

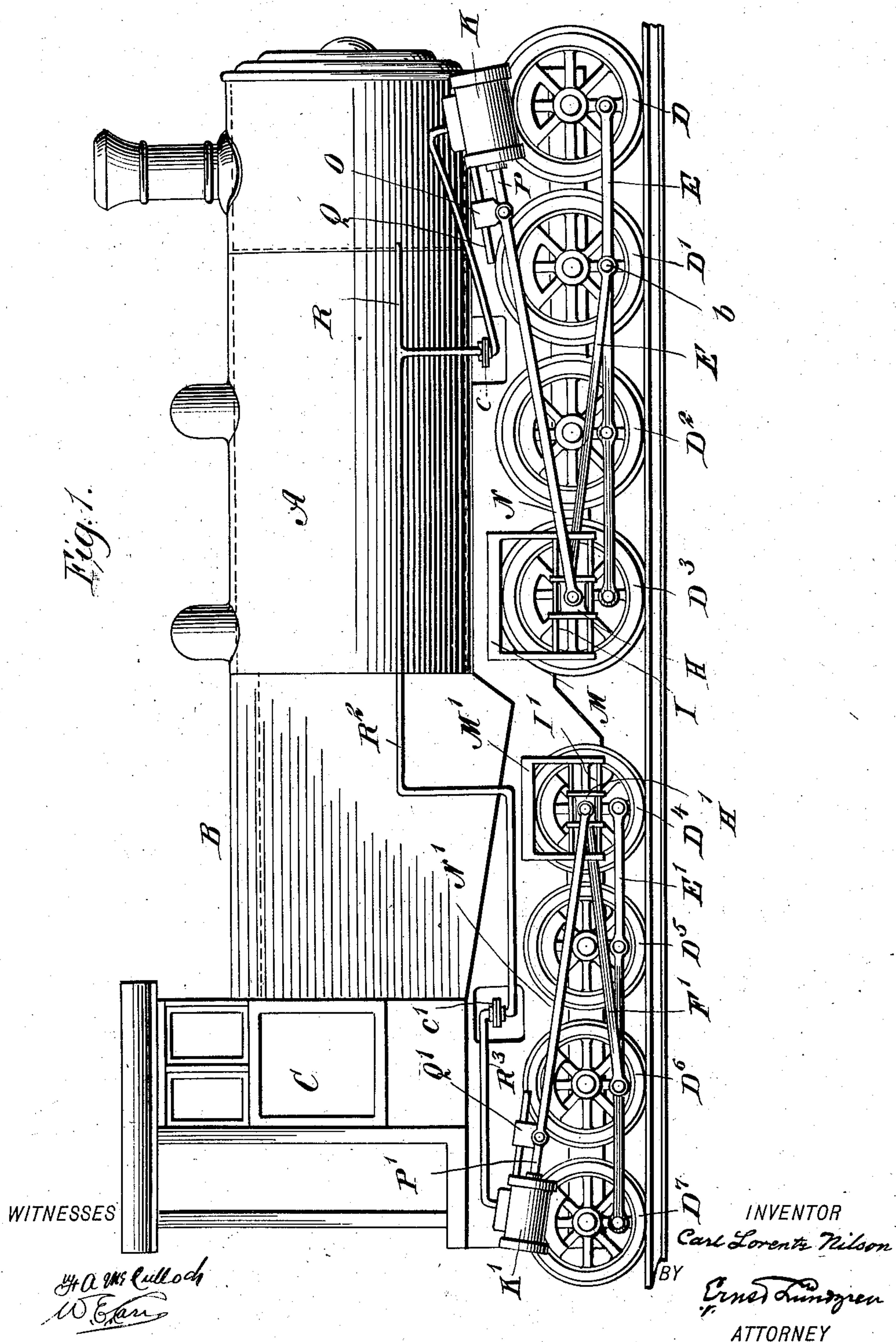
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PATENTED JULY 16, 1907.

C. L. NILSON.
LOCOMOTIVE.

APPLICATION FILED AUG. 25, 1908.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

