

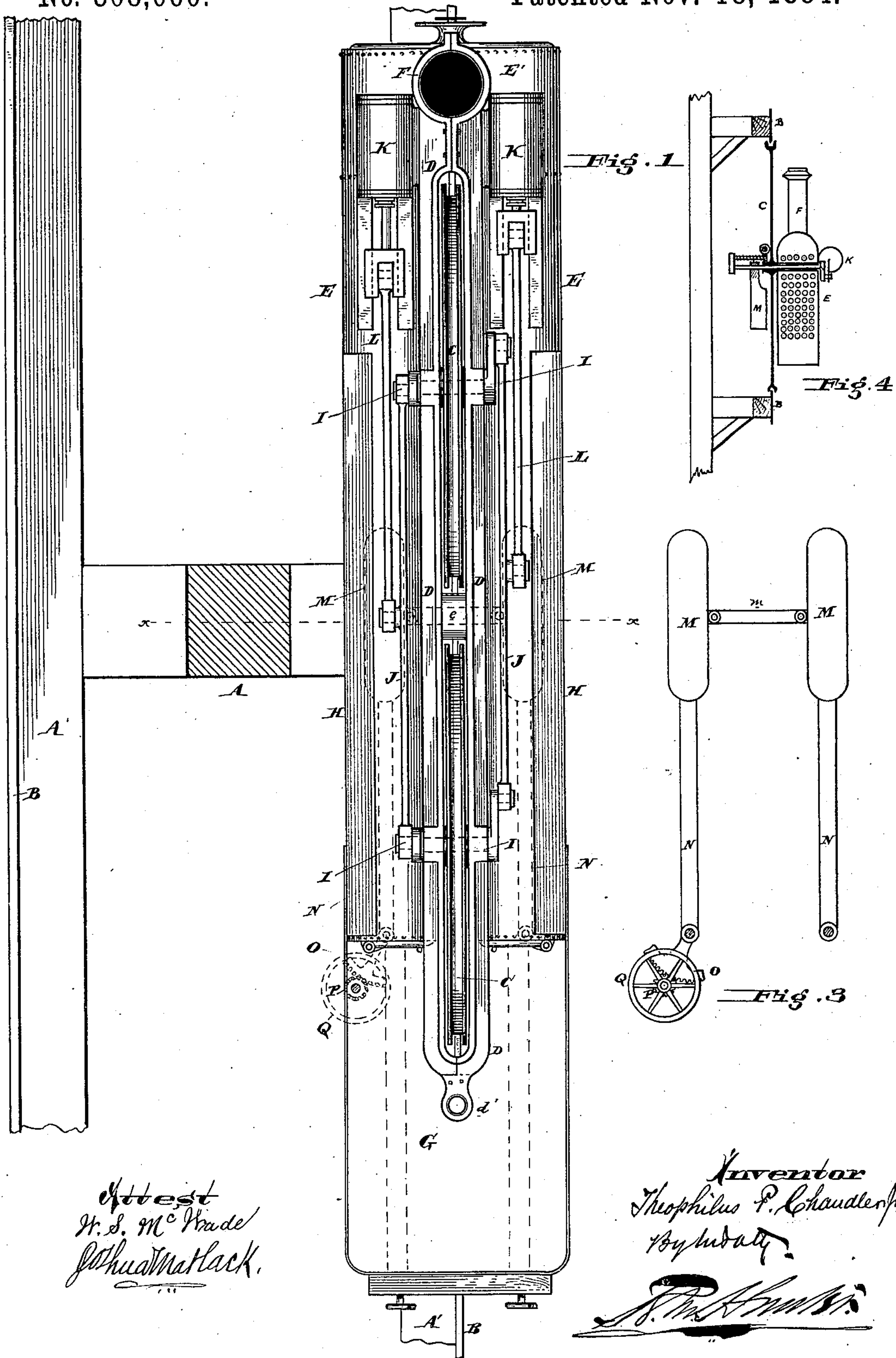
(No Model.)

