

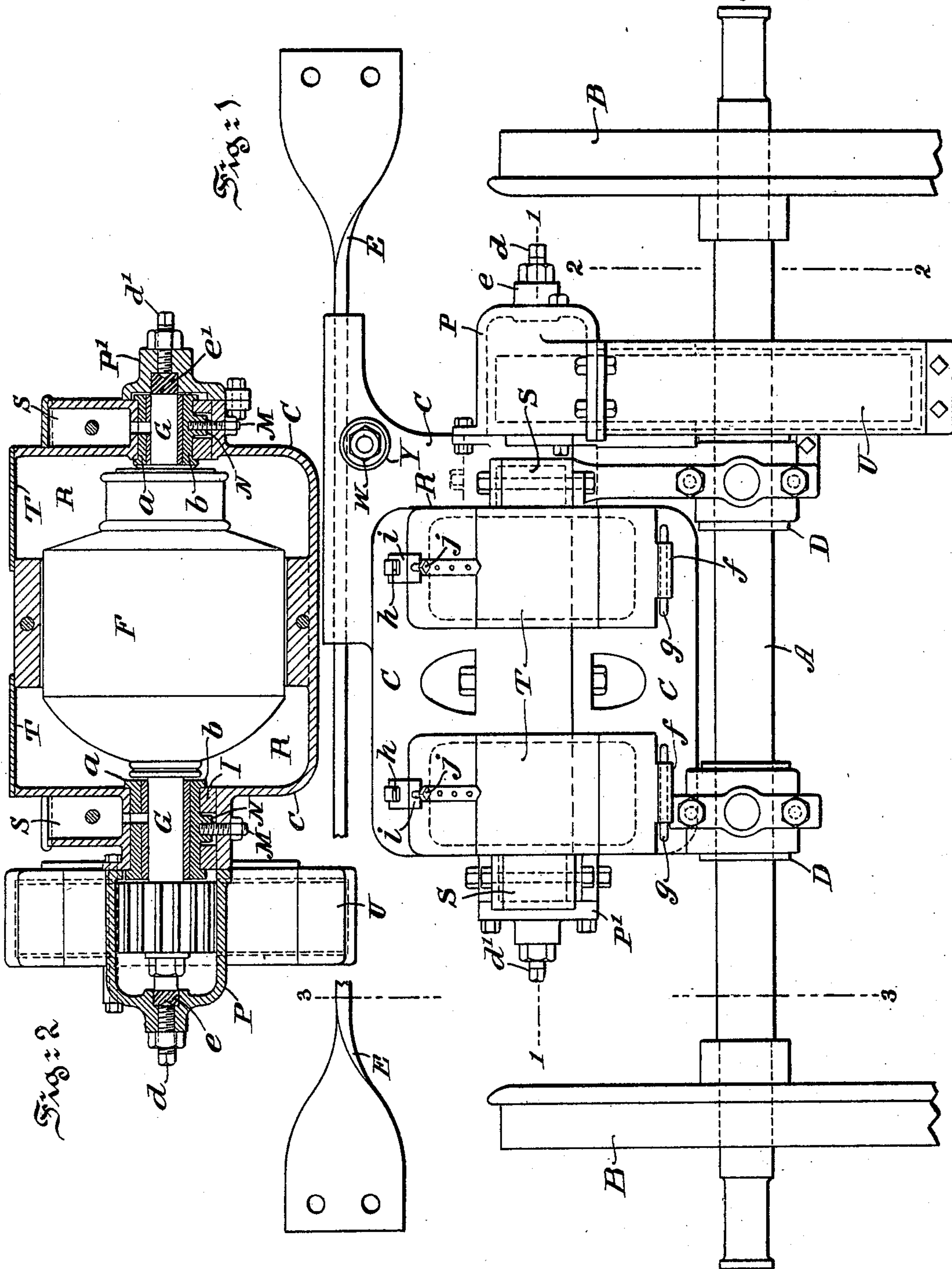
(No Model.)

