

(No Model.)

C. L. SAUNDERS.
STREET CAR MOTOR.

No. 556,105.

Patented Mar. 10, 1896.

Fig. 1.

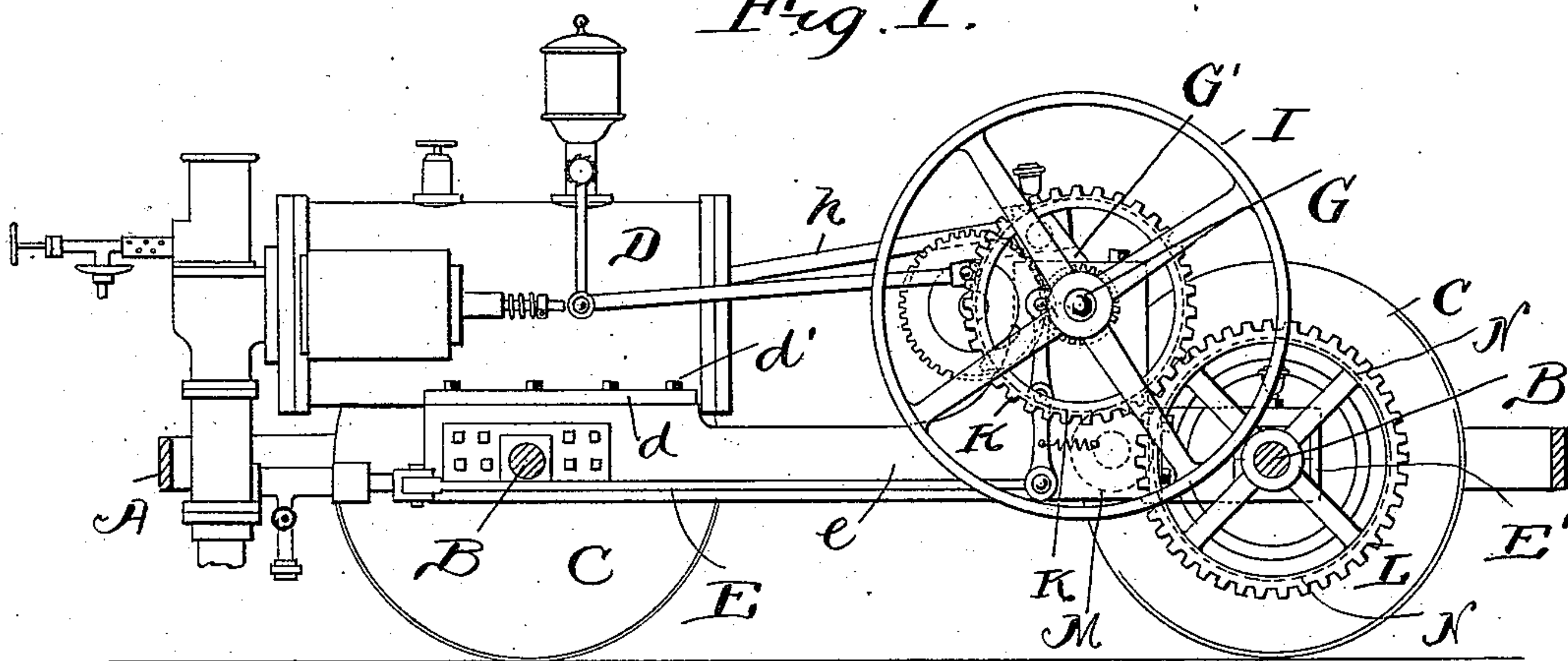


Fig. 2.

