E. J. A. De BERNALES.

TRACTION WHEEL.

No. 185,856. Patented Jan. 2, 1877.

*Fig. 1.*

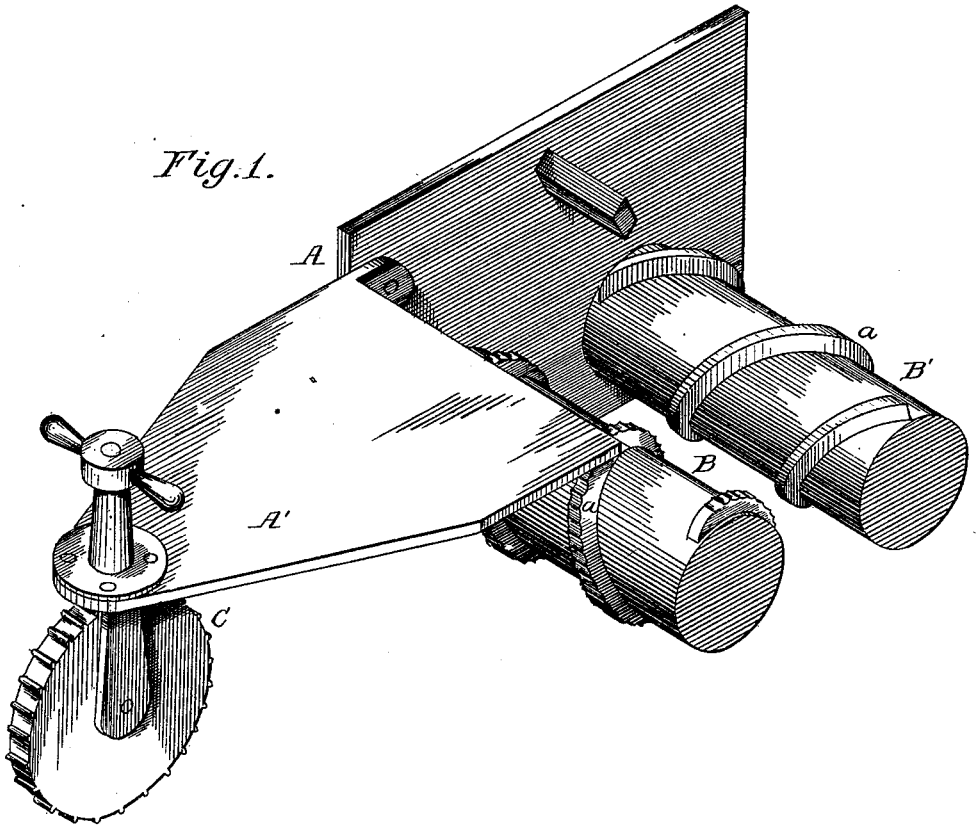
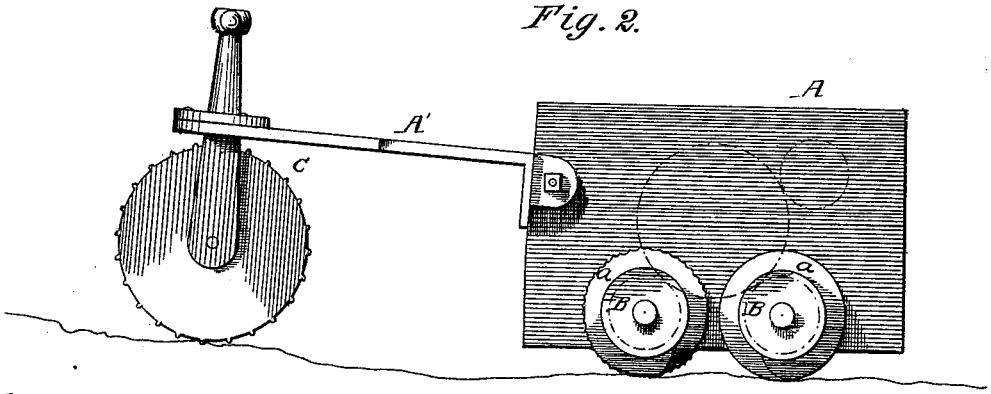



*Fig. 2.*




Attest:

E. J. A. de Bernales.

Fred Benjamin

By his attorney

Charles E. Foster

# UNITED STATES PATENT OFFICE.

EMMANUEL JOSEPH ALBO DE BERNALÉS, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN TRACTION-WHEELS.

