

(No Model.)

3 Sheets—Sheet 1.

J. W. DEAN & J. C. SNYDER.
STREET CAR MOTOR.

No. 561,769.

Patented June 9, 1896.

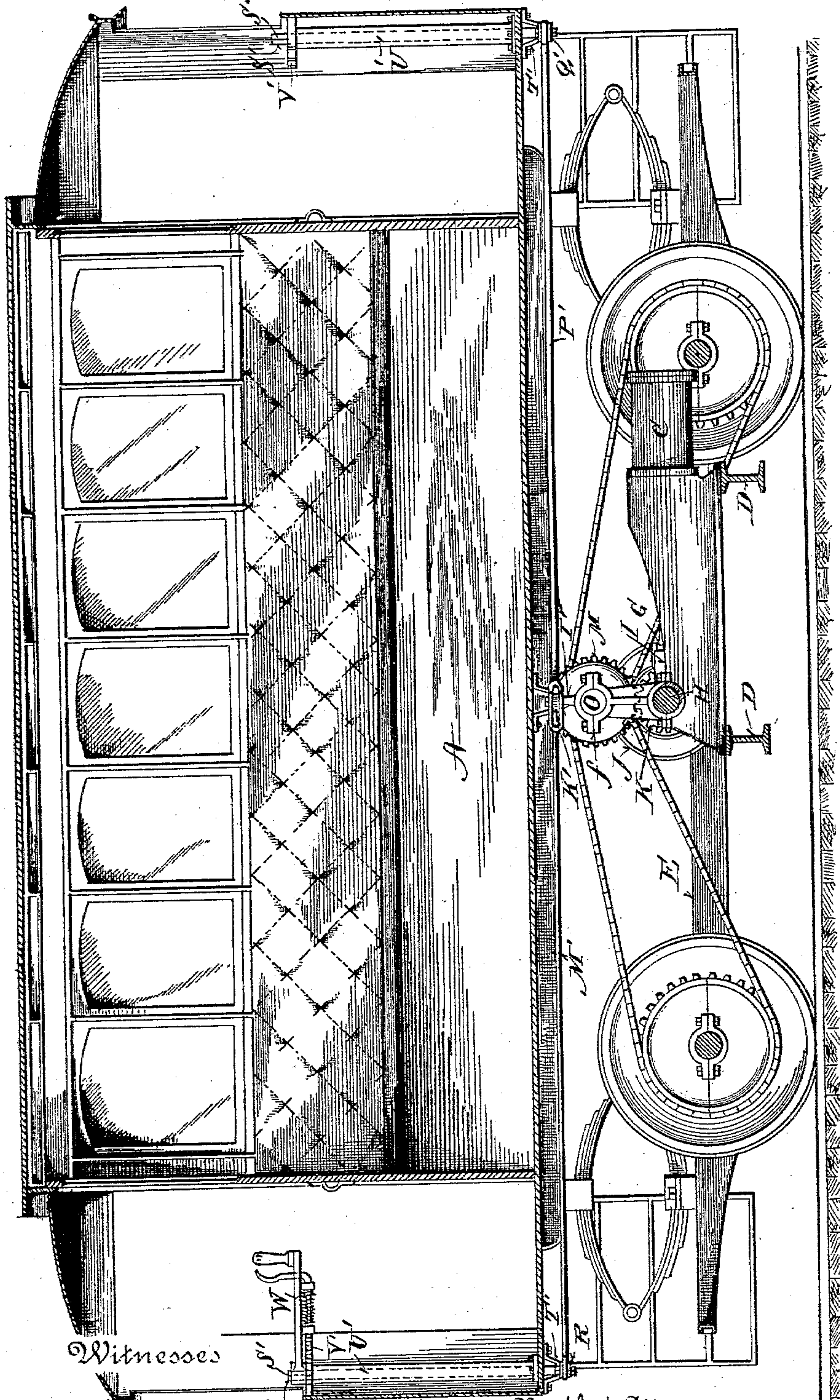


Fig. 1.

Witnesses

Jas. C. Dawley
H. M. McRair.

By their Attorney

H. A. Coulman.

Inventors
J. W. Dean, Jr.
J. C. Snyder.

