2 Sheets—Sheet 1.

D. F. LEACH.

Portable Locomotive.

No. 93,316. Patented Aug. 3, 1869.

Fig: 1.

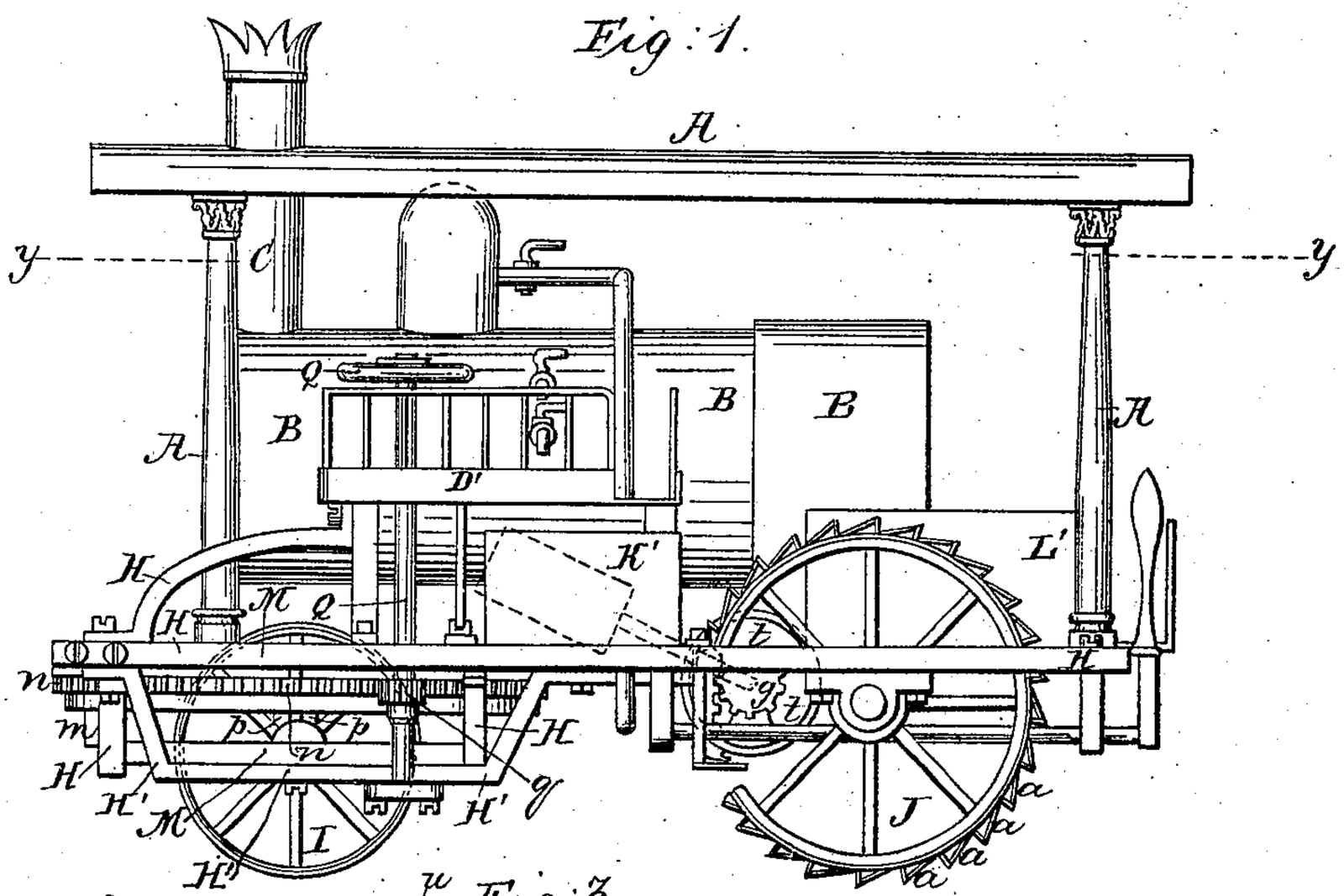
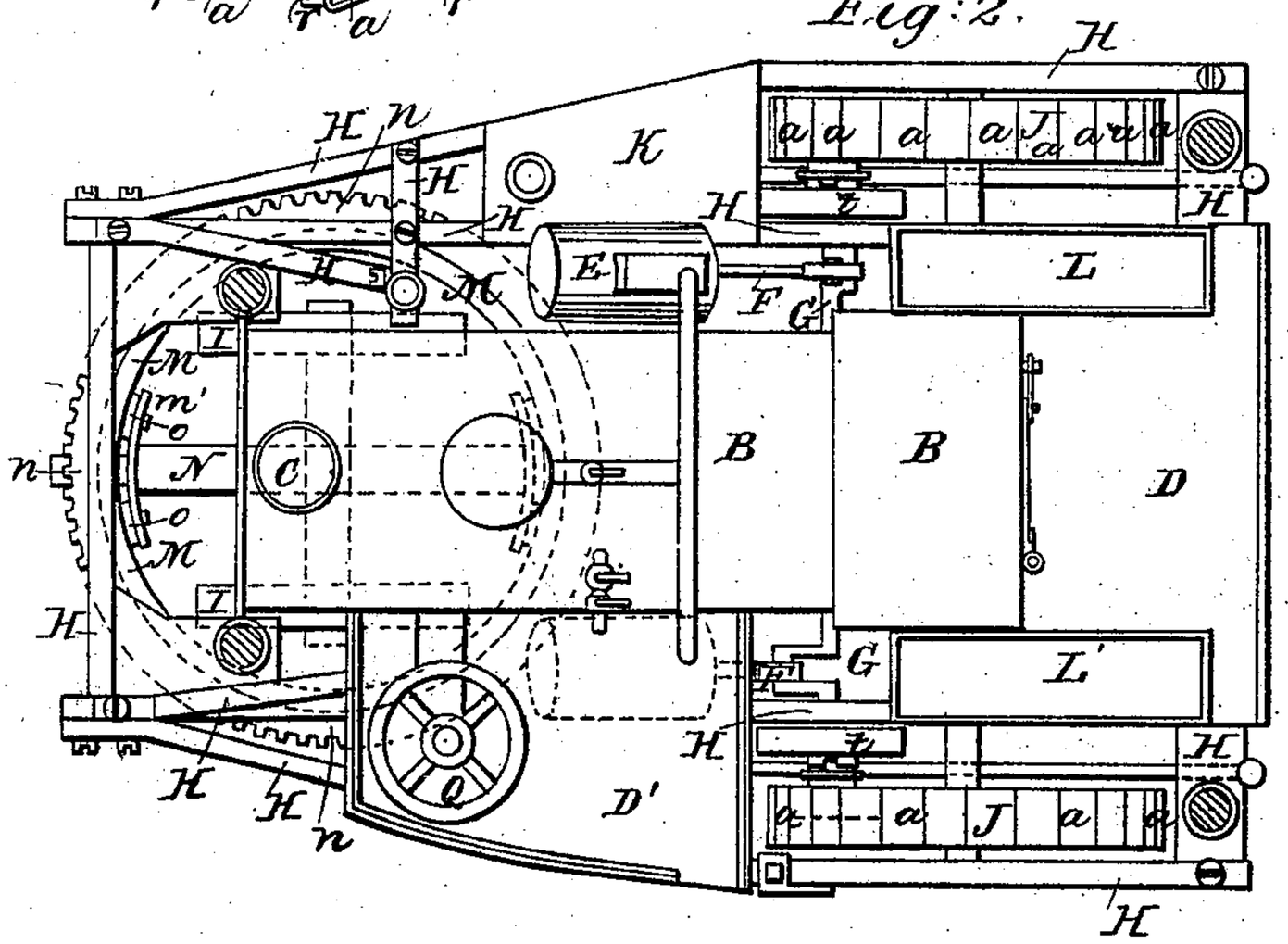


