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N. C. BASSETT.

ELECTRIC RAILWAY MOTOR.

No. 457,102. Patented Aug. 4, 1891.

Fig. 1.

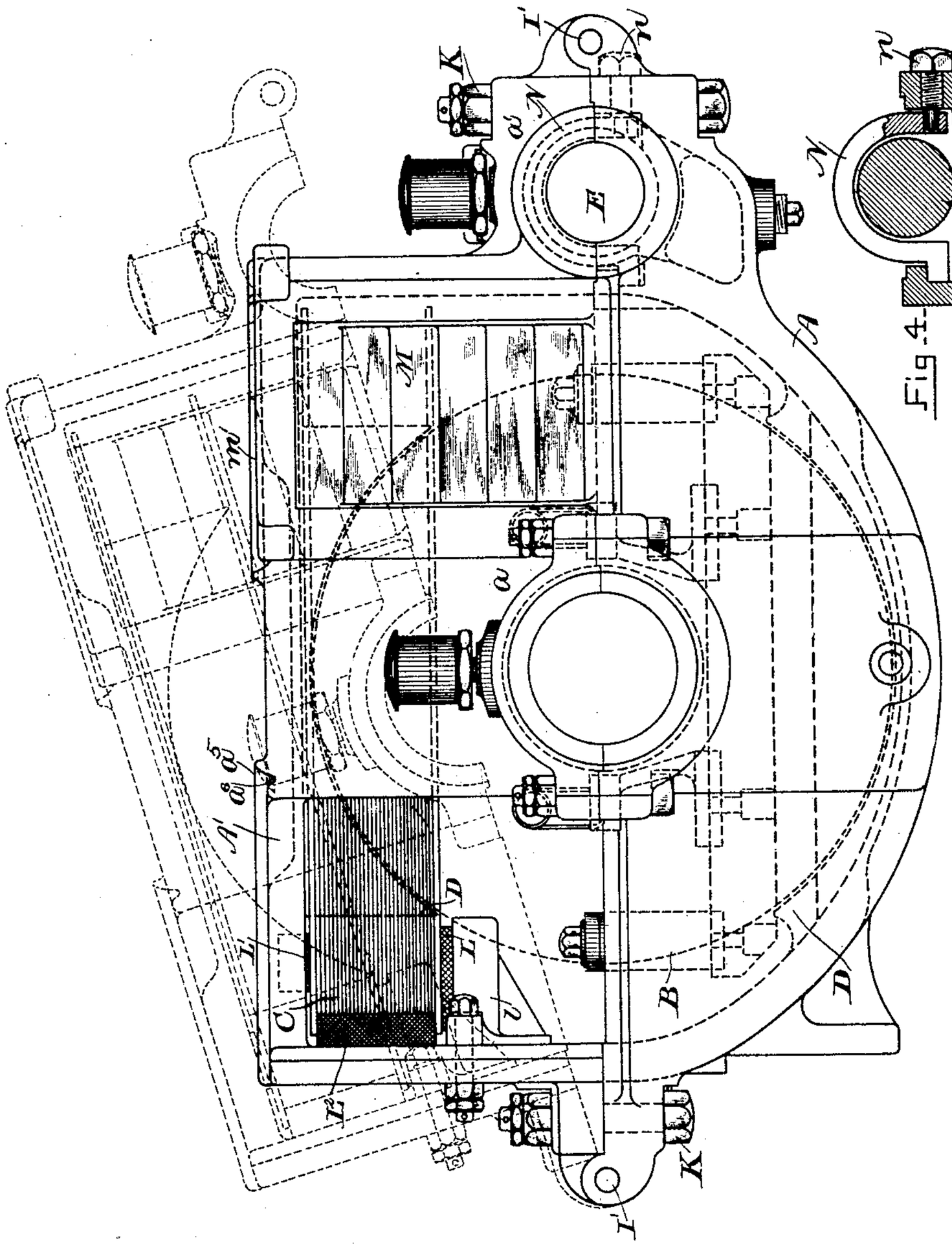

Fig. 4.

Fig. 5.

