

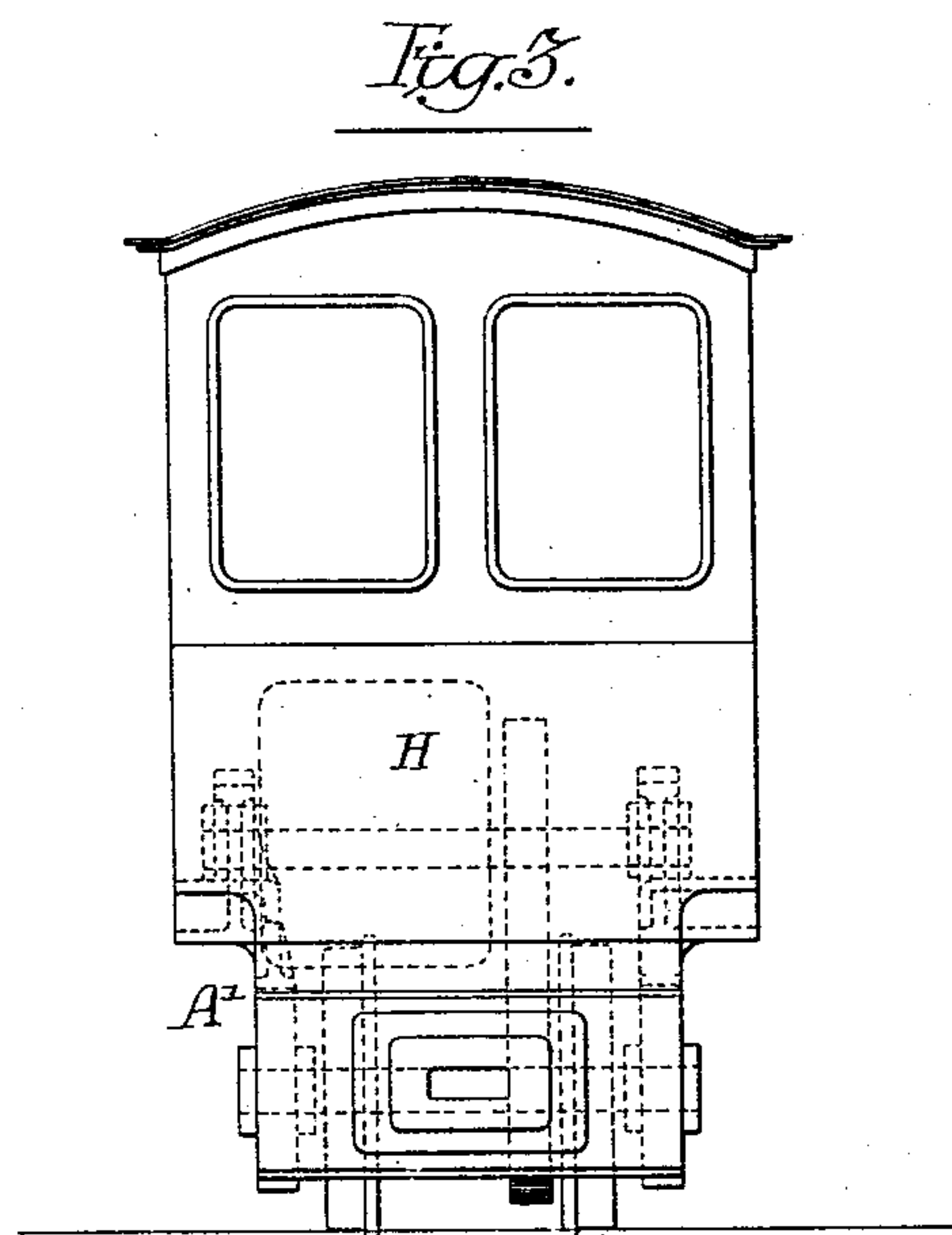
