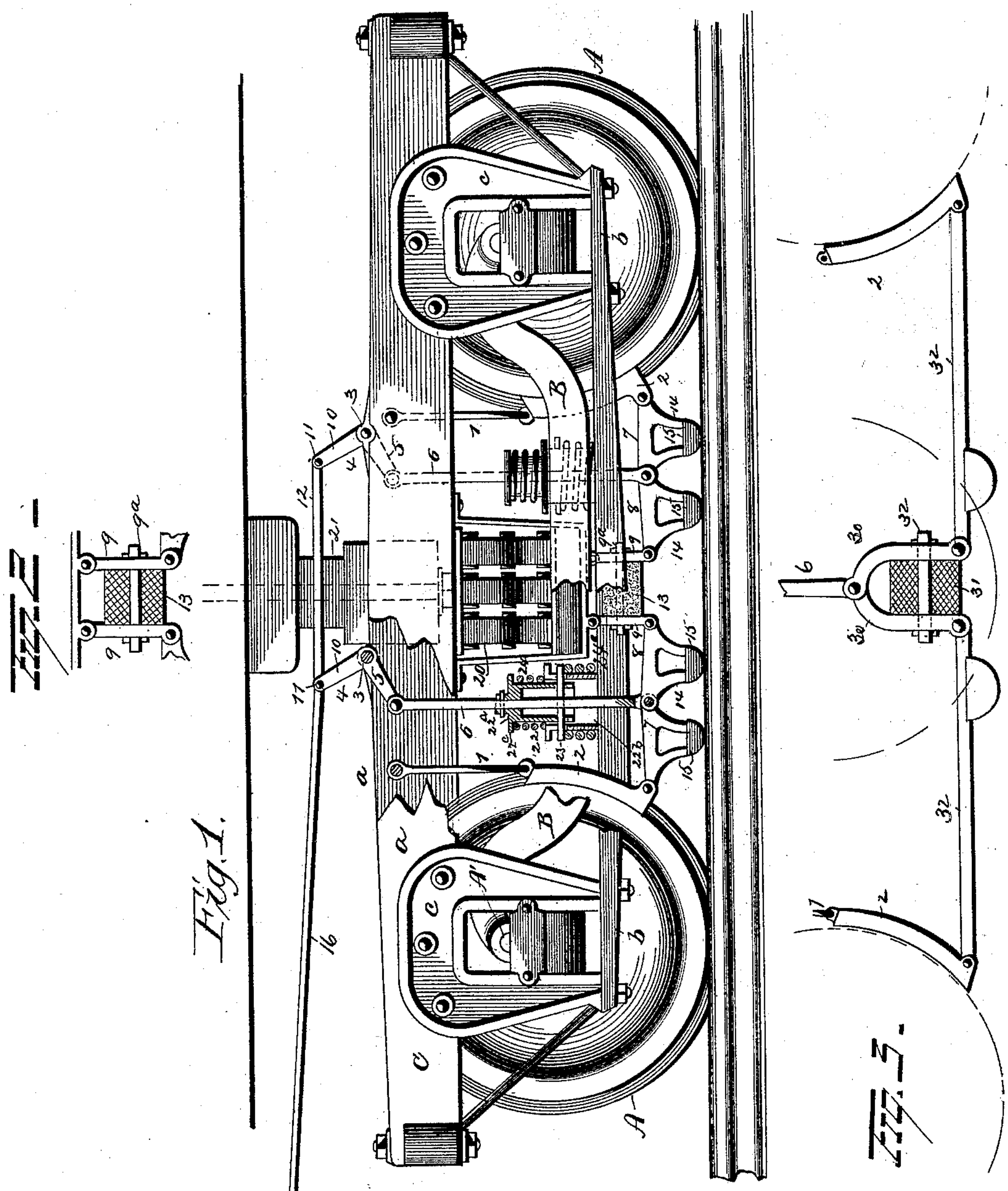
(No Model.)

M. BODEFELD.

CAR BRAKE.

No. 421,231. Patented Feb. 11, 1890.



Witnesses

C. J. Nottingham

G. F. Downing

Inventor

M. Bodefeld.

By his Attorney

H. A. Seymour

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

MEINOLPH BODEFELD, OF ST. LOUIS, MISSOURI.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 421,231, dated February 11, 1890.

Application filed December 10, 1889. Serial No. 333,191. (No model.)

To all whom it may concern:

Be it known that I, MEINOLPH BODEFELD, a citizen of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Car-Brakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in car-brakes, and has for its object to provide a car-brake which shall be durable in construction and effective in operation.