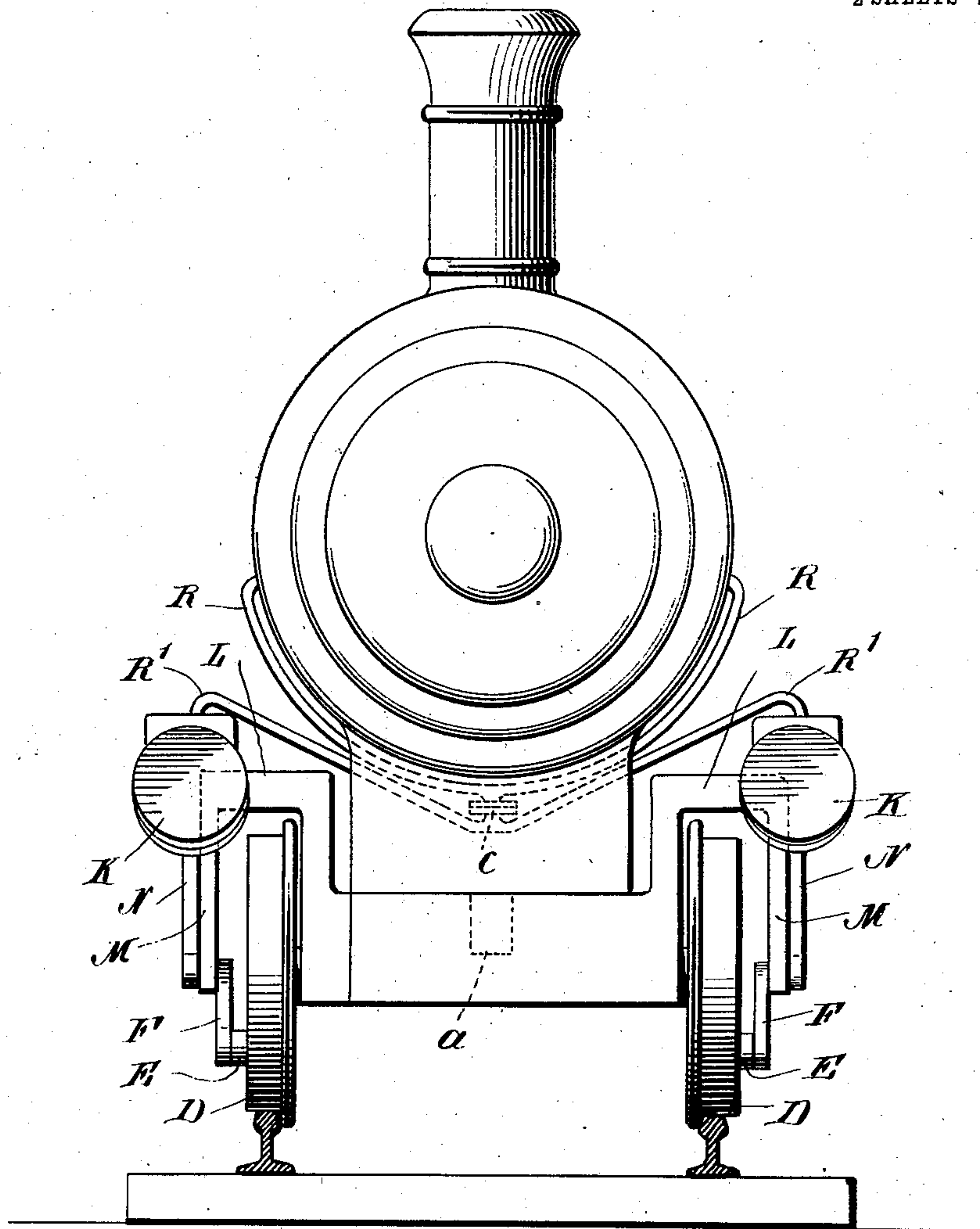


Fig. 2.

WITNESSES

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LOCOMOTIVE.

No. 859,970.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CARL LORENTZ NILSON, a subject of the King of Sweden, residing at Montreal, in the Province of Quebec, Dominion of Canada, have invented certain new and useful Improvements in Locomotives, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, and to the reference characters marked thereon.

10 My invention has relation to that class of locomotives which are employed on rails or tracks and for moving cars or trains thereon for the ordinary purposes of transportation of passengers and freight. This class of devices is sometimes designated "railway locomotives."

15 The object of my invention is principally to make a very long and very heavy locomotive calculated to be operated at a high speed and to have great power of traction under an economical consumption of steam and at the same time be capable of operation upon railways having the usual curves and without danger of derailment or inconvenience of movement by reason of the said curves.

20 To accomplish the foregoing object and to secure other and further advantages in the matters of construction and operation, my improvements involve certain new and useful arrangements as will be herein first fully described and then pointed out in the claims.

25 In the accompanying drawings forming part of this specification, Figure 1 is a view in side elevation of my improved form of locomotive, and Fig. 2 is a corresponding front end elevation.

In both figures like letters of reference, wherever they occur, indicate corresponding parts.

30 As indicated, the locomotive structure is unusually long; and that it may be correspondingly heavy and powerful I surround a portion of the boiler with a jacket, represented at A, within which a supply of water is carried, and outside the fire box and combustion chamber proper is another jacket, represented at B, within which to carry a supply of fuel. This latter jacket will preferably be somewhat angular in construction while the former may most conveniently be made cylindrical. The weight of the water and the fuel are added to the weight upon the driving wheels and thus increase the traction of the locomotive. A cab, C, for the engineer and fireman is embodied in the structure, as usual.

35 I sustain the weight of the boiler and its immediate appendages upon two independent trucks, called the forward truck and the rear truck, and these trucks are movable beneath the body of the structure after the manner of ordinary railway car trucks so as to conform to the variations in the curvatures of the railway and thus enable the long body to be turned about or moved along or over a curve of comparatively short radius, which would otherwise be impossible or dangerous.