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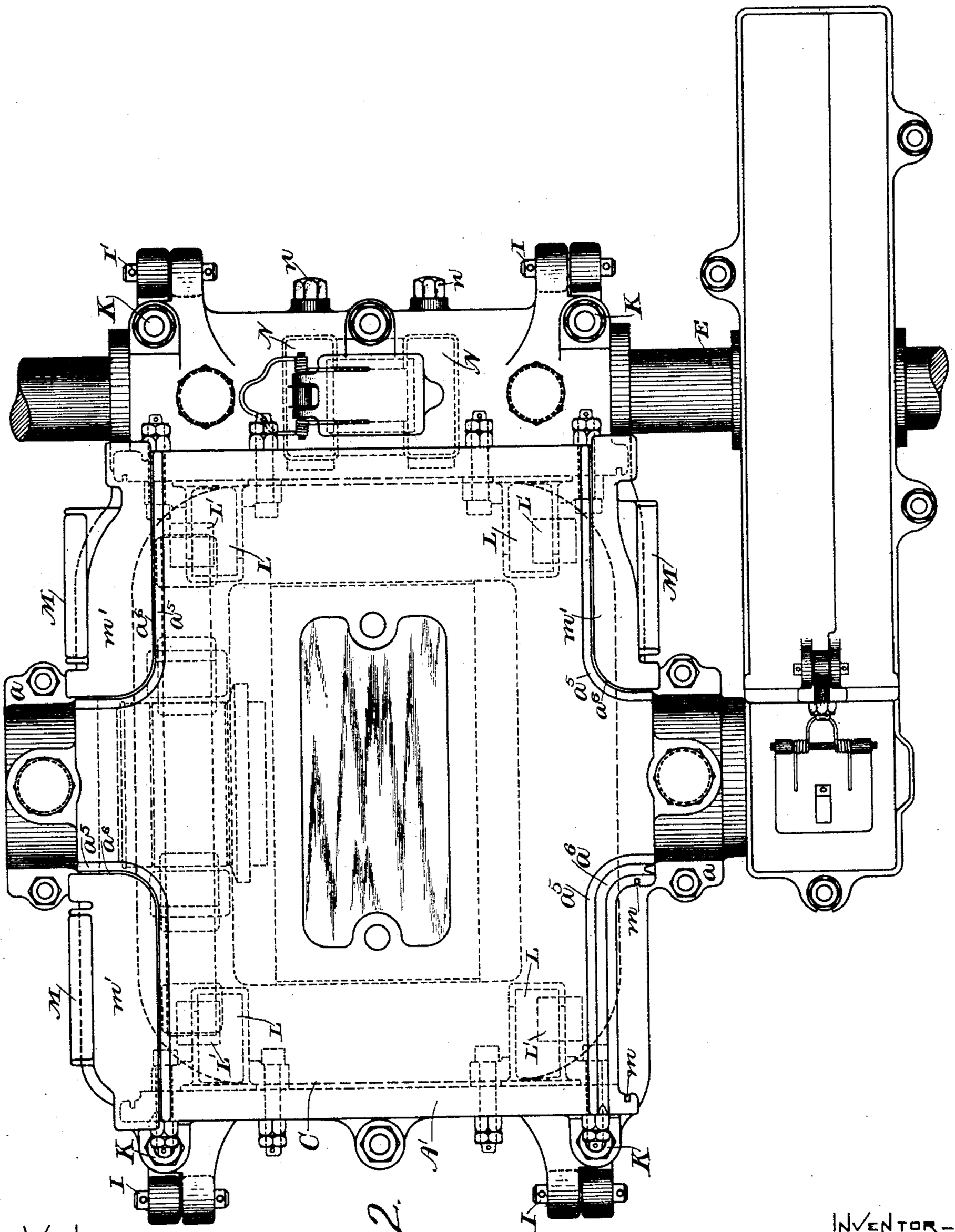

Fig. 2.