3 Sheets—Sheet 1.

J. CONNER, J. R. McMILLAN & A. J. FULLER.
ELECTRIC MOTOR.

No. 583,210.

Patented May 25, 1897.



Witnesses:
W. A. Schaefer
Geo. K. Hannemacher

Inventors:
Joseph Conner, James R. McMillan,
Allen S. Fuller.
By their attorneys Chas. A. Rutter

(No Model.)

3 Sheets—Sheet 2.

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Fig: 3

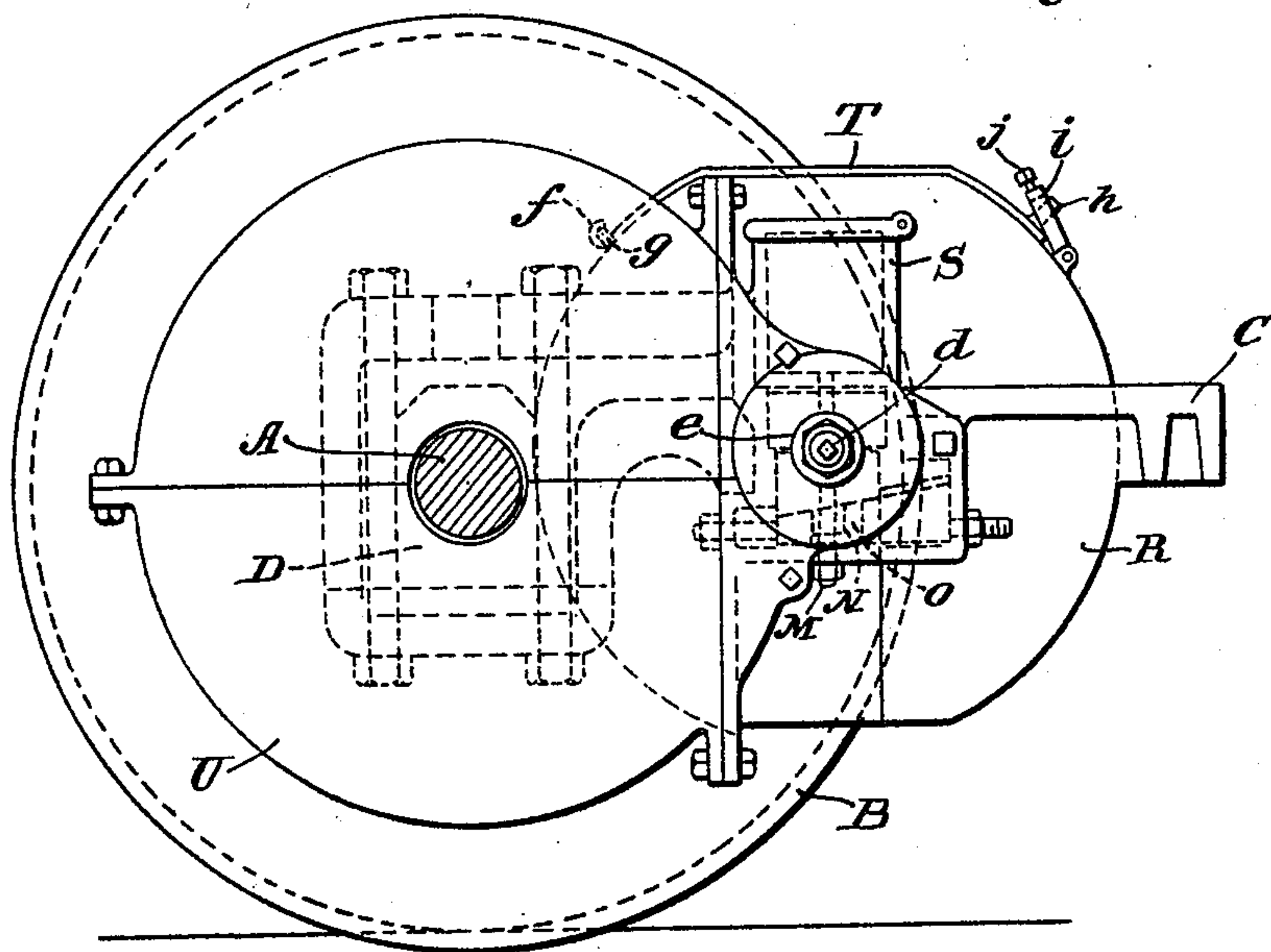
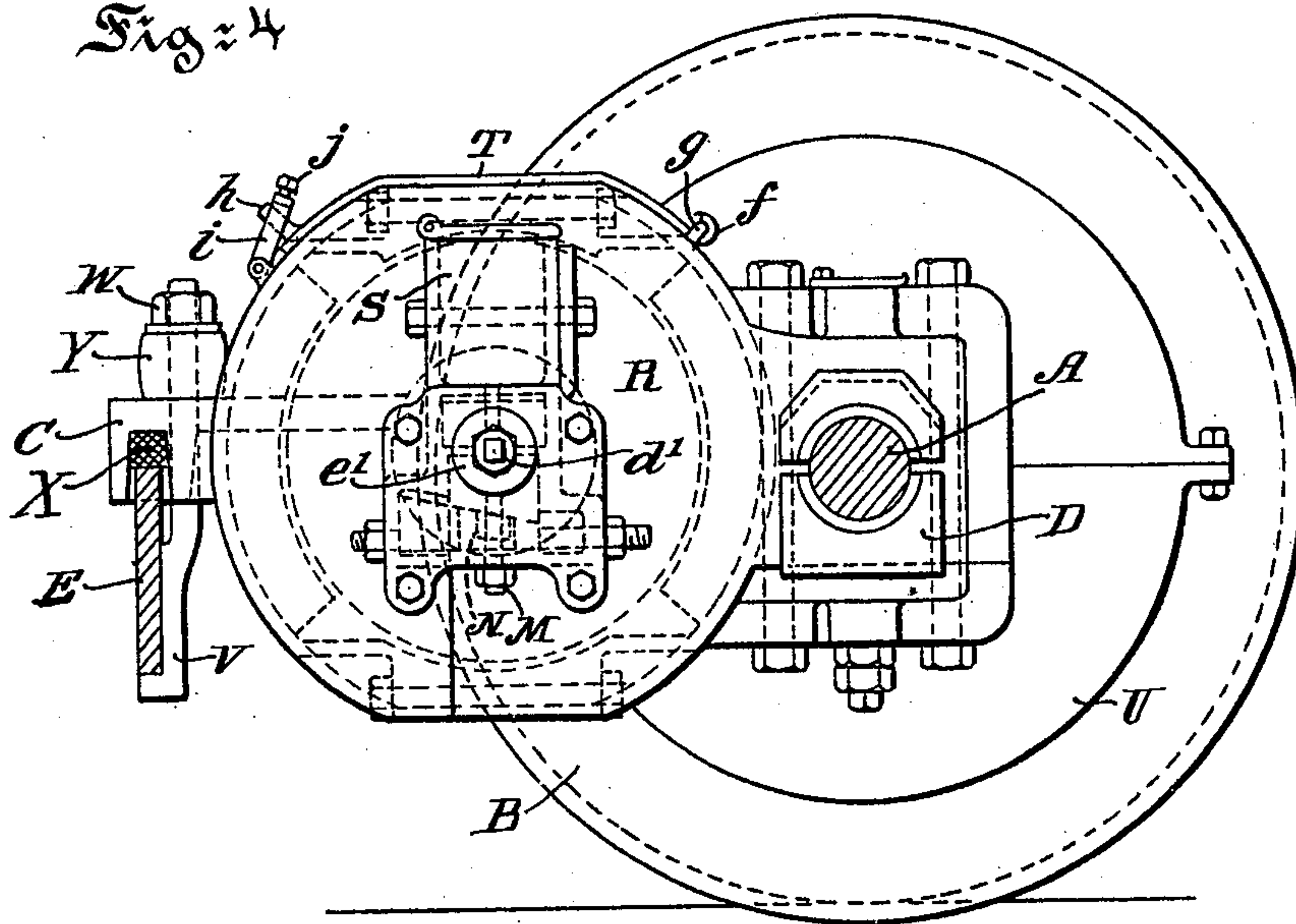


