(No Model.)

E. M. BOYNTON.

RAILWAY MOTOR.

No. 555,280. Patented Feb. 25, 1896.

Fig. 1.

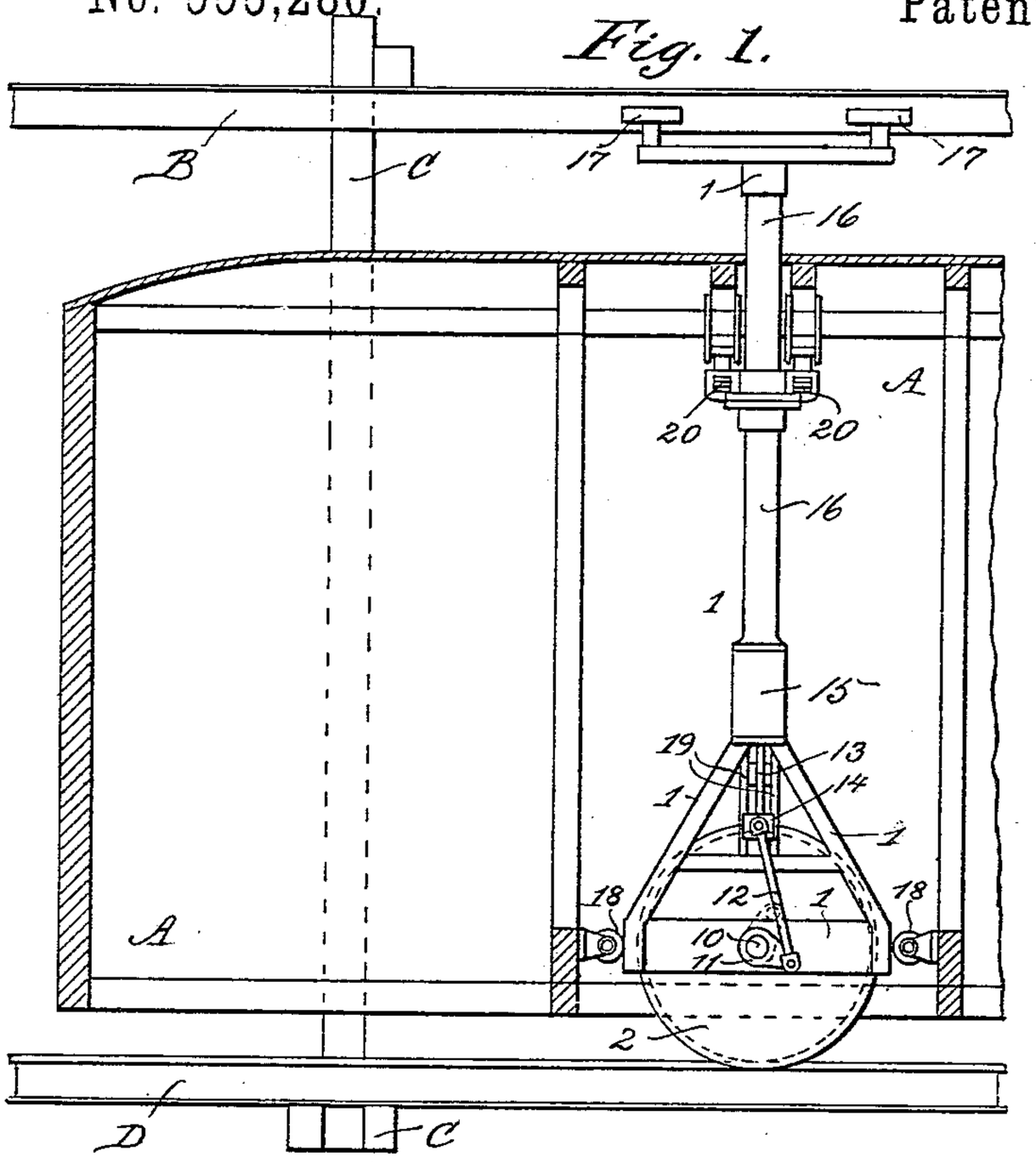


Fig. 2.