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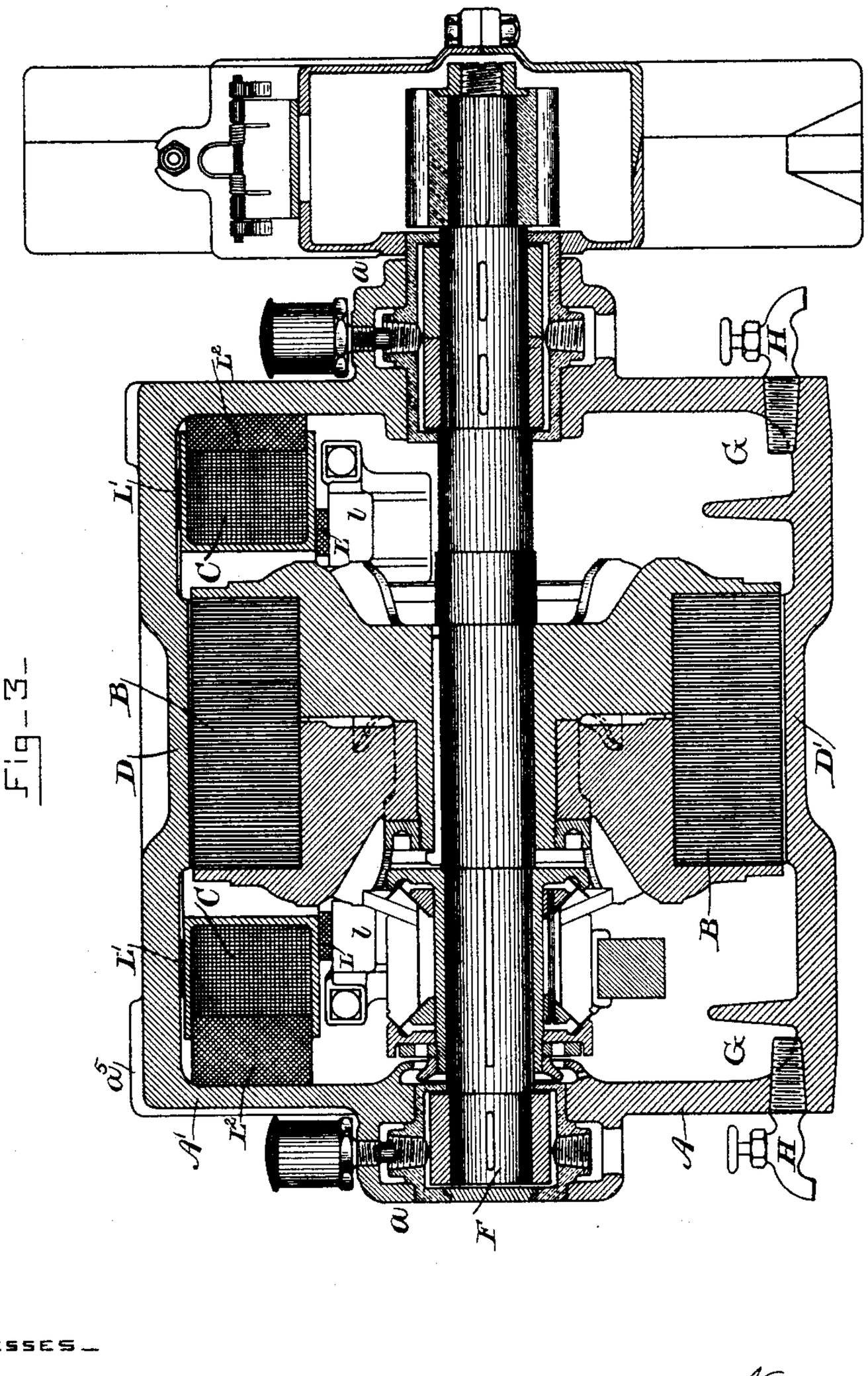
Fig-3-



