

No. 690,553.

Patented Jan. 7, 1902.

M. A. BECK.  
TROLLEY FOR ELECTRIC CRANES.

(Application filed July 30, 1900.)

(No Model.)

2 Sheets—Sheet I.

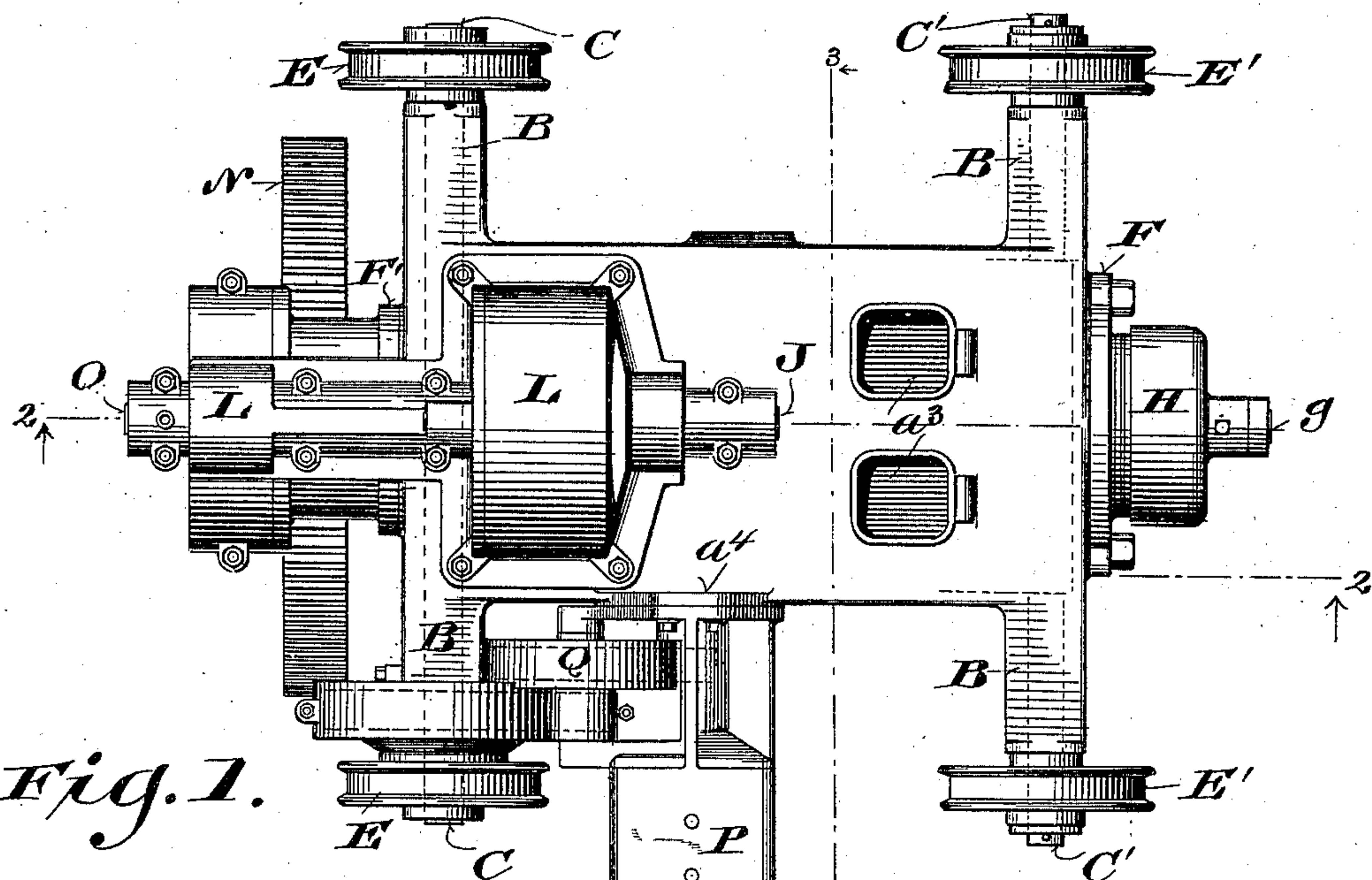
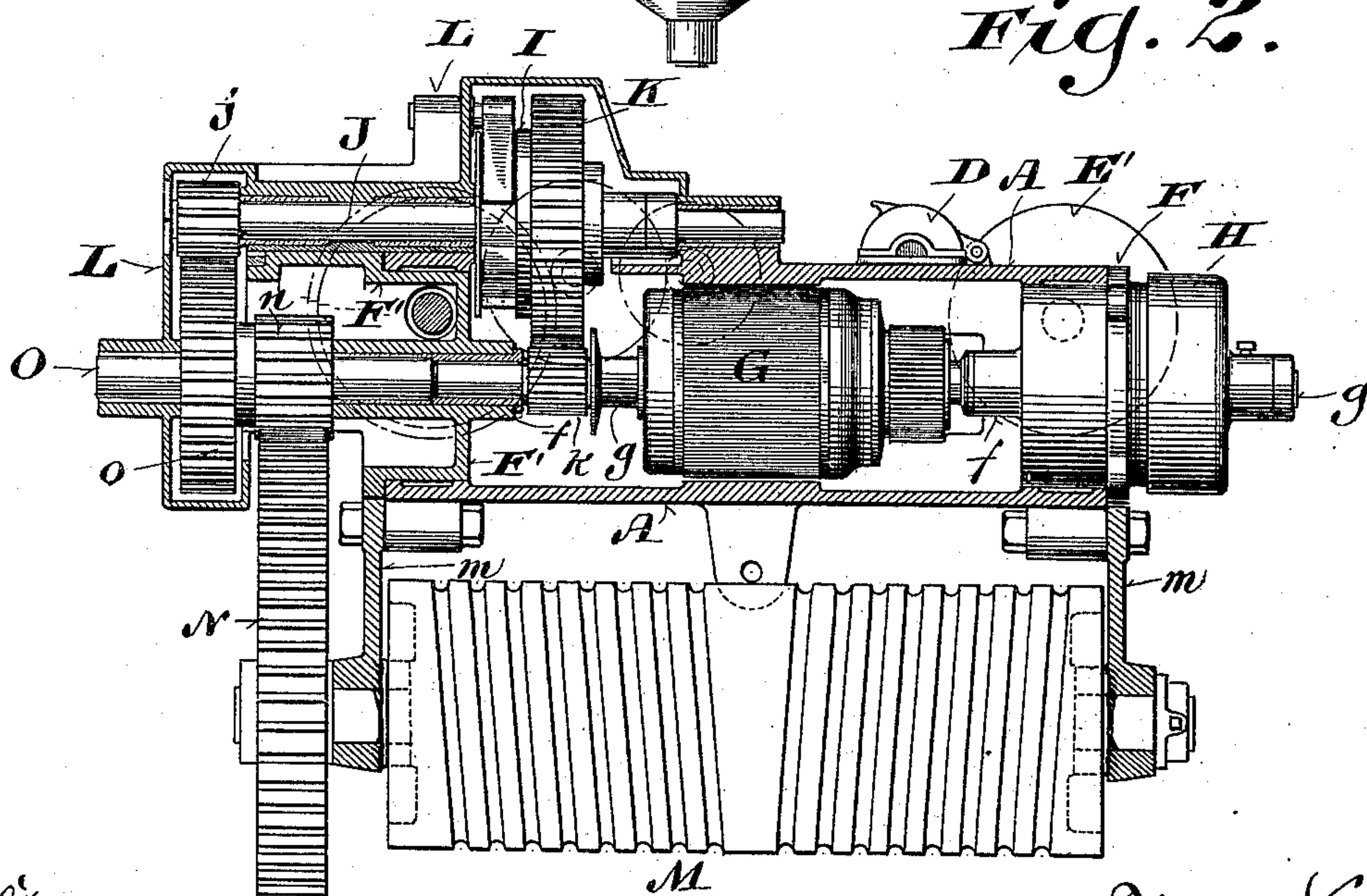


Fig. 1.

Fig. 2.



