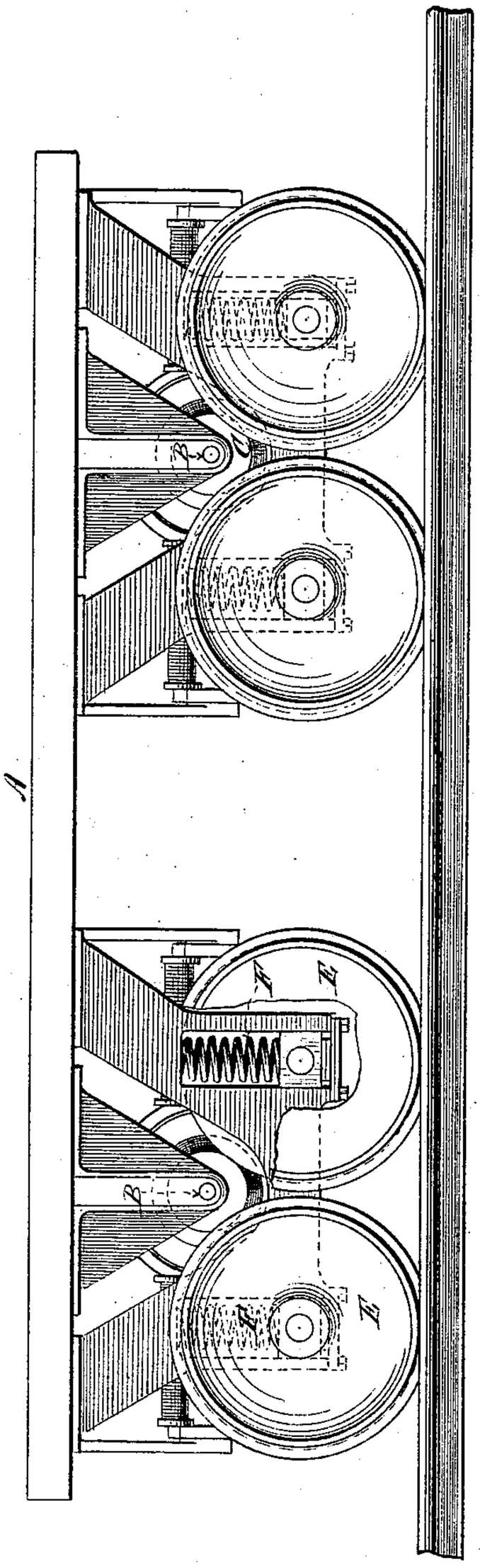
(No Model.) 2 Sheets—Sheet 1.

L. DAFT.

ELECTRIC LOCOMOTIVE ENGINE.

No. 289,895. Patented Dec. 11, 1883.

Figure 1.



Witnesses:
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Inventor:
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By his attorney
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(No Model.) 2 Sheets—Sheet 2.

L. DAFT.

ELECTRIC LOCOMOTIVE ENGINE.

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Figure 2.