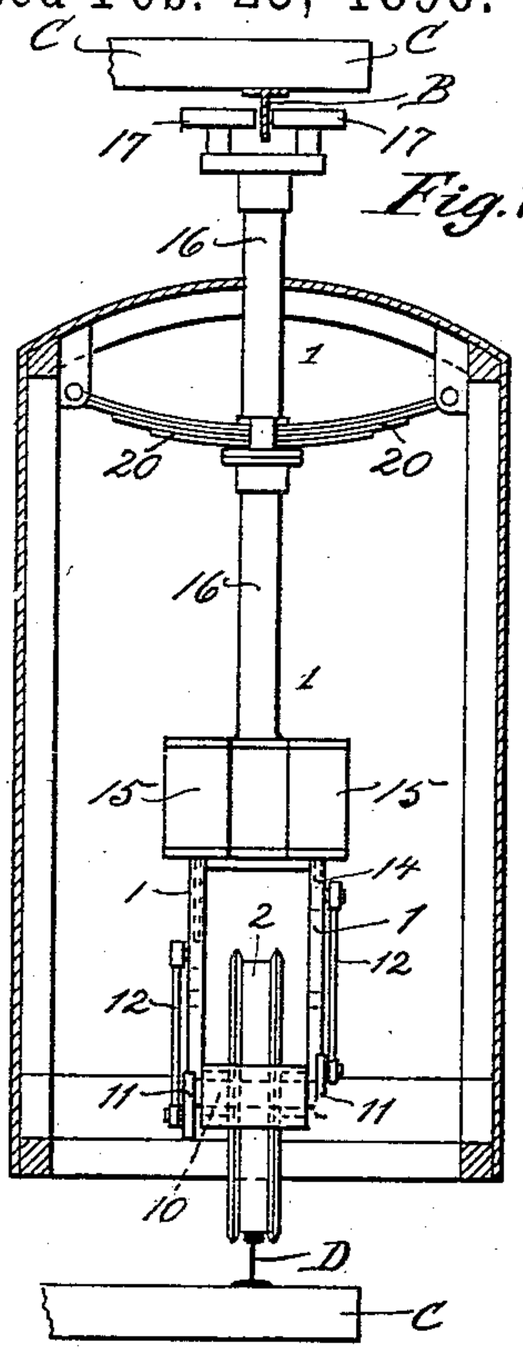


Fig. 3.

