No. 648,059.

Patented Apr. 24, 1900.

E. S. SUTCH.

MOTOR VEHICLE.

(Application filed July 8, 1899.)

(No Model.)

2 Sheets—Sheet 1.

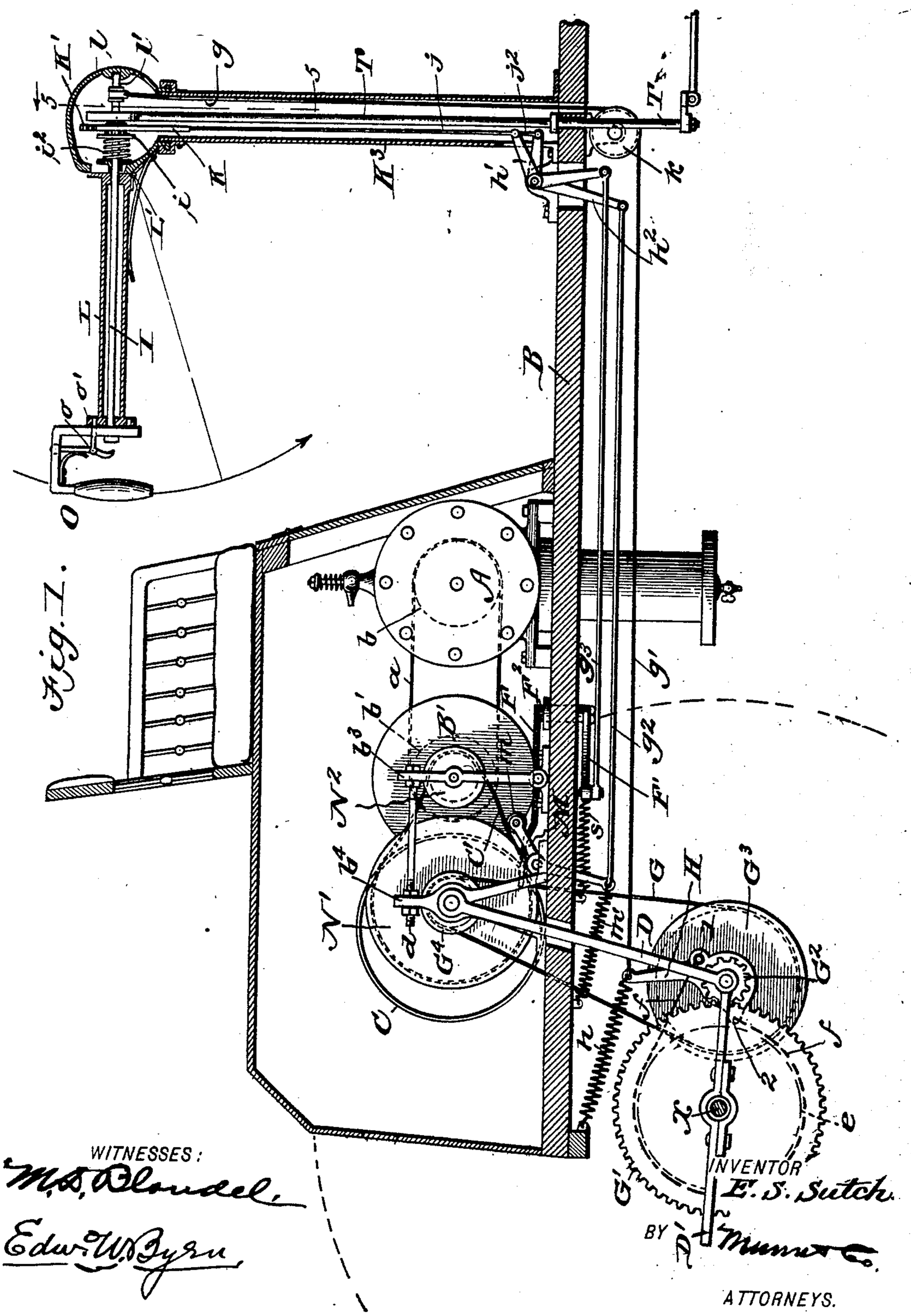


Fig. 1.