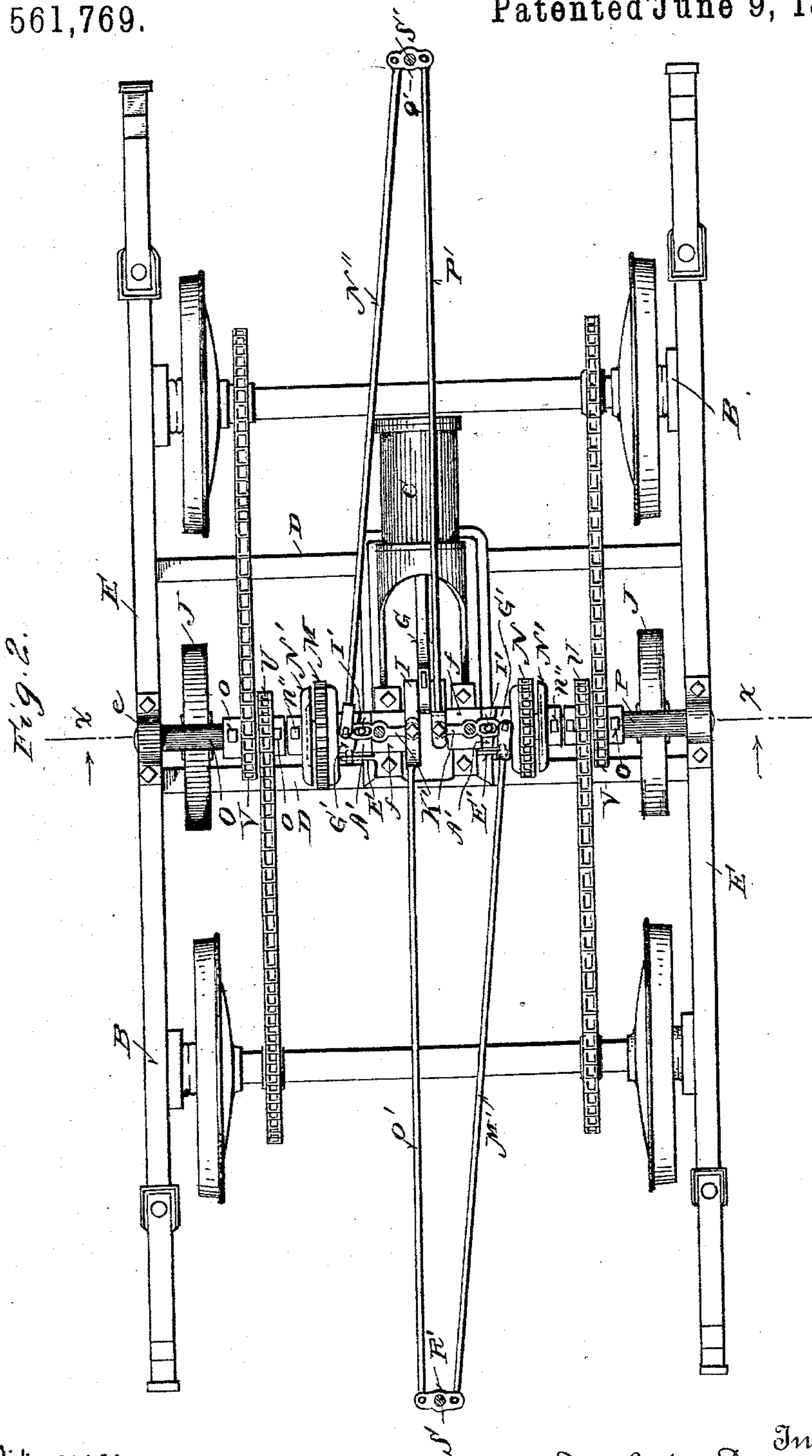
(No Model.)

3 Sheets—Sheet 2.

J. W. DEAN & J. C. SNYDER.
STREET CAR MOTOR.

No. 561,769.

Patented June 9, 1896.



Witnesses

for C. Dawley.
W. M. McNaiv.

Inventors,
Jaede W. Dean and
John C. Snyder.
By their Attorney,
H. A. Toulmin.

(No Model.)

3 Sheets—Sheet 3.

J. W. DEAN & J. C. SNYDER.
STREET CAR MOTOR.

No. 561,769.

Patented June 9, 1896.