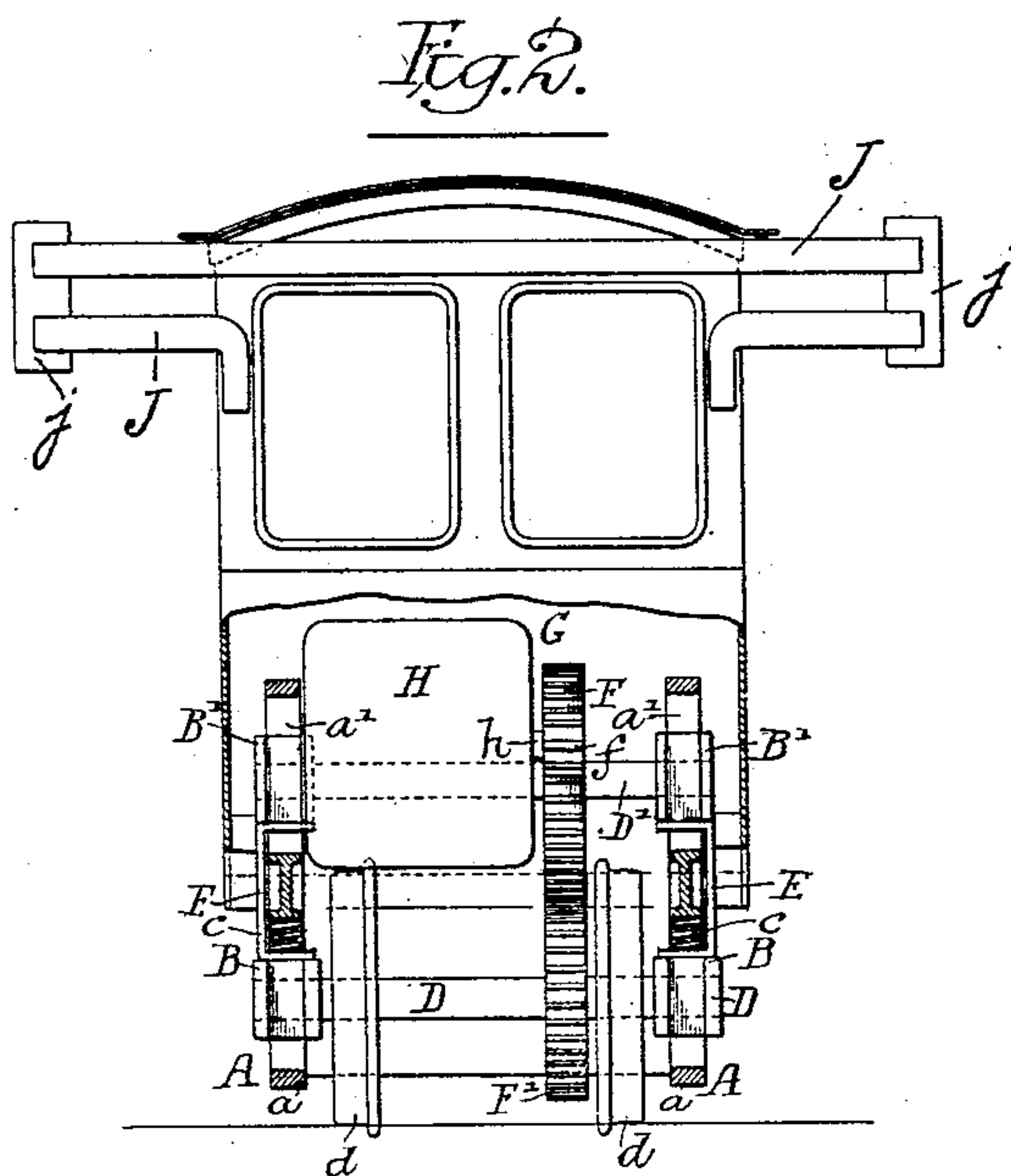
