

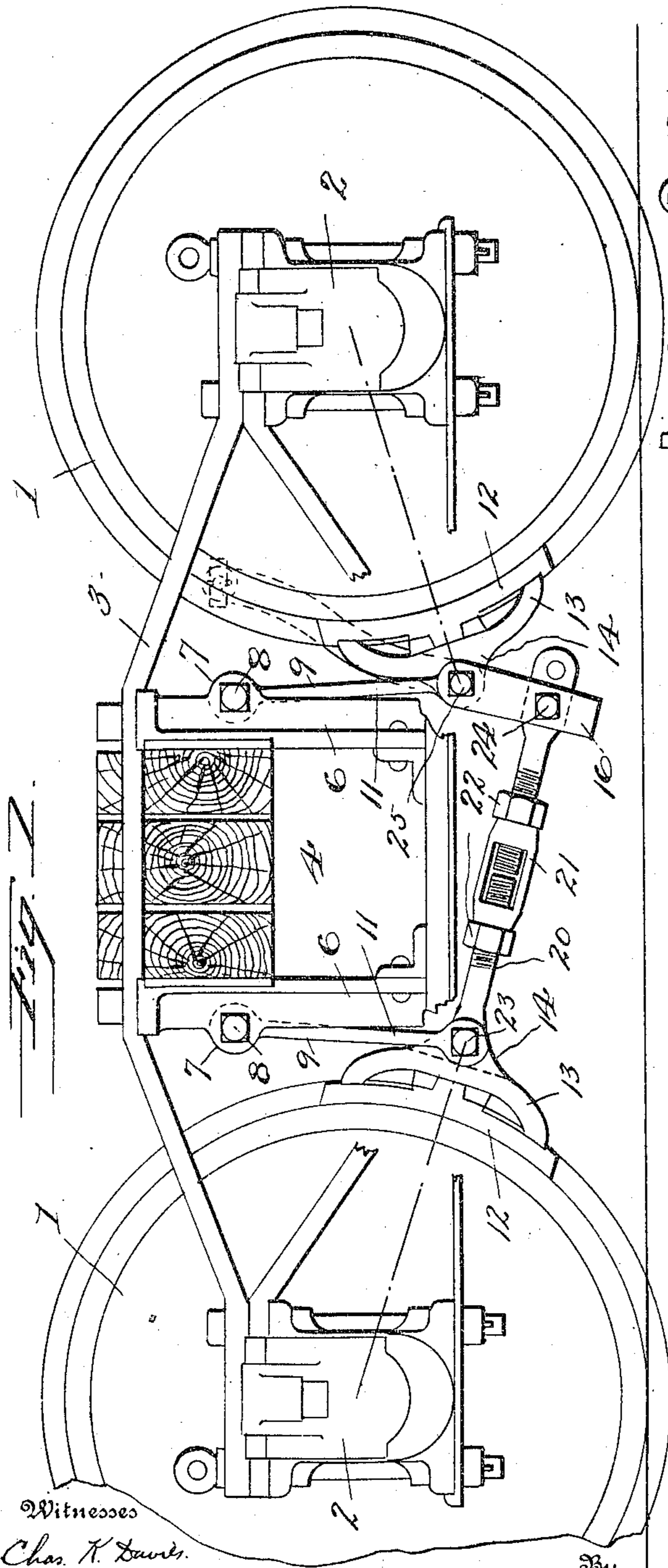
No. 840,991.

PATENTED JAN. 8, 1907.