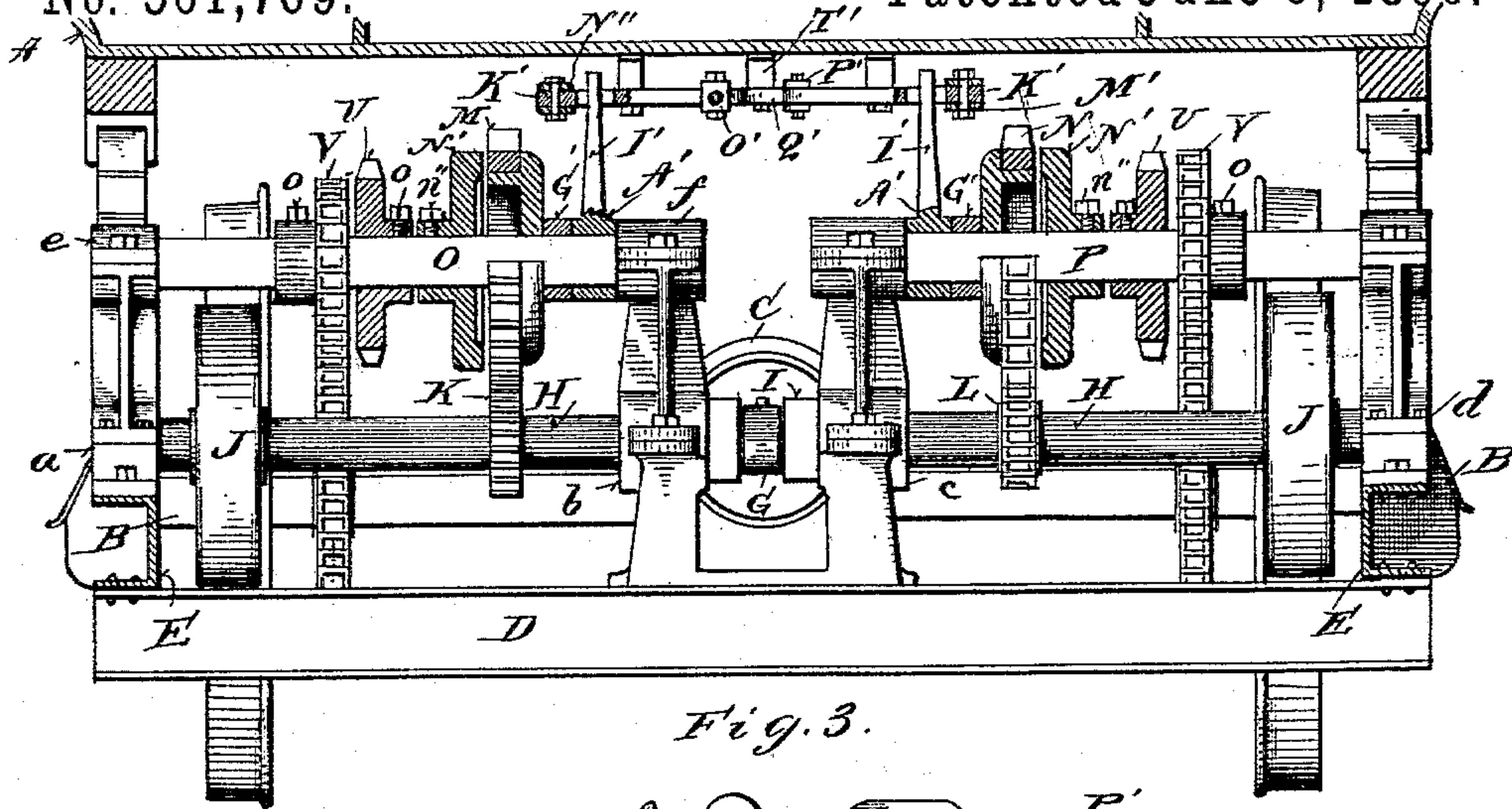


Fig. 3.

