

977,893.

FIG. 2. A cross-sectional view of a mechanical device, likely a pump or engine. The diagram shows a large circular chamber on the left, labeled 4a, which is connected to a central shaft or piston rod. This rod passes through a series of components, including a valve or check valve labeled 15, and is connected to a piston or plunger labeled 12b. The piston is situated within a cylinder or chamber labeled 12f. The entire assembly is mounted on a base or frame labeled 1a. The diagram uses hatching to indicate different materials or cross-sections of the components.

Fig. 2.

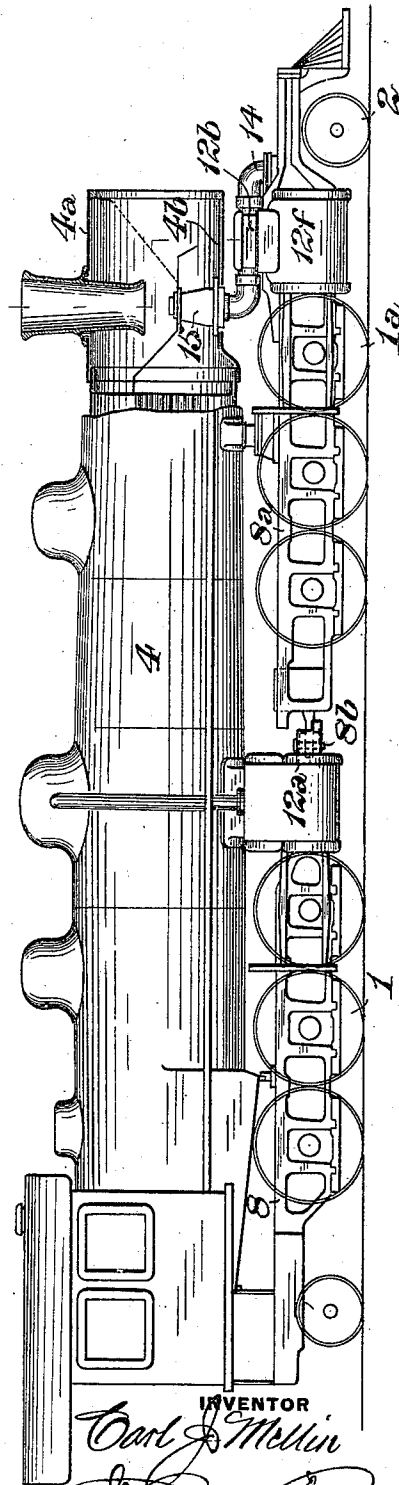


FIG 1.

WITNESSES

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ARTICULATED LOCOMOTIVE.

977,893.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CARL J. MELLIN, of Schenectady, in the county of Schenectady and State of New York, have invented a certain new and useful Improvement in Articulated Locomotives, of which improvement the following is a specification.

My invention relates to locomotives of the "Mallet" or articulated type, in which the driving wheels are disposed in two independent frames, coupled with the capacity of relative movement in vertical planes, and its object is to provide means for permitting the free swinging movement of the boiler in passing sharp curves without interference with the low pressure steam chests, and enabling simpler connections of the ball joint casing and exhaust pipe base to be made.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings: Figure 1 is a diagrammatic side view, partly in section, of an articulated locomotive embodying my invention; and Fig. 2, a transverse section on an enlarged scale, on the line *x x* of Fig. 1.

Under the limitation of height imposed in railroad service, and with the increasing use of driving wheels of larger diameter than ordinarily heretofore applied, difficulty is experienced, in articulated locomotives, as to the use of low pressure cylinders and steam chests of the desired proportions without interfering with the swinging or transverse movement of the boiler relatively thereto, in passing curves of comparatively short radius, as well as in providing for making desirable connections of the ball joint casing and exhaust pipe. My invention is designed to obviate the objections developed in these regards in articulated locomotives of the ordinary construction, which more particularly obtain in those for narrow gage railroads, and has been found, in practice, to satisfactorily comply with the requirements.

My invention is herein exemplified as applied in a locomotive engine of the "Mallet" articulated compound type, comprising a rear frame, 8, supported on a plurality of driving wheels, 1, and a front frame, 8^a, supported on a plurality of driving wheels, 1^a, and a two wheeled leading truck, 2. The rear frame carries a pair of high pressure cylinders, 12^a, the pistons of which are coupled to crank pins on the driving wheels, 1,

and the front frame carries a pair of low pressure cylinders, 12^b, the pistons of which are coupled to crank pins on the driving wheels, 1^a. The boiler, 4, is fixed to the rear frame, 8, and the front and rear frames are coupled, in the longitudinal central plane of the locomotive, by a pivot pin, 8^b, the forward portion of the boiler being thus, as is usual in locomotives of this type, free to swing or traverse laterally, relatively to the front frame, 8^a, in passing curves.

Owing to the limitation of height ordinarily prevailing, and the requirements as to boiler capacity and dimensions, the boiler cannot, in many cases, particularly in narrow gage locomotives, be set sufficiently high to provide fully satisfactory facilities for clearance of the low pressure steam chests, and the desirable disposition of the pipes connected therewith. In order to enable these facilities to be afforded without undue elevation of the boiler, 4, in the practice of my invention, I provide a smoke box, 4^a, which, in lieu of being of the ordinary cylindrical form, is relieved on its bottom, and reduced in depth, by being provided with a floor or bottom plate, 4^b, which is located in a plane above that of the bottom of the waist or body of the boiler, and sufficiently above the tops of the low pressure steam chests, 12^b, to entirely clear them in the swinging movements of the boiler over the front frame, to one side or the other, in passing curves. The floor, 4^b, is preferably, as shown, formed of a flat or horizontal plate, this being best adapted for the connection of the exterior low pressure exhaust pipe, 14, to the interior exhaust pipe, 15, by castings of simple form, but it will be obvious that, if preferred, it may be flattened, relatively to the remainder of the smoke box wall, by being outwardly or inwardly curved or dished, so long as it does not present any surface which is depressed sufficiently to come into contact with the low pressure steam chests.

I claim as my invention and desire to secure by Letters Patent:

1. In an articulated locomotive, the combination of a rear frame, a front frame articulated thereto, and a boiler fixed to the rear frame and having a smoke box which is relieved at bottom and reduced in depth by being formed with a bottom wall located above the lower line of the waist or body of the boiler.

2. In an articulated locomotive, the combination of a rear frame, a front frame articulated thereto, cylinders and steam chests fixed to the front frame, and a boiler fixed to the rear frame and having a smoke box which is relieved at bottom and reduced in depth by being formed with a bottom wall located above the level of the steam chests of the front frame.
- 10 3. In an articulated locomotive, the combination of a rear frame, a front frame articulated thereto, and a boiler fixed to the rear frame and having a smoke box provided with a flattened bottom plate located above the lower line of the waist of the boiler.

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Witnesses:

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