E. S. COFFMAN.  
BEAMLESS BRAKE FOR CAR TRUCKS.

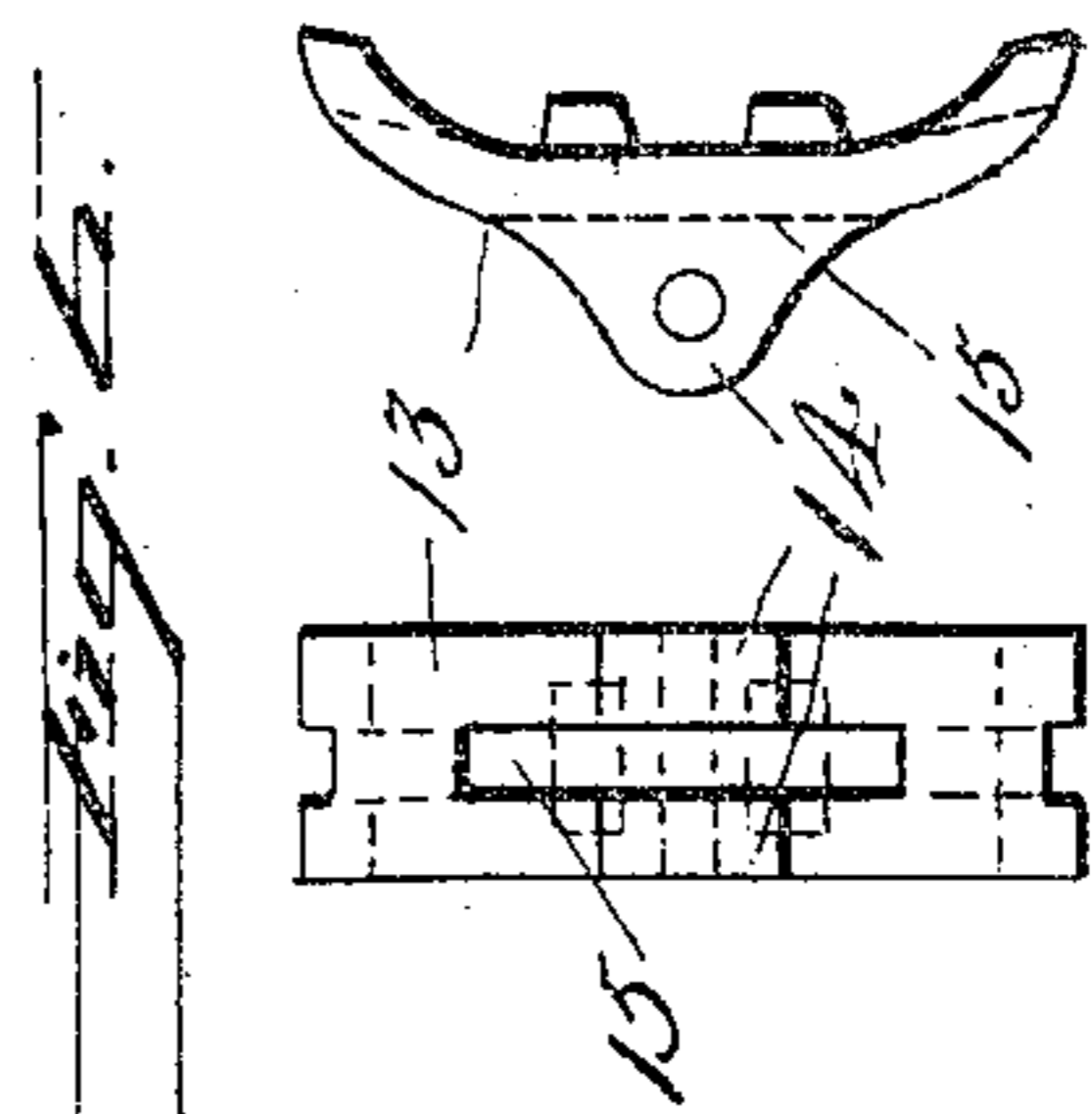
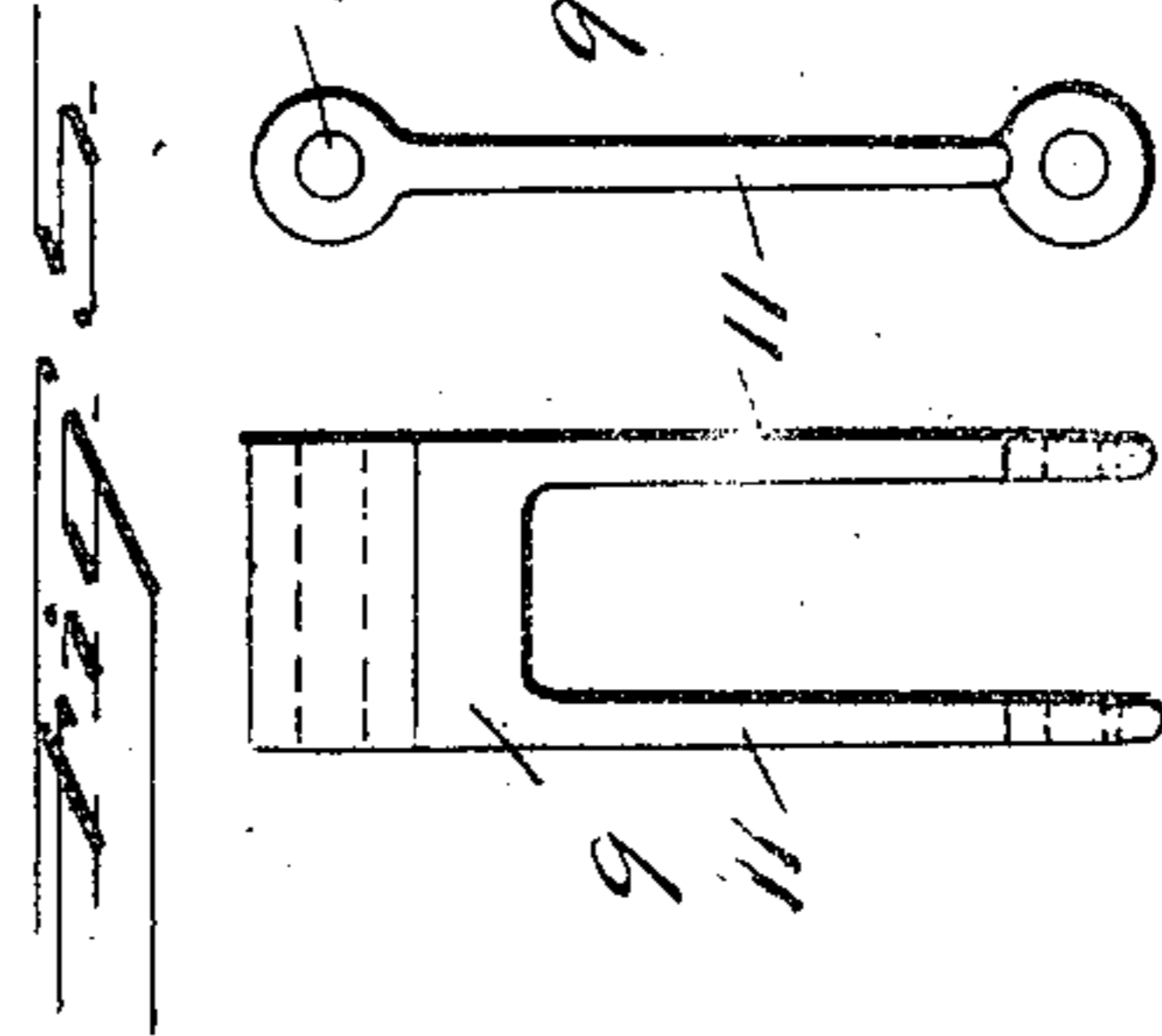