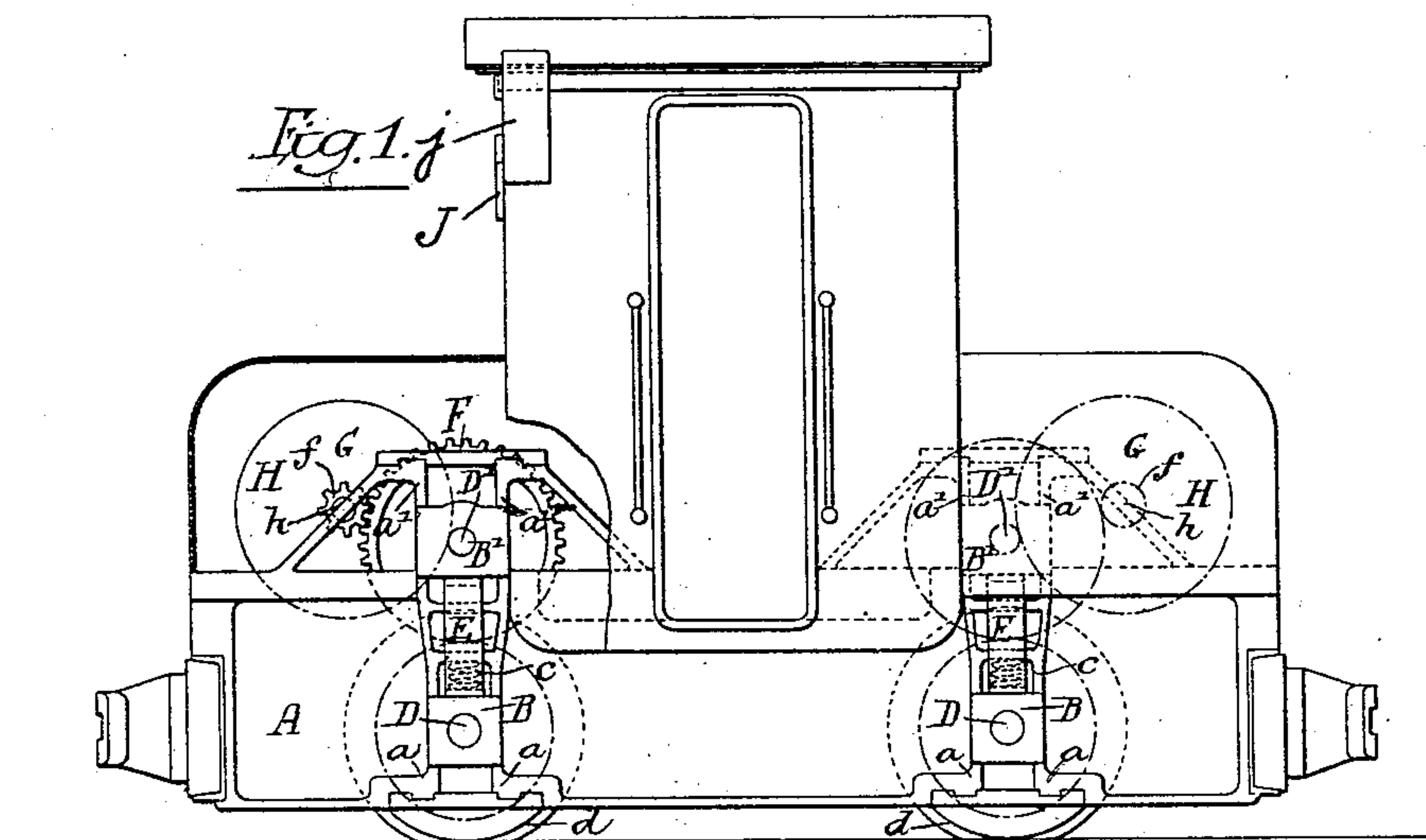
No. 713,464.