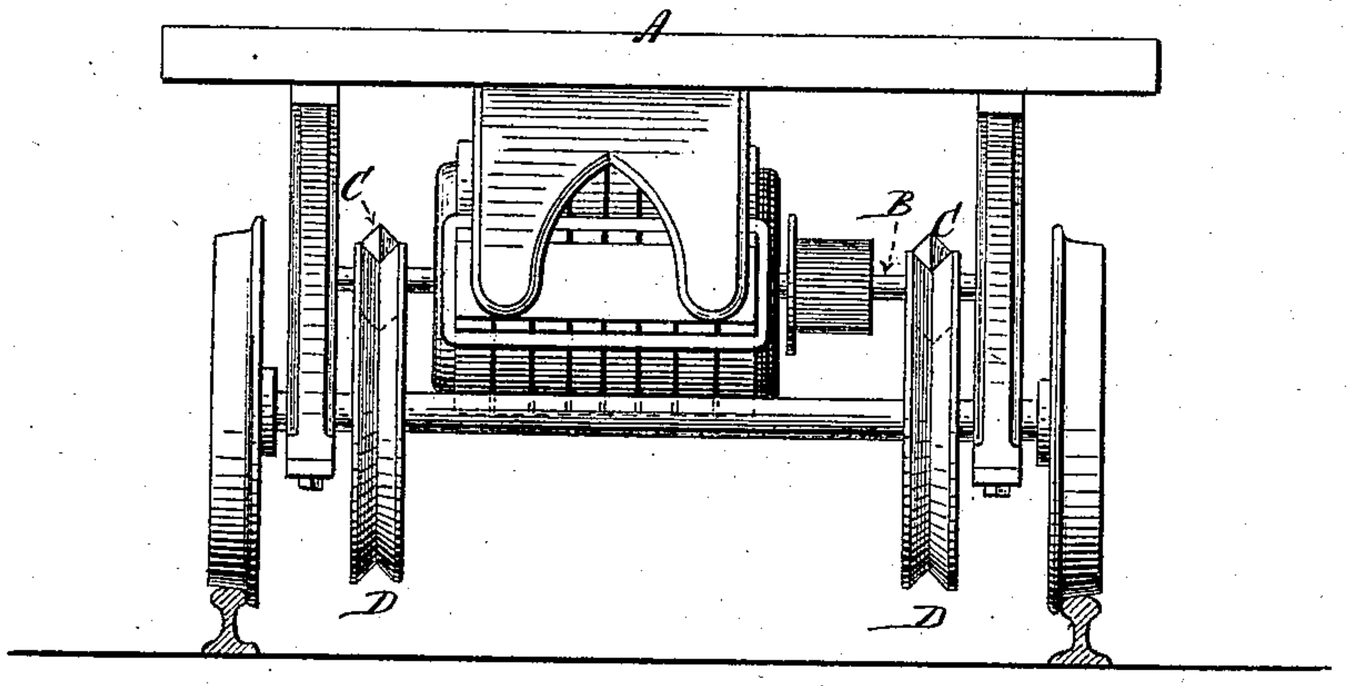


Figure 3.

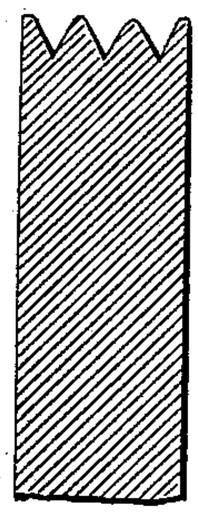


Figure 4.

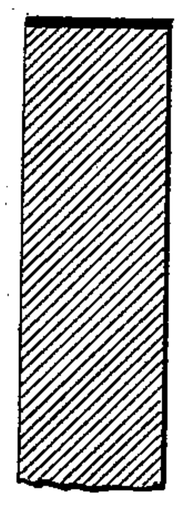


Figure 5.

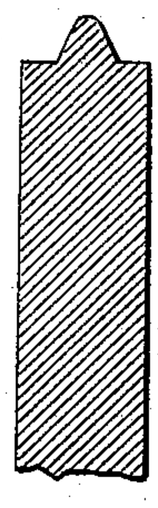
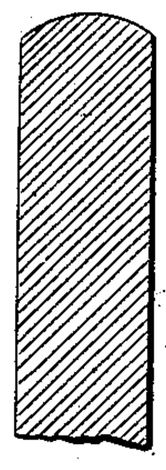


Figure 6.



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By his attorney
Charles E. Foster

UNITED STATES PATENT OFFICE.

LEO DAFT, OF GREENVILLE, NEW JERSEY.

ELECTRIC LOCOMOTIVE-ENGINE.

SPECIFICATION forming part of Letters Patent No. 289,895, dated December 11, 1883.

Application filed March 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, LEO DAFT, a citizen of Great Britain, and a resident of Greenville, New Jersey, have invented a new and useful Improvement in Electric Locomotive-Engines, of which the following is a full, true, and exact description, reference being had to the accompanying drawings.

This improvement has for its object a means of obtaining sufficient power consistent with high armature-speed to operate electric motors for heavy traction and general purposes.