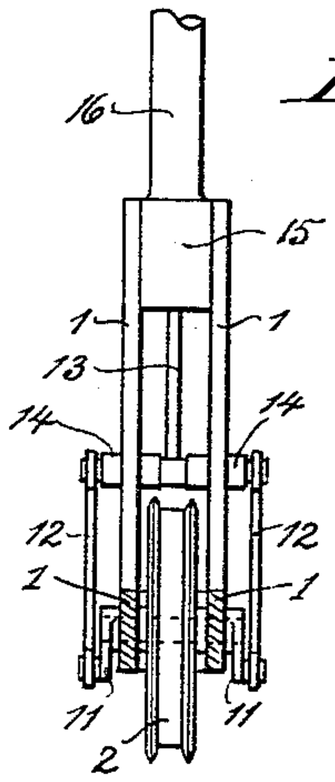
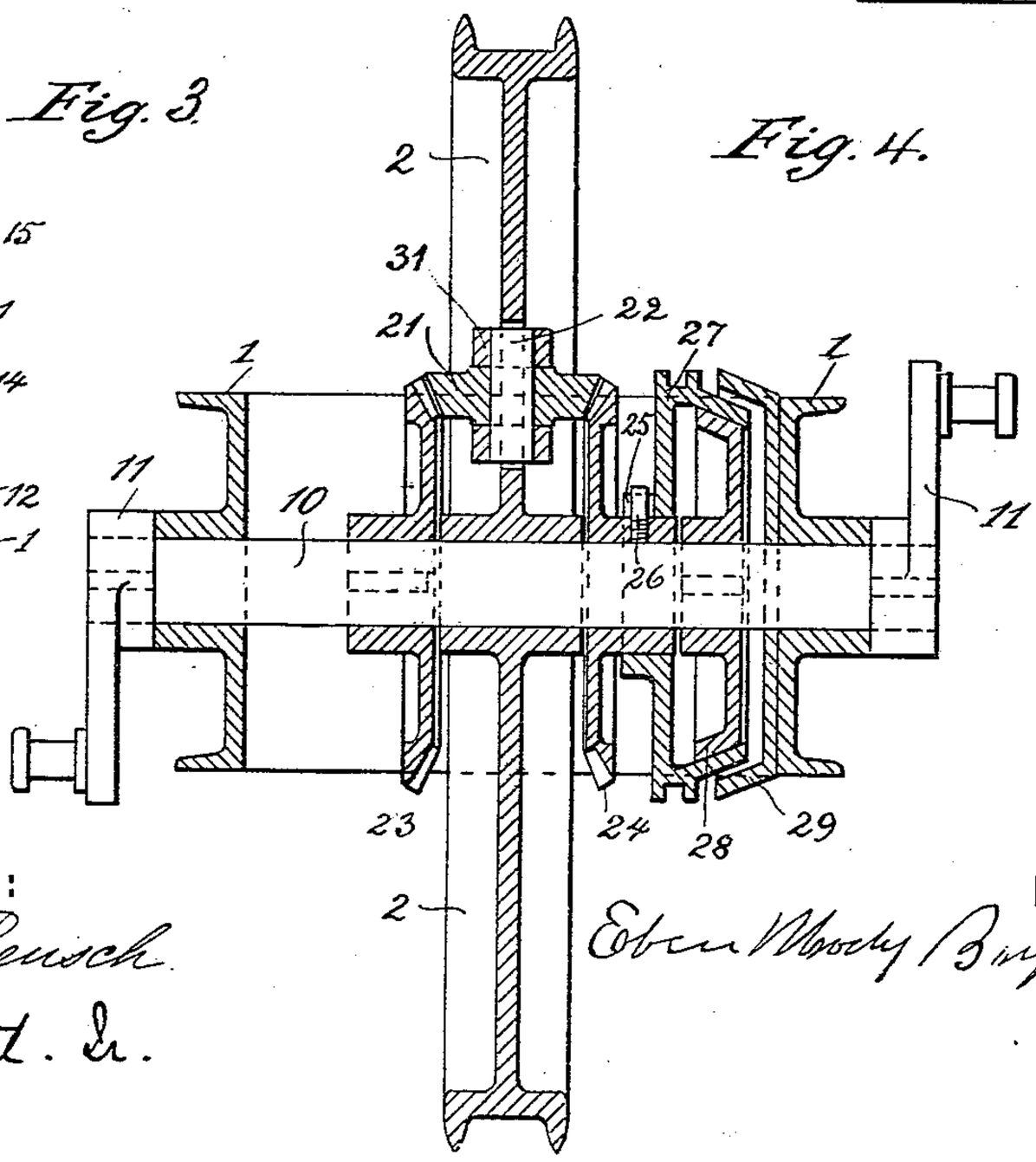


Fig. 4.



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RAILWAY-MOTOR.

SPECIFICATION forming part of Letters Patent No. 555,280, dated February 25, 1896.

Application filed April 2, 1895. Serial No. 544,200. (No model.)

To all whom it may concern:

Be it known that I, EBEN MOODY BOYNTON, a citizen of the United States, and a resident of West Newbury, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Railway-Motors, of which the following is a specification.

My invention relates to improvements in motors for railway-cars of the single-rail system, and refers especially to the application of gas-engines for the propelling of the cars. Hitherto there has been some difficulty in applying this class of motors for such purpose, partly on account of the great weight and also on account of the difficulty in starting the motors or of changing the leverage. As the bicycle-cars can be built extremely light, they will be easy to start and quick to reach their full speed, and some of the main difficulties under which these motors at present labor will therefore be eliminated.

The main idea in the invention is to have the engine-shaft with its driving-pulley separate from the driving-wheels, and by means shown make these latter gradually reach the circumferential speed of the driving-pulley. Another advantage claimed is the method of supporting the engine, it being placed directly on the truck-frame, thus moving with the latter and making all flexible connections superfluous. I have also arranged the motor so as to operate the driving-shaft directly and have the latter united with the driving-wheel or rotate it by means of intermediate gearing. By these means I claim to have reduced the number of parts and the weight.