Fig: 4



Witnesses:
W. A. Schaefer

Geo. A. Hannenmacher

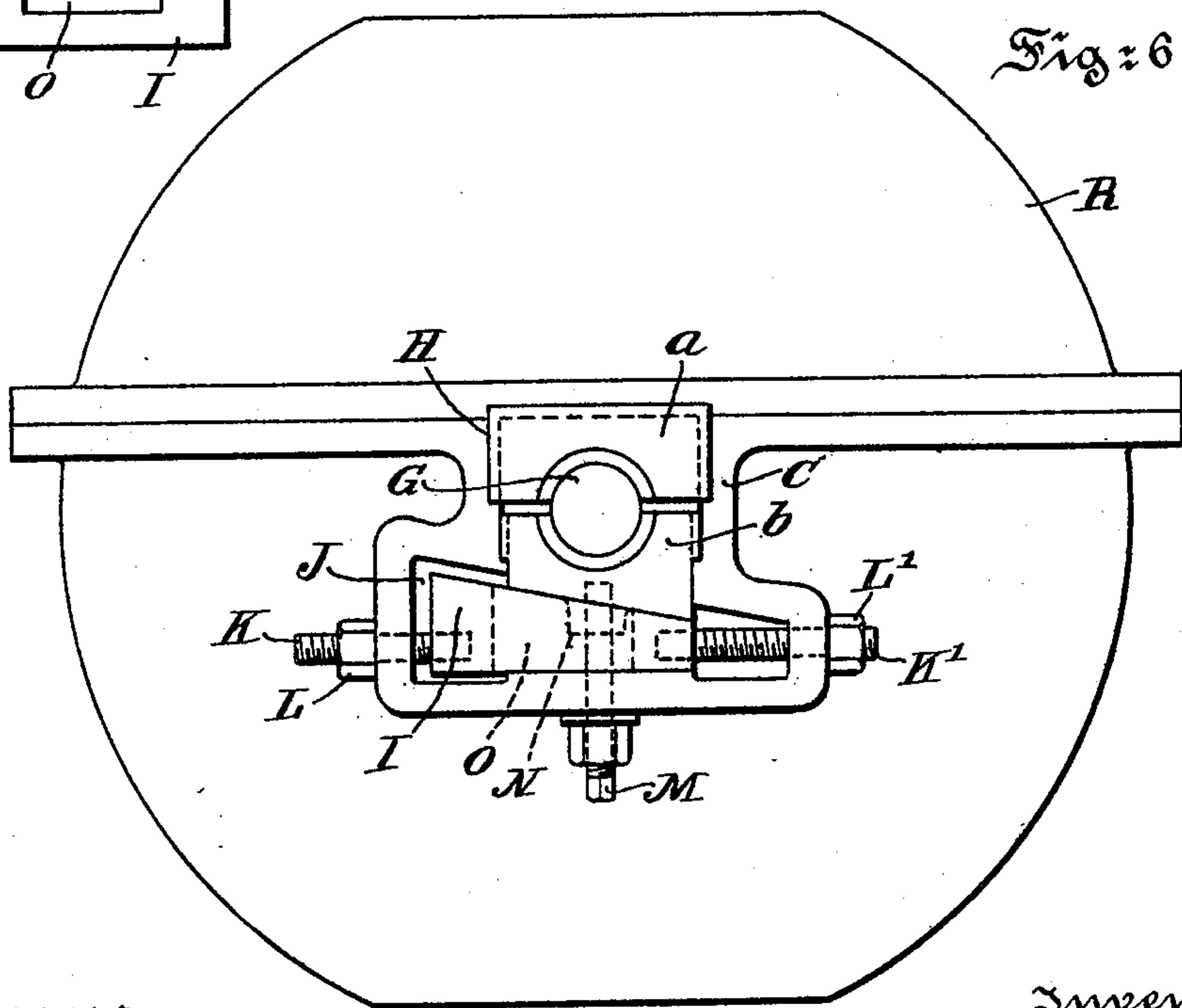
