J. BATLEY.

Traction Locomotive.

No. 198,266. Patented Dec. 18, 1877.

Fig 3

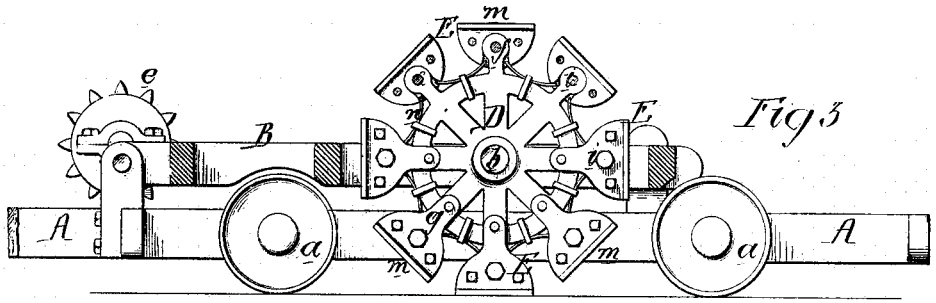


Fig 2

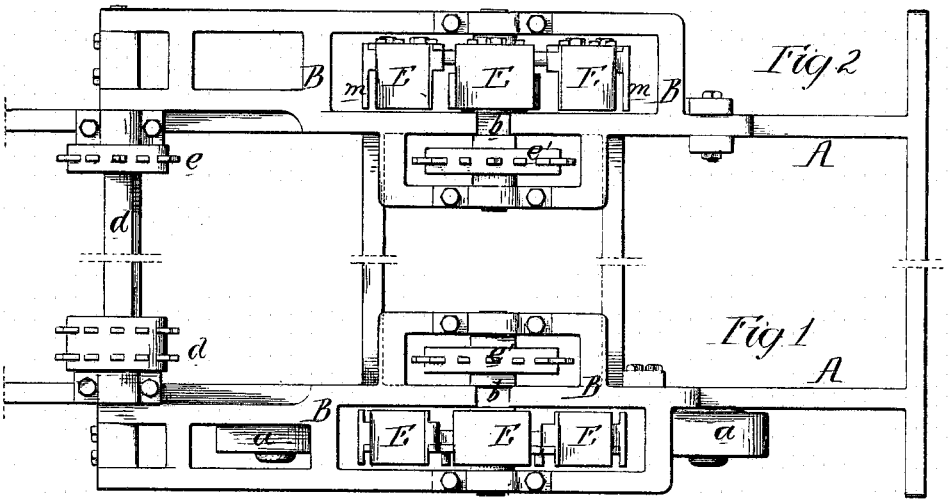


Fig 1

Fig 4

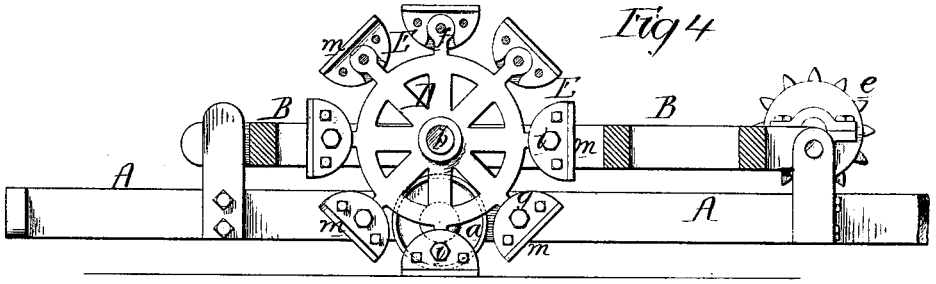


Fig 6

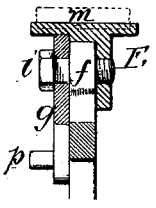
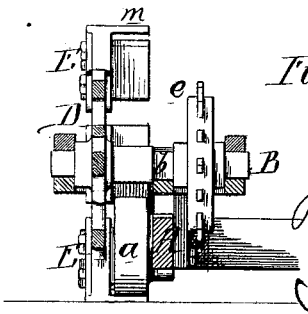


Fig 5



Witnesses

Harry A. Crawford.

Harry Smith

Inventor

John Batley

by his Attorneys

Howson Son

UNITED STATES PATENT OFFICE.