Patented Nov. 11, 1902.

E. C. LINDSAY.
ELECTRIC LOCOMOTIVE.
(Application filed May 28, 1902.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses:-

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Inventor:-

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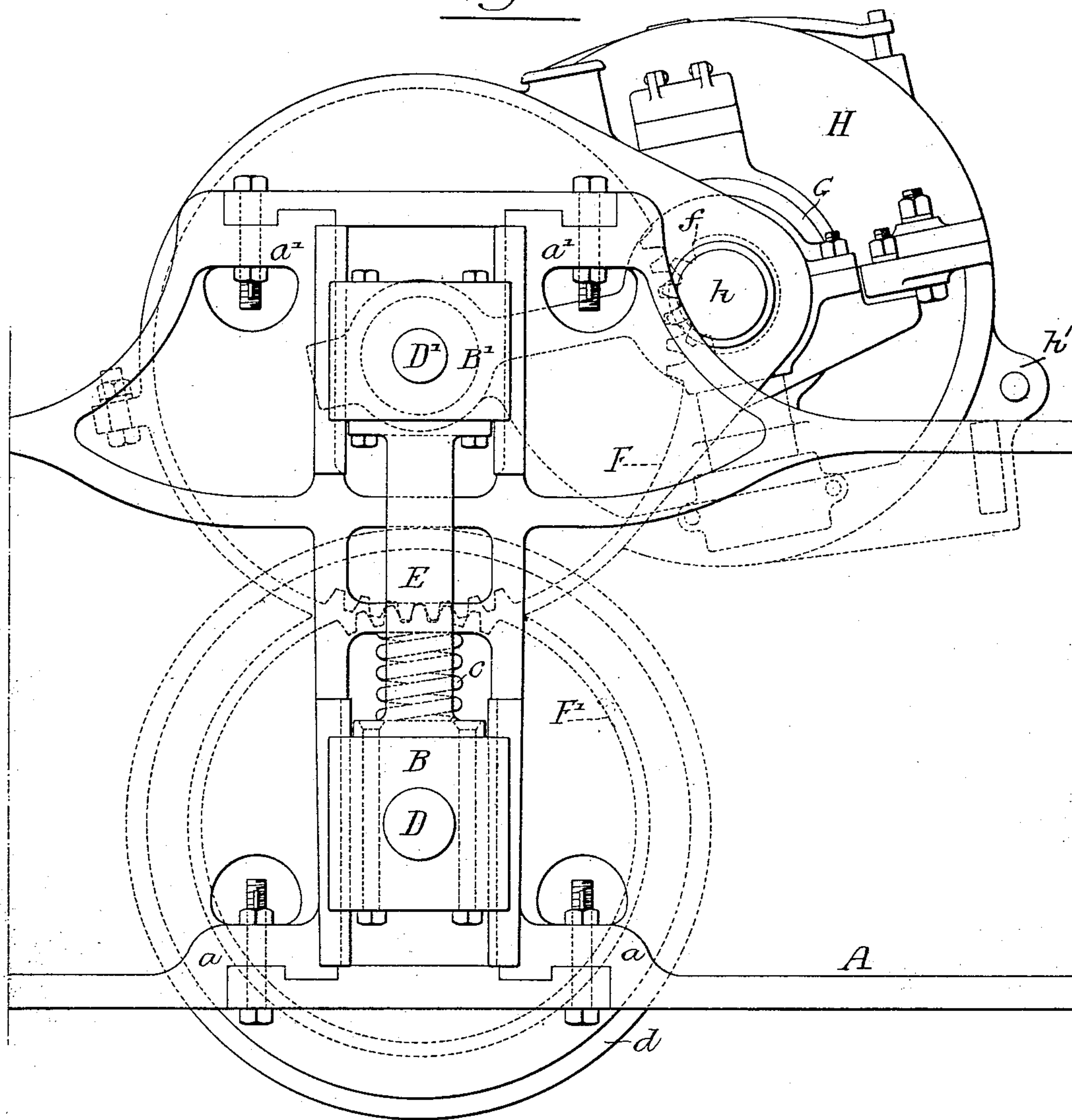
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3 Sheets—Sheet 2.

