

(No Model.)

2 Sheets—Sheet 1.

C. D. SCOTT.

PROPELLING GEAR FOR TRAMWAY LOCOMOTIVES.

No. 470,078.

Patented Mar. 1, 1892.

Fig. 1.

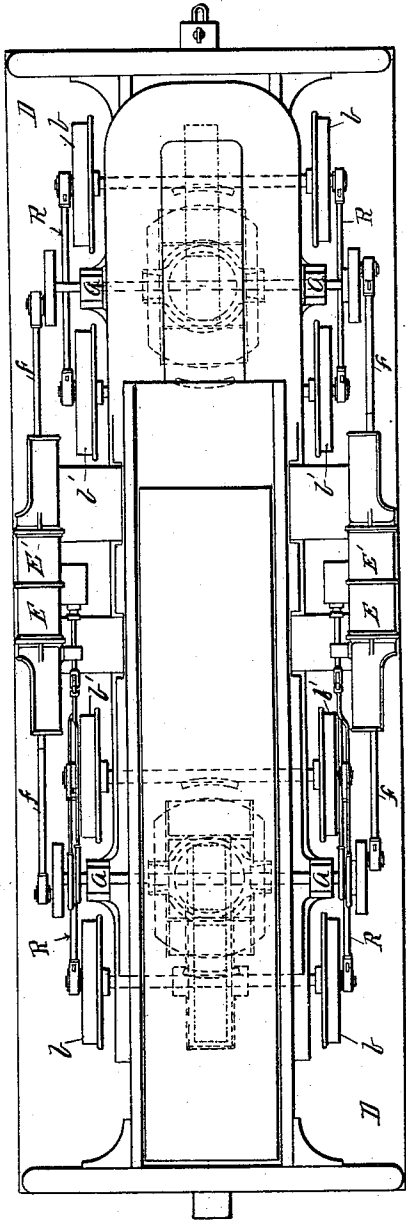
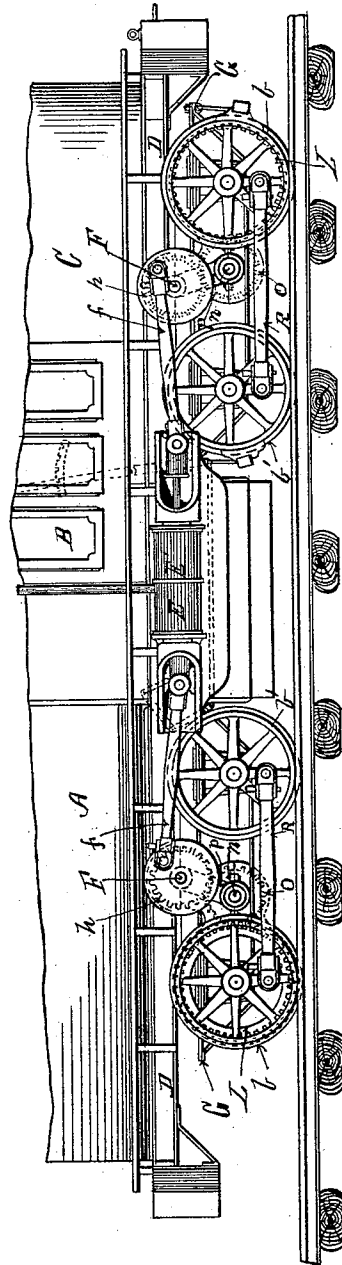


Fig. 2.



WITNESSES.

A. L. Jackson
G. J. Mad

INVENTOR.

Charles D. Scott.
By H. Sturgeon
Atty.

C. D. SCOTT.

PROPELLING GEAR FOR TRAMWAY LOCOMOTIVES.

No. 470,078.

Patented Mar. 1, 1892.