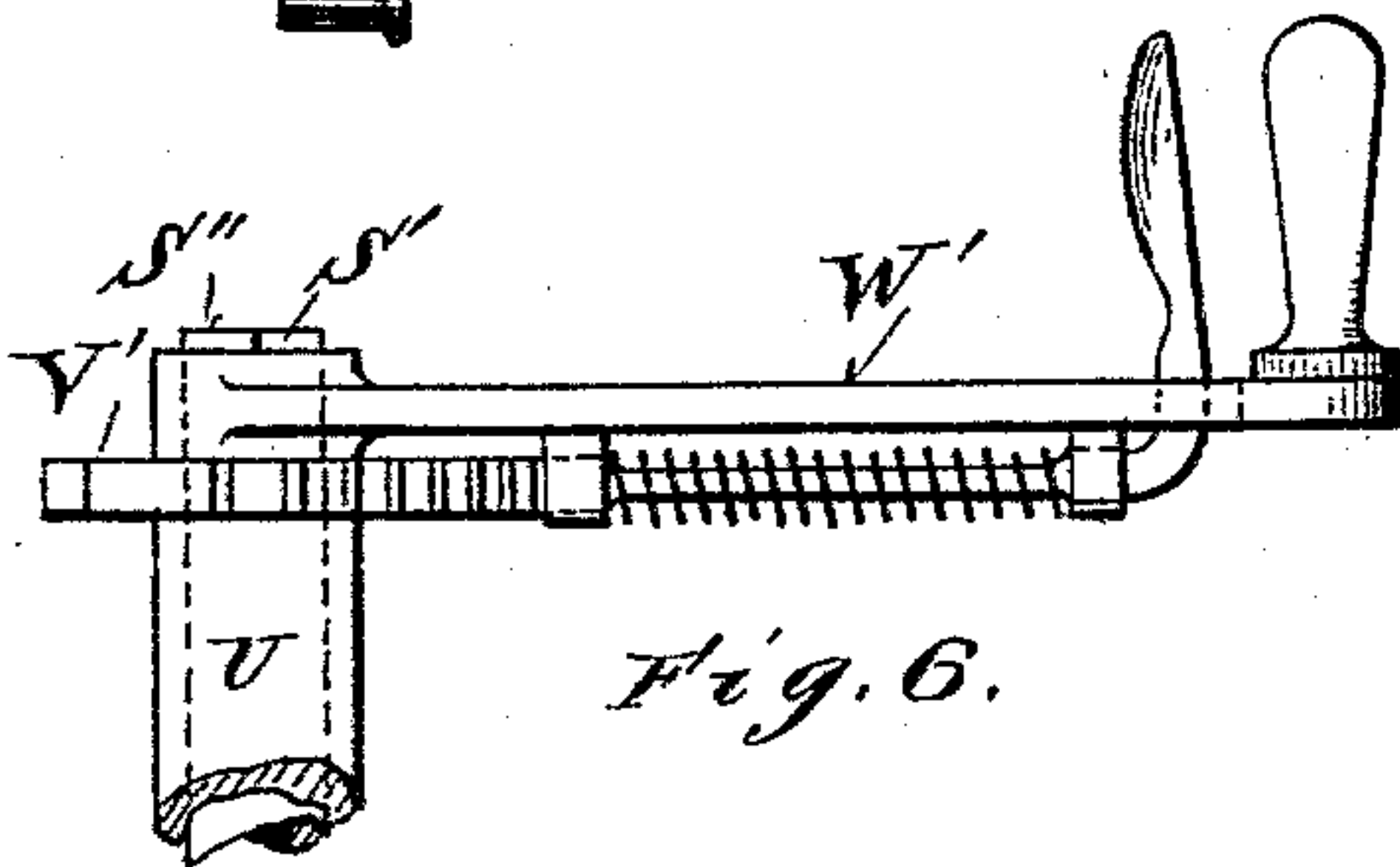


Fig. 6.

