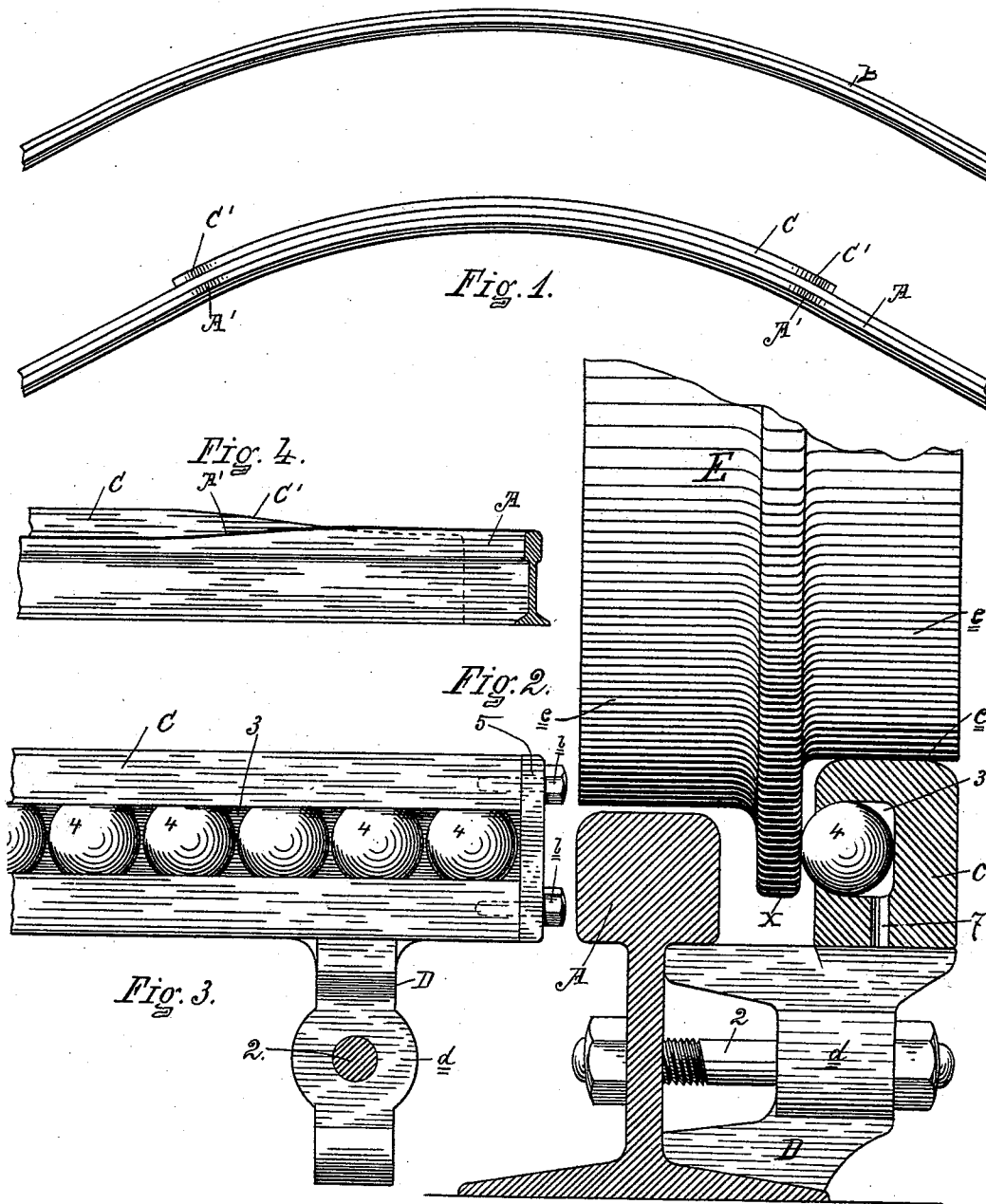


(No Model.)

R. B. POOLE.  
GUARD RAIL.

No. 538,280.

Patented Apr. 30, 1895.



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

ROBERT B. POOLE, OF UTICA, NEW YORK.

