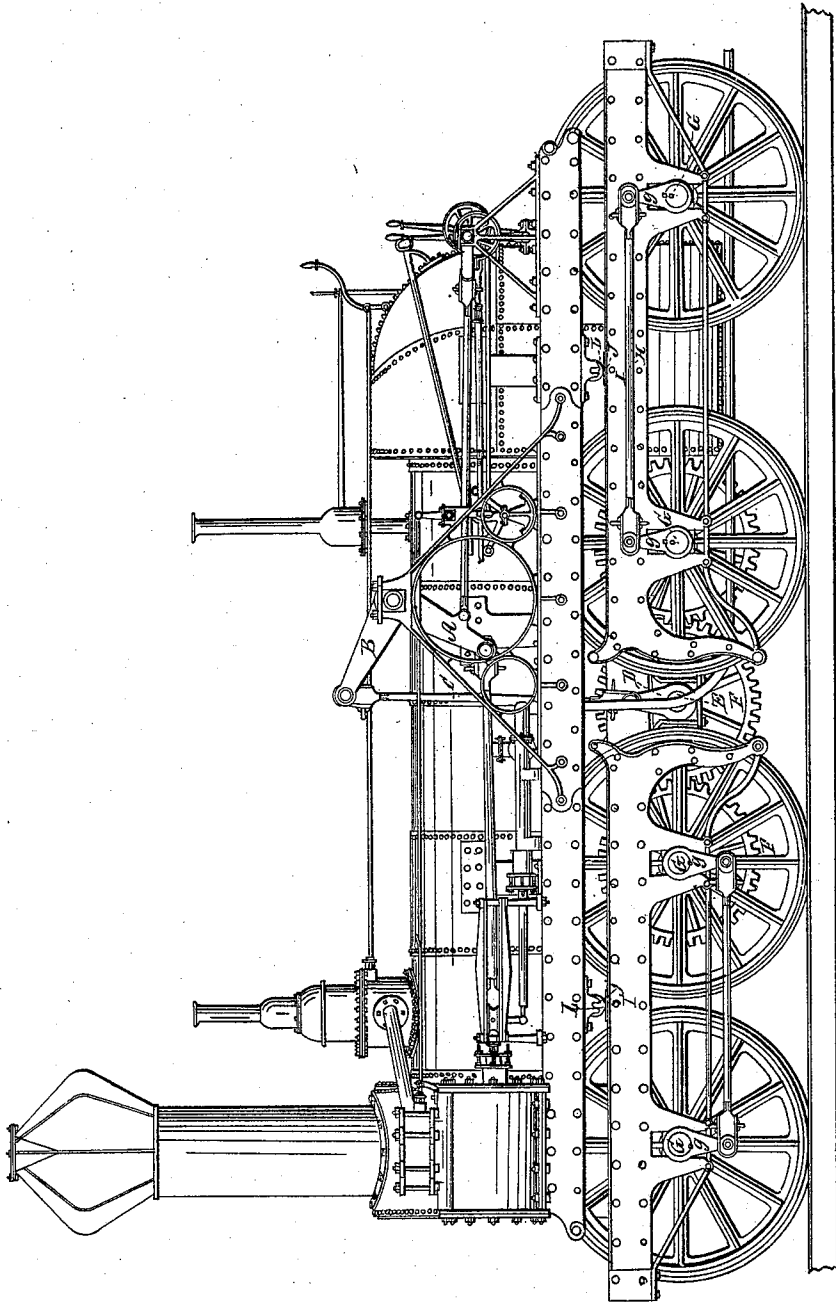


3 Sheets-Sheet 1.  
A. Whitney,  
Locomotive.

IT # 1653.

Patented June 27, 1840.