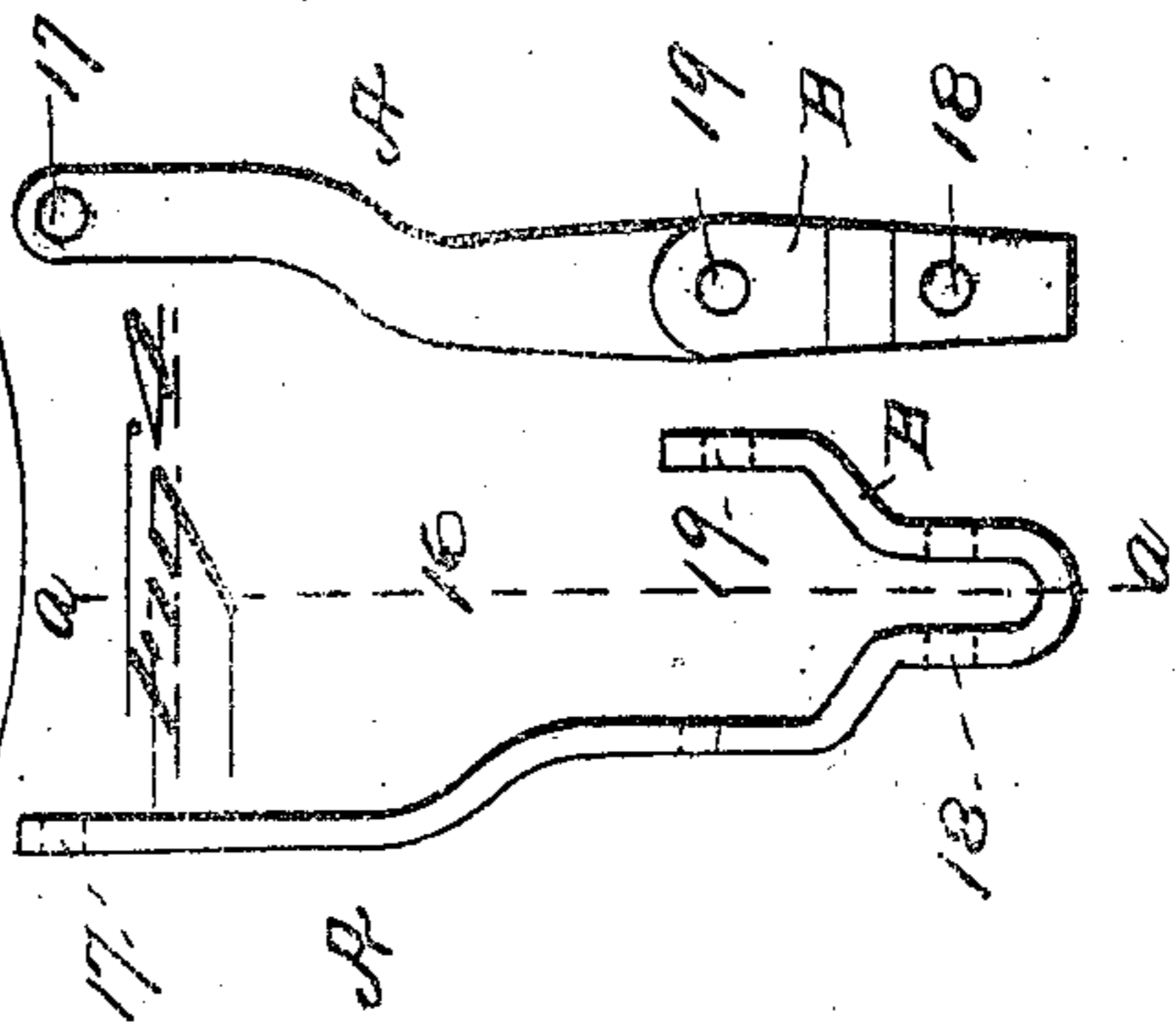
APPLICATION FILED APR. 13, 1906.