Specificat on forming part of Letters Patent No. **185,856**, dated January 2, 1877; application filed November 17, 1876.

*To all whom it may concern:*

Be it known that I, EMMANUEL JOSEPH ALBO DE BERNALÉS, of Brooklyn, Kings county, New York State, have invented certain Improvements in the Running-Gear of Traction-Engines, &c., of which the following is the specification:

The objects of my invention are to improve the bearings of traction-engines or road-engines, and insure a constant support for the bearing, driving, and traction wheels, however uneven may be the surface of the ground.

In the accompanying drawing, Figure 1 represents, in sectional perspective, sufficient of a traction or road engine to illustrate my improvements; and Fig. 2 is a side elevation.

The frame A of the engine may be of any form and construction which circumstances may determine to be the most expedient to employ, and in suitable bearings on the frame turn the journals of the supporting or driving wheels or rollers B B′, each of which is shown in the drawing as consisting of a cylinder with a spiral projection, *a*, constituting the tread or bearing-face of the roller.

The rollers, one or both, are driven through gearing, (shown in dotted lines, Fig. 2,) or by belts, or in any suitable manner, from an engine carried by the frame, or are operated by hand; or, where the propelling power is otherwise applied, the rollers serve simply as bearings and not as drivers.

The forward portion A′ of the frame is constructed in any suitable manner, and is jointed at *x* to the body A of the frame, so that its outer end, which carries a pilot-wheel, C, may rise and fall freely, thus insuring the constant contact of all the wheels or rollers with the ground, however uneven the latter may be, and regardless of the length of the apparatus.

In moving over the ground the spiral tread *a* of each roller has a number of bearing-points, continually varying, depending (on a plane surface) upon the number of complete revolutions on the spiral projection. It will therefore be apparent that a bearing for each roller at two or more points must be insured, however uneven or irregular the surface may be, while the spaces between the bearings receive the loose stones, &c., which, if the face of the cylinder were the bearing-surface, would constitute serious obstacles to the movement of the machine, increasing the power required to drive it.

Another advantage of the spiral bearing results where two or more rollers or wheels are employed, in which case the spirals are inclined in opposite directions, so that the ruts made by one will be at an angle to the tread of the succeeding roller, insuring a fresh surface for the latter, and preventing the formation of deep ruts. This is of much importance where the engine is used on soft ground, as in drawing gangs of plows over fields, &c., or in towing canal-boats where the tow-path is soft.

The frame A A′ may constitute the frame of the locomotive or engine, or it may be a truck arranged beneath, or forming part of the main frame.

Any desired number of rollers may be used, and each roller may have one or more parallel spiral bearings or treads, and may be solid or hollow, and of any required depth and width; and the bearing-faces of the spiral treads may be plain or notched, and may consist of a continuous rib, or of a series of cogs arranged spirally on the roller, or of a heavy spiral rod formed into journals at the ends. Without confining myself, therefore, to the construction shown,

I claim—

1. A traction-engine provided with wheels or rollers having bearings, each extending spirally completely round the axis, as set forth.

2. The combination, in a traction-engine, of two or more wheels or rollers having spiral treads winding in different directions, as and for the purpose set forth.

3. The combination of the frame A, rollers B B′, having spiral treads, the platform A′, hinged to the frame A, and the vertical swiveling shaft carrying a pilot-wheel, C, all as set forth.

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

EMMANUEL JOSEPH ALBO DE BERNALÉS.

Witnesses:

TAYLOR C. RUNDLET,

ALBERT C. HOYT.