WITNESSES:

M. S. Blundell.

Edw. W. Byrne

INVENTOR

E. S. Sutch.

BY Munn & Co.

ATTORNEYS.

No. 648,059. Patented Apr. 24, 1900.

E. S. SUTCH.

MOTOR VEHICLE.

(Application filed July 8, 1899.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 2.

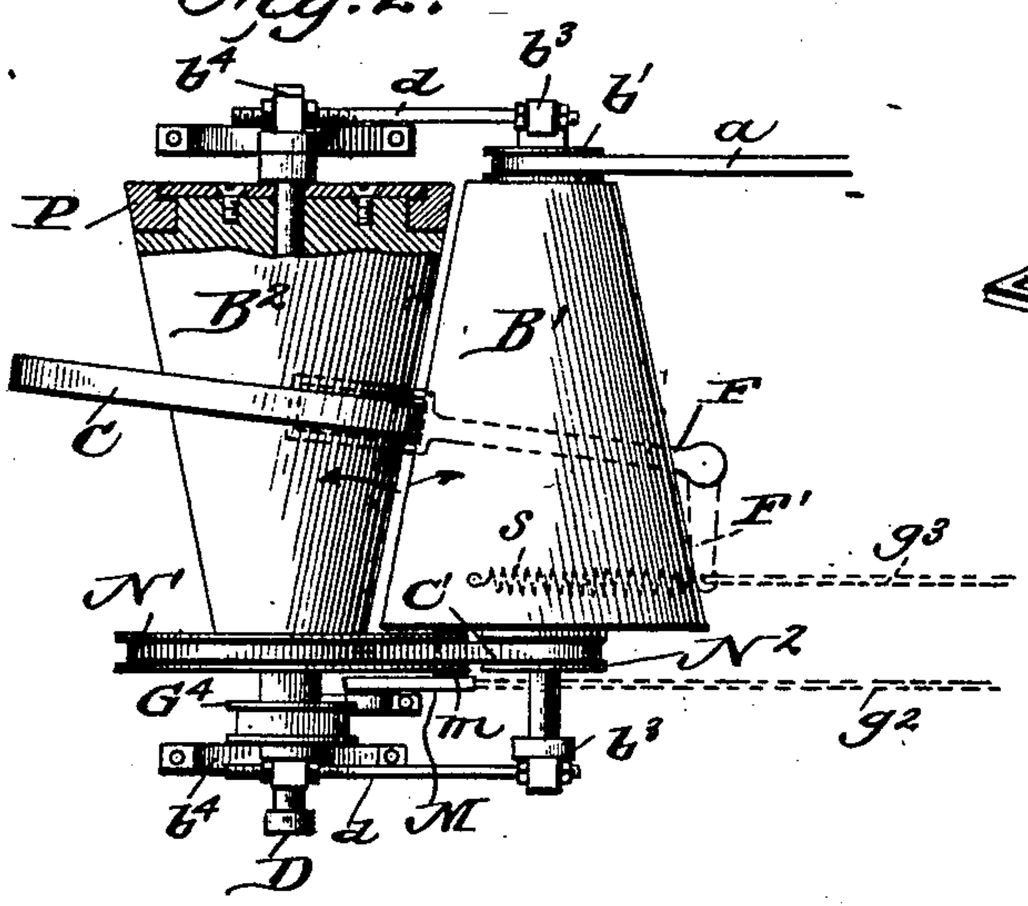


Fig. 3.

