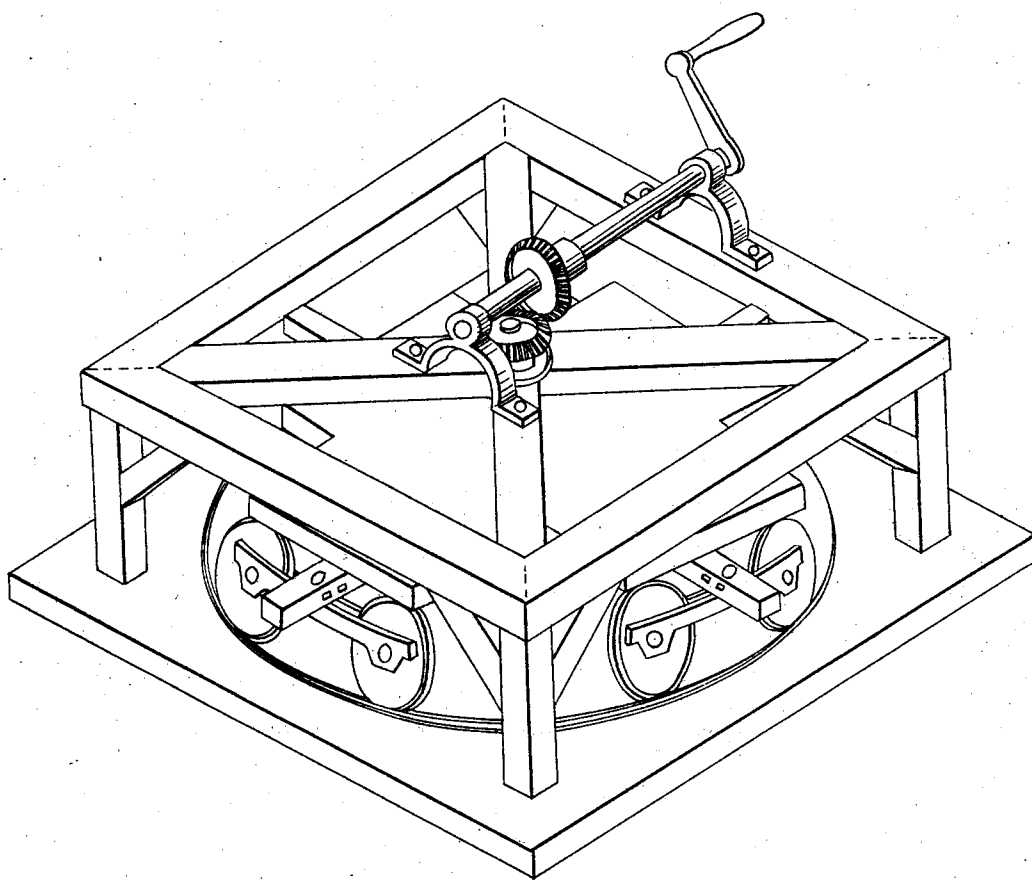


C. T. LIERNUR.

Testing Machine for Car Wheels.

No. 27,915.

Patented April 17, 1860.



Witnesses  
Charles C. Durbrose  
Chas. H. Gode

Inventor  
Charles T. Liernur

# UNITED STATES PATENT OFFICE.

CHARLES T. LIERNUR, OF MOBILE, ALABAMA.

## TESTING THE WEAR OF RAILWAY RAILS AND WHEELS.

Specification of Letters Patent No. 27,915, dated April 17, 1860.

*To all whom it may concern:*

Be it known that I, CHARLES T. LIERNUR, civil engineer, of the city of Mobile, State of Alabama, have invented an Apparatus  
5 for Testing Rails and Wheels for Railways, whereby the exact duration or wear of a rail and wheel can be determined; and I hereby declare that the following is a full and exact description thereof.

10 The object of my invention is to construct an apparatus in which the rail is subjected to a course of trials, similar in its results to actual usage when laid upon the road. For this purpose I lay a circular track com-  
15 posed of 3, 4 or more rails, making a circle of from 20 to 30 feet in diameter. On this track I place a car supported by 4, 6, 8, or more wheels all the axles of which point toward the center of this circular track, the  
20 wheels to be of the size, pattern, and make as actually are to be used upon the road for which the rails are to be tested and the car to be loaded with a weight per wheel equal to the greatest load they will have to  
25 sustain when in use upon the road, the vertical shaft to be well braced and to be strongly attached to the car, so that when a rotary motion is given to the former, this motion will be participated in by the latter;  
30 a beveled cog wheel being placed at the top or bottom of the shaft for the purpose of revolving it by means of a stationary steam engine placed nearby, the speed of travel of the wheels to be the same as the average  
35 speed required upon the road.

The *modus operandi* of the test of rails and wheels with this apparatus can be illustrated as follows: Assuming the average  
40 traffic of the road to demand the going and returning of eight daily trains (or 4 trains each way) of 15 eight wheel cars, then each rail would be ridden over by 480 wheels daily. My testing car being supported by,

say 8 wheels, of course in that case 60 revolutions would be equal to one day's use of  
45 the rail. Supposing the circular track to measure 60 feet on its circumference and the average speed of the trains on the road in question to be 20 miles per hour or say 1800 feet per minute, then it would be necessary  
50 to give the revolving car 30 revolutions per minute, to subject the rails to a trial of usage with the same speed. At this rate, (60 revolutions of the car being equal to  
55 one day's use of the rails) the effect of the wear due to that time will be produced in two minutes. If 2 minutes are equal to one day's use, then one hour will be equal to  
60 that of 30 days, and 12 hours and 10 minutes to that of 365 days or one year; or in other words, experimenting during one of 12 hours and 10 minutes will show the effect of a whole year's use of the rail when laid on the road.

Thus the duration and corresponding  
65 value of rails can be determined with great accuracy because in the trial they are exposed to all the various strains and elements tending to its destruction in the same manner and in the same combination as they  
70 would be, when laid upon the road and were subject to its regular traffic.

What I claim as my invention and desire to secure by Letters Patent is—

A railway car revolving by means of a  
75 center shaft and supported by 4, 8 or more wheels the axles of all of which point toward said shaft and running said car upon a circular track of railway rails for the purpose of submitting both, rails and wheels,  
80 to a test of actual usage, substantially as and for the reasons described above.

CHARLES T. LIERNUR.

Witnesses of signature:

C. BINGHAM,  
CHS. H. FONDÉ.