(No Model.)

J. CLARK.

RAILWAY CONSTRUCTION.

No. 549,704. Patented Nov. 12, 1895.

Fig. 1.

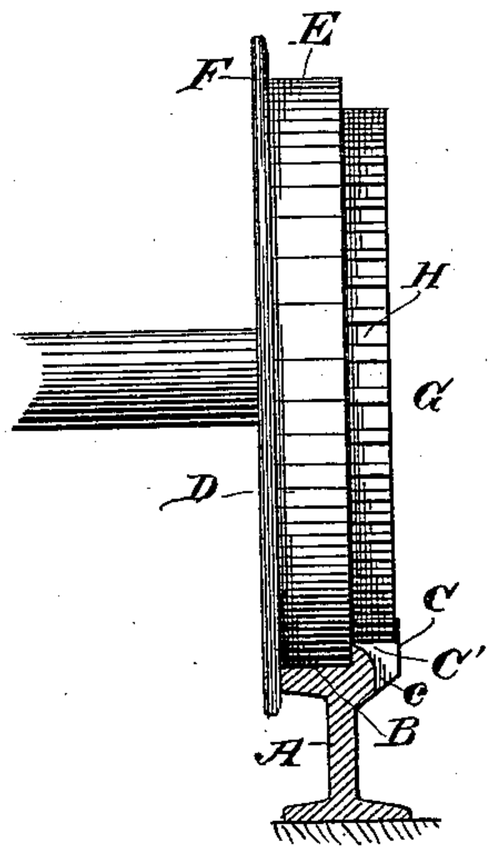
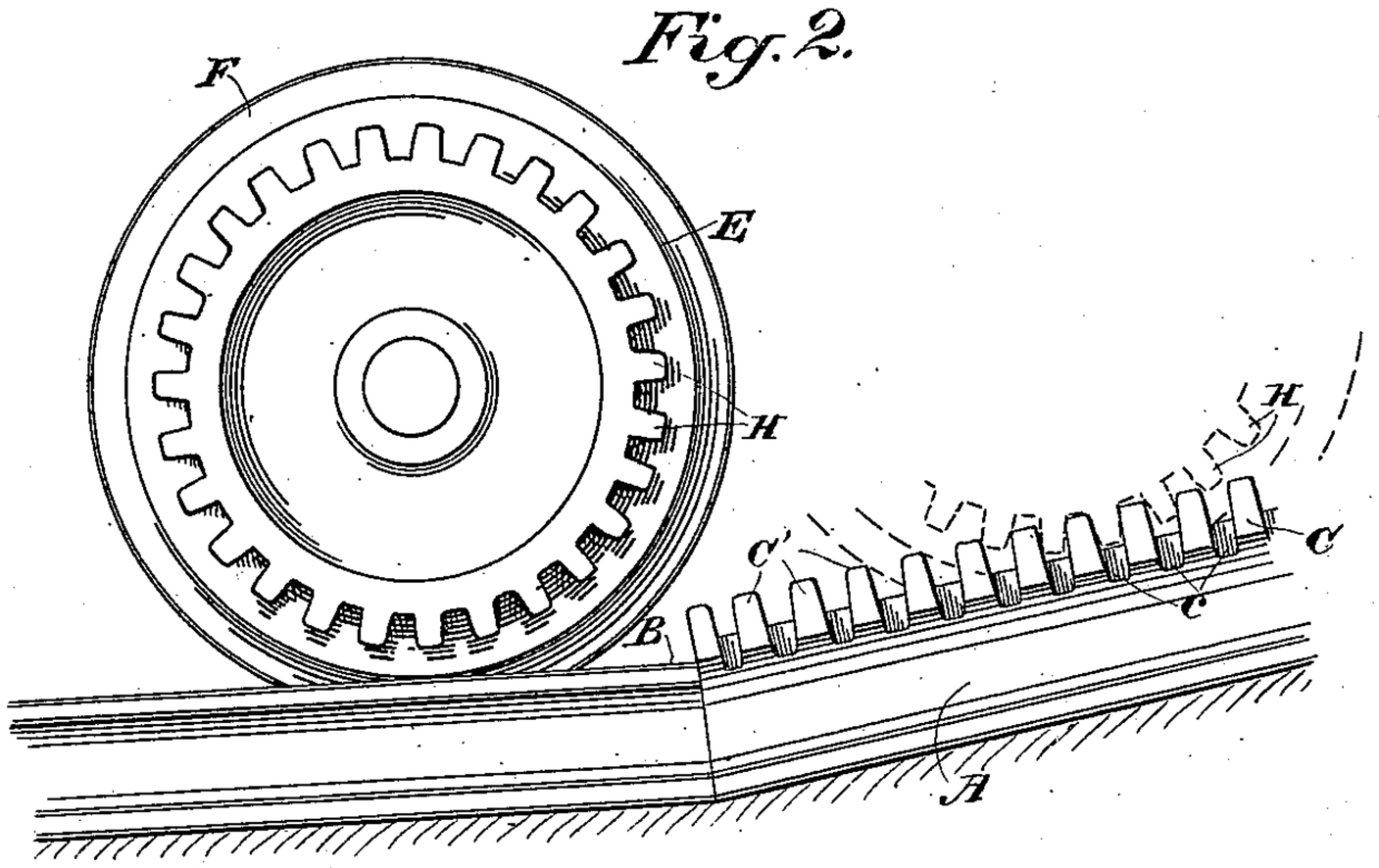