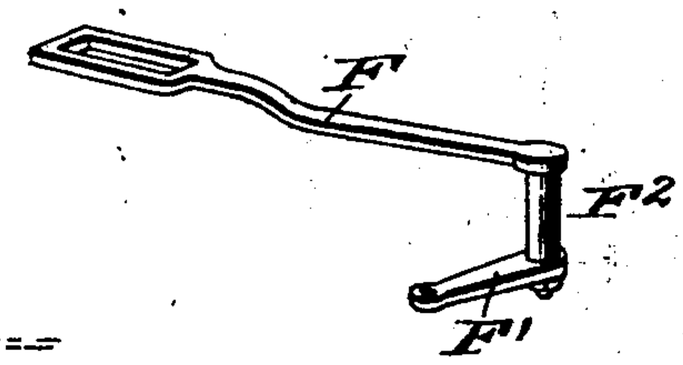


Fig. 4.

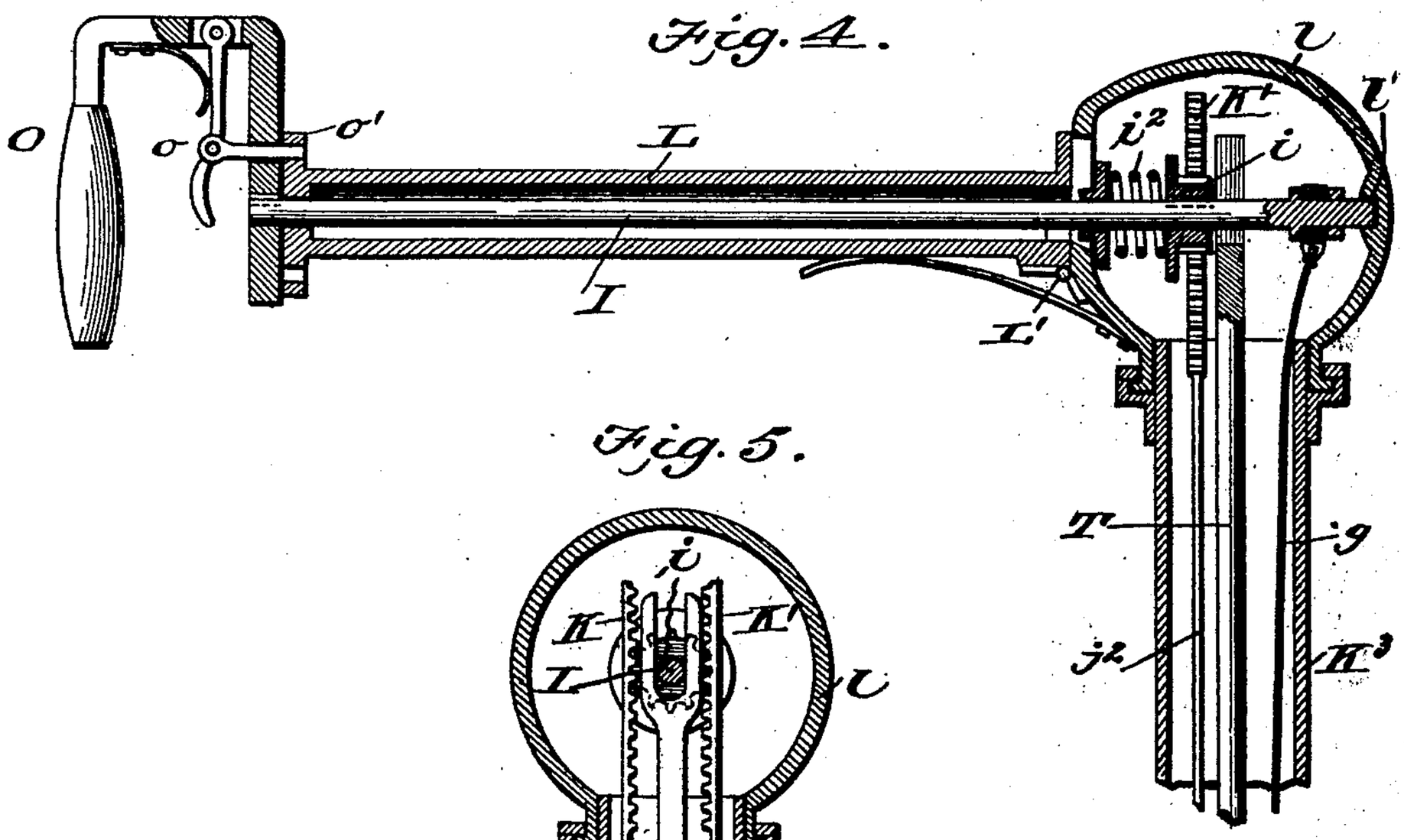
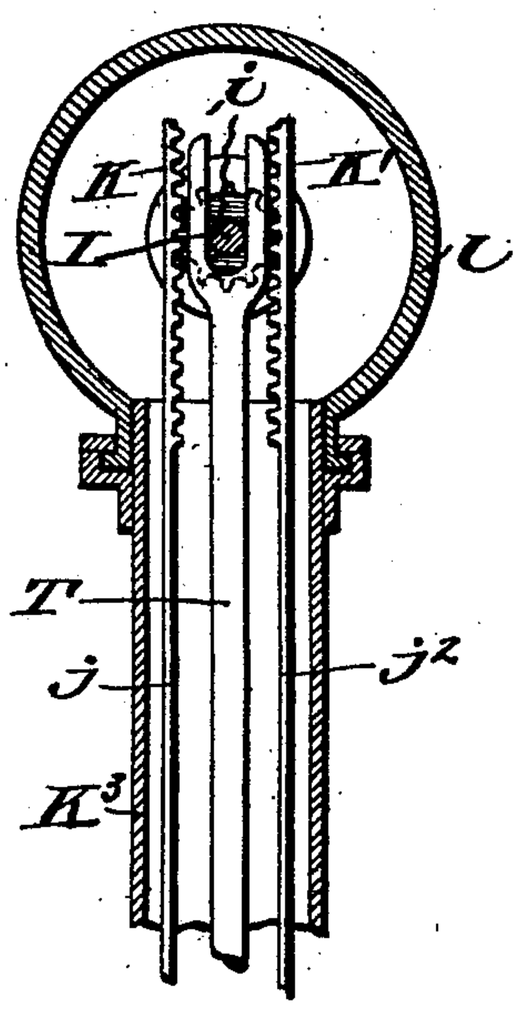