Fig: 2.



Witnesses.
C. A. Pettit
S. C. Kenrow

Inventor
D. F. Leach
by Munn & Co
attorneys

2 Sheets—Sheet 2.

D. F. LEACH.

Portable Locomotive.

No. 93,316. Patented Aug. 3, 1869.

Fig: 4

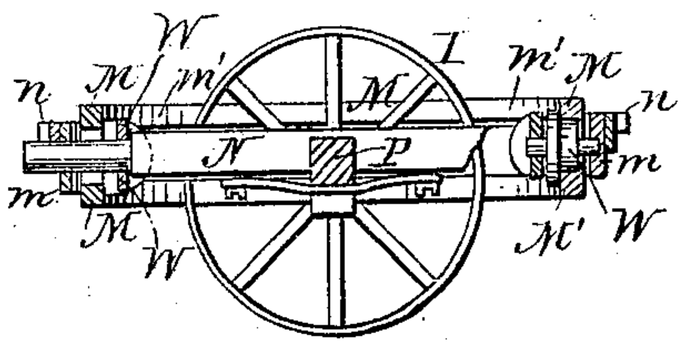
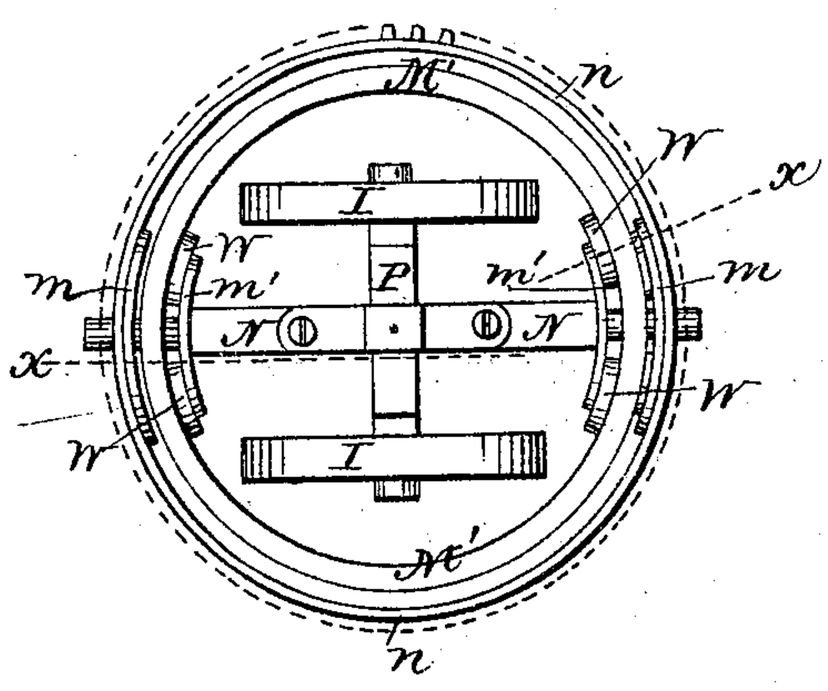


Fig: 5.



Witnesses.
C. A. Pettit
S. C. Kenon

Inventor.
D. F. Leach
by Munn & Co
attorneys.

United States Patent Office.

DANIEL F. LEACH, OF FORSYTH, ILLINOIS.

Letters Patent No. 93,316, *dated August* 3, 1869.

IMPROVEMENT IN FARM-LOCOMOTIVE.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, DANIEL F. LEACH, of Forsyth, in the county of Macon, and State of Illinois, have invented a new and improved Farm-Locomotive; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side elevation.

Figure 2 is a horizontal section, through the line *y y* of fig. 1.

Figure 3 is a detached view, showing a portion of the rim of one of the traction-wheels.

Figure 4 is a longitudinal vertical section, through line *x x* of fig. 5.

Figure 5 is a bottom view of the fifth-wheel apparatus detached.

The object of this invention is to improve the construction and arrangement of the device which supports and guides the forward wheels, and to improve the construction of the traction-wheels of locomotives employed for farm-work. To this end,

The invention consists, first, in the employment of the apparatus represented in figs. 4 and 5, as a species of "fifth-wheel," or horizontally-rotating apparatus, supporting and guiding the forward wheels and their axle, and furnishing the means by which the locomotive is steered, said apparatus being arranged with relation to the boiler and engine, as will be fully understood from figs. 1 and 2; and secondly, in a new and improved construction of the tread of the driving-wheels, as represented in figs. 1 and 3.

