

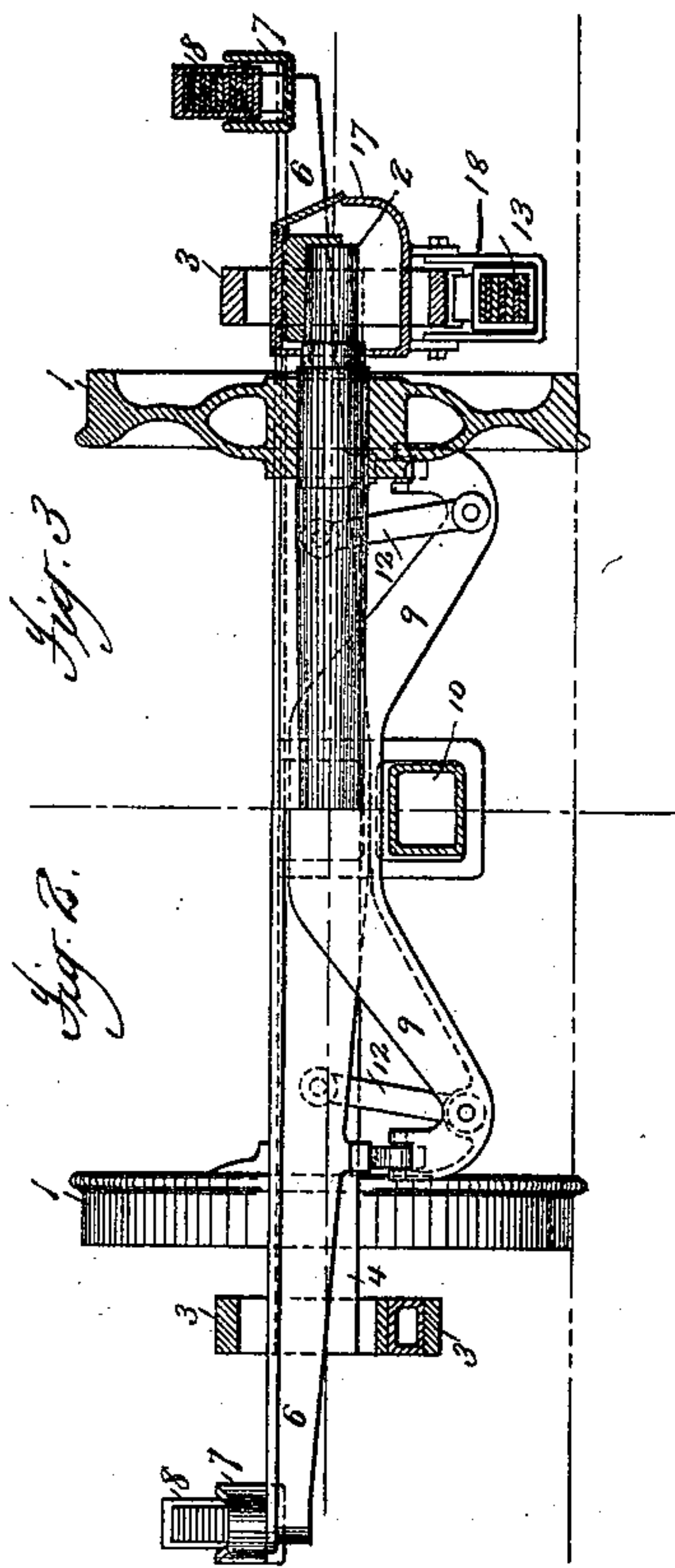
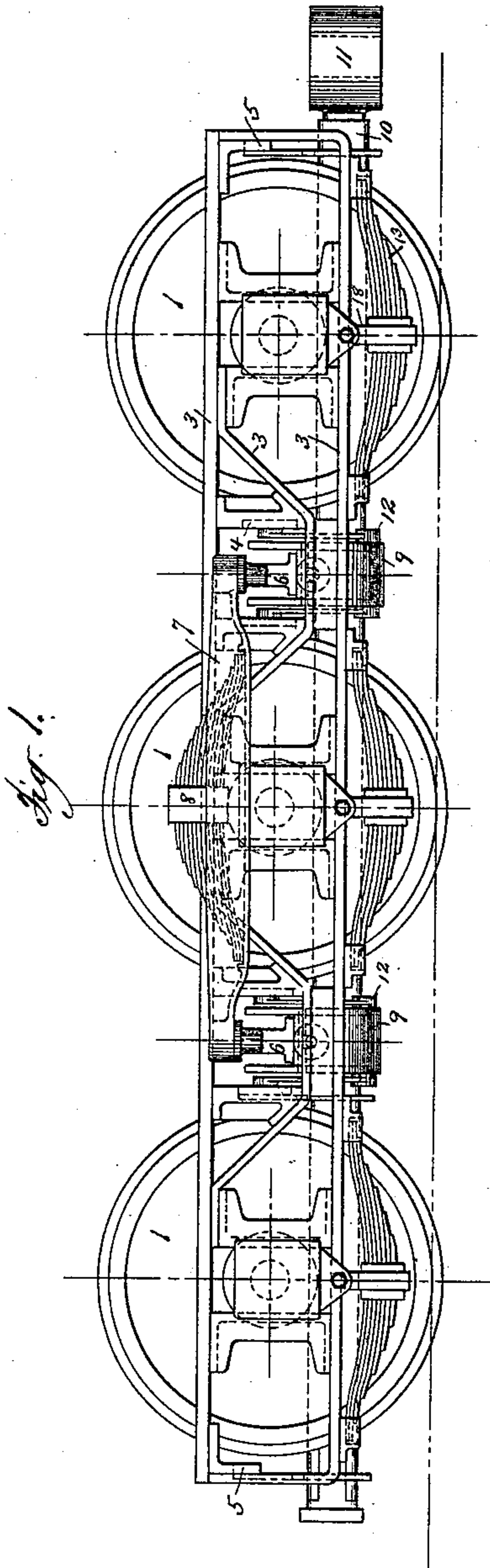
(No Model.)