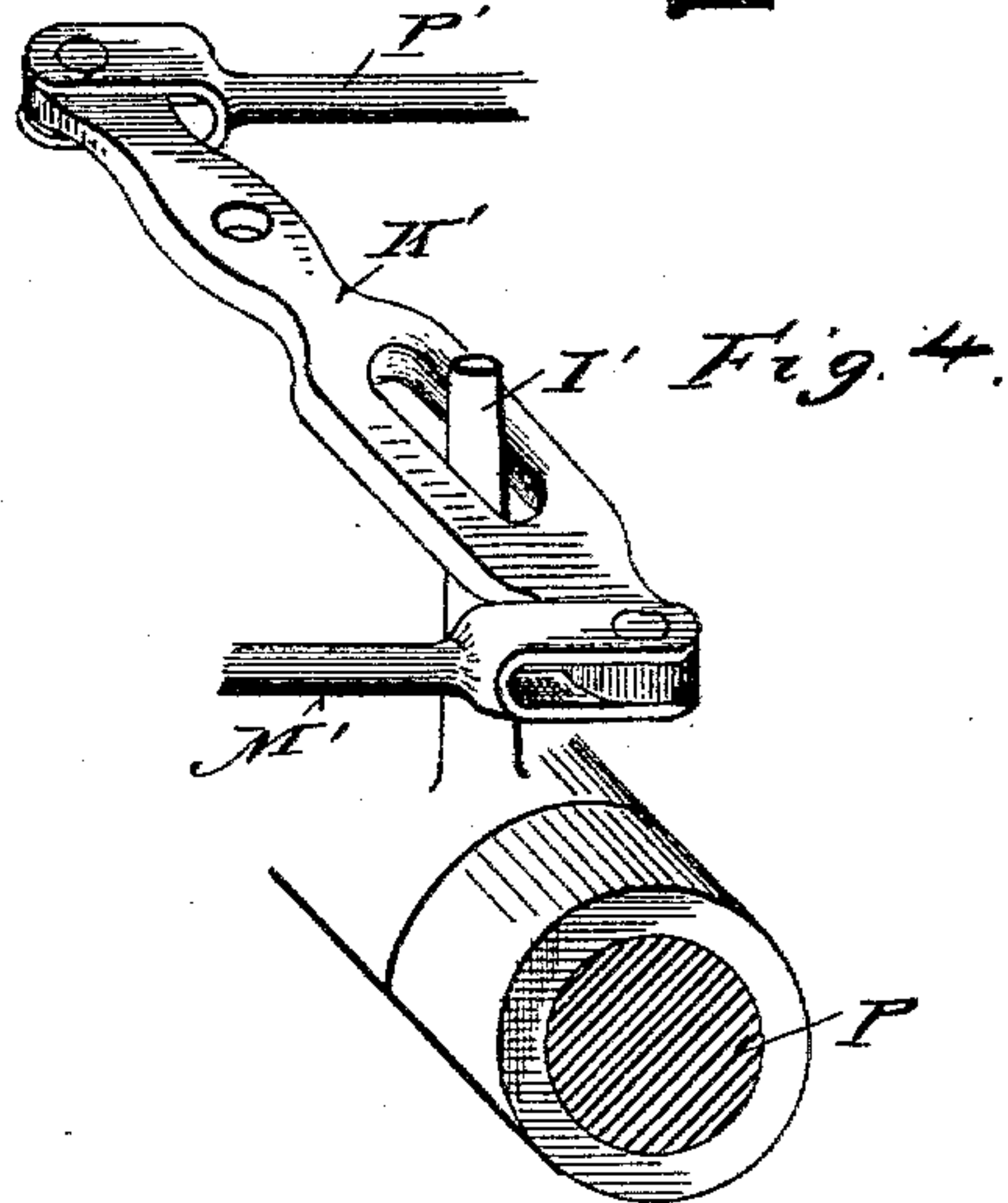


Fig. 4.