2 Sheets—Sheet 1.

T. P. CHANDLER, Jr.
LOCOMOTIVE.

No. 308,060.

Patented Nov. 18, 1884.



Attest
H. S. McWade
Joshua Matlack.

Inventor
Theophilus P. Chandler, Jr.
By

[Signature]

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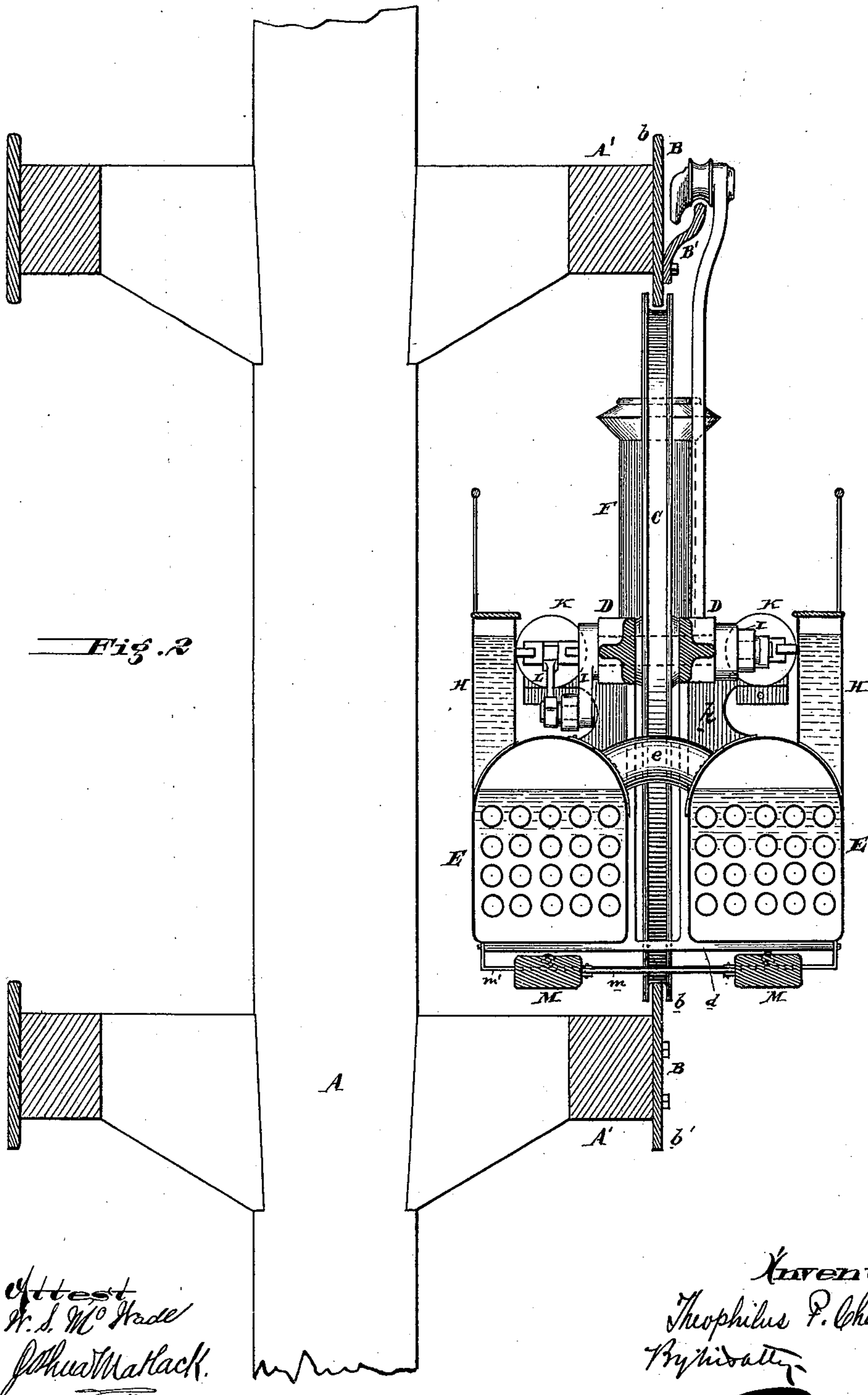
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Attest
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UNITED STATES PATENT OFFICE.