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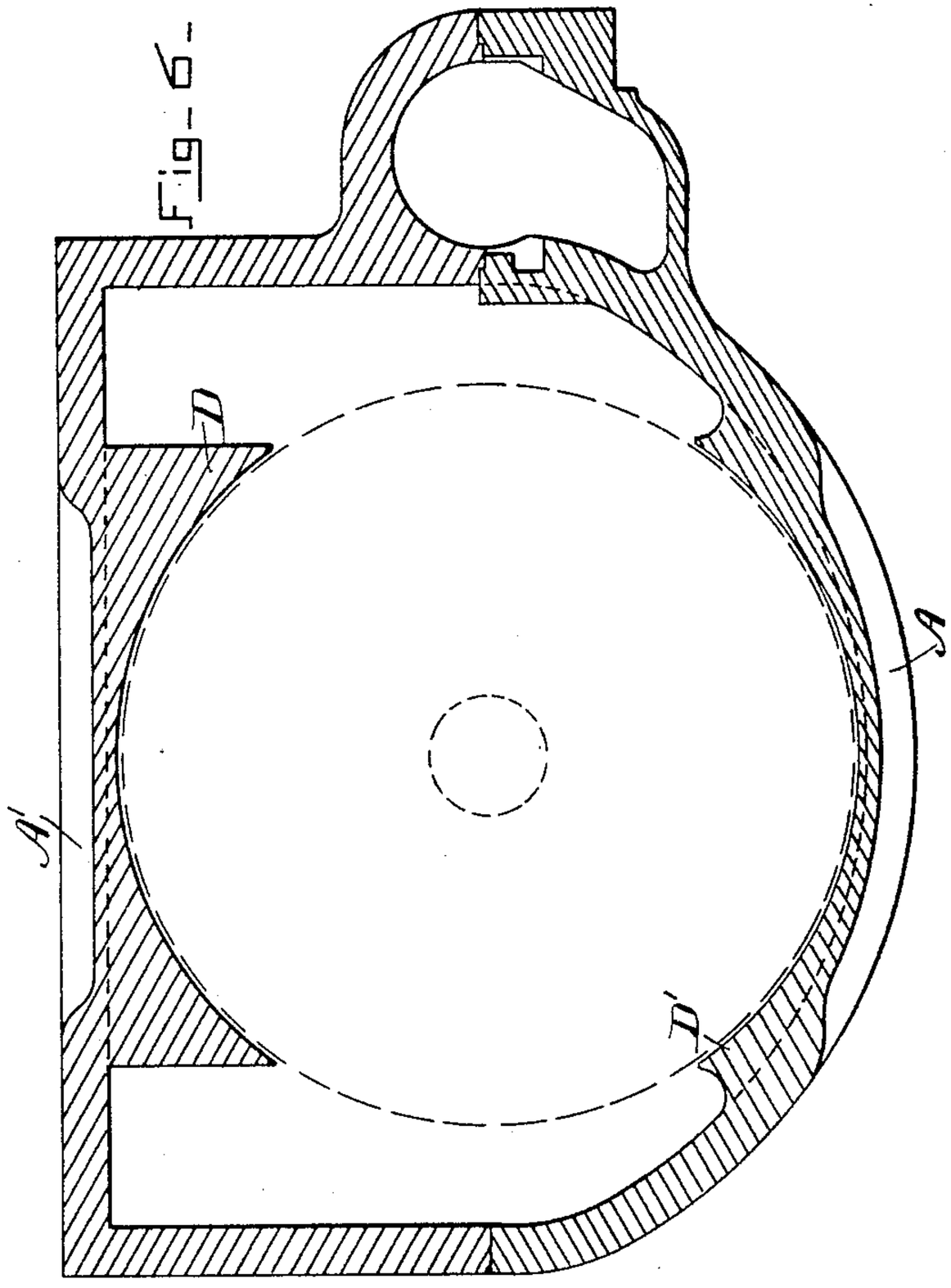
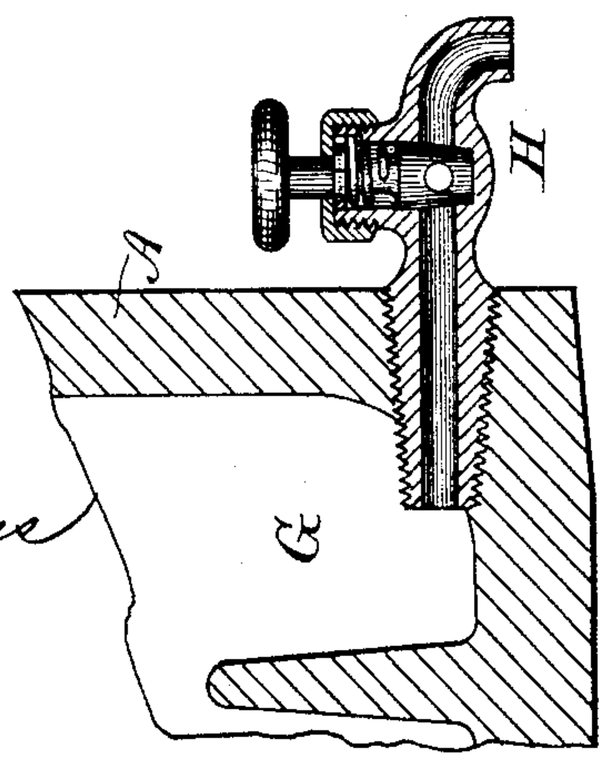
No. 457,102. Patented Aug. 4, 1891.