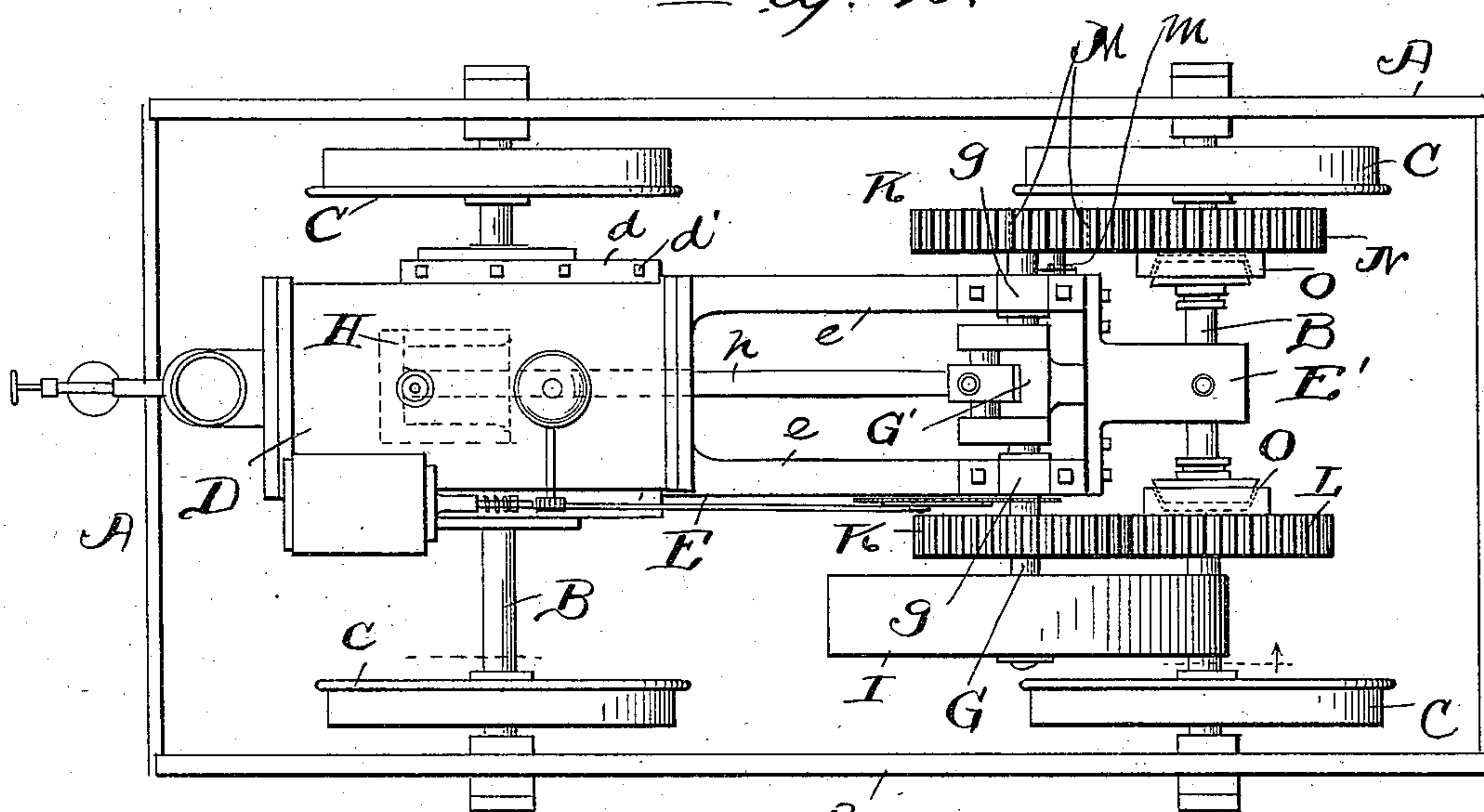
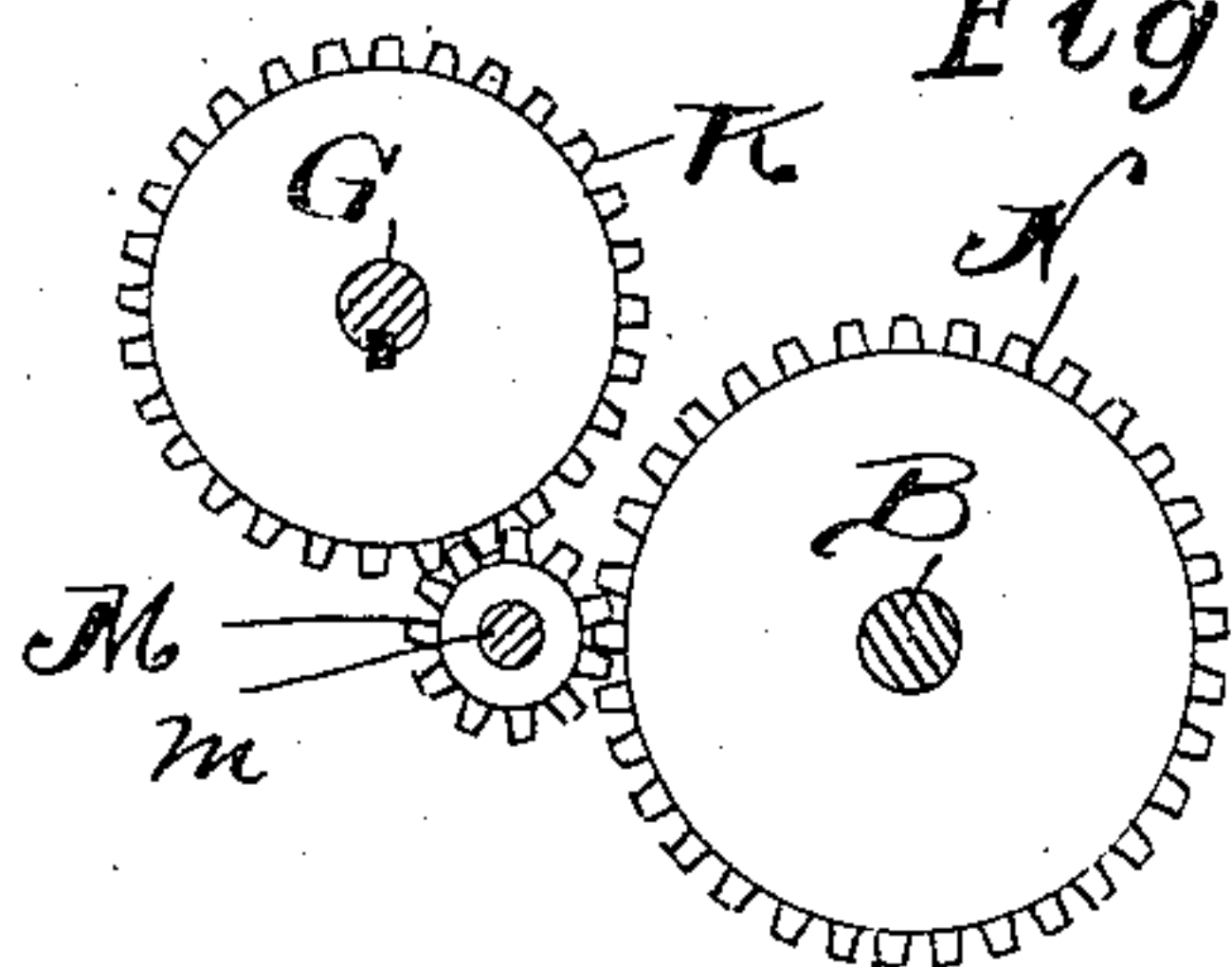