The king bolt or pintle of the forward truck is represented at *a*, the rear truck having a similar king bolt or pintle, not shown.

D, D¹, D², and D³ are the wheels of the forward truck 60 which are utilized as driving wheels. They are connected by a connecting bar or driving bar E; and this bar is actuated by a connecting rod F journaled as at *b* on the bar E and suitably jointed with a cross-head, H, movable in or on a slide, I, at the rear portion of the 65 truck.

The forward cylinders K, K, are mounted upon the forward truck and rigidly secured in place in connection therewith by suitable yokes, as L, which may be conveniently formed integrally with portions of the 70 frame of the truck so as to be amply rigid and secure. Of course these cylinders must move with the truck and independently of the boiler, as will be readily perceived. The slides I (on each side of the locomotive) are maintained in position in connection with the 75 truck by yokes, as M, which may be formed in substantially the same way as are the yokes L. The cross-head H is driven by a connecting rod, N, coupled with said cross-head and with a cross-head O which in turn is connected with the piston rod, P, and moves upon a 80 suitable slide represented, at Q. Inasmuch as the cylinders K, K, are movable with respect to the locomotive boiler, a peculiar means of delivering steam from the boiler to these cylinders are necessary.

R, R, are steam delivering pipes leading from any 85 convenient steam space within the boiler as may be preferred. For the front cylinders these pipes are carried down to a suitable union joint, represented at *c*, and from this union or coupling which permits the desired movements of the branches, branches as R¹, R¹, 90 lead to the steam chests of the cylinders.

The pipe coupling *c* is located over the pintle or king bolt *a* so that the axis of the pipe coupling and that of the king bolt are co-incident. This arrangement provides for the movements of the branches R¹, R¹, simultaneously with those of the truck and therefore with those of the two cylinders, whereby any cramping and consequent damage is obviated and steam is supplied to the cylinders in the same manner as if they were rigid in respect to the boiler. 100

The wheels of the rear truck are represented at D⁴, D⁵, D⁶ and D⁷ and these wheels like those of the forward truck are also utilized as driving wheels. They are connected on each side of the truck by a similar driving bar E¹ operated by a coupling rod F¹ united 105 with a cross-head H¹ movable upon a slide I¹.

K¹ represents one of the cylinders connected with the rear truck and this is secured and sustained upon the rear truck upon the same general principles as the forward cylinders are secured and sustained. The 110 slides I¹ (on each side) are rigidly secured upon or in connection with the rear truck by suitable yokes, as M¹,

which may be formed same as the yokes L or M. The cross-head H¹ is driven by a connecting rod N¹ which joins said cross-head and a cross-head O¹ made movable by the piston rod P¹. Steam pipe branches as R² 5 lead to a pipe coupling, as c¹, which should be located over the vertical axis of the rear truck; and from this coupling branches, as R³, convey steam to the steam chests of the cylinders K¹.

The cylinders on either truck may be utilized independently of those on the other, or both sets may be simultaneously employed, as will be apparent. The cylinders on the forward truck are preferably located in front and those in the rear truck at the rear; but this arrangement is not essential and may be varied at will. 10 The forward cylinders are preferably larger than the rear cylinders, and this affords the advantage of using only the small cylinders when but little power is required to be exerted, thereby effecting a saving in the consumption of steam and fuel. The engine cylinders 15 are located above the level of the axles of the truck wheels and for the most part higher than the wheels; and the arrangement of connecting rods enables me to employ wheels of any desired diameter without impairing the strength of the structure or the driving 20 power. On heavy grades or with heavy loads both sets of cylinders may be used to great advantage; or when very high speed is alone required the larger set may be most advantageously used alone.

The parts being constructed and assembled as herein indicated, the improved locomotive will be found to 30 answer all the purposes or objects of the invention herein alluded to.

Having now fully described my invention, what I claim as new herein and desire to secure by Letters Patent, is:— 35

1. In a locomotive, the combination with the boiler and fire box, of a jacket around the boiler forming a compartment for water and a jacket surrounding the fire box forming a compartment for fuel; the independent trucks, 40 and a steam conduit having connected branches and joints, one joint being located over the center of the forward truck and one over the center of the rear truck, substantially as and for the purposes set forth.

2. In a locomotive, the combination of a truck, an engine cylinder secured thereon outside the wheel line and 45 extending above the wheels at one end of the truck, the piston rod, a coupling rod connected with the piston rod, a cross head on the end of the truck opposite the cylinder, a yoke for sustaining said cross head, a coupling bar extending from the cross head towards the opposite end of 50 the truck, and a driving bar connecting all the wheels, the second coupling rod being connected with said driving bar and cross head, the parts being mounted and arranged substantially as set forth.

In testimony whereof, I have signed my name to this 55 specification in the presence of two subscribing witnesses.

CARL LORENTZ NILSON.

Witnesses:

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W. E. CARR.