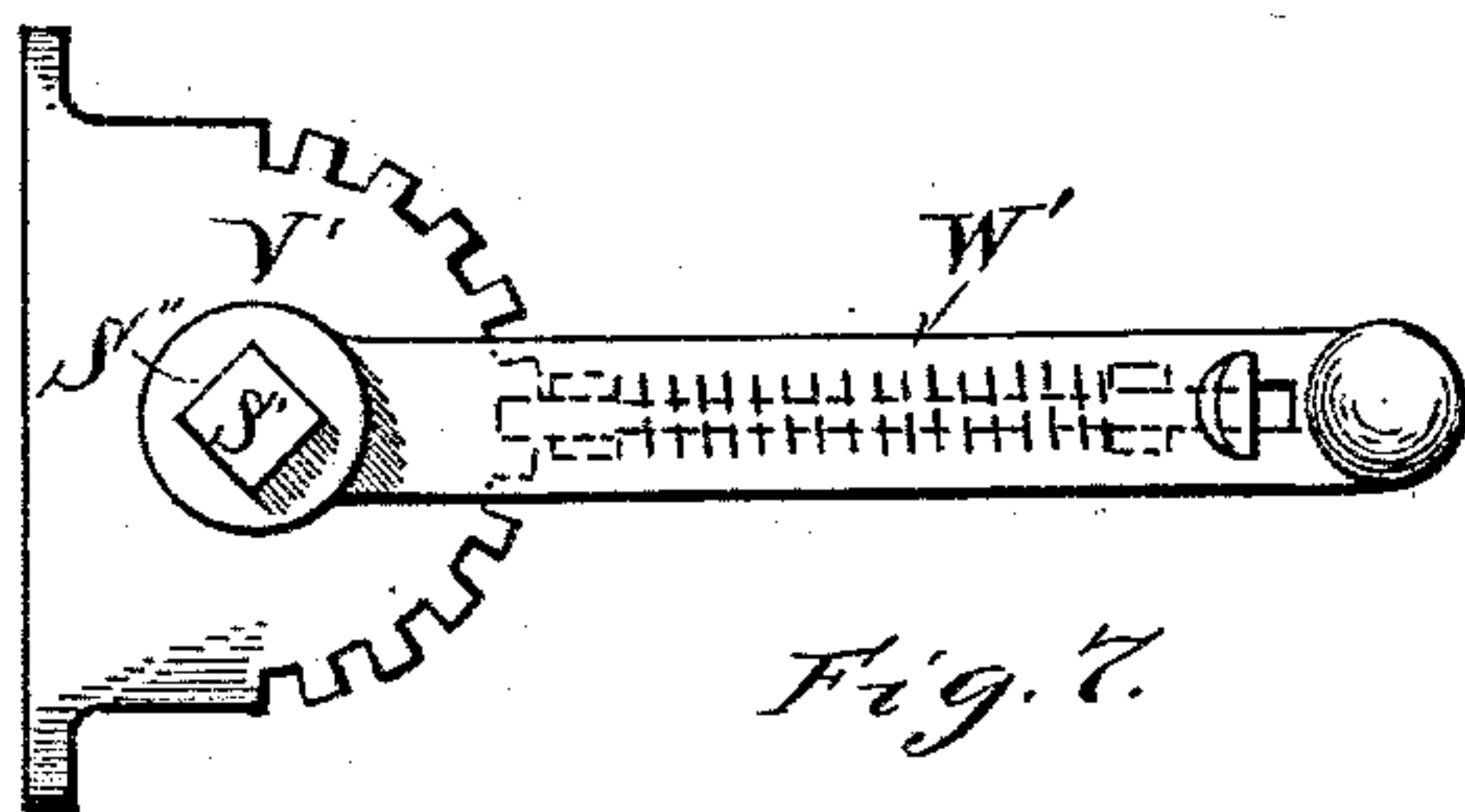


Fig. 7.