Fig. 3.

Witnesses,
E. B. Gilchrist
Crown



Inventor.
Cecil L. Saunders.
By Leggett & Leggett
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UNITED STATES PATENT OFFICE.

CECIL L. SAUNDERS, OF CLEVELAND, OHIO, ASSIGNOR TO THE CLEVELAND MOTOR COMPANY, OF SAME PLACE.

STREET-CAR MOTOR.

SPECIFICATION forming part of Letters Patent No. 556,105, dated March 10, 1896.

Application filed October 19, 1894. Serial No. 526,394. (No model.)

To all whom it may concern:

Be it known that I, CECIL L. SAUNDERS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and
5 useful Improvements in Street-Car Motors; 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 pertains to make and use
10 the same.

My invention relates to improvements in street-car motors; and it consists in certain features of construction and in combinations of parts hereinafter described, and pointed
15 out in the claims.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a motor embodying my invention; and Fig. 2 is a top plan of the same. Fig. 3 is an elevation
20 showing gear M that transmits motion to gear N from one of the gears K.

Referring to the drawings, A represents the frame of a motor-car truck, B the axles, and C the car-wheels.

25 D represents the cylinder of a gas or gasoline engine provided with supply and exhaust pipes, cooling-jacket and water-pipes, all arranged in the usual manner of this class of engines.

30 The engine is mounted in any suitable manner upon a frame E, that is suitably supported from the axles of the truck, supporting-frame E being preferably of such construction as to bring the cylinder of the engine in a plane located as little above the
35 axles as is practicable.