A further object is to provide a car-brake by means of which considerable power can be brought to bear on the brake-shoes with the expenditure of but little physical exertion on the part of the operator.

A further object is to so construct the brake that the amount of frictional resistance offered by the brake-shoes may be regulated.

With these objects in view my invention consists in certain novel features of construction and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a car-truck having my improved brake mechanism applied thereto. Fig. 2 is a detail view of the links 9 and interposed rubber block. Fig. 3 is a view of a modification.

A represents the wheels of a car-truck having their axles A′ connected by means of yokes B. A frame C, of wood or other suitable material, is supported by the axles or axle-boxes and made to embrace the wheels A. Each frame C comprises two bars *a* above the axle and two bars *b* below the same, these bars being connected together by means of brackets *c*.

Suspended by means of links 1 from the bars *a* of frame C and in proximity to the wheels A are brake-shoes 2. Two shafts 3 (one for each pair of brake-shoes 2) are journaled on the upper bars of the frame C, and extend from one frame C to the other. A bell-crank lever 4 is secured to each end of each shaft 3, and to one arm 5 of the bell-crank levers rods 6 are pivoted.

Pivoted to the lower end of each rod 6 are two rods 7 and 8, projecting from the rods 6 in opposite directions, this connection of the rods 7 and 8 with the rods 6 producing, in effect, toggle-joints. The free ends of the levers 7 are pivotally connected with the lower ends of the brake-shoes, while the free ends of the rods 8 are pivotally connected with some stationary part of the truck-frame by means of pivoted links 9. The links 9 are connected by means of a bolt 9^a, which passes loosely through them, as shown in Figs. 1 and 2, and supported upon this bolt is a block of elastic material 13; or, if desired, springs may be employed instead of the elastic material. The arms 10 of the bell-crank levers are pivotally connected by means of connecting-rods 11, and these latter rods are connected together by means of a rod 12.

Secured to each lever 7 and 8 are a series of two or more brake-shoes 14, having curved faces 15, adapted to engage the track when the device is operated.

A rod 16 is pivotally connected at one end with one end of the connecting-rod 12 and at the other end to a hand-lever pivoted to the car.

Springs 20, of any preferred construction, are connected to the truck in any approved manner.

The truck is connected to the car at its center by means of a heavy bolt 21, or in any other suitable manner, the connection being such as to permit the truck to turn.

When the hand-lever on the car is operated, the bell-crank levers will be turned on their pivots and the vertical rods 6 made to descend. When the vertical rods descend, the inner ends of the horizontal levers 7 and 8 will be lowered and the shoes brought into contact with the rails of the track. At the same operation the levers 7 will move outwardly and cause the brake-shoes 2 to make contact with the wheels, and the horizontal levers 8 will be moved inwardly and made to bear against the springs or rubber blocks 13. The combined length of the rods 7 and 8 being greater than the distance between the springs or elastic blocks 13 and the brake-shoes 2, it will be seen that when the vertical rods 6 are lowered the horizontal levers 7 and

8 will operate as above described, and great pressure can be exerted upon the brake-shoes.

In some cases it may be found desirable to regulate or vary the amount of frictional resistance to be exerted by the brake-shoes; or, in other words, it may be desired to apply the brakes with greater force at some times than at other times. To accomplish this result, the rods or levers are so arranged relatively to each other and provided with springs in such a manner that with a certain amount of pressure on the hand-lever the brake-shoes 2 will be made to engage the wheels, and with additional pressure on the hand-lever the shoes 14 will be made to engage the rails of the track. A series of sleeves 22 is located on the truck-frame and made to surround the vertical rods 6. The sleeves 22 are each made with a lower part 22^a and an upper part 22^b, the upper part 22^b being smaller than the lower part 22^a and adapted to move in said lower part. A spring 24 is coiled about the part 22^a of the sleeve, bearing at one end on the part 22^b and at the other end against a flange 22^c on part 22^a, and a stronger spring 24^a is coiled about the part 22^b of the sleeve, the last-mentioned spring bearing against the bottom bar *b* of the truck-frame and at the other end against a pin 23, projecting from the vertical rod 6. The part 22^a of the sleeve is slotted for the accommodation of the pin 23, which projects from the vertical rod 6. Thus when the device is operated and the springs 24 shall have been compressed, the brake-shoes 2 will be applied to the wheels, and when the handle is further operated and the springs 24^a compressed the brake-shoes 14 will be brought in contact with the track; and, further, by providing the springs 24 24^a when the hand operating-lever is released the springs 24 24^a will return the vertical levers to their normal positions, and thus release the brakes.