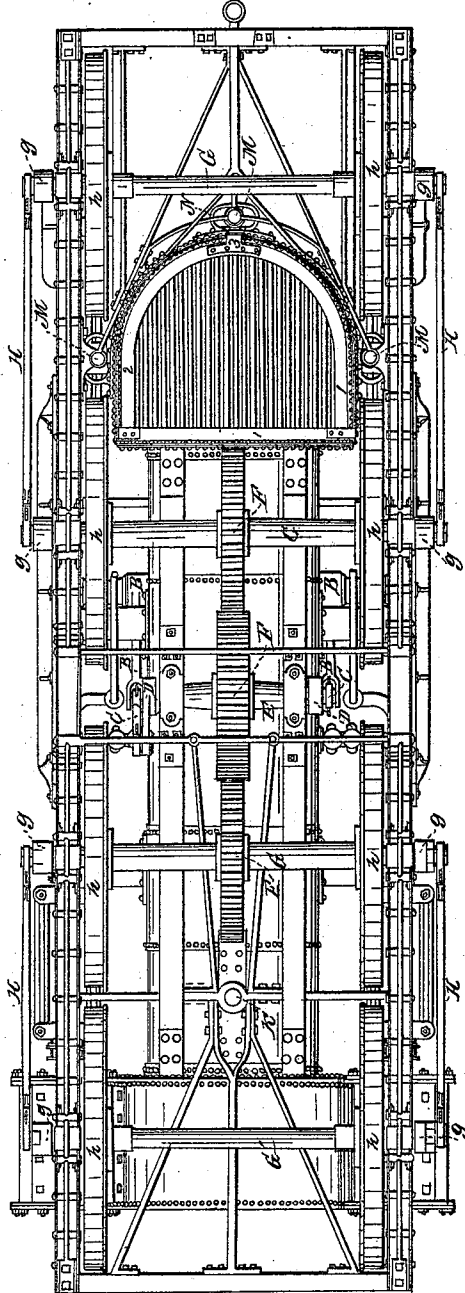


3 Sheets-Sheet 2.

A. Whitney,  
Locomotive.

N<sup>o</sup> 1653.

Patented June 27, 1840.



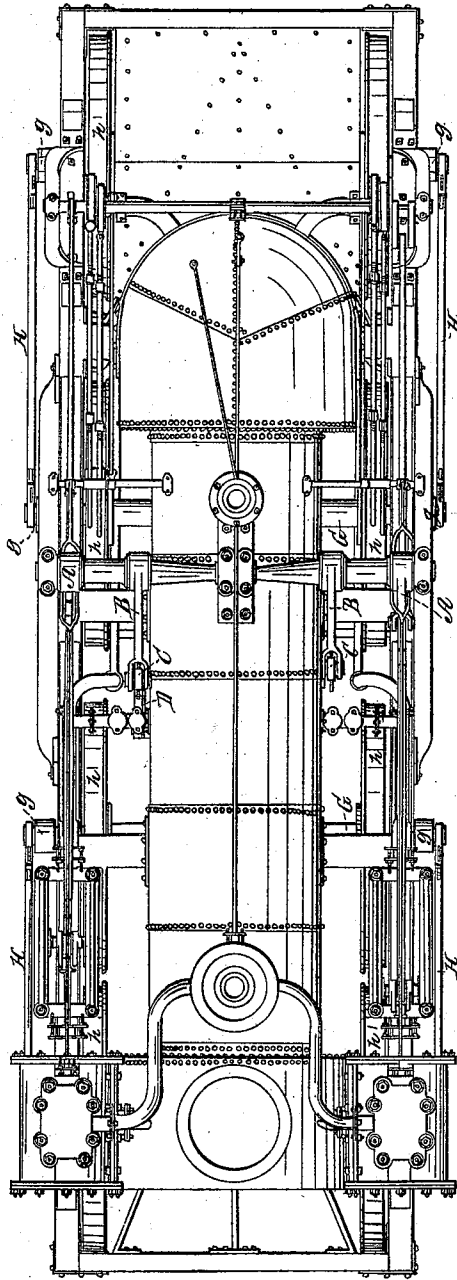
3 Sheets-Sheet 3.

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N<sup>o</sup> 1653.

Patented June 27, 1840.



# UNITED STATES PATENT OFFICE.

ASA WHITNEY, OF ROTTERDAM, NEW YORK.

## LOCOMOTIVE STEAM-ENGINE.

Specification of Letters Patent No. 1,653, dated June 27, 1840.