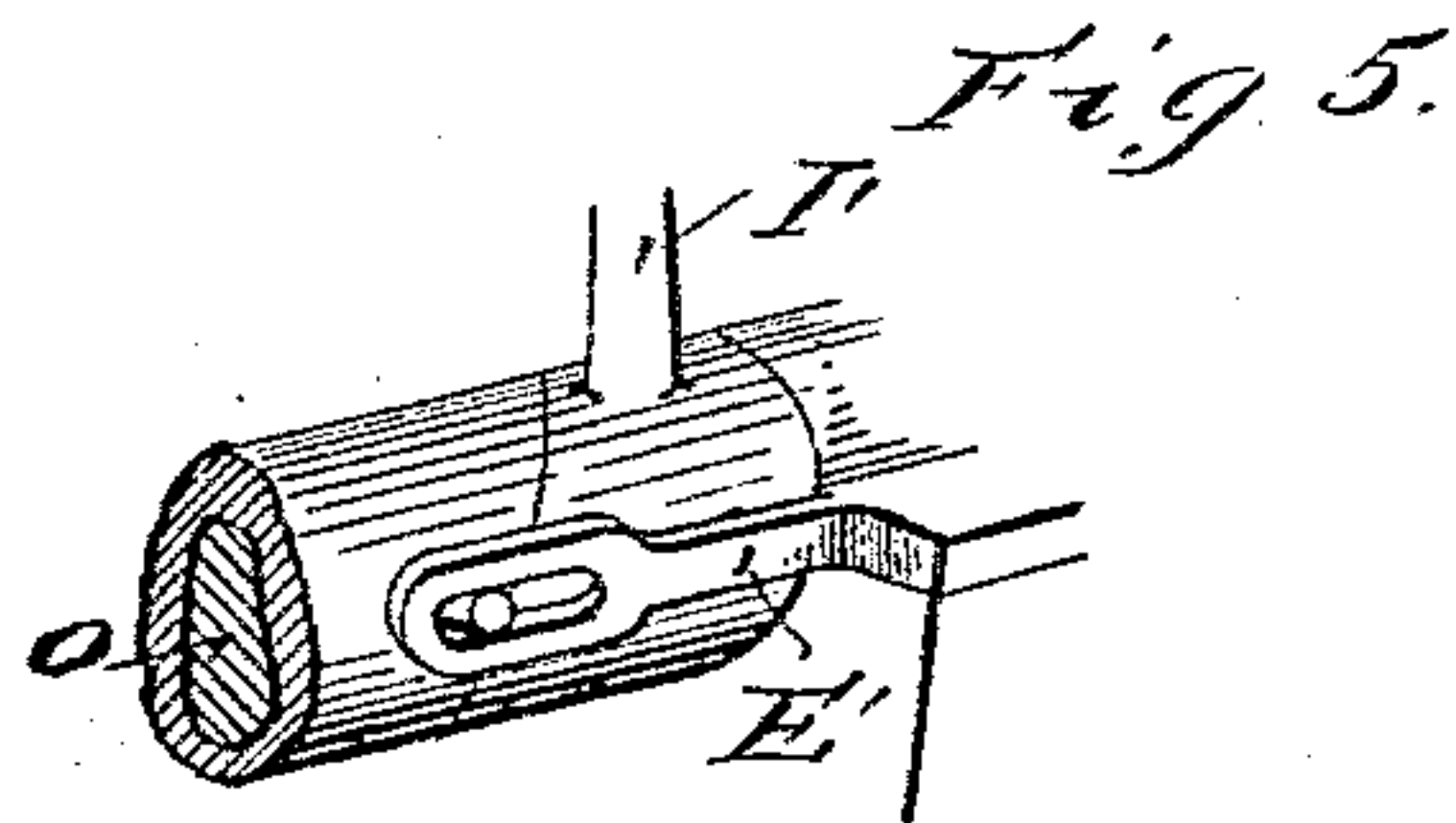


Fig. 5.

Witnesses
J. C. Hawley.
W. M. McKinn.

Inventors,
Jacob W. Dean and
John C. Snyder,
By their Attorney,
H. A. Toulmin.

UNITED STATES PATENT OFFICE.

JACOB W. DEAN AND JOHN C. SNYDER, OF SPRINGFIELD, OHIO.

STREET-CAR MOTOR.

SPECIFICATION forming part of Letters Patent No. 561,769, dated June 9, 1896.

Application filed January 30, 1896. Serial No. 577,458. (No model.)

To all whom it may concern:

Be it known that we, JACOB W. DEAN and JOHN C. SNYDER, citizens of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Street-Car Motors, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in street-car motors.

Our invention consists in providing mechanism for transmitting motion from a rotatable or driving shaft to driven counter-shafts.

15 It further consists in mechanism for operating frictional clutches into and release them from frictional contact with correspondingly driven gears by means of cams; and it also consists in means for changing the movement of the car to either direction from the same platform, and further consists in details of construction hereinafter appearing.

In the accompanying drawings, on which like reference-letters indicate corresponding parts, Figure 1 is a longitudinal sectional elevation of an ordinary street-car, showing our improvements applied thereto; Fig. 2, a plan view of the running-gear of said car, also showing our improvements applied thereto; 30 Fig. 3, a sectional view on the line *x x* of Fig. 2, looking in the direction of the arrow; Fig. 4, a detail view of the cam mechanism, showing its connection with the lever attached to the connecting-rods; Fig. 5, a detail perspective view of one cam-sleeve on the driven shaft and means for preventing its rotation on said shaft; Fig. 6, a detail side elevation of the ratchet-and-clutch mechanism mounted on the car-platform for manipulating the connecting-rods, and Fig. 7 a plan view of the same.

The letter A represents a street-car of the ordinary or any approved type, mounted on trucks B.

45 This invention is designed especially to be used in connection with a gas or gasoline engine, such as shown at C, but may be used in connection with any kind of driving-motor. The engine, as shown, is mounted on cross-beams D, bolted to the frame E, which con-

nect and hold the car-trucks B in position. The piston-rod G of said engine is connected to a shaft H through a crank I, as shown in Fig. 2, the shaft being supported in bearings *a b c d*. Upon the shaft H are mounted one 55 or more fly-wheels J, a spur-gear K, and a sprocket-gear L. From these gears motion is transmitted to loosely-mounted gears M and N on the flanges of a slidable part of friction-gears N'. These friction-gears are mounted 60 on driven shafts O and P, respectively, and are adapted to transmit motion from the driven gears to the driven shafts, as will hereinafter appear. It will be seen that in our construction the gears M and N rotate in opposite directions. Thus the motion transmitted to the shafts O and P is in opposite directions. It will only be necessary to describe one clutch-gear and its action on the driven shaft, as the arrangement on both shafts O 70 and P is alike.

