3 Sheets—Sheet 1.

J. LARMANJAT.

TRACTION-WHEELS FOR LOCOMOTIVES.

No. 192,923. Patented July 10, 1877.

Fig. 1.

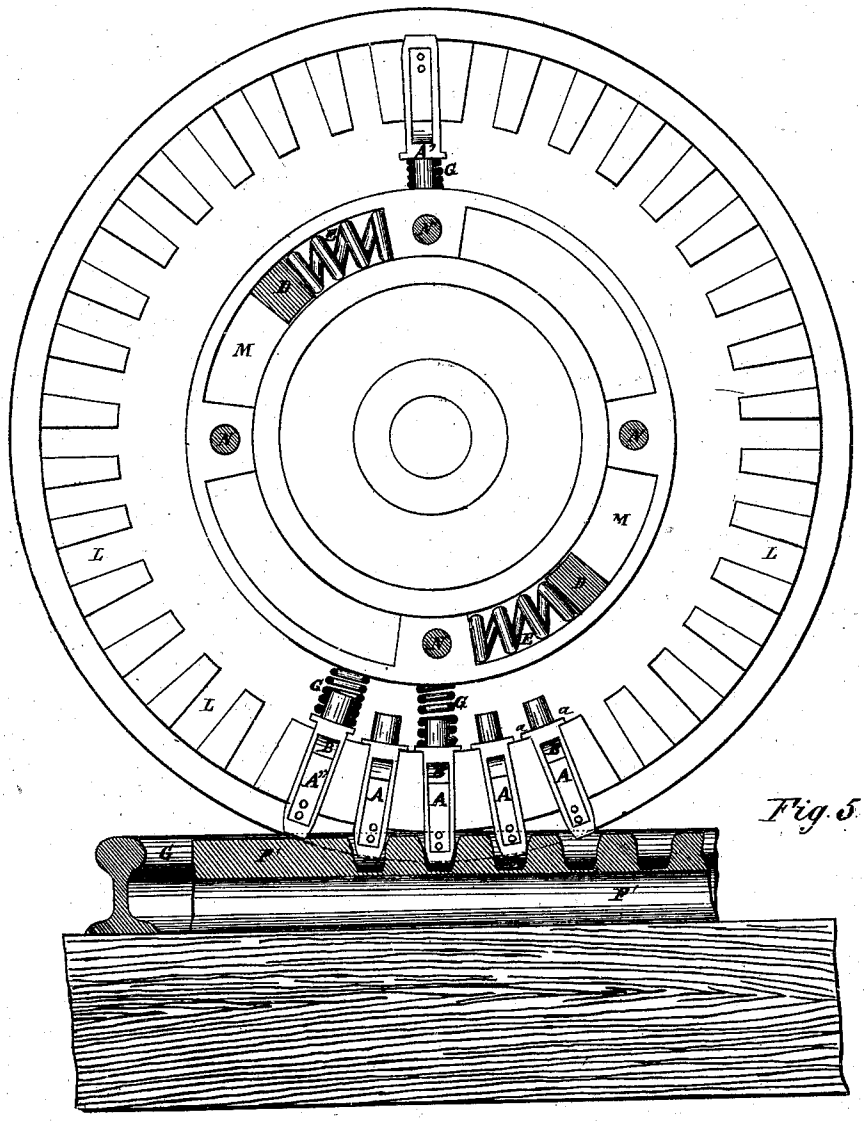


Fig. 5

Witnesses:

1 Robt. A. Hemphill

2 Jean Baptiste Rollands

Inventor:

Jean Larmanjat

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

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Fig. 2.