4 Sheets—Sheet 1.

D. L. BARNES.
RAILWAY CAR TRUCK.

No. 431,736.

Patented July 8, 1890.



WITNESSES:

Geo. H. Botta
J. J. Kennedy

David L. Barnes
INVENTOR

BY *Wm. C. Behrens*
ATTORNEY.

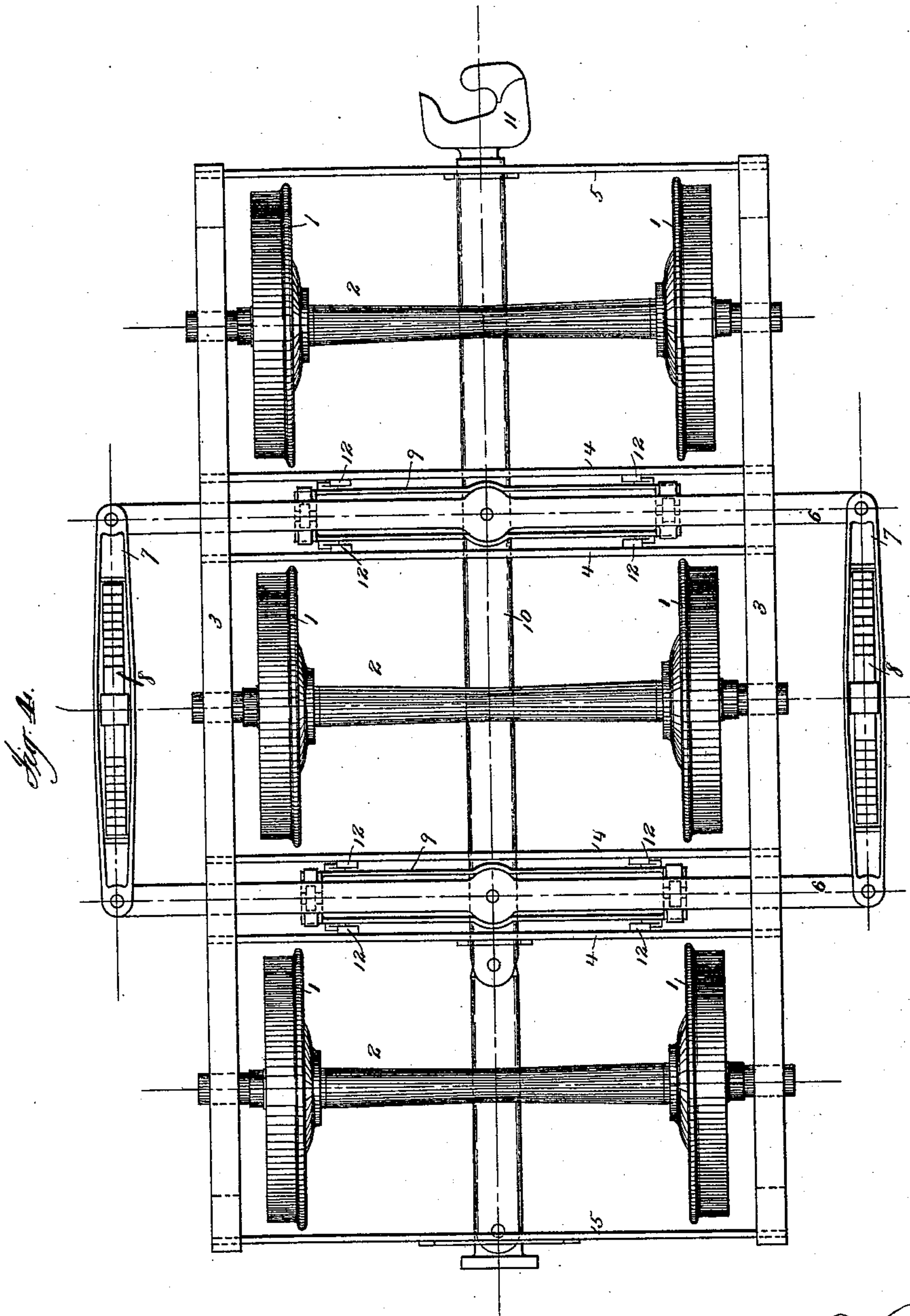
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WITNESSES:

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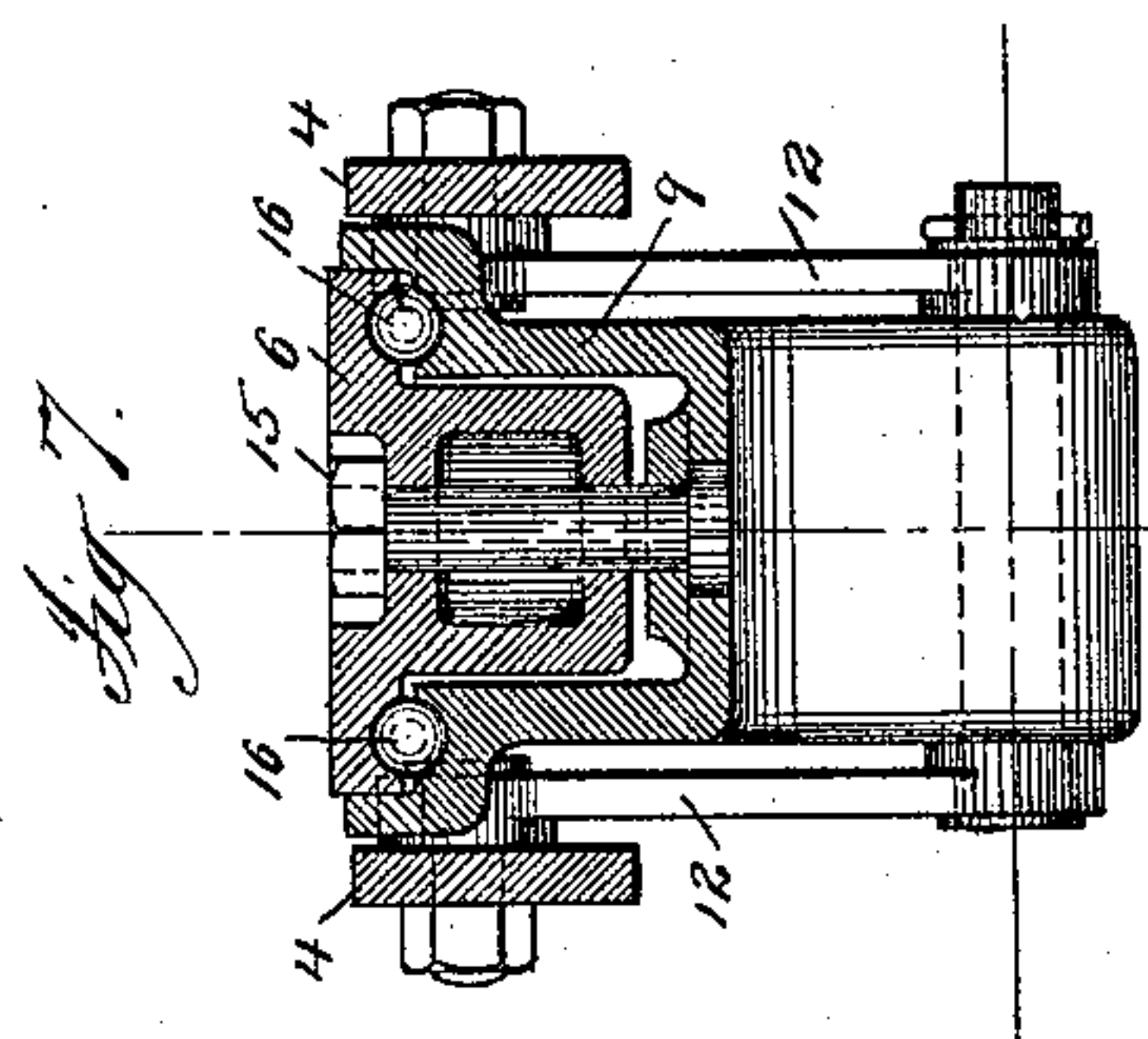
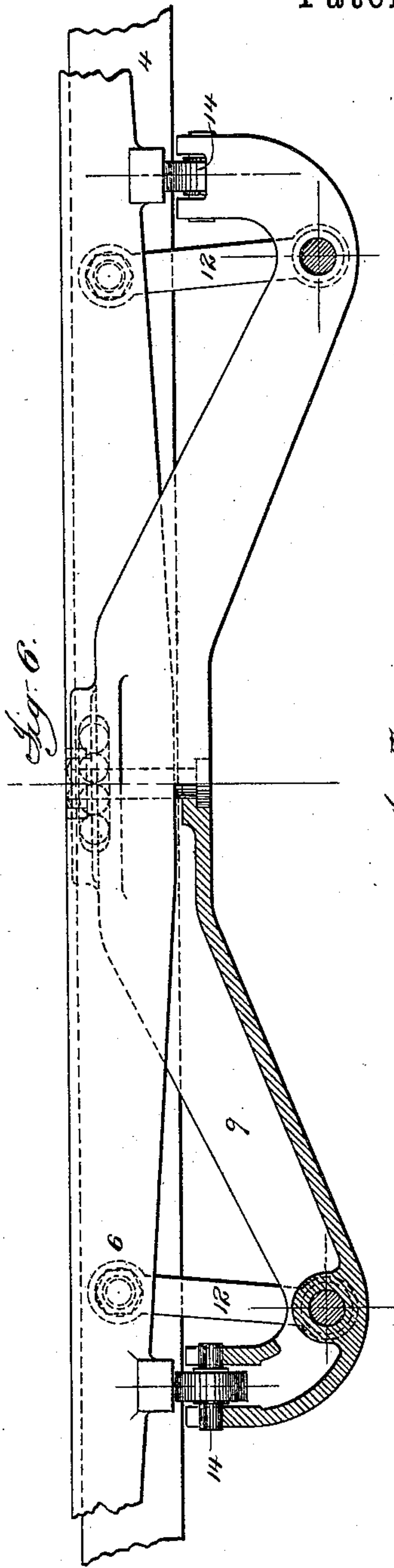