Witnesses:

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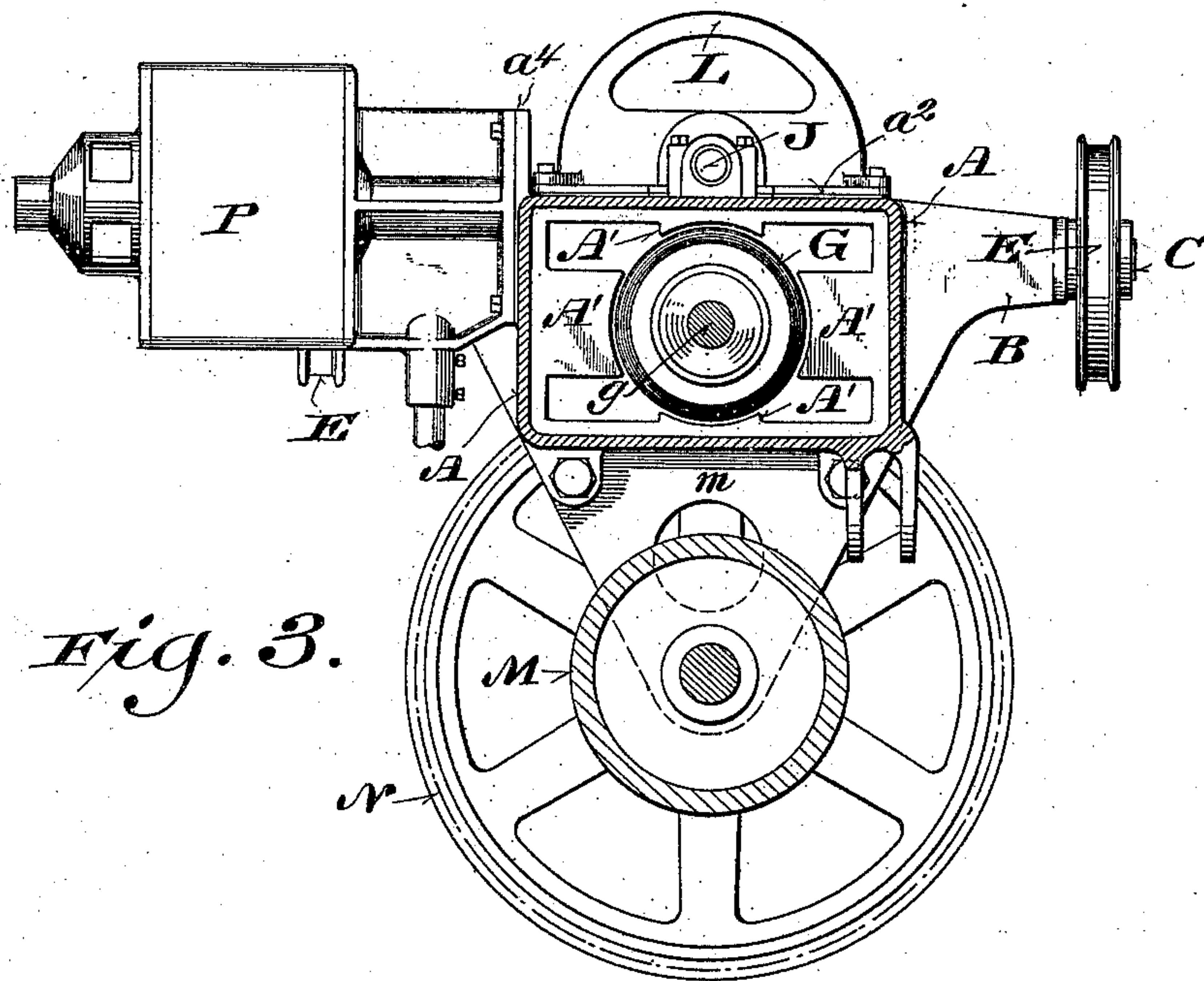
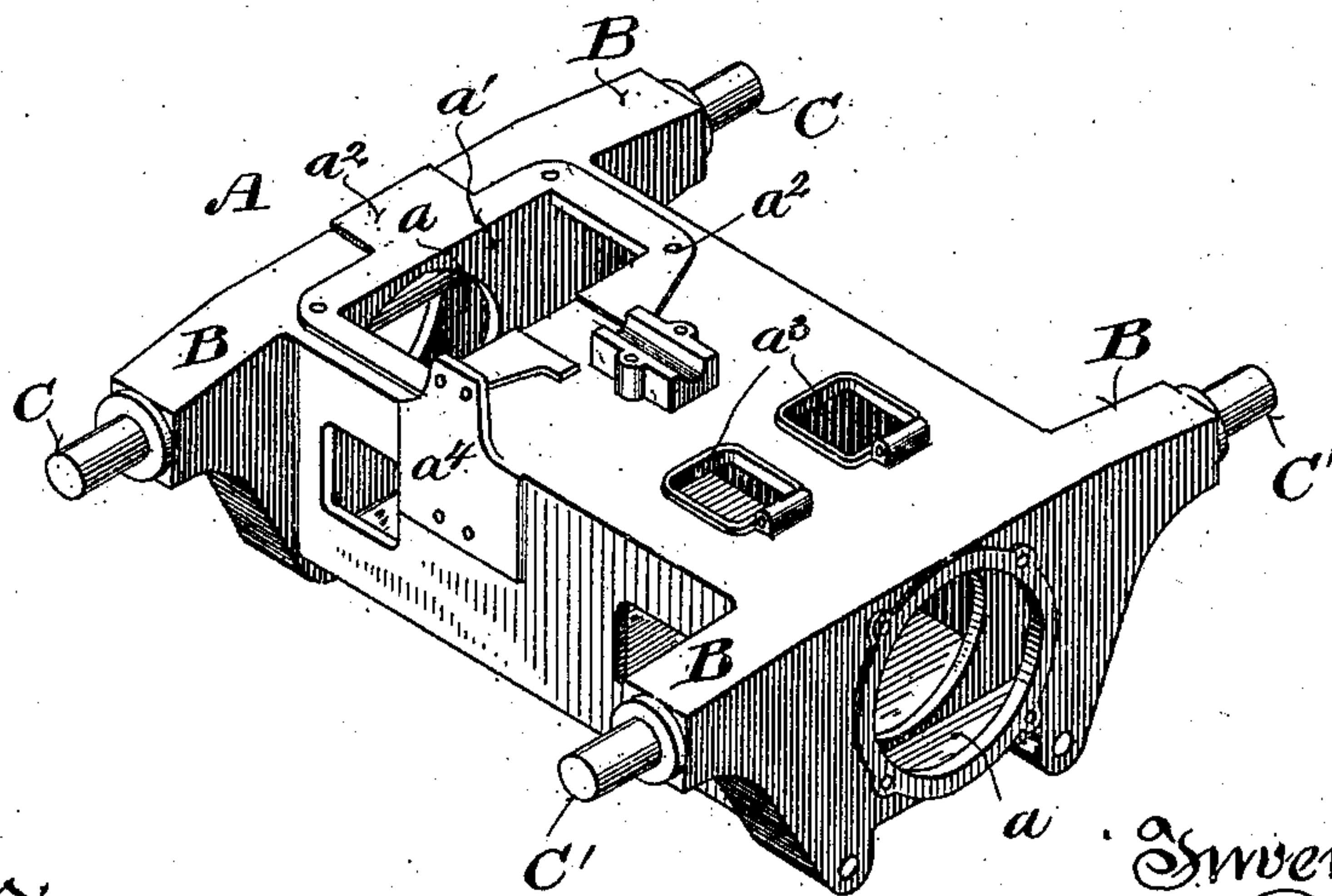