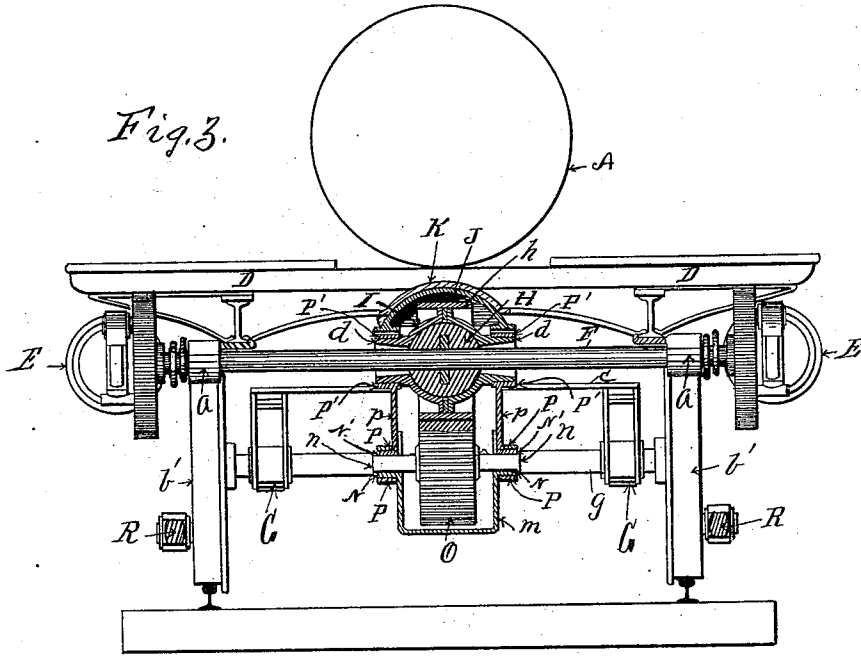


Fig. 3.

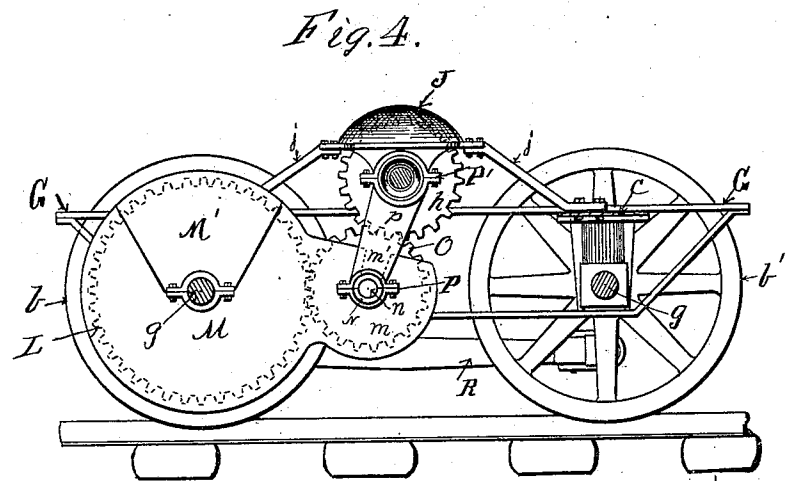


Fig. 4.

WITNESSES.

A. L. Jackson
G. J. Mac

INVENTOR

Charles D. Scott.
By H. Sturgeon
Atty.

UNITED STATES PATENT OFFICE.

CHARLES D. SCOTT, OF CORRY, PENNSYLVANIA.

PROPELLING-GEAR FOR TRAMWAY-LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 470,078, dated March 1, 1892.

Application filed October 10, 1891. Serial No. 408,393. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. SCOTT, a citizen of the United States, residing at Corry, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Propelling-Gear for Tramway-Locomotives; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

My invention consists in the improvements in the propelling-gear for tramway-locomotives hereinafter set forth and explained, and illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view of my improved tramway-locomotive, the boiler, cab, and upper works being removed therefrom. Fig. 2 is a side elevation of my improved tramway-locomotive, the upper portion of the boiler and cab being broken away. Fig. 3 is an enlarged end view of the propelling-gear of same, partially in elevation and partially in section. Fig. 4 is enlarged detail view of the same.

Like letters refer to like parts in all the figures.

This invention is designed as an improvement on the invention in locomotives for tramways described and claimed in Letters Patent No. 452,124, granted to me May 12, 1891, the objects thereof being to simplify the construction of the propelling-gear thereof and render the connection of the trucks with the locomotive-frame and of the truck-gearing with the gearing on the crank-shafts more flexible in operation.

Other features of my invention will more fully appear hereinafter in the specification and claims.

In the construction of my improved propelling-gear for tramway-locomotives shown in the drawings, A is the boiler, B the cab, C the fuel and water tank, D the locomotive-frame, these parts being substantially the same in construction as described in my Letters Patent No. 452,124, hereinbefore referred

to. In this construction, however, I preferably use two cylinders E E' on each side of the locomotive instead of the single cylinder shown in the above-mentioned patent. From these cylinders E E' connecting-rods *ff* and *f' f'* extend to crank-shafts F F, which are mounted in bearings *aa* on the locomotive-frame D, preferably about midway between the wheels *b b'* of the trucks G G.