It is evident that my improved brake may be operated by means of compressed air as well as manually. Whether the device be operated by hand or by compressed air, it will require a certain amount of pressure to overcome the resistance of springs 24 sufficiently to apply the brakes 2 2 to the wheels and an additional amount to overcome the resistance of the springs 24^a sufficiently to apply the brake-shoes 14 to the rails. It being known how much pressure is required to apply one set of brake-shoes and how much additional pressure is required to apply both sets, the operator can readily apply one or both sets at will.

When my improvements are to be applied to a truck having six wheels, the modified form shown in Fig. 3 will preferably be employed. In this form of the invention a single vertical rod 6 will be employed at each side of the truck, and these rods will be located at the center of the truck. To the lower end of each rod 6 are two curved pivoted arms 30, and between these arms a block of rubber 31 is located, a bolt 32 passing loosely through the arms 30 and rubber block 31. To each arm 30 is pivoted a horizontal lever 33, the opposite ends of said levers 33 being pivoted to the brake-shoes 2 of the respective wheels A. If desired, this construction of the connection between the vertical and horizontal levers may be adopted for the connection between the vertical rods 6 and horizontal levers 7 8 instead of the simple construction of connection shown in Fig. 1.

Slight changes might be made in the constructive details of my invention without departing from the spirit thereof; hence I do not wish to limit myself to the precise details of construction herein set forth; but,

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

1. In a car-brake, the combination, with the truck and wheels, of brake-shoes suspended in proximity to said wheels, pivoted levers attached to said brake-shoes, brake-shoes secured to the pivoted levers and adapted to engage the track-rails, and means for operating both sets of brake-shoes simultaneously, substantially as set forth.

2. In a car-brake, the combination, with the car axles and wheels and truck, of brake-shoes suspended from the truck-frame, pivoted levers attached to said brake-shoes, brake-shoes attached to said pivoted levers, means for applying said brake-shoes, and springs for returning the brake-shoes to their normal positions, substantially as set forth.

3. In a car-brake, the combination, with the axles and wheels and truck, of brake-shoes suspended from the truck-frame, vertically-reciprocating rods, horizontal levers pivoted to the vertical rods and to the suspended brake-shoes, brake-shoes secured to the horizontal levers, and means for reciprocating the vertical rods to apply the brakes, substantially as set forth.

4. In a car-brake, the combination, with the axles, wheels, and trucks, of brake-shoes suspended from the truck-frame, vertically-reciprocating rods, horizontal levers pivoted at their inner ends to the vertical rods and at their outer ends respectively to the brake-shoes and to the frame, brake-shoes secured to the horizontal levers, elastic material between the inner ends of the horizontal levers, and means for reciprocating the vertical rods to apply the brakes, substantially as set forth.

5. In a car-brake, the combination, with the axles, wheels, and truck, of brake-shoes suspended from the truck-frame, bell-crank levers pivotally supported on the frame, vertically-reciprocating rods pivoted to the bell-crank levers, horizontal levers pivoted at their inner ends to the vertical rods and at their outer ends respectively to the brake-shoes and to the frame, brake-shoes secured to the horizontal levers, elastic material between the inner ends of the horizontal levers, and means

for operating the bell-crank levers to apply the brakes, substantially as set forth.

6. In a car-brake, the combination, with the axles, wheels, and truck-frame, of brake-shoes suspended from the truck-frame, shafts mounted on the frame, bell-crank levers carried at the ends of said shafts, vertical rods pivoted to the bell-crank levers, horizontal levers pivoted at their inner ends to the vertical rods and at their outer ends respectively to the suspended brake-shoes and to the frame, brake-shoes on the horizontal levers, elastic material between the inner ends of said levers, and means for operating the bell-crank levers simultaneously, substantially as set forth.

7. In a car-brake, the combination, with the car axles and wheels and truck-frame, of brake-shoes suspended from the truck-frame, pivoted levers attached to said brake-shoes, brake-shoes attached to said pivoted levers, means for applying the brake-shoes, and double springs so arranged that when the brake is operated to apply one set of brake-shoes one part of the spring will be compressed and when the device is further operated the other part of the spring will be compressed and the other set of brake-shoes applied, substantially as set forth.

8. In a car-brake, the combination, with the axles, wheels, and truck-frame, of brake-shoes suspended from the truck-frame, vertically-reciprocating rods having short arms at their lower ends, elastic material between said short arms, horizontal levers pivoted to said short arms and to the suspended brake-shoes, brake-shoes secured to the horizontal levers, and means for reciprocating the vertical rods to apply the brakes, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

MEINOLPH BODEFELD.

Witnesses:
GEORGE H. STILLE,
ADOLPH H. STILLE.