Figure 1 is a side view of the motor partly in section. Fig. 2 is an end view of the same, showing two engines, one on each side of the driving-wheel. Fig. 3 is a modification of Fig. 6, the two engines being replaced by one. Fig. 4 is an enlarged detail view of the driving-wheel with its crank-shaft in combination with a starting, coupling, and stopping gear.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters and numerals of reference indicate corresponding parts in all the figures.

In the drawings, A represents the car, B the upper guide, C the supporting structure, and D the rail.

2 is the driving-wheel supporting the truck-frame 1. In the frame 1 is journaled shaft 10 of the driving-wheel 2, revolving loosely in same. Cranks 11, connecting-rods 12, joined by means of cross-heads 14 to piston-rods 13, transmit the motion of the latter to the shaft 10. The cylinders 15 receive the explosive mixture in the usual way, but the necessary valve-gear has been left out in these drawings in order that they may not be unnecessarily confusing. Joined to the cylinders is the column 16 with the supporting-springs 20. On the top of the column are guide-wheels 17 to insure the vertical position of the truck 1 and to guide the same. Rollers 18 (see Fig. 1) keep the truck in the central position and also transfer the motion of the latter to the car. In Figs. 1 and 2 I have used two cylinders, but in Fig. 3 only one.

By having the crank-shaft independent of the driving-wheel, as is more fully illustrated in Fig. 4, the starting of the engine is facilitated, as it is possible to first let the crank-shaft run idle, then to let the number of revolutions of the driving-wheel only be a fraction of those of the crank-shaft, and, lastly, to connect the shaft rigidly with the wheel and thus compel the wheel to make the same number of revolutions as the shaft.

23 is a gear-wheel keyed to the shaft. 21 is another meshing into the same with its spindle 22 revolving in the journals 31.

Gear-wheels 23, 21 and 24 all mesh together. Of these 23 is keyed to the shaft, while 24 revolves loosely on the same. 21 with its spindle 22 is supported by the bearings 31. Friction-pulley 27 revolves with 24, but is enabled to slide longitudinally on the same, the stud 26, projecting through the slit 25, allowing the longitudinal movement of 27, but compelling it to rotate with it. The friction-pulley 28 is fastened to the shaft, and 29 to the frame. The friction-pulley 27 can be moved either to the left or to the right. When it is so placed that it neither touches friction-pulleys 28 nor 29, the shaft 10 will revolve idle without driving the wheel 2, as 21 drives 24, and this in the middle position is without connection with the shaft. If friction-pulley 27 is moved to the right, it is brought in contact with friction-pulley 29 and thus made stationary. The revolutions of shaft 10 will therefore result in

wheel 21 rolling along 24, resulting in wheel 2 making only half the number of revolutions of 10. If now pulley 27 is moved to the left, it will be compelled to revolve with the shaft. The gear will therefore be stationary, and the wheel 2 will revolve in unison with the shaft.

I do not limit myself to the gear combination as shown, as many others may be used, reducing the speed in different proportions.

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

1. In a single-rail supported railroad-car, the combination with the car-body of a frame situated in same near one end thereof, having guide-wheels engaging with an upper guide-rail, a driving-wheel, a crank-shaft revolving loosely in said wheel and journaled in the frame, one or more gas-motors integral with said frame and operating the crank-shaft and means for coupling the shaft to the driving-wheel, substantially as set forth.

2. In a single-rail supported railroad-car, the combination with the car-body of a frame situated in same near one end thereof, having guide-wheels engaging with an upper guide-rail, a driving-wheel, a crank-shaft revolving loosely in said wheel and journaled in the frame, one or more gas-motors integral with said frame and operating the crank-shaft, means for coupling the shaft to the driving-wheel and reducing the number of revolutions of the latter, relative to those of the shaft, substantially as set forth.

3. In a single-rail supported railroad-car, the combination with the car-body of a frame situated in same near one end thereof, having guide-wheels engaging with an upper guide-rail, a driving-wheel, a crank-shaft revolving loosely in said wheel and journaled in the frame, one or more gas-motors integral with said frame and operating the crank-shaft, a friction-pulley connected with a suitable gear adapted to engage with one on the shaft-fastened friction-pulley or with a stationary pulley, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 21st day of March, A. D. 1895.

EBEN MOODY BOYNTON.

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