Fig. 3.

Fig. 4.



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# UNITED STATES PATENT OFFICE.

MATTHIAS A. BECK, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO PAWLING AND HARNISCHFEGGER, A FIRM COMPOSED OF ALONZO PAWLING AND HENRY HARNISCHFEGGER, OF MILWAUKEE, WISCONSIN.

## TROLLEY FOR ELECTRIC CRANES.

SPECIFICATION forming part of Letters Patent No. 690,553, dated January 7, 1902.

Application filed July 30, 1900. Serial No. 25,240. (No model.)

*To all whom it may concern:*

Be it known that I, MATTHIAS A. BECK, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Trolleys for Electric Cranes, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to trolleys for electric cranes. Its main objects are to provide a strong compact structure, to inclose and protect the working parts of the trolley, to afford easy access to such parts, to provide for their detachment and removal from the inclosing casing or frame, and generally to improve the construction of devices of this kind.

It consists in certain novel features in the construction and arrangement of component parts of the trolley and in certain combinations of parts, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a plan view of a trolley embodying my improvements. Fig. 2 is a vertical longitudinal section thereof on the broken line 2 2, Fig. 1. Fig. 3 is a vertical cross-section on the line 3 3, Fig. 1; and Fig. 4 is a perspective view of the trolley-frame.

Referring to Fig. 4 in connection with the other figures, A designates the trolley-frame, which is cast in the form of an oblong box or casing with circular openings  $a$  in the ends and horizontal arms or projections B B on the sides at or near the ends. The arms B are bored crosswise of the frame to receive and hold the axles C and C' of the trolley-supporting wheels. The casing is also formed with an opening  $a'$  in the top and with a pad  $a^2$  for the connection of the load-brake with the hoisting-motor and the attachment of the load-brake housing to said casing. It is also formed on the top with two openings  $a^3$ , which are provided with covers D, as shown in Fig. 2, to afford direct and easy access to the commutator and brushes of the hoisting-

motor. It is formed on one side with a pad  $a^4$  for the attachment of the trolley-motor.

E E' are trolley-supporting wheels grooved or flanged in the usual way to run on guiding-rails. The wheels E E are fixed on the ends of the axle C, which extends through and turns in the frame A. The wheels E' are loosely mounted on the axles C', which are rigidly secured in said frame and terminate at or near the inner ends of the arms B, in which they are held.

F and F' are the front and back heads, which are fitted in and adapted to close the openings  $a$  in the ends of the trolley-frame and motor-casing. They are centrally formed or provided with journal-boxes  $f f$  for the shaft  $g$  of the armature G of the hoisting-motor.

H is an automatic motor-brake formed with or attached to the front head F and removable therewith from the trolley-frame. As brakes of this kind are commonly employed and are well known in connection with hoisting-motors for automatically stopping the motor quickly whenever the current is cut off from the motor, a detailed description of the construction of the brake and explanation of its operation are deemed unnecessary. Its attachment to the front head of the motor-casing, so as to be removed with the head, constitutes the only essential bearing it has upon the present invention. A brake of this kind and for this purpose is shown and described in detail in United States Letters Patent No. 647,436, dated April 10, 1900.

The casing A is formed on the inside with pole-pieces A' for the field-magnets of the hoisting-motor, as shown in Fig. 3. The openings  $a$  in the ends of the casing are made of sufficient size to permit the removal therefrom of the armature G when either of the heads F or F' and parts connected therewith are detached and removed from the casing.

I is an automatic load-brake for controlling the descent of the load by and in accordance with the operation of the motor. Like or similar brakes being used and well known for this purpose, it is not deemed necessary to describe the same in detail, its arrangement



with relation to other parts of the trolley constituting the only essential bearing it has upon the present invention.

The brake I is mounted on a shaft J, which is supported in bearings on top of the casing A parallel with the armature-shaft  $g$  and is connected therewith through the opening  $a'$  by a gear K on the brake-shaft and a pinion  $k$  on the armature-shaft. This brake is inclosed and partially supported by a housing L, attached to the pad  $a^2$  on top of the casing A.

M is the hoisting-drum, supported parallel with the armature G in brackets or hangers  $m m$ , which are bolted to the under side of the frame or casing A at or near its ends. The drum-shaft is provided at one end with a gear N, which meshes with a pinion  $n$  on a shaft O between and parallel with the drum-shaft and the brake-shaft J. The shaft O is supported in line with the armature-shaft  $g$  by an extension of the box  $f$  in the back head  $F'$  and by a box in the housing L, and it is provided with a gear  $o$ , which meshes with a pinion  $j$  on the brake-shaft J. The housing L, which incloses and furnishes bearings for the brake-shaft and its connections with the gear on the drum-shaft, is or may be made in sections which are separable in planes intersecting the axes of the shafts J and O, so as to facilitate the assemblage of the parts and the removal of the brake and its connections.