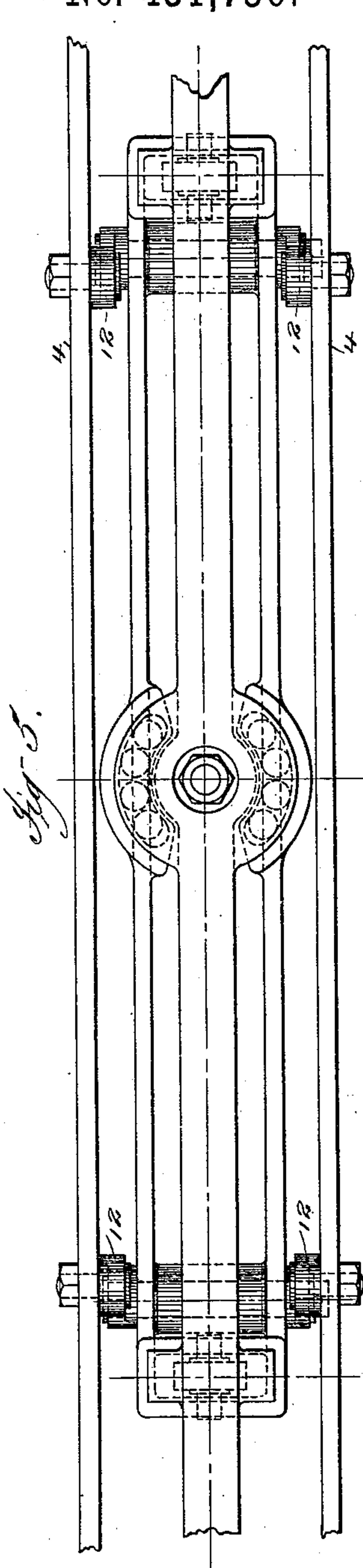
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No. 431,736.