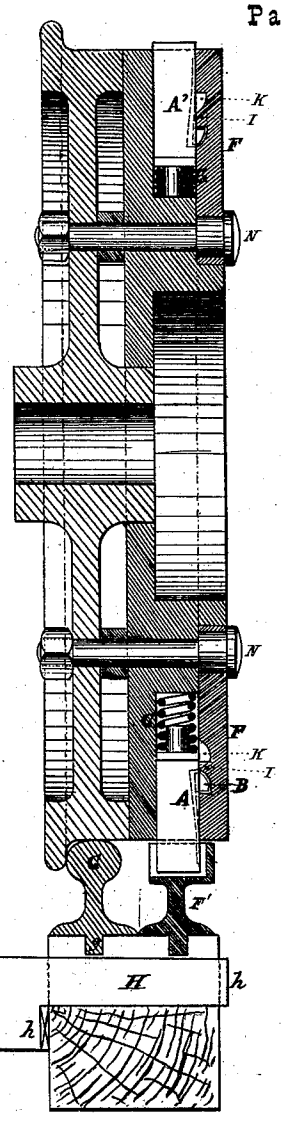
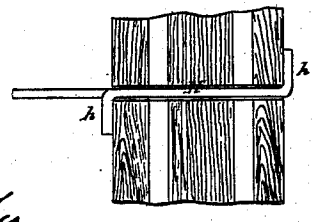


Fig. 4.

Fig. 6.



Witnesses:

1 Russell Hewson

2 Jean Baptiste Rollands

Inventor.

Jean Larmanjat

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

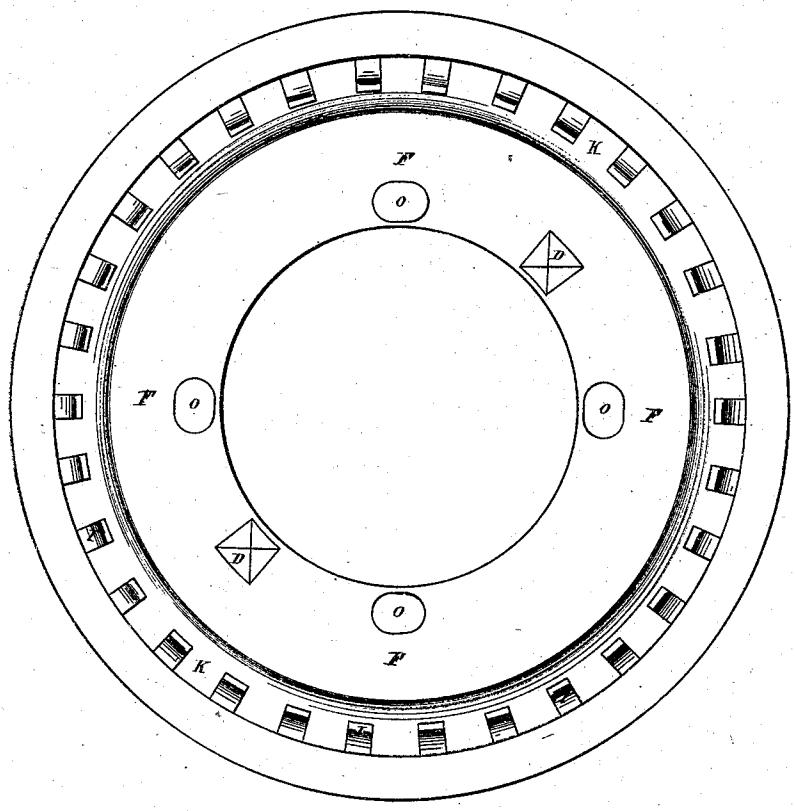
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J. LARMANJAT.

TRACTION-WHEELS FOR LOCOMOTIVES.

No. 192,923. Patented July 10, 1877.

Fig. 3.



Witnesses:

Robt. H. Kemper

2 Jean Baptiste Rollano

Inventor:

Jean Larmanjat

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JEAN LARMANJAT, OF PARIS, FRANCE.

IMPROVEMENT IN TRACTION-WHEELS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **192,923**, dated July 10, 1877; application filed April 19, 1877; patented in France, November 18, 1876, for fifteen years.

To all whom it may concern:

Be it known that I, JEAN LARMANJAT, of Paris, France, have invented Improvements in the Driving-Wheels of Locomotive-Engines, and in the permanent way; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheets of drawings, making a part of the same.

My invention relates to an improvement upon that form of traction-wheel in which spring-seated teeth are arranged to project radially from the wheel, which teeth secure a better hold, and at the same time yield to any obstruction that may present itself.

My improvement consists in the means for controlling the said teeth, as hereinafter described, whereby they may be allowed to project to engage with a rock-bar to increase the traction, or be withdrawn into the periphery of the wheel, as may be desired.

