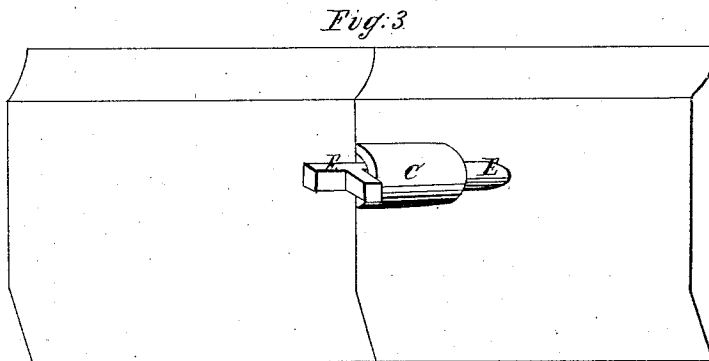
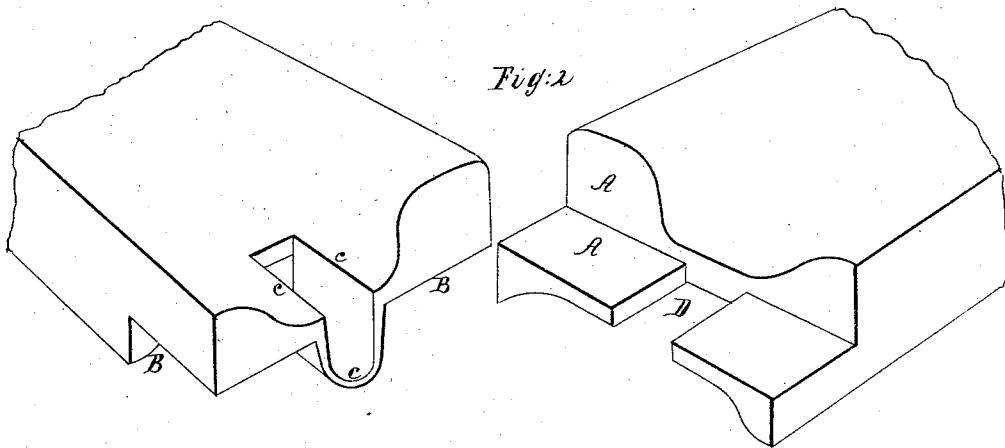
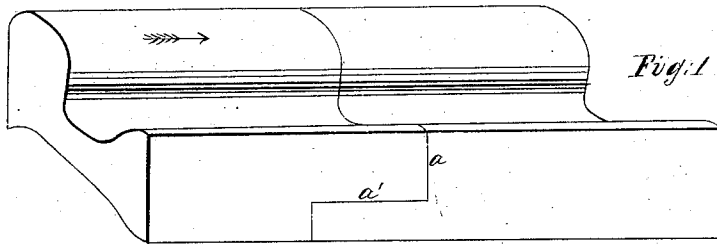


*W. C. Gould.*

*Rail Joint for Street Railroads.*

*N<sup>o</sup> 41,501.*

*Patented Feb. 9, 1864.*



*Witnesses*

*S. D. Law*  
*Alouzo C. Farham*

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# UNITED STATES PATENT OFFICE.

WILLIAM C. GOULD, OF NEW YORK, N. Y.

## IMPROVEMENT IN LOCK-JOINTS FOR STREET-RAILWAYS.

Specification forming part of Letters Patent No. 41,501, dated February 9, 1864.

*To all whom it may concern :*

Be it known that I, WILLIAM C. GOULD, of the city and State of New York, have invented a new and improved lock joint for securing together the ends of rails, such as are used in cities, and usually called "city and horse railroads;" and I do hereby declare that the following is a full, clear, and exact description thereof, and of its construction and manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and making a part of this specification.

It is well known that the form of the rails which are used in city railroads now so extensively being laid down for the conveyance of passengers from one part of a city to another, and which have of necessity to be laid down in streets crowded with the passing of wagons and vehicles of all descriptions, differs widely from that of those rails which are used on railroads where heavy rolling-stock is demanded and high rates of speed required. The method of travel on such city railroads is also somewhat peculiar, as the cars generally pass continuously in one direction, the number of cars used and the frequency of their trips requiring a distinct track for those moving in either direction.