It is well known to electricians that in order to operate electric motors economically under ordinary conditions a high speed of armature is desirable; but in electromotors as hitherto constructed it has been customary to introduce gearing and similar objectionable features, so as to permit of a relatively high armature-speed. It is also well known that gearing and similar appliances are more or less objectionable in the construction of railroad plant, since they introduce a feature which is specially liable to derangement and fracture at high speeds. This improved means of communicating motion from a rapidly-rotating armature eliminates these difficulties and practically extends the rail surface in contact with the driving-wheels, so as to maintain the same frictional conditions as those on the locomotive in ordinary use.

By reference to the drawings it will be seen that the greater part of the locomotive weight rests, by the small frictional driving-pulleys attached directly to the armature-shaft at each end, on friction-wheels D D. These, with flanged wheels E, are attached to the usual axles, and the wheels E rest upon the rails, constituting in this case friction-wheels between the driving-pulleys and the rails. It is evident from this arrangement that the effect is similar to a disposition of parts which would permit of the smaller wheel engaging directly with the track, which would effect the same object; but this necessitates the expense of excavating the whole length of the track to admit of the passage of the dynamo-machine without contact with the ties or the raising of the tracks. This disposition of parts is introduced for the purpose of permitting of high armature-speed without a change in existing conditions, but has the further effect of securing two bearing-points for each driver-wheel, so that, notwithstanding the small size of the latter, as great a frictional surface is secured as with larger drivers resting directly on the track.

It will be seen by a further reference to the diagram that the disposition of the bearing parts is so arranged that while the whole weight of the locomotive does not rest upon the friction-wheels by an amount equal to the resistance of the spring F, shown above the larger bearings, it is still sufficient to preserve the necessary friction. In some cases it may be desirable to employ flat frictional surfaces on these wheels, so as to compensate for the slight change of adjustment due to lateral motion in rounding curves, taking switches, and similar operations; but I do not confine myself to any special form of peripheral section, since it is well known that a variety of mechanical devices may be substituted to take up the lateral motion referred to; but, referring to the drawings, it will be seen that the small contact-wheel rests between two large driving-wheels; but I do not confine myself to such disposition, nor to the use of two friction-wheels with each driver-wheel. It will be obvious that it is immaterial whether the driving-pulleys rest upon the peripheries of the friction-wheels E or on other wheels, D, secured to the same shaft. It will also be seen that the bearings of the large wheels are so arranged as to move freely in slotted extensions of the journal-hangers, so as to permit of the draft being conducted through the rigid frame-work of the locomotive without in any way affecting the adhesion between the frictional surfaces.

In my drawings similar letters refer to similar parts.

Figure 1 represents a side view of a truck, showing my attachment; Fig. 2, a view at right angles to the view shown in Fig. 1; Figs. 3, 4, 5, and 6, different views of frictional bearing-surfaces.

A represents the platform of a truck; B, a shaft of a dynamo. Upon this shaft are arranged the friction driving-wheels C C, which engage with the large friction-wheels D D, attached to the shaft. As shown, the wheel C engages with both the wheels D D. The traction-wheels E E are supported upon springs F F, which may be made of greater or less tension, as may be found expedient in differ-

ent cases. They should not be too heavy to allow sufficient friction to exist between the friction-wheels C and D, and in certain cases they may be dispensed with.

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

1. The combination, in an electric locomotive, of an electromotor supported by and arranged beneath the car, a shaft carrying the armature of the motor, a small wheel connected directly with the shaft of the motor, and an axle to the locomotive carrying traction-wheels and propelled by frictional contact with the wheel upon the motor-shaft, said frictional contact being maintained by the weight of the car, substantially as described.

2. The combination, in an electric locomotive, of a spring-supported car provided with shafts and flanged wheels, an electromotor arranged below the body of the car, and a friction driving-wheel upon the shaft of the armature for propelling the car, the necessary friction being maintained by the weight of the car, substantially as set forth.

LEO DAFT.

Witnesses:
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WM. A. POLLOCK.