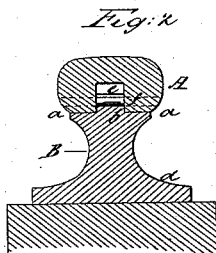


Patented May 22, 1866.



Inventors
J. L. Butterfield & M. L. Green
By their Atty
H. Howson

UNITED STATES PATENT OFFICE.

JESSE S. BUTTERFIELD AND M. S. GREEN, OF PHILADELPHIA, PA.

IMPROVED RAIL FOR RAILROADS.

Specification forming part of Letters Patent No. 54,853, dated May 22, 1866.

To all whom it may concern:

Be it known that we, J. S. BUTTERFIELD and M. S. GREEN, of Philadelphia, Pennsylvania, have invented an Improved Rail for Railroads; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our improved rail consists of an upper and a lower portion, fitted together and secured substantially as described hereinafter, so that an inferior iron may be used for the lower portion and a superior iron or steel for the upper portion, and so that the latter can be readily detached from the former when necessary.

In order to enable others skilled in the art to make our invention, we will now proceed to describe the manner in which we carry it into effect.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a side view, partly in section, of our improved compound rail for railroads, and Fig. 2 a transverse section on the line 1 2, Fig. 1.

The rail consists of the upper portion, A, and lower portion, B, the latter having a base, *d*, similar to that of an ordinary rail, and at the upper edge are two shoulders, *a a*, one on each side of a central rib, *b*, both shoulders and rib extending throughout the entire length of the rail.

The upper portion, A, is of the sectional form illustrated in Fig. 2, and has on the under side a longitudinal groove adapted to the rib *b* of the lower portion, B, on the shoulders *a a* of which the upper portion, A, rests.

At suitable intervals openings *e* of the form illustrated in Fig. 1, are cut in the central rib, *b*, one part of each opening being vertical and the other part slightly inclined in the direction of the arrows.

A number of pins, *f*, are driven transversely through the upper portion, A, of the rail and across the groove which receives the central flange, *b*, these pins being at the same distance apart from each other as the openings *e* in the central rib, *b*.

In adjusting the upper to the lower portion

of the rail the former is placed in such a position that its pins *f* will coincide with the vertical portions of the openings *e*. It is then driven down over the central rib, *b*, which fits snugly in the groove of the upper portion. The latter is now driven in the direction of the arrow 1, so that its pins *e* may be forced into the inclined portions of the opening *e*. As the upper portion of the rail is thus driven endwise, and the pins *f* are at the same time driven along the inclined portions of the opening *e*, the latter have a tendency to draw the upper portion of the rail downward, causing it to bear hard on the shoulders *a a* of the lower portion, B, of which the upper portion becomes almost as much a part as though the two were welded and rolled together.

While the weight of our compound rail need not be greater than an ordinary solid rail, the lower portion, not being subjected to any wear and tear, may be made of very inferior iron, and the upper portion of iron of a quality best adapted for withstanding the action of car-wheels; or the upper portion may be made of steel.

Another advantage of our invention is the readiness with which the upper portion, when worn or otherwise damaged, can be withdrawn from the lower portion, all that is necessary to accomplish this being the driving of the former in a direction contrary to that pointed out by the arrow 1 until the pins *f* coincide with the vertical portions of the openings *e*, when the upper portion of the rail can be readily detached.

We claim as our invention and desire to secure by Letters Patent—

The rail composed of the upper portion, A, with its longitudinal groove and pins *f*, and lower portion, B, with its longitudinal rib *b*, adapted to the said groove, and its openings *e*, all substantially as set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

J. S. BUTTERFIELD.
M. S. GREEN.

Witnesses:

C. B. PRICE,
H. HOWSON.