My invention has reference to a method of fastening and keeping together the ends of such rails, so that lighter rails can be used, the motion of the cars rendered less unpleasant, and the cars themselves receive less injury.

Figure 1 is a side and top perspective view of a rail, such as is used on city railroads, and showing the ends of two rails lapped and locked together. Fig. 2 shows the ends of the two rails opened from each other, and showing the form of the joint. Fig. 3 is a bottom view of a rail and the key that locks the joint.

A portion of the upper part of one of the rails is cut away to a little below the central hollow of the rail, as shown at A A, Fig. 2, and as indicated by the lines  $a a'$ , Fig. 1, and the under part of the other rail is cut away, as shown at B, Fig. 2, so that when the ends of the two rails are placed upon each other they will form a lap-joint, as shown in Fig. 1. The end of the rail which laps over the end or section of the other rail is then placed in a suitable female die prepared for that purpose,

and by means of a corresponding male die the hollow projection or tongue  $c$  is formed, the rail having been first heated for that purpose, and which is made of the length of the lap. The drawings represent such part C as larger than it will be made in actual practice, its depth being intended to be only such that it shall extend below the thin part of the lap of the other rail just far enough to receive a key or piece of metal, so as to prevent the end of the upper rail rising or springing from the lower one. Through the lap section of the other rail a part is cut away, as shown at D, so as to allow the part C of the other rail to pass through it and receive a key or strip of metal, as shown in Fig. 3. The part C, instead of being shaped by dies, may be welded or riveted to the under side of the lap, or, when cast-iron rails are used, it may be formed by the casting. To prevent dirt, gravel, &c, getting into the part C, and thus working between the laps of the rail, a small piece of iron may be fitted to the upper part  $c$ , of the hollow tongue and driven tightly with a few blows of a hammer.

On the under side of the rail a key, E, and which need be only a thin, short piece of iron, passes through the part C, which extends below the rail, projecting a little each way beyond the hollow part C, so that its ends will rest on the under surfaces of both rails, as shown in Fig. 3. Such key will effectually hold the ends of the rails together and prevent them lifting or warping or curving, thus allowing the use of a lighter rail and render the rail more like a continuous one, thus securing greater comfort to passengers and lightening the draft. Such key may be kept in position by letting its head into the string-piece.

The end of one rail being thus caused to lock, substantially in the manner above described, into the end of the other rail, [the track is made substantially continuous, all lateral motion of the two rails upon each other is prevented, and neither rail can warp or bend away from the other. A much lighter rail can thus be used, as it has been considered that the weight of the rails may be reduced one-half, provided the ends are kept in perfect apposition, with a consequent great saving of expense, and far less animal power will be required to move the cars, which is very important, it having been estimated that horse-

power on railroads now costs \$33, where steam costs but \$1. The fastening of the ends of the rails also prevents the wave-like motion in the other parts of the rail and lessens noise and largely reduces the expense of repairing the road.

The use of the key E is not absolutely indispensable, though its use is deemed preferable, and is required where it is necessary for any particular purpose to hold and confine the ends of the rails upon each other. As, however, the cars on city railroads move in but one direction, and almost always in the same direction, it is not absolutely necessary to confine the laps together, as the weight and pressure of the car as it passes along in the direction indicated by the arrow in Fig. 1 (and the rails should always be so laid that the covering-lap shall lie in the same direction as the cars move) will cause the upper lap to lie close upon the under lap of the next rail as the car passes over, and thus make a continuous bearing surface, and prevent all jar and jolt, such as is now experienced when the wheel passes from one rail to another.

If the key is dispensed with, then the part or depression C need not extend downward

so much, but may be more shallow, and only sufficient to fill the recess D in the under lap, and in such arrangement also the part D need not be wholly cut out, but may be sunk or depressed sufficiently to receive a corresponding projection made upon the lap of the other rail. As the cars pass over the rails the projection on the upper lap will be pressed into the corresponding depressed part of the under lap, and thereby the two rails kept in line and all lateral movement of the ends of the rails prevented, and also all jar and jolt avoided.

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

1. The method of connecting the ends of rails for city railroads, so as to secure a continuous track, by causing one rail to lap upon and enter within another, substantially as described.

2. The use and application of the key E in combination with such laps substantially as and for the purpose set forth.

WM. C. GOULD.

Witnesses:

S. D. LAW,

ALONZO C. FARNHAM.