2 SHEETS—SHEET 1.



Witnesses  
Chas. K. Davis.  
W. L. Shipley.

By



Inventor  
E. S. Coffman,  
F. E. Stebbins.

Attorney

No. 840,991.

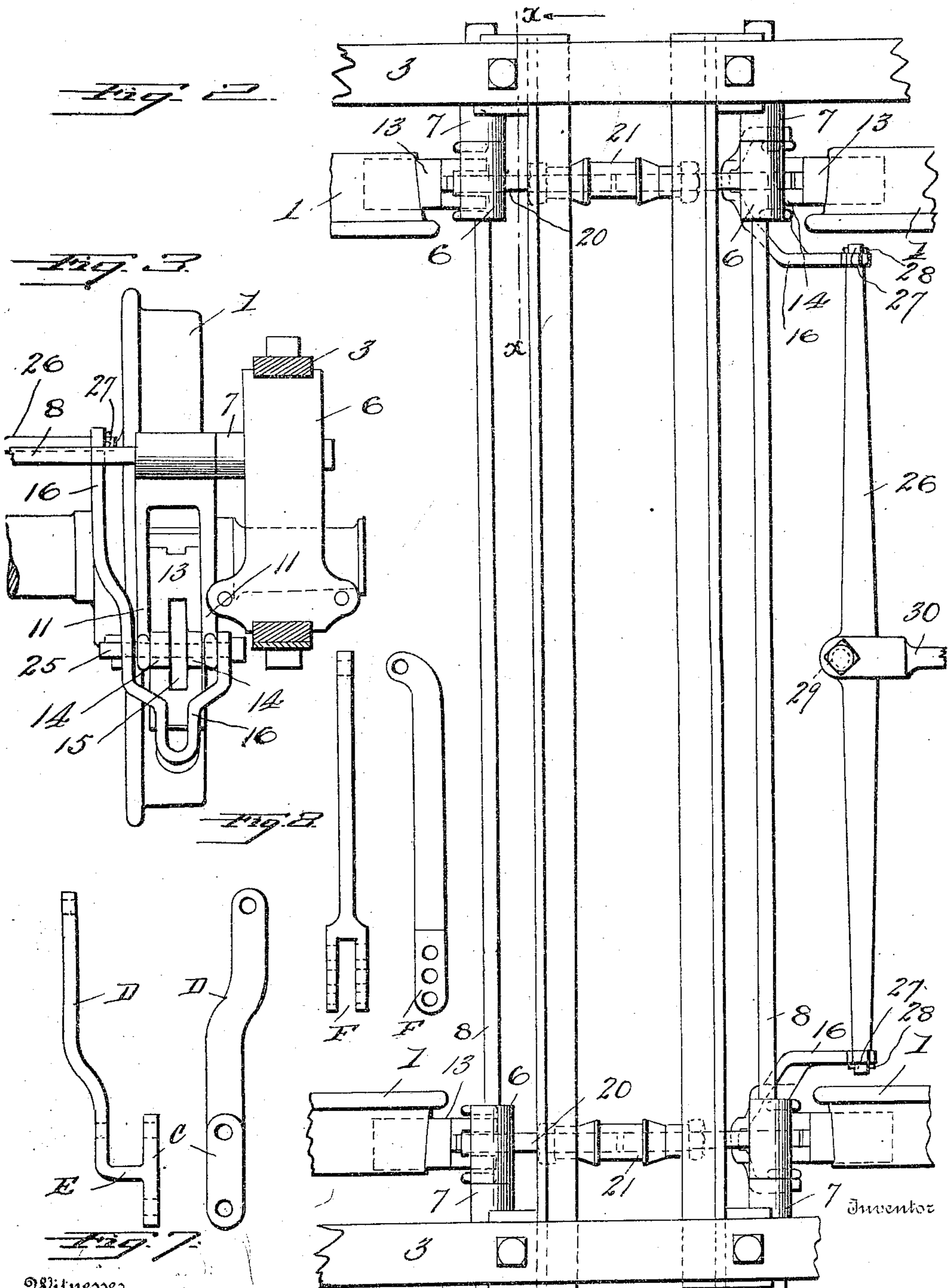
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Chas. H. Davis,  
W. L. Shipley.

E. S. Coffman,  
J. E. Stebbins, Attorney

# UNITED STATES PATENT OFFICE.

EDWARD S. COFFMAN, OF CLIFTON FORGE, VIRGINIA.

## BEAMLESS BRAKE FOR CAR-TRUCKS.

No. 840,991.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed April 13, 1906. Serial No. 311,450.