Centrally upon each of the crank-shafts F F, I mount a ball-and-socket-joint connection consisting, preferably, of a ball H, secured to the shaft F, and a socket I, surrounding said ball and operatively connected therewith, having a gear-wheel *h* mounted thereon, said socket I also having trunnions *dd* thereon, upon which trunnions *dd* domes J over the top of the gear-wheels *h h* rest, and are secured by braces *jj* to cross-pieces *cc* on the truck-frames. On the under side of the locomotive-frame D caps K K are secured, which fit down over the domes J J, forming the pivotal points of movement between the locomotive-frame D and the trucks G G, the major portion of the weight of the locomotive being otherwise supported by the usual and ordinary connections (not shown) between the same and the trucks.

Centrally upon one of the axles *g* of each of the trucks G, I secure a gear-wheel L, and surrounding said gear-wheel L, I mount a cover M, adapted to inclose the same, and on one side of the cover M is a projection *m*, provided with the lower halves N N of shaft-bearings, in which is mounted the shaft *n* of a gear-wheel O, which operates as an intermediate between the gear-wheel *h* on the crank-shaft F and the gear-wheel L on the truck-axle *g*, the upper halves of the boxes in which the shaft *n* operates being semicircular bushings N'. Around the bearings N N' are clamped boxes P P on the lower ends of stirrups *pp*, which have boxes P' P' on the upper ends thereof surrounding the trunnions *dd* on the socket I, the object of this construction being to keep the intermediate gear-wheel O always in mesh with the driving-wheel *h* on the crank-shaft F and with the gear-wheel L on the truck-axle *g*, regardless of the movement of the trucks G. The cover M, surrounding the gear-wheel L, I make with a removable upper section M', and in

the extension *m* thereon I make slots *m'*, adapted to pass over the shaft *n*, so that the cover *M* may be easily detached from the mechanism surrounded thereby when desired.

5 Between the truck-wheels *b* and *b'* are ordinary connecting-rods *R R*, by which the power is transmitted from the wheels *b b* to the wheels *b' b'* of the trucks *G*. By means of this construction all of the wheels under
10 the trucks *G G* operate as driving-wheels, while at the same time the trucks are free to follow the curves and inequalities of the tracks upon which the locomotive is being operated.

15 Having thus fully described my invention, so as to enable others to construct and operate the same, what I claim as new, and desire to secure by Letters Patent of the United States, is—

20 1. The combination, in a tramway-locomotive, of cylinders secured to each side of a locomotive-frame, and a crank-shaft driven by said cylinders, mounted in bearings on the locomotive-frame, and a gear-wheel mounted
25 in bearings on the truck-frame, ball-and-socket joints in the hub of said gear-wheel, through which said crank-shaft passes and by means whereof motion is communicated to said gear-wheel, a gear-wheel on one of the
30 truck-axles, and an intermediate gear-wheel between the gear-wheel on the crank-shaft and the gear-wheel on the truck-axle, substantially as and for the purpose set forth.

35 2. The combination, in a tramway-locomotive, of cylinders secured to each side of a locomotive-frame, and crank-shafts *F F*, driven by said cylinders, mounted in bearings on the locomotive-frame, with gear-wheels *h*, mounted in bearings secured to the truck-

frame, ball-and-socket joints *H I* in the hubs 40 of said gear-wheels *h*, through which the crank-shafts *F F* pass and by means whereof said crank-shafts communicate motion to the gear-wheels *h*, gear-wheels *L* on one side of the axle
45 *g* of each truck, intermediate gear-wheels *O* between the gear-wheels *h* and *L*, mounted in bearings *N N'* in the projection *m* on the case *M* and supported vertically in stirrups *p*, extending from trunnions *d* on the socket *I* to
50 and surrounding the bearings *N N'*, and the connecting-rods *R R* between the truck-wheels *b b'*, substantially as and for the purpose set forth.

3. The combination, in a tramway-locomotive, of a dome-shaped cap *J*, secured to the
55 trucks *G*, and a gear-wheel, as *h*, mounted in bearings secured to said cap *J*, with the cup-shaped bearings *K* on the locomotive-frame, substantially as and for the purpose set forth.

4. The combination, in a tramway-locomotive, of a gear-wheel *L*, secured to one of the
60 axles of each truck, as *g*, and a sectional case or cover, as *M*, surrounding said gear-wheel *L*, with a projection, as *m*, on said cover *M*, having bearings *N* therein, an intermediate
65 gear-wheel, as *O*, mounted in said bearings *N*, and stirrups, as *p p*, extending from the bearings *N* and forming a flexible joint therewith to and around trunnions, as *d d*, on a
70 socket, as *I*, surrounding the main crank-shafts *F F* of the locomotive, substantially as and for the purpose set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES D. SCOTT.

Witnesses:

H. J. CURTZE,

L. ALBRACHT, Jr.