Fig. 4.



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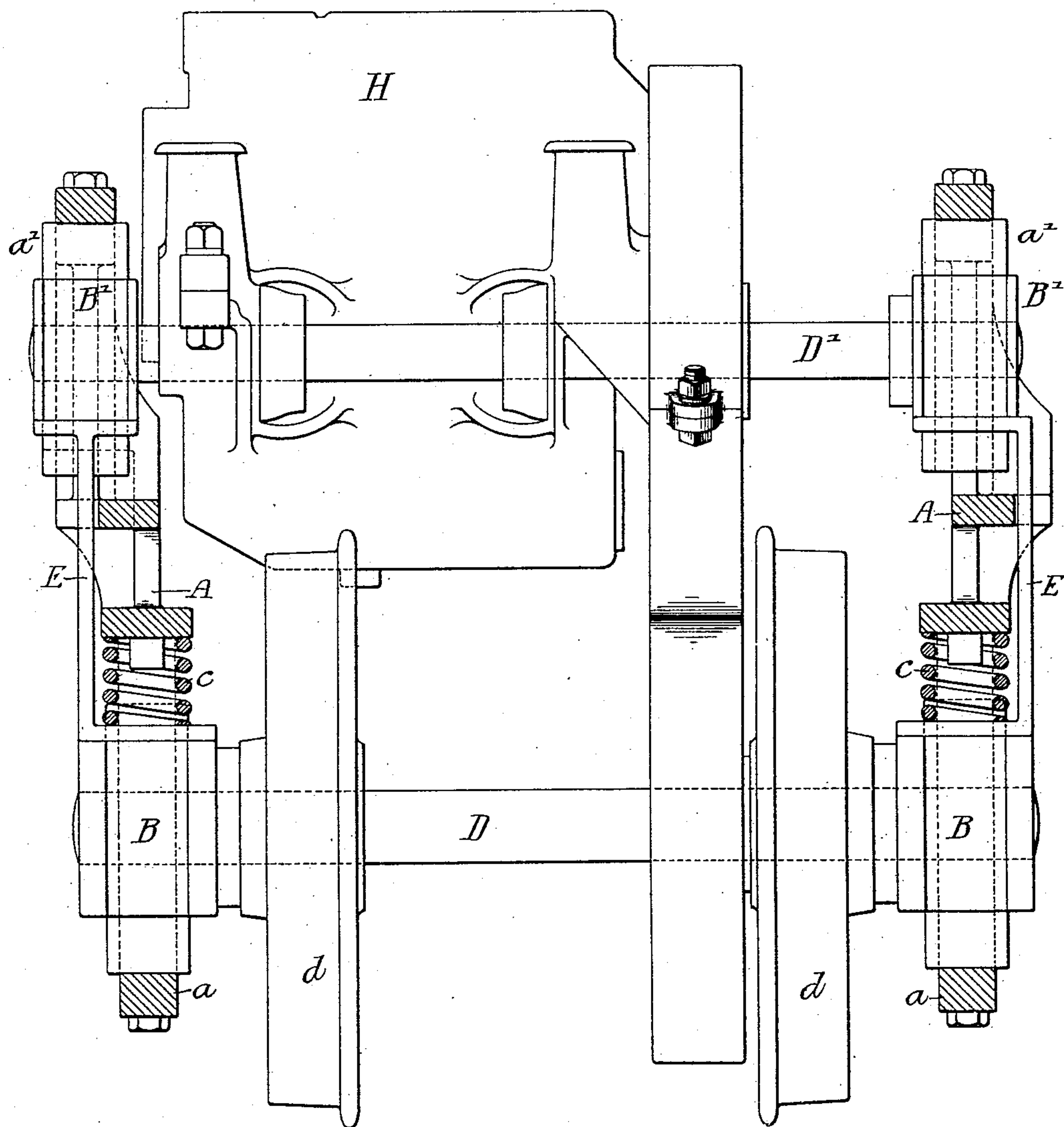
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3 Sheets—Sheet 3.