Patented July 8, 1890.



WITNESSES:

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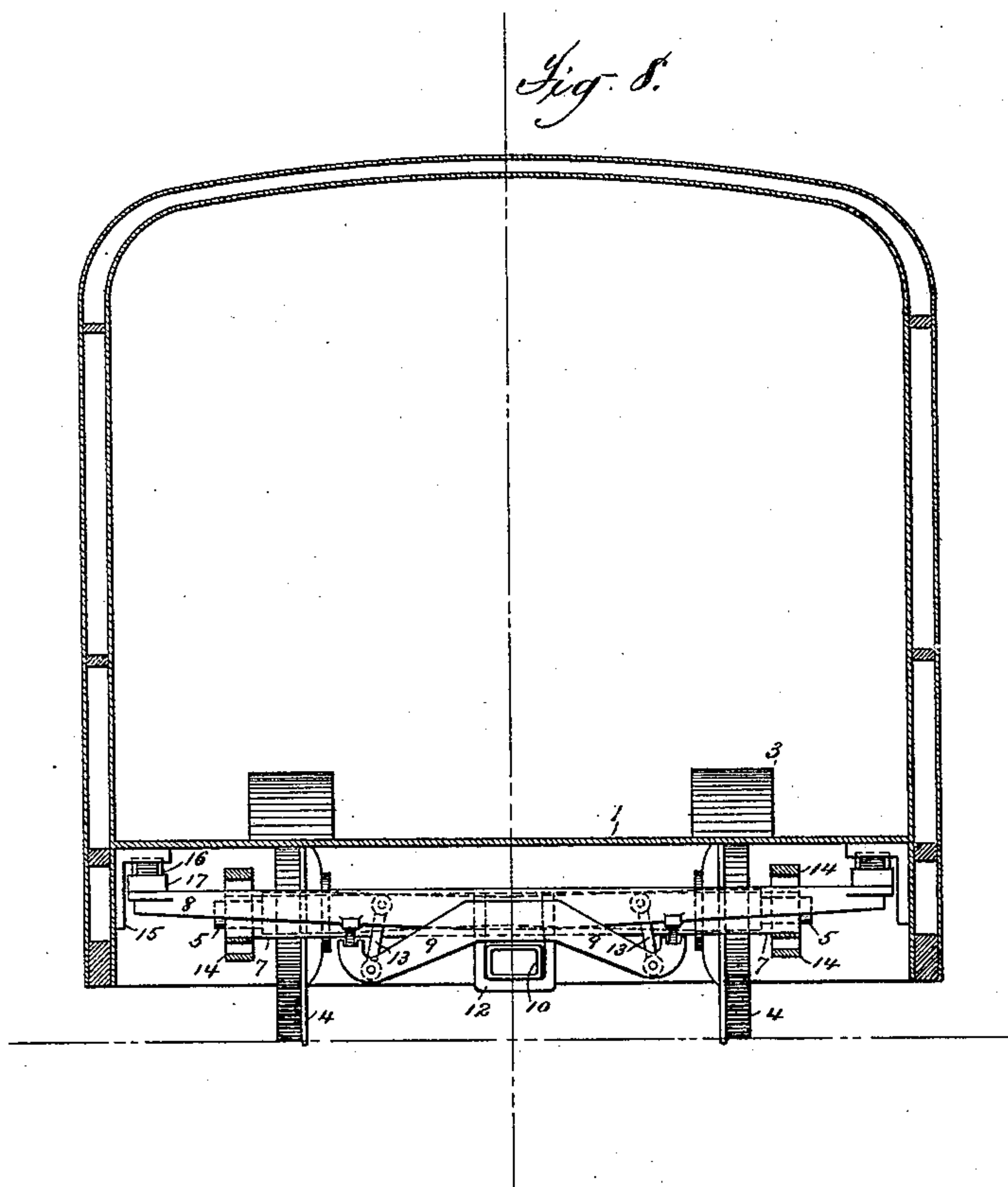
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D. L. BARNES.
RAILWAY CAR TRUCK.