Fig. 5.



WITNESSES:

M. S. Blondel,

Edw. W. Byrn.

INVENTOR

E. S. Sutch.

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWIN SCHOFIELD SUTCH, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO DANIEL T. KEENAN, OF SAME PLACE.

MOTOR-VEHICLE.

SPECIFICATION forming part of Letters Patent No. 648,059, dated April 24, 1900.

Application filed July 8, 1899. Serial No. 723,148. (No model.)

To all whom it may concern:

Be it known that I, EDWIN SCHOFIELD SUTCH, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Motor-Vehicles, of which the following is a specification.

The object of my invention is to provide a motor-vehicle in which the means for guiding, for varying the speed, for reversing, and for applying the brakes are all operated by a single handle, so that a one-armed man may operate the vehicle, if desired; and it consists in the mechanism for accomplishing this result without interference, as will be hereinafter described with reference to the drawings, in which—

Figure 1 is a side elevation in section; Fig. 2, a plan view of the speed-varying gear; Fig. 3, a detail of the operating-lever for the same; Fig. 4, an enlarged section of the handle mechanism, and Fig. 5 a section on line 5 5 of Fig. 1 looking in the direction of the arrow.

In the drawings, B represents the floor of the body of the vehicle, on which is located the motor and its driving-gears. The motor may be a gasolene-engine, as shown at A, or it may be an electric or other form of motor. At the remote end from that shown in Fig. 1 it has a pulley *b*, (shown in dotted lines,) which is connected by a belt *a*, Fig. 2, with a pulley *b'* on the small end of a cone-roller B'. This cone-roller is arranged side by side with another cone-roller B^2, whose large end is opposite the small end of the cone-roller B'. These cone-rollers are separated from each other, so that they do not touch; but between them and inclosing the cone B^2 there is an endless band, hoop, or glat-ring C, made of leather, steel, or any other suitable material, which is larger than the largest end of cone B^2 and which when it passes between the two cones is revolved around B^2 with a pinched contact between both cones that causes the rotation of B' to be transmitted to B^2. This ring or band C is adjustable along the longitudinal axis of cone B^2, so as to cause the cones to be engaged at a point between the large end of B^2 and small end of B' for a slow speed or the large end of B' and small end of B^2 for a high speed or at any intermediate point for any different speed between the two adjustments. For adjusting the band C at different points between the cones said band is shifted laterally by a yoke embracing the band and formed on the end of a lever F, projecting from a vertical axis F^2, passing through the floor of the vehicle and having on its lower end a crank-arm F'. At the large end of cone B^2 there is a loose section P, and when the band C is on this section the rotation of cone B' does not impart rotation to B^2. The lever F F' is (see Fig. 2) thrown in one direction by a spring *s* and is drawn in the other direction by a pull-rod g^3, and when there is no tension on the rod the spring *s* throws the band C over onto the loose section P and power is not transmitted to the driving-wheel of the vehicle. When, however, a pull is made on the rod g^3 the band C is shifted onto the cone B^2 at such point as to give any desired speed, the cones revolving in the direction of the arrows. On the large end of cone B' there is a small rigid pulley N^2 with flanges, and on the small end of cone B^2 there is a large pulley N' with flanges, and around these two pulleys there loosely hangs a loose belt C', which being slack does not ordinarily transmit motion from one to the other, but which may be tightened, so as to cause one cone to drive the other in the opposite direction from that produced by the traveling band C. The loose belt C' has beneath it a pulley *m*, mounted in the upper end of a vertical lever M, fulcrumed on the floor of the vehicle and projecting below it and drawn in one direction by a spring *m'* and in the opposite direction by a pull-rod g^2. Normally the spring *m'* pulls the lever M, so that its pulley *m* is held away from the slack belt C'; but when tension is put on rod g^2 the pulley *m* is thrown against the belt C' and forms a belt-tightener that causes the cone B' to impart a rotation to B^2 in a direction reverse to that given by band C, which enables the vehicle to be backed.

The cones are adjusted to or from each other to cause them to bind more or less tightly upon the band C by screw-rods *d* at both ends. These cause the movable frame b^3, carrying the journal-box of one cone, to be adjusted

to or from the stationary frame b^4, carrying the journal-box of the other cone.

Rigidly fixed to the shaft of cone B^2, outside of the pulley N', there is a pulley G^4, around which a belt G passes to a large pulley G^3, below which is hung in the lower end of a nearly-vertical bar D a jointed arm D', which is hung upon the axle X of the driving-wheel. (Shown in dotted lines.) Rigidly fixed to this axle and the driving-wheels there is a cog-wheel G', which is in mesh with a small pinion G^2, rigidly attached to the side of pulley G^3, so that the power of the belt G is transmitted to pulley G^3 and pinion G^2, and the latter acting on the cog-wheel G' on the axle turns the driving-wheels. By means of the frame-bar D and arm D' it will be seen that the motor and most of the driving mechanism may be located on the floor of the vehicle, and their weight may be carried on the springs of the vehicle, so as to be protected against derangement from jolting, and yet as the body of the vehicle moves up and down on its springs the pinion D^2 will roll around cog-wheel G' without getting out of mesh and without straining the teeth. This latter adjustment has been used before and I make no claim to it.

On the shaft of the pinion G^2 there is hung a brake-lever H, which at the points 1 and 2 is attached to the ends of a strap-brake *f*, passing around a drum *e*. This brake-lever *f* is drawn back or thrown out of action by a spring *h* and is applied by a pull-wire *g'*.

I will now proceed to describe how the various pull-rods g' g^2 g^3 and also the guide-wheel are operated and controlled from a single handle without interference with each other.