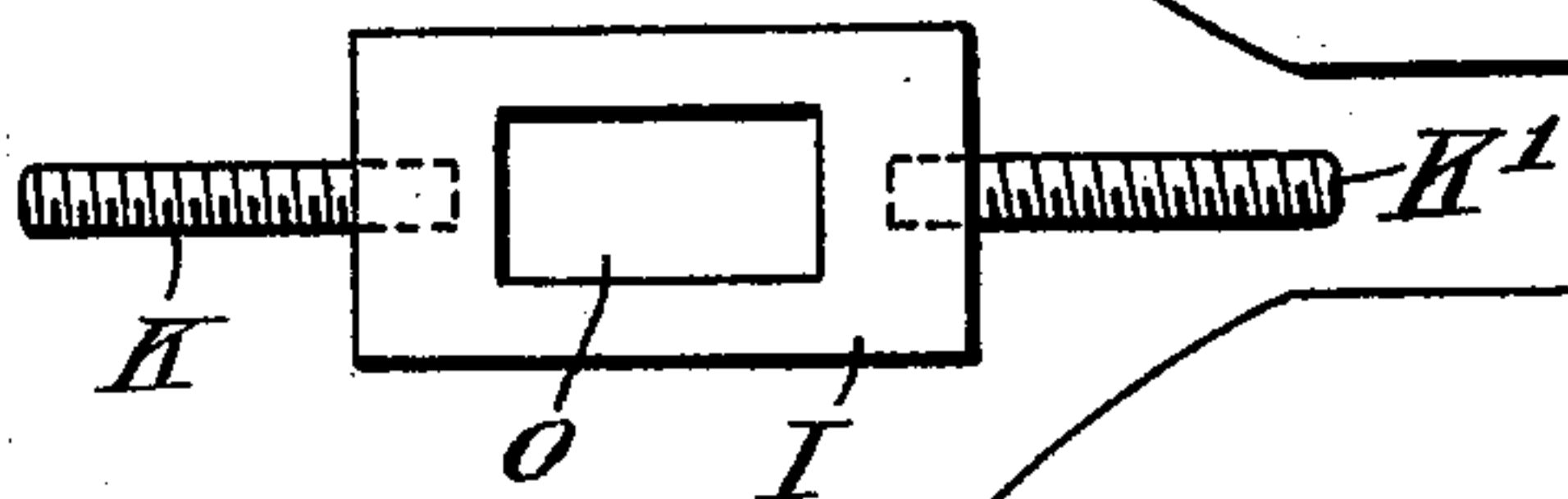
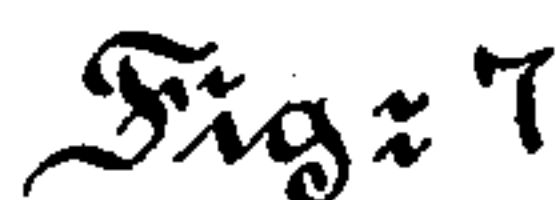
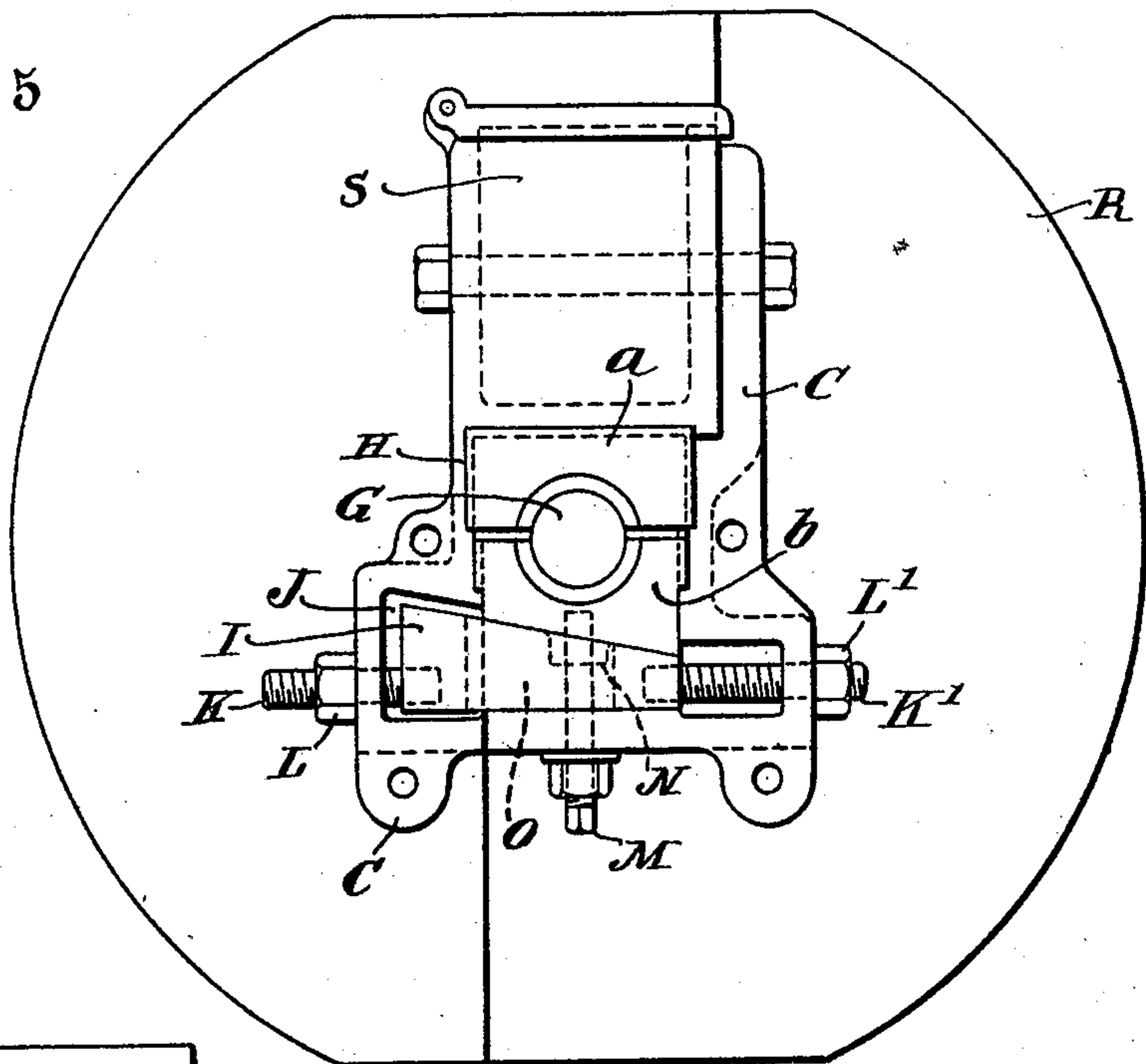
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By their Attorney *Chas. A. Rutter.*