Fig. 5.



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UNITED STATES PATENT OFFICE.

ELLWOOD C. LINDSAY, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
BURNHAM WILLIAMS & COMPANY, OF PHILADELPHIA, PENNSYLVANIA,
A FIRM.

ELECTRIC LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 713,464, dated November 11, 1902.

Application filed May 28, 1902. Serial No. 109,367. (No model.)

To all whom it may concern:

Be it known that I, ELLWOOD C. LINDSAY, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Electric Locomotives, of which the following is a specification.

The object of my invention is to so construct an electric locomotive used especially on narrow-gage tracks that a large and powerful electric motor can be mounted on the locomotive and geared to the driving mechanism. Heretofore in locomotives of this type especially used on narrow-gage railway tracks, such as those around the yards of factories and mills, the motor was mounted directly on the axle of the locomotive and between the wheels, and consequently the size and power of the motor was limited; but by my invention I can materially increase both the size and the power of the locomotive and yet use a locomotive having a very narrow gage.

In the accompanying drawings, Figure 1 is a side view of a locomotive, partly in section, illustrating my invention. Fig. 2 is an end view, partly in section. Fig. 3 is a view of a modification. Fig. 4 is a side elevation illustrating the detail construction of my invention, and Fig. 5 is an end elevation of the structure shown in Fig. 4.

A is the frame of a locomotive, having the usual pedestals *a a* for the reception of the bearings B of the axles D D, which are provided with the ordinary traction-wheels *d d*. Between the bearings and the frame A are suitable springs *c c*. Directly above the pedestals *a a* are inverted pedestals *a'* for the reception of bearings B', in which is mounted an intermediate shaft D'. The frame may be a single casting or may be made of a number of parts secured together.

Extending from the axle-bearings to the intermediate shaft-bearings and rigidly connecting the same are bars or portions of rolled sections E, the construction being such that the frame is free to move independently of the bearings, while said bearings necessarily always remain in the same position in respect to each other. Springs *c* are placed between the frame and the bearings, so that said frame may be yieldingly supported.

On the shaft D' is a gear-wheel F, and on the axle D is a gear-wheel F', one meshing with the other, so that both shafts will turn in unison and preferably at the same speed, although when it is desired to increase or diminish the speed of the axle the diameter of the gear F' may be varied as required. Mounted on the shaft D' is the frame G of the motor H, having bearings for the armature-shaft *h*. On the armature-shaft is a gear-pinion *f*, which meshes with the gear-wheel F on the shaft D', so that the motor drives the axle through the pinion *f* and gears F F'.

It will be seen by referring to Fig. 2 that the motor can be of any width desired, the limit being the width of the frames A A of the locomotive, the motor extending over one of the wheels.

As shown in the figures, one end of each motor is supported by bearings of the well-known form, which rest upon the auxiliary shaft D', while the other end of each motor has a lug *h'* for the attachment of any of the well-known forms of motor-suspension known to the art and not forming a part of my present invention.

As shown in Fig. 1, I have illustrated two motors and intermediate gearing; but it will be understood that one motor may be used or more than two, as desired, according to the type of locomotive.

The locomotive illustrated in certain of the figures is primarily designed for use in mine work and may for this purpose be provided with structures J, extending transversely across the upper portion of the cab and projecting at each side, these being employed to carry a special form of lamp or lantern *j*.

In Fig. 3 I have illustrated a locomotive having a very narrow gage, and I have shown the frame A' widened above the axle-pedestals, so that the motor H will extend not only over one of the wheels, but also over a portion of the frame A'.