Fig. 6.





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UNITED STATES PATENT OFFICE.

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ELECTRIC-RAILWAY MOTOR.

SPECIFICATION forming part of Letters Patent No. 457,102, dated August 4, 1891.

Application filed March 30, 1891. Serial No 386,925. (No model.)

To all whom it may concern:

Be it known that I, NORMAN C. BASSETT, a citizen of the United State, residing at Lynn, in the county of Essex and State of Massachusetts, have invented a certain new and useful Improvement in Electric-Railway Motors, of which the following is a specification.

My present improvements in electric-railway motors relate to a water-proof inclosing case or frame, to means for protecting the field-coil from injury, and to other features hereinafter set forth and claimed.

These improvements are illustrated in the accompanying drawings, wherein—

Figure is a partly-sectioned end view, and Figs. 2 and 3 are respectively a plan and an axial section of the motor. Figs. 4 and 5 show details. Fig. 6 is a longitudinal central section through the field-magnet frame, and Fig. 7 shows the self-closing drainage-cock.

In my improved railway motor the field-magnet A A′ forms the frame of the motor, and also forms a case or shell completely inclosing the armature B and the field-magnet coil C. There are two field-poles cast solid with the said frame, but only the upper pole D is surrounded by a field-coil. The lower pole D′ is unwound, a lower field coil being dispensed with. The field-magnet frame is cast in two portions A A′, which are united on the plane of the axle E and armature-shaft F. The lower frame portion, which has the lower pole cast solid thereon, forms a water-tight trough, dish, or bowl-shaped casting whose sides are carried up to the level of the axle and armature-shaft. This construction enables the motor to travel through water up to the axle without injury, as the water is completely shut off from the armature. Moreover, the field-coil, being at the top, is well protected from such water and dirt as may enter through ventilating-openings. The single upper field-coil therefore presents in this connection, besides the advantages of less cost and greater simplicity which are inherent in a single field-coil motor, additional advantages due to the location of the coil above the armature, such advantages accruing only when the motor is used in situations exposed to dirt and water, as on a railway-car.

The motor is used with a single reduction-gear, the bearings a a' for the armature and the axle being formed half and half in the two frame portions. It is often necessary to lift the upper motor-frame portion for inspection or repair of the interior parts, and it is desirable that the frame should be capable of being swung up at either end. For this purpose the upper and lower frame portions A A′ are hinged together at each end by hinge-joints I I′. Bolts K firmly clamp the two portions together. On removing these bolts and withdrawing the hinge-pins at either end the upper frame may be swung up, hinging or turning on the other end, as represented by dotted lines in Fig. 1. To hold the lower frame A from falling when the upper frame is swung up and the top bearing on the axle thereby removed, an independent support on the axle is provided therefor, consisting of a strap or hook N, engaged at one end in a recess and at the other end on a screw-pin in the lower frame, as shown in Fig. 4, and extending over the axle, so that when the upper frame is lifted the strap drops onto the axle and supports the lower frame. When the lower frame is to be dropped, the screw-pin n is withdrawn and the strap removed by swinging it around its other end. The upper frame portion A′, also cast in one piece, has ventilating openings or windows M, protected by water-shedding shutters with outwardly and downwardly inclined slats, which at once facilitate ventilation and shed the water which may be thrown against the motor from the sides. These shutters M slide in grooves m in the frame A′, and have caps m' overlapping the top of the frame. Ribs a^5 and grooves a^6 are provided on the top of the frame A′ to deflect and guide away from the windows M any water which may fall on the motor. The shutter-caps m' have flanges m^2 projecting into grooves a^6 to shut off the water from the openings M. To catch and retain any water or dirt which may penetrate through the side ventilating-openings and prevent the same from reaching the armature, receptacles G are formed within and at the sides of the lower casing A. By means of stop-cocks H, which should be self-closing, these receptacles may be emptied from time to time. Oil from the armature-bearings will also be retained by