UNITED STATES PATENT OFFICE.

JOSEPH CONNER, JAMES R. McMILLAN, AND ALLEN J. FULLER, OF
PHILADELPHIA, PENNSYLVANIA.

ELECTRIC MOTOR.

SPECIFICATION forming part of Letters Patent No. 583,210, dated May 25, 1897.

Application filed September 26, 1896. Serial No. 607,034. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH CONNER, JAMES R. McMILLAN, and ALLEN J. FULLER, citizens of the United States, and residents of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Electric Motors, of which the following is a specification.

Our invention relates to improvements in electric motors; and the object of our invention is, first, to furnish a means whereby the armature-shaft and the lower bearing, which forms the bearing for this shaft, may be easily and quickly adjusted at any time to compensate for wear that may occur in the lower brass; second, to furnish an improved means for preventing longitudinal play of the armature-shaft; third, to furnish an improved cover for preventing dirt and dust from reaching the armature and its connected parts; fourth, to furnish an improved means for carrying the end of the motor opposite to that carried by the axle of the car or truck.

In the accompanying drawings, forming part of this specification and in which similar letters of reference indicate similar parts throughout the several views, Figure 1 is a plan of an electric motor embodying our improvements, the truck-axle carrying the front of the motor and the cross-bar carrying the rear of the motor being shown; Fig. 2, a section of Fig. 1 on line 1 1, the armature and its shaft being shown in elevation; Fig. 3, a section of Fig. 1 on line 2 2, showing in elevation the end of the motor and its connected parts; Fig. 4, a section of Fig. 1 on line 3 3, showing in elevation the other end of the motor and its connected parts; Fig. 5, an enlarged end elevation of the armature case and frame, showing means for rapidly and positively adjusting the armature bearing-block and armature; Fig. 6, a similar view showing a modified form of frame; and Fig. 7, a plan of wedge-shaped adjusting-block, showing slot in same.

A is the axle, and B B wheels, of a truck or car.

C is the frame of an electric motor. One end of this frame is carried by axle A, as at D D. The other is carried upon a cross-bar

E, that extends transversely of the car and which may be supported in any convenient manner.

F is the armature, the shaft G of which is carried in bearings carried by frame C. The bearings which support the armature-shaft are, as usual, for purposes of convenience, made in two sections *a b*, and the frame C is made with a vertical opening H, in which the sections of the bearings are placed. The wear upon the upper section *a* is so little that it need not be taken into account, and this section is seated in the opening H, so that it has neither vertical nor horizontal play. The wear upon the under section *b*, which carries the entire weight of the armature, the armature-shaft, &c., is very great, and as this wear takes place the armature-shaft is lowered at one or both ends and the gearing which connects the armature-shaft and the driving-axle of the truck is thrown out of line, causing the machine to run noisily and not infrequently causing teeth on the cogs or other parts of the machine to break. In order to quickly and positively adjust the lower section *b* and the shaft G when the former becomes worn, we make use of a wedge-shaped adjusting-block I, the upper face of which is inclined and adapted to engage a correspondingly-inclined lower face on the section *b*.

J is an opening in the frame C to receive the wedge-shaped block I. This opening connects with the vertical opening H in the frame, as shown.

K K' are screws carried by block I, which pass through frame C, as best shown in Figs. 5 and 6.

L L' are jam-nuts on screws K K', which bear against the frame C.

M is a screw passing vertically upward through frame C, through a slot O in the block I, and into a downwardly-projecting lug N, carried by section *b*. When the armature-shaft G wears the section *b*, the nut L' is loosened and the nut L set up, forcing the wedge-shaped block I along, raising the section *b* until the shaft G again engages the section *a*, after which the nut L' is set up firmly against frame C.

In order to prevent longitudinal play of the

shaft G and its connected parts, we place in the caps P P', which inclose the ends of the shaft and which are bolted to the frame C, set-screws *d d'*, which are adapted to engage washers *e e'*, preferably of rawhide, which engage the ends of shaft G. When wear takes place and the shaft G commences to play longitudinally, we have only to set up screws *d d'* to entirely prevent this play.

Electric car-motors are necessarily so placed upon the trucks of the car that unless thoroughly protected by casings their working parts would be rapidly cut away by the dust and dirt with which they are constantly surrounded. We cast with the frame C a box R to inclose the armature. This box is open at its top and at its sides is furnished with means, heretofore described, for carrying the armature-shaft.

S are oil-cups upon the sides of box R, which carry oil to lubricate the bearings of the shaft G.

T are detachable covers for closing the top of box R, and P P', already described, are caps for inclosing the ends of the armature-shaft.