No. 431,736.

Patented July 8, 1890.



WITNESSES:

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UNITED STATES PATENT OFFICE.

DAVID L. BARNES, OF CHICAGO, ILLINOIS, ASSIGNOR TO ROWLAND R. HAZARD, OF NEW YORK, N. Y.

RAILWAY-CAR TRUCK.

SPECIFICATION forming part of Letters Patent No. 431,736, dated July 8, 1890.

Application filed March 20, 1889. Serial No. 304,033. (No model.)

To all whom it may concern:

Be it known that I, DAVID L. BARNES, a citizen of the United States, and a resident of Chicago, Illinois, have invented a new and useful Improvement in Passenger-Railway Trucks, of which the following is a specification.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of a truck embodying my invention. Fig. 2 is a cross-section of one-half of truck shown in Fig. 1 at the swing-bolster. Fig. 3 is a cross-section of one-half of truck shown in Fig. 1 at the axle. Fig. 4 is a plan view of truck shown in Fig. 1. Figs. 5, 6, and 7 represent details of swing-bolster, showing side and center bearings of equalizer on same. Fig. 8 represents a cross-section of a railway-carriage adapted to be used in connection with my truck, the said figure showing how the said carriage is supported on the truck.

Referring to the drawings, 1 represents the wheels, and 2 the axles, of the truck. The frame of the same consists of side frames 3, transoms 4, and end pieces 5. The bearings of the journal-boxes 17 rest on the axles, and said boxes are connected by depending links 18 to the journal-box springs 13, secured to the said side frames in any approved manner. The journal-box springs 13 are of great strength and yield but little when the full weight of the car is on the truck, and they serve to control the rolling motion of the car.

Securely pivoted to each transom 4 are four depending swing-links 12, the lower ends of which are pivoted to a swing-bolster 9. (See Figs. 5, 6, and 7.) Said swing-bolster carries at its extremities side bearing-rolls 14, on which the car-supporting bolster 6 rests and has a slight movement. This car-supporting bolster 6 is secured to swing-bolster 9 by center-pin bolt 15 and rests on ball-bearings 16, confined in grooves in swing and car-supporting bolsters, as shown in the drawings. The two car-supporting bolsters of each truck are connected at their outer ends by equalizers 7, the parts having a pivotal connection, thus forming what may be termed a "double car-supporting bolster." Each equalizer carries a spring 8, and on these springs the car-body

directly rests, as illustrated in Fig. 8. These springs give the car vertical elasticity, and being placed at a maximum distance from center allow vertical vibration to take place with a minimum of rolling motion.

The buffer and draw-bar 10, provided with coupling 11, is suspended from the truck under the axles by suitable supports. The object designed to be accomplished by this new form of truck is to reduce as much as possible the vertical dimension of the same, thereby making it possible to lower car-floors considerably as compared with the constructions now generally used.

The reduction of height made possible by my invention is very great, and will be at once recognized by comparing Fig. 8 with the forms now generally in use. I accomplish the said object by the construction shown and described, principally by supporting the car on each side on the car-supporting bolsters 6 of the truck, properly speaking, since the equalizers 7 serve principally as connecting-pieces uniting the said car-supporting bolsters. I also save much valuable vertical space by placing the journal-box springs beneath the boxes.

Another object of my invention is to reduce to a minimum the rolling motion of railway-carriages. In general this motion is dependent upon the relative position of the center of gravity and the disposition of the springs. The greater the distance between springs transversely and the nearer the center of gravity approaches a horizontal line drawn from top to top of springs the less rolling motion the centrifugal or any other disturbing force will produce. In all the passenger-car trucks heretofore known two sets or series of springs are used, and one or both sets are so placed that the distance between centers transversely is less than the distance between truck side frames. In my invention the distance between springs is greater than distance between truck side frames, and in no case less, as will be apparent on reference to Figs. 2, 3, and 4 of the drawings.