these receptacles and prevented from fouling the armature.

In order to further protect the field-coil C, I support the same elastically and yieldingly by means of rubber cushions L L′ L^2, interposed between it and the field-magnet frame, the coil being out of direct contact with said frame. Cushions L take the weight of the spool C and are supported in brackets *l*. Cushions L′ prevent contact between the spools and the frame top, and are recessed into said top. Cushions L^2 between the spool and the sides of the frame hold the spool laterally. These rubber cushions serve both to insulate the spool from the frame and to ease off or deaden the effect on the spool of the shocks given to the frame by rough riding over the tracks, thereby prolonging the life of the field-insulation.

What I claim as new, and desire to secure by Letters Patent, is—

1. An electric-railway motor having a field-magnet frame or shell inclosing the armature on all sides, and having projecting inwardly therefrom an upper pole surrounded by a field-coil and a lower unwound pole.

2. An electric-railway motor having a field-magnet frame or shell inclosing the armature on all sides, and having a water-tight lower portion and a ventilated upper portion.

3. An electric-railway motor having a field-magnet frame or shell inclosing the armature on all sides, but provided with ventilating-openings, and having an upper coil-wound pole and a lower unwound pole.

4. An electric-railway-motor frame journaled on the axle, and having its lower portion, up to the line of the armature-shaft and axle, cast in one piece to form a water-tight shell with closed bottom and sides, completely inclosing the lower half of the armature.

5. The combination, with a motor-frame in the form of a closed shell inclosing and having journal-bearings for the armature, of the oil-receptacles within said frame, beneath said bearings, and drainage-outlets for said receptacles.

6. A motor-frame in the form of a closed shell surrounding the armature, and having a water-tight lower portion, a ventilated upper portion, and receptacles beneath the ventilating-openings, substantially as set forth.

7. The combination, with the water-tight lower frame or shell of the railway-car motor, of the drainage-receptacle therein, and a self-closing stop-cock for said receptacle.

8. A motor-inclosing shell having a ventilating-opening with outwardly and downwardly directed slats.

9. The combination, with a motor-inclosing frame having a groove in its top, of a ventilating sliding window with a cap and flange extending into said groove.

10. The motor-inclosing frame having ventilating-openings and water-deflecting ribs or equivalent portions on its top.

11. The motor-frame having upper and lower portions hinged together at each end, substantially as and for the purpose set forth.

12. A motor-frame having an upper portion and a lower portion hinged together at each end and fastened together by bolts.

13. The combination, with a motor-frame formed in two portions hinged together, the upper portion supported by a journal-bearing on the axle and the lower portion being suspended therefrom, of the independent support for the lower portion, substantially as described.

14. The combination of the upper motor-frame portion journaled on the axle, the lower-frame portion hung therefrom, and the strap or hook attached to the lower frame and extending over the axle.

15. An electric motor having its field-spool out of direct contact with its core or frame, with insulating and elastic supports between said spool and the core or frame.

16. The combination, with the field-magnet frame of a motor, of the field-coil supported thereon by elastic cushions.

17. The combination, with the field-magnet frame of the motor, of the yieldingly-supported field-spool.

In witness whereof I have hereunto set my hand.

NORMAN C. BASSETT.

Witnesses:
JOHN W. GIBBONEY,
OTIS K. STUART.