U is a case bolted to cap P, which incloses the gear-wheel on the driving-shaft A of the truck. When the covers T, the caps P P', and the cover U are in place, the working parts of the machine are completely protected from dust. At one end the covers T are bent over, forming a hook *f*, which is adapted to engage a staple *g*, carried by box R. At the other end the covers carry a projecting lug *h*, which is adapted to be engaged by a swinging keeper *i*, carried by the box R.

j is a set-screw carried by keeper *i*, by means of which the covers are drawn down tightly against the box R.

One end of frame C, which carries the armature and its connected parts, is carried by the shaft or axle A, and the other end of this frame is carried by a cross-bar E, which runs transversely of the truck. In order to prevent the ill effects of the constant jolting and jarring to which the mechanism is at all times subjected, we do not attach the frame C to the bar E rigidly, but make a yielding connection between these two parts.

V is a bolt the lower end of which is secured to the cross-bar E. This bolt passes up and through the frame C and carries a nut or washer W at its upper end.

Y is a spring, which may be of rubber, as shown, or an ordinary coil-spring of metal, one end of which bears against washer W and the other against frame C.

X, Fig. 4, is a spring or a rubber cushion interposed between frame C and top of cross-bar E. The spring or cushion X and the spring Y operate to prevent rattling between the frame and cross-bar, and one operates to take up all jars or sudden movements in one direction and the other to take up these movements in the other direction.

Having thus described our invention, we claim—

1. In combination, an armature and its shaft, a frame furnished with a vertical and with a horizontal opening the former of which connects with the latter, a bearing formed in two sections in which said shaft is journaled, the upper section *a* being seated in a recess in the upper part of said vertical opening, and the lower section *b* of which is vertically movable in said opening and which has its lower face inclined, a wedge-shaped adjusting-block furnished with a vertical opening and placed in said horizontal opening in said frame the inclined face of which engages the inclined face on said lower section *b*, screws passing through said frame and engaging the ends of said wedge-shaped bearing-block, and a screw passing upward through said frame and slot in said bearing-block and into said lower section *b*, all substantially as and for the purposes set forth.

2. In combination, an armature and its shaft, a frame furnished with a vertical and a horizontal opening the former of which connects with the latter, a bearing in which said shaft is journaled the upper part *a* of which is seated in a recess in the upper part of said vertical opening and the lower section *b* of which is vertically movable in said opening and the lower face of which is inclined, a wedge-shaped adjusting-block the inclined face of which engages the inclined face on said section *b* of the bearing, and means carried by said frame whereby said adjusting-block may be moved backward or forward or held firmly in any position.

3. In combination, an armature, a shaft carrying said armature, a frame supporting said shaft, a box carried by said frame inclosing said armature, a removable cover for said box one of the ends of which is bent up and back forming a hook, a staple carried by said box adapted to engage and hold said hook, a lug upon the opposite end of said cover, a keeper pivoted to said box, and a screw-bolt carried by said keeper adapted to engage said lug, all substantially as and for the purposes set forth.

4. The combination with an armature and its shaft, of a supporting-frame, a box inclosing said armature, caps inclosing the ends of said armature-shaft and bolted to said frame or box, set-screws passing through said caps, and washers one end of which is engaged by said set-screws and the other end of which is adapted to engage the ends of said armature-shaft.

5. In combination, an electric motor, a frame upon which said motor is carried, means for connecting one end of said frame to the axle of a car-truck, a cross-bar carried by said truck and passing under the end of said frame opposite to that carried by the axle, a bolt the lower end of which is secured to said cross-bar and which passes up and through said frame, a nut upon the upper end of said

bolt, a spring interposed between said nut and frame, and a spring or cushion interposed between the upper part of said cross-bar and the under part of said frame.

5 6. The combination with the frame C and the cross-bar E of a bolt carried by said bar and projecting upward through said frame, a nut and washer on the upper end of said
10 bolt, a spring interposed between said washer and said frame, and a spring or cushion in-

terposed between said frame and the top of the cross-bar E, all substantially as and for the purposes set forth.

JOSEPH CONNER.
JAMES R. McMILLAN.
ALLEN J. FULLER.

Witnesses:

E. J. DE HAVEN,
A. M. DE HAVEN.