Figure 1 shows a face view, with the cover-plate removed; Fig. 2, a transverse action of a railway-wheel, showing the way the teeth are fitted, and the internal construction of the wheel. Fig. 3 represents the cover-plate separately, and shows the circle of lugs on said plate, whereby the spring-teeth are retained, as hereinafter described. Fig. 4 shows a cross-section, and Fig. 5 a side elevation, of the ordinary rail with a rack-rail alongside of it, and both fixed on a longitudinal sleeper. Fig. 6 represents a plan of the sleeper with an improved metallic tie-bar, H, bent at right angles at *h h* inside and outside the sleeper, to maintain the gage of the line.

Each spring-tooth A has attached to it a small spring-catch, B, which engages with the circle of lugs I in a circular groove, K, in plate F, which lugs serve to retain the teeth A withdrawn into the wheel, as represented in the case of the tooth A′. The teeth A are fitted to slide in and out in sockets L in the body of the wheel, and have spiral springs C on their inner ends, by which they are projected a certain distance (limited by the shoulders *a* or the teeth) beyond the periphery of the wheel, when the catches B are released from the lugs on plate F, which is effected while the engine is traveling in the following manner:

D D, Fig. 1, are two blocks fixed on the inner face of the plate F, and received in circular grooves M in the body of the wheel containing springs E. By turning plate F round on the wheel a distance equal to the width of a lug, I, the spring-catches B will be no longer held by the lugs I, but will pass between them, and the teeth A will be projected outward by their springs C. As the wheel is rotating when the gear-teeth A are brought into action, it is sufficient to retard the plate F by any suitable means, by a brake, for example, in order to release catches B from lugs I and cause the teeth to project. If the brake be now released the plate F will be returned to its original position by the springs E, so as to bring the lugs in plate F again in line with the spring-catches B. Should any of the teeth now be driven inward by encountering any obstacle on the rack-rail, its catch B will slip over the lug I and the tooth will remain withdrawn into the wheel, as shown by the tooth A″, Fig. 1, which, having passed beyond the toothed part of the rack-rail F′, is driven inward on arriving at a plain length of rail provided at the end of the rack-rail. This plain part is at least equal in length to the circumference of the wheel, so that the whole of the teeth of the wheel will be similarly driven inward immediately they are no longer required, and thus form no obstacle to ordinary traveling. The plate F is fitted to rotate on the boss of the wheel, to which it is connected by bolts N passing through sufficiently elongated slots O to admit of the rotary movement of the plate F on the wheel.

This construction of wheel is more particularly applicable on lines with gradients exceeding one or two in one hundred, and the advantage of such an arrangement—of teeth coming into operation only at places where the driving-wheels of the locomotive would slip—will be readily seen.

The great objection to the employment of toothed gearing on railways has been due to the difference in the circumference of toothed and plain portions of the wheels, for if at any

moment sufficient adhesion is obtained on the smooth rail the teeth of the wheel are caused to ride upon the teeth of the rack, instead of falling in the spaces between them, and they become not only useless but dangerous.

This objection is entirely obviated in the wheel of this invention, the spring-teeth gearing instantly with the rack whenever it is provided on the rails. To appreciate the gain in power realized, it is only necessary to mention that under ordinary circumstances the tractive power of an engine is no more than one-seventh of its weight, but by means of this invention the power is increased to upward of one-half its weight.

I claim—

1. A locomotive drive-wheel, provided with radially-arranged spring-seated teeth, combined with catches for holding them withdrawn into the wheel, substantially as and for the purpose described.

2. The drive-wheel, having the radially-arranged spring-seated teeth, provided with spring-catches B, in combination with the concentric plate F, made adjustable upon its center, and having lugs I adapted to hold the said teeth in, when in one position, or be turned to allow the same to project, substantially as described.

3. The circularly-arranged spring E, and movable block D, in combination with the drive-wheel having radially-arranged spring-seated teeth, having spring-catches, and with the adjustable plate F, having lugs I, substantially as described, and for the purpose set forth.

JEAN LARMANJAT.

Witnesses:
ROBT. M. HOOPER,
JEAN BAPTISTE ROLLAND.