In connection with these improvements, I employ a new arrangement of cog-gearing, belt-pulleys, &c., as will be more fully understood from the description of said parts hereinafter following.

In the drawings, A represents the awning, or cab; B, the boiler; C, the smoke-stack; D D′, the platforms; E E, the cylinders; F, the piston-rods; G, the working-shaft; H H′, the frame and guards; K K′, the water-tanks; and L L′, the coal-bunkers of an ordinary farm-locomotive.

No particular form of these parts has any necessary connection with my improvements, and they may be of any form, size, or construction that can be adapted for use in connection with the apparatus, which I will now proceed to describe.

And first, the fifth-wheel apparatus, as represented in figs. 4 and 5.

This consists of two horizontal rings, M M′, of equal size, bolted to the frame-pieces H H′ respectively, in the position shown in fig. 1, one of the rings being exactly over the other.

These two rings form a circular guide-track, around which traverse the axle-boxes of a stout rocking-beam, N.

Said axle-boxes are arranged in a frame, consisting of two concentric curved plates, *m m′*, one working on the inner side and one on the outer side of the space between the two rings, their upper and under edges overlapping the edges of the rings, and the two plates supporting spool-shaped, or pulley-shaped friction-rollers, or wheels, *w w*, that travel round between the rings carrying the frame *m m′* and the ends of the beam N with them.

At its centre, the beam N supports a stout block, or axle, P, fixed to it in a transverse position, and the forward or steering-wheels I I are hung upon suitable journals or spindles projecting from the ends of the tranverse block, or axle, each wheel revolving independently of the other.

The wheels can thus rise and fall, to accommodate themselves to the inequalities of the ground, the beam N rocking for that purpose, and at the same time they may be made to take any horizontal direction, by sliding the boxes *m m′* round between the rings.

In order to slide said boxes, a cog-rim, *n*, is fastened to them, gearing with a small pinion, *q*, or a hand-spindle, Q, by turning which the locomotive may be guided in any direction, at pleasure.

The second feature of my invention consists in the employment of a series of inclines, *a a a*, arranged on the rim of the traction-wheels J J, so as to constitute the tread thereof, as shown in figs. 1 and 2.

These inclines are preferably formed of metallic plates, bent, or cast in the form shown in fig. 3, and bolted, through their terminal flanges, to the face of the wheel, by bolts *r r*, the front end of one of the plates being bolted upon the rear end of the other, with a piece of rubber, leather, or other packing, *u*, between them, to diminish the danger of fracture from any sudden shock or jar.

The plates *a a a* are so arranged, that as the locomotive moves forward, their long, flat face, resembling the hypothenuse of a triangle, will approach the ground in a line nearly parallel to it, striking almost flat upon it. If arranged in the opposite position, the sharp, salient angle of their outline would first strike the ground, and, if the locomotive should become stalled, would plow up the ground badly; whereas, by my arrangement, above described, this difficulty is entirely obviated, the wheel, in such case, simply beating or stamping a little deeper bed there than at any other point along the track.

Another advantage of the arrangement is, that in passing over pebbles, and slight inequalities of the ground, it tends to slide the wheel forward as it rises over them, instead of throwing it back.

The traction-wheel is operated by a small pinion, *g′*,

on the end of shaft G, gearing with an internal cog-rim on the inner edge of the wheel, and arranged immediately forward of the centre of the large wheel, so that it acts directly to depress the front edge of the traction-wheel, instead of lifting upon its rear edge, as usually arranged heretofore.

It is believed that the power thus applied is more economically utilized than when applied at the rear edge of the wheel.

Upon the shaft G are arranged two (more or less) belt-pulleys, *t t*, which may be employed when the locomotive is used as a stationary engine for any purpose.

Having thus described my invention,

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

1. The fifth-wheel apparatus, as shown in figs. 4 and 5, consisting essentially of the parts M M′, *m m′*, *n*, *w w*, N, P, I I, all constructed and arranged substantially as specified.

2. The wheel-rim, or tread, constructed as shown in fig. 3, consisting essentially of the parts *a*, *u*, *r*, substantially as set forth.

DANIEL F. LEACH.

Witnesses:
CHAS A. PETTIT,
S. C. KEMON.