*To all whom it may concern:*

Be it known that I, ASA WHITNEY, of the town of Rotterdam, county of Schenectady, and State of New York, have invented and made a new and useful Improvement in Locomotive Steam-Engines as Applied to Railroads; and the following is a full and exact description—that is to say:

I place the boiler, engine, and all the parts, that communicate motion, on a frame that rests on two separate carriages or trucks, with four wheels under each carriage, in such a manner as not to prevent them, or either of them from conforming to the curvatures and undulations of the road as freely as they would, loaded with any other weight of the same amount, when connected by a connecting chain, or any other flexible connection. The whole weight to be equally distributed upon each pair of wheels and the power of the engine is so applied as to secure the adhesion of the whole eight wheels, all of which will be better understood, by reference to the accompanying drawings, viz:

The power of the engine is applied to the arms of two bell cranks A, A, and communicated to the shaft E, through the other arms, B, B, of the two bellcranks, the connecting rods C, C, and the cranks D, D. The spur wheel F, on the shaft E, communicates motion to the shaft or axles G, G, through the spur wheels F', F'. On the outer ends of the shafts or axles G, G, G', G', is attached cranks g, g, g, g, g, g, g, g, and motion is communicated to the axles or shafts G', G', through the connecting rods H, H, H, H, thus communicating motion to, and securing the adhesion of the whole tight wheels h, h, h, h, h, h, h, h.

The weight of the engine boiler, &c., rests on the two carriages or truck frames I, I', at J, J, J, J. The carriage I, is free to revolve on the center pin K, so far as may be required to allow it to conform to the curvatures and undulations of the road, through the intervention of the conical friction rollers L, L, which traverse on circular paths, described by a radius extending from the center pin K, the upper surfaces of which are made to conform to the cone of these rollers.

The carriage I' is free to revolve so far around its common center as may be necessary to allow it to conform to the curvatures of the road by means of the friction rollers

M, M, M, which may traverse in the arcs of circles described by a radius the fixed point of which is at the intersection of lines drawn from 1 to 2, and from 3 to 4. These three arcs N, N, N, are attached to the fire box or furnace part of the boiler. The spaces between the inner surfaces of these arcs come in contact with the friction rollers, the diameters of which very near fill the spaces between the outer and inner arcs, the journals of said rollers to be secured, so as to revolve freely in the frame of the carriage I', which allows this carriage to move easily and to change its relative position both for the curvatures and undulations through the intervention of the conical friction rollers L' L' which traverse on circular paths, in the same manner as the rollers L, L, that traverse on carriage I above described.

By the above arrangement and combination of parts, the cylinder may be so enlarged, as that the pressure on the piston may be equal to the adhesion of the whole eight driving wheels. When the power of the engine is required for high speed (the resistance being less by reason of the load being lighter, or the grade of the road being more favorable, or by both) the passage of the steam from the boiler to the cylinder may be so regulated as to admit of the escape of the steam, no faster than it is generated. The great object of my experiment and study has been to obtain a locomotive of more adhesion to the rail, and, consequently, of greater power, and so flexible as to conform readily to the road, and with the greatly increased weight so distributed as not bear too heavily on any one point on the rail and not injure the road.

By rendering the above carriage flexible, and by so communicating the power as to make the whole eight wheels driving wheels, I have secured the object. The great advantages of this improvement are obvious.

I do not claim any one of the parts of said engine, or locomotive, separately, and independently of the arrangements and combinations herein set forth and claimed; nor any combination, or combinations of the parts aforesaid, not herein specially named and claimed as my invention and improvement; but

I do claim, in the first place, as my invention and improvement—

1. The combination of the cog, or spur, wheel, with the two pair of driving wheels

nearest to them, in combination with the rod  
connecting the front and rear wheels with  
the middle wheels, by which combination  
of the cog wheels and connecting rods with  
5 the driving wheels, the power the engine is  
communicated to the whole number of the  
driving wheels when the engine is put in  
motion.

2. I also claim the above method of con-  
10 necting the wheels of the locomotive so as  
to constitute four pair of driving wheels in  
combination with the frame extending over

both carriages, resting on bearings and sup-  
porting the weight of the engine on two sep-  
arate carriages as herein set forth, thereby 15  
securing the adhesion to the rails of the  
whole eight wheels.

In witness whereof, I hereunto set my  
hand in the presence of two witnesses, this  
6th day of June, A. D. 1840.

ASA WHITNEY.

Witnesses:

THOS. P. JONES,  
GEO. WEST.