The shaft O is mounted in bearings *e* and *f*, preferably over the driving-shaft H. One portion of the friction-clutch N' is rigidly secured to the shaft O by means of a set-screw 75 or otherwise, as shown at *n''*. When it is desired to use the driven shaft to transmit motion to the car-axles, as presently to appear, the loosely-mounted flanged part of the friction-clutch is moved toward the rigidly-mounted portion of the fixed friction-clutch 80 by means of two cam-sleeves A' and G', respectively, one of which may be partially rotated and the other of which simply has longitudinal adjustment, being prevented from rotating by a lug cast therewith and extending through a slot in a casting E', carried by the boxing *f*. When the loose portion of the friction-clutch N is slid up close to the fixed part of the friction-clutch, the two faces of 90 the driven gear M are impinged upon and the motion transmitted to the driven shaft O. We also rigidly mount upon this driven shaft two sprocket-gears U and V by means of set-screws or otherwise. From these sprocket- 95 wheels sprocket-chains extend to each of the axles of the car-trucks, so that when the driven shaft O is rotated the car-axles must also rotate and also in the same direction. When the power is transmitted through the 100

shaft O, the car will move in one direction, and when the power is transmitted through the shaft P the car will move in the opposite direction since the shafts rotate in opposite directions.

We will now refer to the mechanism for operating the cam-sleeves to operate and release the clutch-gears. From the cam-sleeves A' extend arms I' through slotted levers K', pivoted near their centers to the car-body. From either end of these levers extend operating-rods M' N'' and O' P', respectively, in opposite directions, as shown in Fig. 2, to beneath each car-platform, where their outer ends are connected to the ends of the yokes Q' R', respectively. These yokes are secured to the ends of upright shafts S', extending up through each platform of the car. The upright shafts S' are supported in brackets T' and are boxed in by boxing U', which at its upper end carries a ratchet-segment V'. On the upper ends of the shafts S' are square shoulders S'', extending above the ratchet-segments and adapted to receive a crank or operating handle W', which is adapted to be engaged and disengaged from the ratchet-segment at the pleasure of the motorman.

Referring now to the operation of our mechanism, it will be seen that when the motorman releases the operating-handle from engagement with the segments and turns it in either direction, but, say, to the right, he turns the upright shaft S' and pulls on the connecting-rod O', which operates the lever K' and partially rotates the cam A', which, operating against the cam-surface of the cam G', causes the frictional clutches to operate on the driven gear M, and as this gear is constantly rotating, by reason of its connection with the constantly-rotating driving-shaft, the driven shaft is rotated and the car moved to the right, as viewed in Fig. 1. When the rod O' is pushed on by operating the upright shaft around to the left, the frictional clutches are released and the rod M' pulled upon, which operates the mechanism mounted on the driven shaft P; but as the shaft P is driven in the opposite direction to that of the shaft O the car moves in the opposite direction, or to the left, as viewed in Fig. 1. Thus our car may be operated in either direction from either car-platform, which is of great practical importance in operating street-cars.

It will be seen that we do not connect the arms and levers I' rigidly, but allow the arms to pass through slots in the levers. This is done to allow the cams to have longitudinal movement on the shafts O and P and to allow for the vibration of the car-body up and down. We wish also to be understood as not confining our invention to the propul-

sion of street-cars, as we may apply it to all classes of vehicles.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a street-car motor, the combination with a driving-shaft adapted to rotate in one direction, two driven shafts connected thereto and adapted to rotate in opposite directions to each other, sprocket-chains for connecting said driven shafts and the car-axes together, and means for releasing either shaft from engagement with said driving-shaft, as and for the purpose described.

2. In a street-car motor, the combination with a driving-shaft adapted to rotate in one direction, two driven shafts connected thereto and adapted to rotate in opposite directions to each other, mechanism for transmitting motion from said driven shafts to one or more of the car-axes, and means for releasing either shaft from engagement with said driving-shaft, as and for the purpose described.

3. In a street-car motor, the combination with a driving-shaft adapted to rotate in one direction and having a driving-gear mounted thereon, a driven shaft, a two-part clutch mechanism, one of which parts is secured to said driven shaft and the other of which carries a loosely-mounted driven gear adapted to be connected to said driving-gear, said driven gear and flanged friction-gear upon which it is mounted being adapted to be moved longitudinally on said driven shaft whereby the two-part clutch mechanism is brought into contact with the faces of said loosely-mounted driven gear to rotate said driven shaft, and means for transmitting said motion from said driven shaft to one or more of the vehicle-axes.

4. In a street-car motor, the combination with a driving-shaft and two driven shafts operated by the driving-shaft through mechanism including a gear-wheel with frictional side faces, and friction-clutches mounted on the driven shafts and adapted to be forced into contact with said side friction-faces, of cam mechanism mounted on the driven shafts and adapted to so force said friction-clutches, and connecting-rods running from the car-platform to said cam mechanism to operate the latter.

In testimony whereof we affix our signatures in presence of two witnesses.

JACOB W. DEAN.
JOHN C. SNYDER.

Witnesses:

W. M. MCNAIR,
JAS. P. DAWLEY, Jr.