*To all whom it may concern:*

Be it known that I, EDWARD S. COFFMAN, a citizen of the United States, residing at Clifton Forge, in the county of Alleghany and State of Virginia, have invented new and useful Improvements in Beamless Brakes for Car-Trucks, of which the following is a specification.

My invention relates to so-called "beamless" brakes for car-trucks, the object being the production of a brake of this species which shall be cheaper in first cost than the brake which comprises as a part thereof two or more brake-beams, which can be easily, quickly, and cheaply repaired when necessary, which can readily be applied to trucks now in use without substantial changes, which shall be efficient in operation, and withal constitute a superior means for performing the requisite functions of a relatively perfect brake.

With these ends in view my invention consists in certain novelties of construction and combinations of parts, as hereinafter set forth and claimed.

The accompanying drawings illustrate one complete example of the physical embodiment of the invention and modifications of the brake-lever and push-rod constructed according to the best modes I have so far devised for the practical application of the principle.

Figure 1 is a side elevation view of a car-truck with my brake apparatus in operative position thereon, the lower part of the frame being broken away to more clearly show the location of the parts. Fig. 2 is a part top plan view of Fig. 1. Fig. 3 is a section of Fig. 2 on line *x x* with the push-rod removed. Fig. 4 shows edge and plan views of a brake-lever. Fig. 5 shows plan and edge views of a brake-hanger. Fig. 6 illustrates back plan and side views of a brake-head. Fig. 7 shows a modification of the brake-lever, and Fig. 8 shows a modified construction of the push-rod.

Referring to the several figures, the numeral 1 designates the wheels of the truck; 2, the journal-boxes; 3, the ordinary diamond-frame; 4, the floating bolster, which in practice rests upon springs located beneath the ends thereof; 6, the cast column-guides; 7, perforated projections on the castings; 8, rods which pass through the perforations and aid in holding the side frames parallel

and the truck "square;" 9, the brake-hangers, each having a hole 10 at the top end and two legs 11 11, perforated at the ends, the rods 8 8 being passed through the holes 10, so that the hangers will be suspended from the rods; 12, the brake-shoes; 13, the brake-heads, to which the shoes are detachably secured in any manner; 14, perforated ears at the rear surface of the head; 15, the open space between the ears; 16 in Figs. 1, 2, 3, and 4, the brake-levers, bent, as shown, so as to form a slot at the lower end; 17, a hole at the top end; 18, holes at the lower end; 19, holes intermediate the ends; 20, the push-rod comprising two rods threaded to receive a turnbuckle 21 and at their remote ends forged flat and perforated, as shown, and one end having a series of holes; 22, jam-nuts on the rods; 23, bolts which secure the push-rods at one end to the brake-head, said end being located within the slot or open space 15, and 24 a bolt which secures the other end of the rod within the slot at the lower end of the lever; 25, a bolt which passes through the intermediate holes in the brake-lever; the holes in the legs of the hanger, and the holes in the ears upon the back of the brake-head; 26, the floating lever; 27, journals at the end of the lever, which are located within the holes 17 17 at the top ends of the levers; 28, cotter-pins; 29, a hole at the center of the lever, preferably located at the rear edge thereof, and 30 is a brake-lever rod connected to the air or hand brake mechanism, which in applying the brake moves the floating-lever away from the truck-bolster.

It will be observed that the legs of the hangers are located outside the ears upon the brake-head and that the brake-levers in Figs. 1 to 3 are outside of the brake-hanger legs.

By reference to Fig. 4 it will be seen that the long arm of the lever (designated by A) is offset from the center line *a a* of the brake-head, so that in applying the brake the said arm will not come in contact with the flange of the wheel. This is an important feature of construction. Most freight-car trucks already constructed have a wheel-base of five feet or five feet two inches, and the space between the pairs of wheels upon each side is almost completely occupied by the bolster, spring-seat, springs, and column-guides for the bolster. Consequently there is not sufficient working space between the wheel-tread

and bolster for the shoe, brake-head, hanger, and lever. By forming an offset in the lever the apparatus, as shown, can be made practical. The floating lever can also be located between the pairs of wheels and below the top surface of the bolster. The relative length of the long arm of the lever A to the short arm B is preferably three to one, and it will be noted that should the long arm be lengthened the short arm must also be lengthened, which would bring the end of the short arm too near the track, so it would strike the rail at switches and crossovers. The offset brake-lever is obviously an important feature of the device as designed.