JOHN BATLEY, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TRACTION-LOCOMOTIVES.

Specification forming part of Letters Patent No. **198,266**, dated December 18, 1877; application filed April 18, 1877.

To all whom it may concern:

Be it known that I, JOHN BATLEY, of Philadelphia, Pennsylvania, have invented a new and useful Improvement in Traction-Locomotives, of which the following is a specification:

The object of my invention is to construct a locomotive or other vehicle for running on common roads or over sandy, soft, and marshy ground, or for use in cases where ordinary locomotives are ineffective—an object which I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figures 1 and 2 are plan views of different forms of my improved locomotive; Fig. 3, a side view, partly in section, of Fig. 1; Fig. 4, a side view, partly in section, of Fig. 2; Fig. 5, a transverse section of Fig. 4, and Fig. 6 an enlarged view of a portion of the device.

In Figs. 1 and 3, A represents the frame-work or truck of the locomotive, mounted upon wheels *a a*, and carrying a hinged frame, B, any desired number of these frames being used in practice, but only one being shown in the drawings.

Each frame B carries an axle, *b*, to which is secured the driving-wheel D, power being applied to the axle, in the present instance, from a driving-shaft, *d*, at one end of the truck A, through the medium of chain-wheels *e e'* and a chain-belt.

The driving-wheel consists of a central hub, having a number of radial arms, the outer end of each of which is enlarged, so as to form a circular head, *f*, adapted to a recess in the side of a block, E, which is retained in place on the end of the arm by a plate, *g*, and bolt *i*, the latter serving as a pivot on which the block can vibrate to a limited extent, this pivot being preferably arranged as near the face of the block E as possible.

Each of the blocks E has an extended bearing-surface, *m*, and as the wheel revolves, this surface first finds a firm bearing upon the ground, and then remains stationary, the further rotation of the wheel causing a forward movement of the axle *b* in the arc of a circle of which the pivot-pin *i* is the center, this movement causing a slight vibration of the frame B vertically when the block E is at and near a vertical line drawn through the center of the axle, so that the weight of the frame is effectively exerted upon the block at a time when it is most useful for traction purposes.

The shock caused by the blocks E striking the ground at an angle may be absorbed by springs *n;* or the plates *g* may be provided with pins *p*, adapted to a grooved plate carried by the frame B, and serving to present the faces *m* of the blocks E directly to the ground.

If desired, the faces of the blocks E may be provided with blocks of rubber, wood, or metal, as shown by dotted lines in Fig. 6; but this is not essential.

When used on sandy, soft, and marshy ground, the bearing-faces *m* of the blocks E are extended on the inner side, so as to form a rail, upon which runs the wheels *a*, supporting the body of the locomotive, the extended area of the surfaces *m* preventing that sinking into the ground which would result if the wheels *a* rested directly upon it.

The strong traction-power possessed by my improved driving-wheel renders the locomotive to which it is applied especially applicable to drawing freight-trains up steep inclines on railroads, or to other services in performing which locomotives with smooth driving-wheels are not effective.

An important feature of my invention is the hanging of the axle *b* of the driving-wheel D in a frame or box capable of yielding vertically independently of the body of the locomotive; otherwise the entire weight of the latter would have to be lifted whenever one of the blocks E passed beneath the axle, thus imparting a jolting movement to the body, and subjecting the driving-wheel to an inordinate strain, whereas in my case the only weight to be lifted is that of the frame B, which can be so gaged as to furnish merely such a pressure upon the wheel as will insure proper traction.

I claim as my invention—

1. A driving-wheel for locomotives, consisting of a central hub and rigid radial arms, to the ends of which are rigidly pivoted blocks E, as set forth.

2. The combination of the truck A of the

vehicle with a wheel of the character described, said wheel being carried by a box or frame capable of moving vertically independently of the truck, as described.

3. The combination of the arms of the wheel, having enlarged circular heads *f*, with the blocks E, having corresponding recesses adapted to the heads, and with the pivot-pins *i*.

4. The combination of the truck A and its wheels *a* with a wheel, D, having blocks E, with flanges *m*, which support the wheels *a* of the truck, as set forth.

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

JOHN BATLEY.

Witnesses:

HERMANN MOESSNER,

HARRY SMITH.