P represents the trolley-motor casing or frame, which is bolted to the pad  $a^4$  on one side of the trolley-frame and casing A. The armature-shaft of this motor is arranged parallel with the axle C and is connected therewith by a train of gears inclosed in the housing Q, as shown in Fig. 1. The motor P is for the purpose of propelling the trolley by turning one pair of its supporting-wheels E.

By the construction of the trolley-frame and the arrangement of the several parts of the trolley as hereinbefore described a strong, durable, and compact structure is produced, the various working parts are inclosed and protected, and easy access thereto is provided for. The several parts of the device may also be readily detached and removed for repairs or renewal, as occasion may require.

Various changes in the minor details of construction may be made within the spirit and intended scope of my invention.

I claim—

1. A trolley-frame for electric cranes consisting of a casing formed with openings in the ends and on the sides at or near the ends with horizontal arms or projections bored lengthwise to receive the axles of the trolley-supporting wheels, substantially as and for the purposes set forth.

2. A trolley-frame for electric cranes consisting of a casing adapted to inclose the armature of the hoisting-motor and formed inside with pole-pieces for the field-magnets of

said motor, at the ends with openings for the front and back heads and the bearings of the armature, and on the sides at or near the ends with horizontal arms or projections bored lengthwise in line with each other to receive the axles of the trolley-supporting wheels, substantially as and for the purposes set forth.

3. In a trolley for electric cranes the combination of a casing formed with openings in the ends, pole-pieces inside, and horizontal arms or projections on the sides at or near the ends for the trolley-supporting wheels, front and back heads closing said end openings and provided with journal-bearings, and a motor-armature mounted in said bearings and inclosed in said casing, substantially as and for the purposes set forth.

4. In a trolley for electric cranes the combination of a casing formed on the sides with arms or projections for the axles of the supporting-wheels and in the top and ends with openings, heads closing the end openings and formed with journal-bearings, an armature supported by said bearings within said casing, a hoisting-drum supported parallel with the armature by brackets depending from said casing, a brake-shaft mounted on top of the casing parallel with the armature-shaft and connected therewith by gears through the top opening in said casing, and a shaft between and parallel with the drum and brake shafts and connected therewith by gears, substantially as and for the purposes set forth.

5. In a trolley for electric cranes the combination of a casing formed with arms or projections on the sides for the axles of the trolley-supporting wheels, axles supported in said arms or projections, wheels mounted on said axles, one of the axles extending through said casing and the supporting-wheels being fixed thereon, a hoisting-drum supported in brackets depending from said casing, a motor-armature supported within said casing parallel with said drum and connected with the drum by gears, and a motor mounted on one side of said casing and connected by gears with one of said axles, substantially as and for the purposes set forth.

6. In a trolley for electric cranes the combination of a casing formed with openings in the ends and arms or projections on the sides for the axles of the supporting-wheels, axles supported in said arms or projections, wheels mounted on said axles, one of said axles extending through said casing and the supporting-wheels being fixed thereon, heads closing the end openings in said casing and provided with journal-bearings, a motor having its armature-shaft supported in said bearings, an automatic motor-brake mounted on one of said heads, a brake-shaft mounted on top of said casing parallel with said armature-shaft and connected therewith by gears, an automatic brake mounted upon said brake-shaft, a hoisting-drum suspended from said casing

parallel with said armature-shaft, a shaft between and parallel with said drum and brake-shaft and connected therewith by gears, and a motor mounted on one side of said casing  
5 and connected by gears with one of said axles, substantially as and for the purposes set forth.

In witness whereof I hereto affix my signature in presence of two witnesses.

MATTHIAS A. BECK.

Witnesses:

HERBERT L. ROLOFF,  
CHAS. L. GOSS.