A further object of my invention is to reduce the resistance offered to angular displacement of truck, for if there is great re-

sistance excessive flange-friction will result, and there will be increased vibration of car. I accomplish this object by the arrangement of balls and rolls between body and swing-bolsters, which materially reduce the resistance.

It will be noticed that in the construction herein described the car-supporting bolster passes between the wheels of the truck and about in the same horizontal plane as the axles thereof; that said bolster is free to rotate or move laterally within certain limits to accommodate angular displacement of car, and that there is a double car-supporting bolster for each end of car.

Instead of connecting the car-supporting bolsters at their ends by the equalizers, the latter may be omitted and a spring similar to spring 8 placed on each end of each car-supporting bolster. The end of one car could be placed to rest on one of these bolsters and the adjacent end of another car upon the other, so that the contiguous ends of two adjacent cars could be supported on one truck.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, with a truck-frame, of a car-supporting bolster extended beyond the sides of said truck-frame for supporting the car, and a car supported at the sides only at points on said car-supporting bolster outside of truck-frame, substantially as described.

2. The combination, with a truck-frame, of a car-supporting bolster arranged in substantially the same horizontal plane as the truck-axles and extended beyond the sides of said truck-frame, and a car supported at the sides at points on said car-supporting bolster outside of truck-frame, substantially as described.

3. The combination, with a truck-frame, of a double car-supporting bolster arranged in substantially the same horizontal plane as the truck-axles and extended beyond the sides of said truck-frame, and a car supported at the sides at points on said bolster outside of truck-frame, substantially as described.

4. The combination, with a truck-frame, of a swing-bolster, swing-links connecting truck-frame to swing-bolster, and a car-supporting bolster directly resting or directly supported on said swing-bolster, said car-supporting bolster extending outside of truck-frame to support the car and constituting part of truck, substantially as described.

5. The combination, with a truck-frame, of a double car-supporting bolster, the members of which extend beyond the sides of the truck-frame and are there connected to each other, and a car supported at the sides at points on said bolster outside of truck-frame, substantially as described.

6. The combination, with a truck-frame, of a swing-bolster, swing-links connecting truck-frame to swing-bolster, and a car-supporting

bolster supported centrally on ball-bearings, substantially as described.

7. The combination, with a truck-frame, of a swing-bolster and swing-links connecting truck-frame to swing-bolster, the upper ends of said swing-links being connected to truck-frame in about the same horizontal plane as that occupied by the truck-axles, and a car-supporting bolster directly supported on said swing-bolster, substantially as described.

8. The combination, with a truck-frame, of a swing-bolster provided with bearing-rolls at its ends, swing-links connecting frame to bolster, and a car-supporting bolster arranged to move on said bearing-rolls, substantially as described.

9. The combination, with a truck-frame, of a swing-bolster provided with bearing-rolls at its ends, swing-links connecting frame to bolster, and a car-supporting bolster connected to the swing-bolster and supported centrally on ball-bearings and at its ends on said bearing-rolls, substantially as described.

10. The combination, with a truck-frame, of a car-supporting bolster supported centrally on ball-bearings and provided at its ends outside of truck-frame with supports for the car, substantially as described.

11. The combination, with a truck-frame, of a double car-supporting bolster the members of which are supported centrally on ball-bearings and are connected at their ends by equalizers on which the car is supported, substantially as described.

12. The combination, with a truck-frame, of a pair of swing-bolsters connected to the same by swing-links, a double car-supporting bolster the members of which rest on said swing-bolsters and extend outside of truck-frame in about the same horizontal plane as the truck-axles, and equalizers joining the members of said car-supporting bolster, substantially as described.

13. The combination, with a truck-frame, of a double car-supporting bolster extended beyond the sides of truck-frame, and a set of springs arranged in connection with said bolster outside of truck-frame, and a car supported at the sides outside of truck-frame on said springs, substantially as described.

14. The combination, with a truck-frame, of a car-supporting bolster arranged to have a slight rotary motion on its central support and arranged at its ends outside of truck-frame to support the car, substantially as described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 15th day of March, 1889.

DAVID L. BARNES.

Witnesses:

H. G. PROUT,

H. S. PETTENGILL.