THEOPHILUS P. CHANDLER, JR., OF PHILADELPHIA, PENNSYLVANIA.

LOCOMOTIVE.

SPECIFICATION forming part of Letters Patent No. 308,060, dated November 18, 1884.

Application filed February 23, 1884. (No model.)

To all whom it may concern:

Be it known that I, THEOPHILUS P. CHANDLER, Jr., of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Locomotives, of which the following is a specification.

My invention has reference to locomotives; and it consists in supporting the boilers, and propelling machinery generally, upon central driving-wheels of large diameter, said wheels being adapted to run upon a single rail, and guided by another rail at the top to prevent derailment of the locomotive when slowing down or stopping; further, in providing such a locomotive with mechanism to equalize the distribution of its weight, whereby it, when running, may be balanced upon the said rail and retain its equilibrium; and in details of construction, all of which are fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

Heretofore it has been proposed to run a car upon a single rail, the tread of the same supporting-wheels being above the center of gravity of the car, and to counterbalance the car by movable weights, as is shown in patent granted to Wayne, October 22, 1861; also, to support a car upon a pair of rails secured upon posts which extend up through the center of the car, and which car is supported by two small wheels located in the upper part of same, and adapted to run upon said rails, the said car being prevented from derailment by the use of two additional small wheels arranged below said rails, as is shown in the patent to Humphreys, June 20, 1871; also, to support cars upon a single central rail located below the car and upon which centrally-located wheels run, and one of which wheels in the locomotive being of comparatively large diameter, as shown in patent to Allen, August 29, 1882; and in this patent an auxiliary supporting-rail is used, which rail is located to one side of the car, and receives small grooved wheels above and below the same to support said car; further, it has been proposed to arrange an auxiliary rail to one side of the present railroad-bed, so that it shall clear the ordinary railway-cars, and yet allow of single-rail cars being run upon one of said rails, which cars are provided with supporting-wheels arranged

all in the same plane, and, further, are provided with auxiliary supporting-wheels arranged to run on said auxiliary rail arranged overhead, as is shown in the patent to Boynton, August 10, 1880. Therefore I do not claim these constructions, my invention having reference to the peculiar construction of the locomotive adapted to run between two rails arranged one above the other and in the same plane, and in which the drive-wheels are of greater diameter than the height of the locomotive, and rotate between said upper and lower rails, no auxiliary supporting-wheels being required to prevent derailment.

The object of my invention is to provide a suitable locomotive for a single-rail railway, such as shown in this application, but more specifically described and illustrated in another pending application of mine.

In the drawings, Figure 1 is a plan view of a locomotive embodying my improvements, and is shown running upon a single rail. Fig. 2 is a cross-section of same. Fig. 3 is a plan view showing mechanism by which the locomotive may be balanced, and Fig. 4 is a cross-section of a modification of the form of locomotive shown in Fig. 2.

A are the vertical posts which support the tracks. A' are the girders or stringers, and B the rails secured thereto.

C C are two drive-wheels of large diameter having deep grooves upon their peripheries. These wheels C are journaled in frame D, and their shafts are provided with cranks I, set at right angles to each other, and said cranks connected together, two and two, as shown, by connecting-bars J. These connecting-bars are caused to move by engines K, through the medium of their rods L, and cause the wheels C to revolve without dead-centers. If desired, the rods L might be connected directly to one pair of the cranks I.

The engines K may be of any desired construction and provided with the usual link-valve motion found upon most locomotives. These engines are secured to frame D at the forward end, the rear end of said frame being provided with the eye d', for the coupling with the train.