I claim as my invention—

1. The combination of a frame having bearings, an axle mounted in said bearings having traction-wheels and a gear-wheel, an intermediate shaft also mounted in bearings in the frame and having a gear-wheel meshing with the gear on the axle, a motor hung to

said intermediate shaft and provided with a gear-wheel meshing with said gear-wheel on the intermediate shaft, substantially as described.

5 2. The combination of a frame, an axle, bearings therefor mounted in the frame, traction-wheels on the axle, an intermediate shaft above the axle, bearings for said shaft a rigid connection between the intermediate shaft-
10 bearings and the axle-bearings, the whole being free to move independently of the frame, a motor-frame mounted on said shaft and provided with an armature-shaft, said armature-shaft being geared to the intermediate
15 shaft, substantially as described.

3. The combination of a frame of an electric locomotive having pedestals, axle-bearings in said pedestals, springs between the axle-bearings and the frame, an axle mounted
20 in said bearings and having traction-wheels, an intermediate shaft mounted above the axle, bearings for said intermediate shaft, said intermediate shaft-bearings being supported by the axle-bearings so that they will
25 move therewith, a motor-frame hung to the intermediate shaft and extending over one of the traction-wheels, said motor being geared to the intermediate shaft which is in turn geared to the axle, substantially as described.

30 4. The combination of the frame of an electric locomotive having pedestals, axle-bearings in the pedestals, springs between the axle-bearings and the frame, an axle mounted in the bearings, traction-wheels on the axle,
35 a gear-wheel also on the axle, an intermediate shaft above the axle mounted in bearings arranged in pedestals on the frame of the locomotive, a bar by which the intermediate shaft-bearings are supported by the axle-
40 bearings, a motor-frame hung to the intermediate shaft and extending over one of the traction-wheels, a pinion on the armature-shaft of the motor, a gear-wheel on the intermediate shaft with which the pinion meshes
45 and which also meshes with the gear-wheel on the axle, substantially as described.

5. The combination in an electric locomotive, of a frame, pedestals, axle-bearings in said pedestals, an axle mounted in said bearings and having traction-wheels, the frame of
50 the locomotive being increased in width above

the axle-pedestals, bearings in said widened portion, an intermediate shaft mounted in said bearings, a motor-frame mounted in said shaft and extending over one of the traction- 55 wheels of the locomotive, said motor being geared to the intermediate shaft which in turn is geared to the axle, substantially as described.

6. The combination in an electric locomotive, of the frame having pedestals at each end, axle-bearings in the said pedestals, axles mounted in each of said pair of bearings, traction-wheels on the axles, an intermediate shaft mounted above each axle and geared 65 thereto, bearings for the intermediate shaft supported by the axle-bearings, and a motor hung to the intermediate shaft and geared thereto, substantially as described.

7. The combination of a frame, an axle, 70 bearings therefor mounted in the frame, traction-wheels on the axle, an intermediate shaft above the axle, bearings for said shaft, a rigid connection between the intermediate shaft-bearings and the axle-bearings, the whole being free to move independently of the frame, a motor-frame mounted on said shaft and provided with an armature-shaft, said armature-shaft being geared to the intermediate shaft, there being a spring between said rigidly-con- 80 nected bearings and the frame, substantially as described.

8. The combination in an electric locomotive, of a frame having pedestals, axle-bearings in the said pedestals, axles mounted in 85 each pair of bearings, traction-wheels on the axles and an intermediate shaft mounted above each axle and geared thereto, bearings for the intermediate shaft rigidly connected to the axle-bearings, a spring between the 90 frame and bearing upon said rigidly-connected members and a motor hung to the intermediate shaft and geared thereto, substantially as described.

In testimony whereof I have signed my 95 name to this specification in the presence of two subscribing witnesses.

ELLWOOD C. LINDSAY.

Witnesses:

JAS. H. W. HAYES,

WILLIAM DE KRAFFT.