By Figs. 7 and 8 I have illustrated modified forms of the brake-lever and push-rod. Fig. 7 has a piece C welded or cast upon the lower end of the lever. The upper end D is perforated and fits within the slot or open space 15 between the ears upon the back of the brake-head. The lower perforated end E is straddled by the lower perforated end F of the push-rod. (Shown by Fig. 8.) The upper end of the push-rod (shown by Fig. 8) fits within the slot 15 at the back of the brake-head which holds the shoe for the opposite wheel. The end of the push-rod may be curved, as shown, so that the body thereof will clear the spring plank or seat when the same are located relatively near the track.

The operation of the brake is obvious from the drawings. In advancing the floating lever the shoes carried by the brake-hangers are forced against the treads of the wheels in directions perpendicular to the centers of the axles or journals, as shown by the dotted lines.

From the foregoing description, taken in connection with the drawings, it will be seen that I have produced a beamless brake which fulfils all the conditions set forth as the purposes of the invention. Modifications and changes may of course be introduced in practice which will not constitute substantial departures.

What I claim is—

1. The combination in a beamless brake, of brake shoes and heads; hangers for suspending the same; two brake-levers, two push-rods; and a floating lever connected at its ends with the ends of the brake-levers; the brake-levers being pivoted each between its ends to a brake-head; and the push-rods each secured at one end directly to a brake-head and at the other end to the short arm of a brake-lever.

2. The combination in a beamless brake, of brake heads and shoes; hangers for suspending the same; two brake-levers; two push-rods; and means for connecting the long arms of the brake-levers with a brake-rod; the said brake-levers each having its long arm offset from the plane of the wheel

so as not to come in contact with the flange thereof when the brakes are applied.

3. The combination in a beamless brake, of brake heads and shoes; hangers for suspending the same; two brake-levers; two push-rods; and means for connecting the long arms of the levers with a brake-rod; said brake-levers being pivoted each intermediate of its ends to a brake-head and having the long arm thereof offset from the plane of the wheel; and each push-rod secured at one end to a brake-head and at the other end to the short end of a brake-lever.

4. The combination in a beamless brake, of brake heads and shoes; hangers; two pivoted brake-levers, each having its long arm offset from the plane of the wheel; two push-rods one end of each being secured to a brake-head and the other end to the short arm of a brake-lever; and a floating lever secured to the brake-levers.

5. The combination in a beamless brake, of brake heads and shoes; hangers for the same; two brake-levers each pivoted intermediate of its ends to a brake-head; two push-rods and means for connecting the long arms of the brake-levers with a brake-rod; the arrangement of the push-rods and brake-levers being such that in applying the brakes the shoes will be forced against the treads of the wheels in lines perpendicular to the centers of the axles.

6. The combination in a beamless brake, of brake heads and shoes; hangers for the same; two brake-levers each pivoted intermediate of its ends to a brake-head, and having its long arm bent; two push-rods; and a floating lever located between a pair of wheels and pivotally connected to the long arms of the brake-levers.

7. The combination in a beamless brake, of brake heads and shoes; hangers supporting the same; two brake-levers each pivoted between its ends to a brake-head; two push-rods each pivoted at one end to a brake-head and at the other end to the short arm of a brake-lever; and means for connecting the long arms of the levers with a brake-rod, the said push-rods being located below the plane of the truck spring-seat.

8. The combination with a beamless brake, constructed and operating substantially as set forth, of two brake-levers each pivoted intermediate of its ends to a brake-head, and each having its long arm offset from the plane of the wheel; and means for connecting said long arm with a brake-rod.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD S. COFFMAN.

Witnesses:

JOHN PAYNE, Jr.,  
B. V. BOOTH.