## GUARD-RAIL.

SPECIFICATION forming part of Letters Patent No. 538,280, dated April 30, 1895.

Application filed November 15, 1894. Serial No. 528,884. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT B. POOLE, of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Guard-Rails; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 and numerals of reference marked thereon, which form part of this specification.

My invention relates to improvements in car wheels and tracks.

In the drawings which accompany and form part of this specification, and in which the same letters and numerals of reference refer to corresponding parts in the several figures, Figure 1 shows a plan view of a railroad track at a curve, including the guard rail and embodying one feature of my invention. Fig. 2 shows a cross section of the track and guard rail in connection with a portion of a double-faced wheel adapted to run thereon. Fig. 3 shows an inner face view of a section of the guard rail. Fig. 4 shows a side elevation of a section of the rail and guard rail slightly exaggerated as to differences in height of rails.

The track as shown consists of two rails A and B; the rail A becoming the inner, and the rail B the outer in the curve shown. Adjacent to the rail A at a curve is located the guard rail C on the inner side thereof. The guard rail is provided with bracket-like supports D located at intervals thereon, adapted to engage with the track rail, and the guard rail is secured to the track rail by bolts 2 passing through sleeve-like portions *d* of the brackets D and the web of the track rail. In the inner face of the guard rail C is provided a groove 3 adapted to receive and retain a row or series of balls 4. The faces of these balls project somewhat from the face of the rail and are adapted to be engaged by the flange of a wheel running on the track. The row or series of balls are retained in the groove by plates 5 secured upon each end of the guard rail by bolts *b, b*. There is some extra space provided in the groove so that the row of balls may have an endwise movement of, say, two or three inches. At intervals in

the guard rail are provided drip or escape openings 7. The head *c* of the guard rail projects above the plane of the track rail and may be inclined upward, as indicated at C, while the head of the track rail may be cut away on an incline, as indicated at A' to produce this difference in elevation. The wheel E is provided with an outer bearing face *e* 60 and an inner face *e'* of a smaller diameter, with an intermediate flange *x*. The face *e'* is adapted to run on the head of the guard rail while the face *e* is temporarily out of operation. It will be understood that two wheels E are secured on the same axle and are adapted to run on the track rails A and B respectively.

As a car provided with wheels, as herein shown, reaches a curve in the track provided with guard rails, as herein shown, the weight or tread of the wheels is transferred from the track rail to the guard rail on the inner side of the curve, and the face of the wheel running on the guard rail being of smaller diameter than that of the outer face of the wheel running on the outer rail, the curve may be rounded without slipping of wheels on the track, thereby reducing the friction and amount of power required. The difference in size of the operating faces of the wheels when the car is on a curve, also tends to turn the car in making the curve.

The car is positively directed or turned around the curve by the flange of the wheel running against the row of balls 4 in the groove of the guard rail. The balls prevent friction and prevent the flange of the wheel from chewing or grinding the guard rail, as well as wearing itself out in that useless manner. When the flange of the wheel strikes the row of balls from either end, the row is moved endwise two or three inches, depending on the amount of freedom which is given them, and thereby free themselves as well as assisting in working any foreign matter out of the openings 7.

It is evident that the guard rail and balls may be used with the ordinary form of car wheel, or that the particular form of car wheel may be used with other forms of guard or supplemental piece of track, as occasion or circumstances might require.

No stress is laid on the particular form or

construction of guard or supplemental rail shown, or form of wheel shown; the object being to illustrate the principles and mode of operation of the invention, and many forms of construction may be adopted without departing from the equivalents of my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a flanged wheel and a guard rail having balls projecting from its side face, substantially as set forth.

2. The combination of a flanged wheel, a tread rail, and a guard rail having a series of

balls projecting from its side face, substantially as set forth.

3. A guard rail having a slotted opening in its side face containing a row of balls projecting beyond the side face, substantially as set forth.

In witness whereof I have affixed my signature in presence of two witnesses.

ROBERT B. POOLE.

Witnesses:

M. A. KELLER,

DWIGHT H. COLEGROVE.