O is a gooseneck-handle, whose end is bent over in vertically-pendent position, so as to be conveniently pushed or pulled, rotated about a horizontal axis, or deflected up or down or sidewise. This handle is rigidly attached to a horizontal shaft I and has a locking-catch *o*, that is adapted to be engaged in any one of a circular series of holes in a disk *o'*, formed on the end of a tubular case L, containing the shaft I, and which permits the shaft I to be rotated within case L and locked in any desired position. The opposite end of this shaft carries a rigid pinion *i*, placed between two rack-bars K and K' and engaged with them both. These rack-bars (see Figs. 4 and 5) are connected to rods j j^2, that are attached below to elbow-cranks h' h^2, whose lower arms below the floor are connected, respectively, to the pull-rods g^2 g^3, one of which, g^3, controls the lever F, that applies the power for forward movement, and the other of which, g^2, controls the lever M for backward movement, so that by turning the shaft I axially one rack-bar, K, is raised and the other lowered and the mechanism made to go ahead or back, according to the direction of rotation. This gear, however, causes the two trains of mechanism to be operated alternately, so that there can never be any interference between them caused by applying both at the same time.

K^3 is a hollow column erected in rigid vertical position on the floor of the vehicle and inclosing the racks K K' and rods j' j^2. On the upper end of the column there swivels about a vertical axis a hollow head *l*, which at L' has hinged to it the tube-casing L. The end of the shaft I is connected by a swiveling ring to a pull-wire *g*, that passes around a pulley *k* below and goes to the brake H, so that by moving the handle O in a vertical plane, as indicated by the arrow, the flexible joint at L' allows the pull-wire *g* to be tightened or slackened and the brakes applied or released, as desired. In order that this movement may be effected without interference between the pinion *i* and racks K K', a longitudinal sliding motion by a direct pull on handle O is made to take the end *l'* of the shaft out of its bearing or head *l* and also to move the pinion *i* out of contact with the racks K K', compressing the spring i^2, which throws it back again into position. In addition to these adjustments the hollow head *l*, tube-casing L, and handle O have a horizontal swing, the head turning upon the top of the pillar K^3. This is made to turn a vertical shaft T, that controls the guide-wheel. The upper end of the shaft T is bifurcated, as seen in Fig. 5, and the shaft I passes through it, so as to impart an axial motion to the shaft T when the shaft I and case L are swung sidewise.

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

1. In a motor-vehicle, the combination with a carrying frame or case; of a single handle and attached shaft having a rectilinearly and longitudinally sliding motion, and also a rotary motion, a bearing for said shaft from which the shaft is detached by said sliding motion, means for transmitting the rotary motion to the driving-gears; the said shaft having also a horizontally-swinging motion and means for transmitting the same to the steering-gear, and also a vertically-swinging motion and means for transmitting it to the brakes substantially as and for the purpose described.

2. In a motor-vehicle, the combination with the operating mechanism; of a gooseneck-handle, a shaft attached thereto at right angles to the grasping portion, said shaft having a longitudinally-sliding motion, a rotary axial motion, and a horizontally-swinging lateral motion, and means for connecting the same to the operating parts substantially as described.

3. In a motor-vehicle, an operating-handle arranged as described and having a rotary axial adjustment, one direction for forward movement and the other for backward, and

also a vertical swing for putting on the brakes as described.

4. In a motor-vehicle, an operating-handle arranged as described and having a rotary axial adjustment, one direction for forward and the other for backward movement, and also a longitudinal sliding movement and a vertical swing for applying the brake substantially as described.

5. In a motor-vehicle, an operating-handle arranged as described and having a rotary axial adjustment, one direction for forward and the other for backward, and also a vertical swing for applying the brakes, and a horizontal swing for adjusting the guide-wheel substantially as described.

6. In a motor-vehicle, the combination of the gooseneck-handle O with shaft I and locking-catch *o* hinged tube L with disk *o'*, the pillar K^3 with swiveling head *l*, the pinion *i*, racks K K' and connections for the driving-gears, brake, and guide-wheel, substantially as described.

EDWIN SCHOFIELD SUTCH.

Witnesses:
ELWOOD R. SUTCH,
WILLIAM E. VOLZ.