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOSEPH CLARK, OF SAN FRANCISCO, CALIFORNIA.

RAILWAY CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 549,704, dated November 12, 1895.

Application filed March 19, 1895. Serial No. 542,396. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH CLARK, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Railway Construction; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in railway construction.

It consists, essentially, in an improved construction for rails and wheels adapted to travel thereon.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a cross-section of my rail. Fig. 2 is an elevation of my track, showing a car-wheel in its relative position.

The object of my invention is to provide rails and wheels so formed that when running on a level or without any appreciable grade the smooth-faced portion or tread of the wheel will travel upon a corresponding smooth-faced rail and when inclines or grades are to be overcome a toothed portion of the same wheel will engage with a correspondingly-toothed portion of rails laid upon the grade, so that the tractile power will be correspondingly increased and slippage of the wheels will be prevented.

In the construction of my railway I employ two forms of rail. For level portions and where slight grades are encountered any usual or ordinary form of face of rail may be adopted.

For difficult grades the rails A are rolled or otherwise formed with a face B, of any suitable or usual construction, corresponding and coinciding with those rails which are laid upon the level, and with an upwardly-projecting flange or portion C at the side of the face B, and this portion C is rolled, cast, or formed with teeth, as shown at C′, or the teeth may be afterward formed.

The wheels D are constructed with the usual tread E and the flange F on the inner side. They are also formed with an outwardly-projecting portion, and upon this is secured by any suitable means an annular toothed ring H, or the wheels may be cast with the toothed portion integral with the rest of the wheel. This ring is of such diameter that under ordinary conditions, when the car or engine is running upon a level or slight grade only, the ordinary tread E of the wheel will travel upon the face of the rail, the frictional contact in such cases being sufficient for all tractional purposes.

As soon as a grade is approached which is greater than can be overcome by the usual frictional contact the compound rails having the toothed or rack portion will be reached, and as this portion projects above the ordinary face of the rail the teeth of the geared portion of the wheel will immediately engage the teeth of the rail, when all the power that is necessary can be applied to the wheel-axles and be utilized, as there can be no slip while the gear and rack are in engagement.

Whenever the grade is passed and a comparatively level portion is reached, the toothed rails will cease and the ordinary rails take the wheels, which will again travel upon their usual face or tread, the gear side of the wheel being then above the rail and out of contact and service.

In order to prevent the teeth upon the rails from being clogged with dirt and to insure their clearing themselves of such dust or dirt as may fall or settle into them, I have shown them made deeper at the outside than upon the inside, as shown at *c*, the bottom of the channels between the teeth on the inside next to the flat tread of the rail being of just sufficient depth to receive the teeth of the gear-wheel, while upon the outside the channels are made considerably deeper, the incline being such that any foreign matter would naturally jar or roll out, and thus leave the teeth comparatively clean.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The improvement in railway construction consisting in the combination of wheels having a tread adapted to run upon the face of an ordinary rail, and flanges projecting upon the inner side thereof, a geared portion projecting from the outer sides of the wheels having a diameter smaller than that of the tread portion, with rails having a face upon which the smooth tread of the wheel is adapted to travel, and a toothed portion projecting upwardly adapted to be engaged by the teeth of

the wheel, said toothed portion of the rail having the channels between the teeth made deeper upon one side than the other, substantially as herein described.

2. The improvement in railway construction consisting of wheels having an essentially flat tread and a flange of larger diameter around the inner periphery, in combination with a toothed or geared portion of smaller diameter than the tread, projecting from the outer face of the wheel, and adapted to engage corresponding straight toothed racks projecting upwardly at the outer side of the rail, said racks having their channels declining downwardly and outwardly to provide for the automatic discharge of dirt and foreign matter entering the channels.

In witness whereof I have hereunto set my hand.

JOSEPH CLARK.

Witnesses:
LEE D. CRAIG,
S. H. NOURSE.