Depending from the frame D are supports d, upon which the boilers E are mounted,

the said boilers being preferably formed of two long narrow boilers united by circulating-flues *e* and the smoke-box *E'* at the forward end, and at which point they are riveted to the frame *k*, depending from the engines *K* and frame *D*.

F is the smoke-stack.

G is the coal-box and engineer's stand, which may be housed over, if desired.

H are the water-tanks, and for convenience are supported upon the boilers and between the drive-wheel centers, so as to balance the locomotive as much as possible and prevent pitching fore and aft.

In locomotives as usually made for passenger service part of their weight is supported upon the truck, and the tractive force due to said weight lost; but in my construction the entire weight is supported upon the two drive-wheels, and the whole tractive force due to the whole weight is available.

While in the construction shown in Figs. 1 and 2 it is supposed that the weight is equally distributed upon the two drive-wheels, or that the center of gravity will be a point *a* vertical line through which will pass down through rail *B* somewhere between the two treading-points of wheels *C C*—theoretically at the point marked *e* in Fig. 1—it is nevertheless desirable to provide suitable adjustable counterbalancing mechanism. For this purpose I hinge below the boilers *E* two parallel arms, *N*, connected on their free ends by a link, *m*, which free ends are provided with very heavy weights *M*. These arms *N* and their weights may be shifted by segmental rack *O*, pinion *P*, and hand-wheel *Q*. The weights *M* may run upon rails *m'*, to remove all downward strain from the arms *N*. By turning the hand-wheel one weight *M* will be moved toward the center on one side and the other away from the center on the other, thereby taking away from the weight on one side and increasing it on the other. In going around curves this may be manipulated by the engineer with good effect. The additional weight carried for this purpose is no objection, as it increases the tractive force.

In place of dividing the boilers, a single-shell boiler may be used and supported upon one side of the wheels *C*, as shown in Fig. 4, and this may be counterbalanced by the additional weight *M*, and, if desired, in addition thereto, the water-tank and coal-box may be supported upon the opposite side of the wheels *C* to counterbalance the boiler. The flanged wheels run upon the upper edges, *b*, of the rails *B*, and their lower edges, *b'*, fit between the

flanges at the top, to prevent the said wheels leaving the rail *B* at the bottom.

To prevent derailment of the locomotive, should one of the wheels *C* become broken, I provide two or more uprights, *S*, carrying on their upper ends rollers *T*, which fit over but do not touch the auxiliary or safety rail *B'*, secured to the side of rail *B*, or it may extend over the top of rail *B*; but the former construction is more desirable, as the edge *b* of the upper rail, *B*, forms the bottom rail for the next train above, there being any number of tracks desired.

While I prefer the general construction herein set forth, I do not limit myself to the details, as they may be modified in various ways without departing from my invention.

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

1. A locomotive or car provided with two large supporting or drive wheels of a diameter greater than the height of the locomotive or car, in combination with two rails arranged in the same plane with said wheels and between which said wheels run, whereby said locomotive or car may turn curves or switch from one track to another, substantially as and for the purpose specified.

2. A locomotive having one or more supporting-wheels of a diameter greater than the height of the locomotive, arranged in the same plane, one or more of which are used as drive-wheels, and its weight substantially balanced upon said wheels, in combination with an upper and lower rail between which said wheels run, and counterbalancing mechanism to balance said locomotive upon its wheels, should the same become unbalanced, or to vary its center of gravity, substantially as and for the purpose specified.

3. In a locomotive, the combination of the central supporting-wheels, *C*, weights *M M*, mechanism to adjust them, and boilers *E E*, arranged on each side of said wheels, substantially as and for the purpose specified.

4. In a locomotive, the combination of the central supporting-wheels, *C*, weights *M M*, arms *N N*, segment *O*, pinion *P*, and band-wheels *Q*, or their equivalent, and boilers *E E*, arranged on each side of said wheels, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

T. P. CHANDLER, JR.

Witnesses:

R. M. HUNTER,
FRANCIS S. BROWN.