A preferable construction is exhibited in the drawings, wherein the cylinder of the engine has laterally-projecting flanges *d* bolted,
40 as at *d'*, to supporting-frame E, and the latter comprises side members *e* arranged at a suitable interval apart between the axles upon which the supporting-frame of the engine is mounted. Said side members *e* of
45 supporting-frame E are provided with journal-boxes *g* that afford bearing for engine-shaft G. Shaft G is provided with a crank G' between members *e* of frame E, which crank is operatively connected by means of
50 a rod *h* with the piston H that operates within the cylinder of the engine. The engine-

shaft extends at either side of frame E, and is provided with a fly-wheel I at any suitable point. Two gears K are operatively mounted upon the engine-shaft at a suitable interval
55 apart and preferably just outside of frame E. One of said gears meshes directly with a gear L loose on the driving-axle, and the other is adapted to communicate motion by means of an intermediate gear M to a gear N,
60 also loose on the driving-axle, intermediate gear M being preferably supported by a bracket *m* rigid with the adjacent side of frame E.

By the construction just described it will
65 be observed that the driving-axle is caused to drive in the one direction or the other, according as operative connection is established between said axle and the one or the other of gears L N. Engine-supporting
70 frame E at the end that is mounted upon the driving-axle is reduced in width, as at E', to accommodate the location and operation of clutches O upon the driving-axle at opposite
75 sides, respectively, of said reduced portion of frame E, a clutch being provided for each gear L and N to establish or interrupt operative connection between the respective gear and driving-axle. Friction-clutches are shown
80 employed in the case illustrated, the one member of each clutch being rigid with the respective gear and the companion member of the clutch being operatively mounted upon the driving-axle. Operative connection between the two members of either clutch is
85 established by means of any suitable lever mechanism. (Not shown.)

By the construction hereinbefore described it will be observed that the motor-car will
90 cease to be driven when both clutches are operated to interrupt operative connection between the driving-gears and driving-axle, and that the driving-axle, and consequently the motor-car, will be moved in the one direction or the other, according as operative connection by means of the respective clutch is
95 established between the driving-axle and the one or the other of driving-gears L N.

By means of the particular arrangement of parts hereinbefore specified, wherein the
100 clutches and axle-driving gears are mounted upon the axle, the wear and strain on the parts

are not only reduced to a minimum, but great economy in space is obtained, which is desirable.

What I claim is—

5 1. The combination with a motor-truck, of a frame suitably supported between the wheels of opposite sides of the truck, an engine mounted upon said frame with the engine-shaft located in suitable proximity to the
10 driving-axle and extending at either side of the engine-supporting frame, two gears loose upon the driving-axle, two gears operatively mounted upon the engine-shaft at opposite sides, respectively, of the aforesaid frame
15 and two gears loosely mounted upon the driving-axle adjacent to the different engine-shaft gears, respectively, one of said loosely-mounted gears meshing directly with the adjacent engine-shaft gear, an intermediate gear estab-
20 lishing operative connection between the other loosely-mounted gear and the other engine-shaft gear, and two clutches operatively mounted upon the driving-axle between the two gears upon said axle, said clutches being
25 adapted to establish and interrupt operative connection between the different axle-gears, respectively, and the axle, substantially as shown and described.

2. The combination with a motor-truck, of a

frame, E, suitably supported by the axles of 30 the truck and reduced in width at the end supported by the driving-axle, substantially as indicated, an engine mounted upon said frame with the engine-shaft located in suit- 35 able proximity to the driving-axle and extending at either side of the engine-supporting frame and provided with a fly-wheel, two gears loose upon the driving-axle at opposite sides of the reduced portion of said frame, respectively, and clutches located between 40 said gears and frame for operatively connecting and disconnecting the gears and driving-axle and suitable means operatively connect- 45 ed with the engine-shaft and operatively connected with the gears on the driving-axle in such a manner that the driving-axle shall be driven in the one direction or the other accord- 50 ing as operative connection is established between the driving-axle and the one or the other of the axle-driving gears, substantially as set forth.

In testimony whereof I sign this specification, in the presence of two witnesses, this 25th day of August, 1894.

CECIL L. SAUNDERS.

Witnesses:

C. H. DORER,
WARD HOOVER.