E. Sampson.

Railroad Rail.

No. 62,691. Patented Mar. 5, 1867.

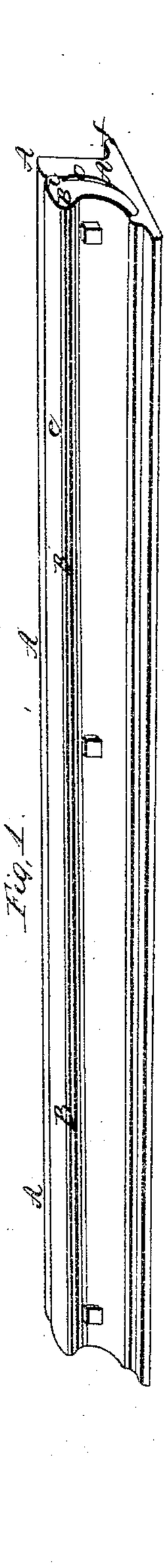

Fig. 1.

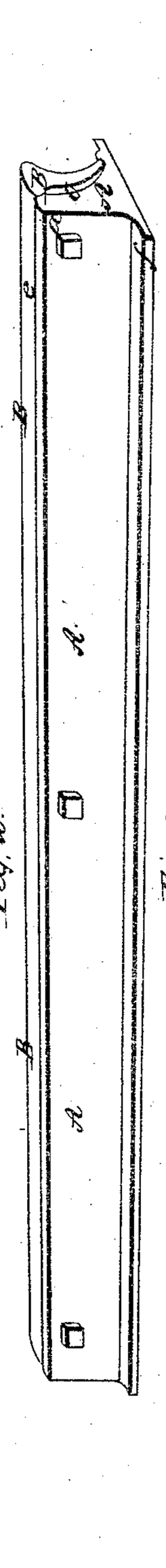

Fig. 2.

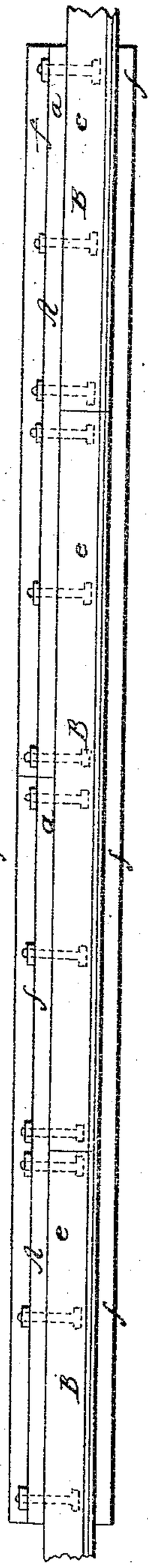

Fig. 3.

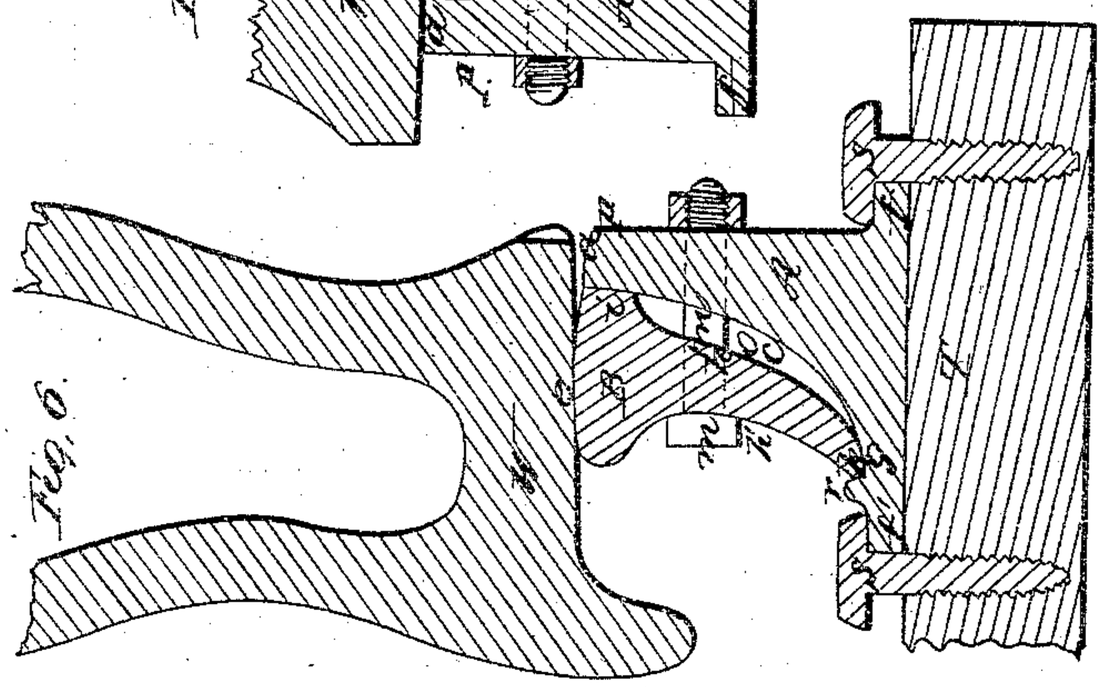

Fig. 6.

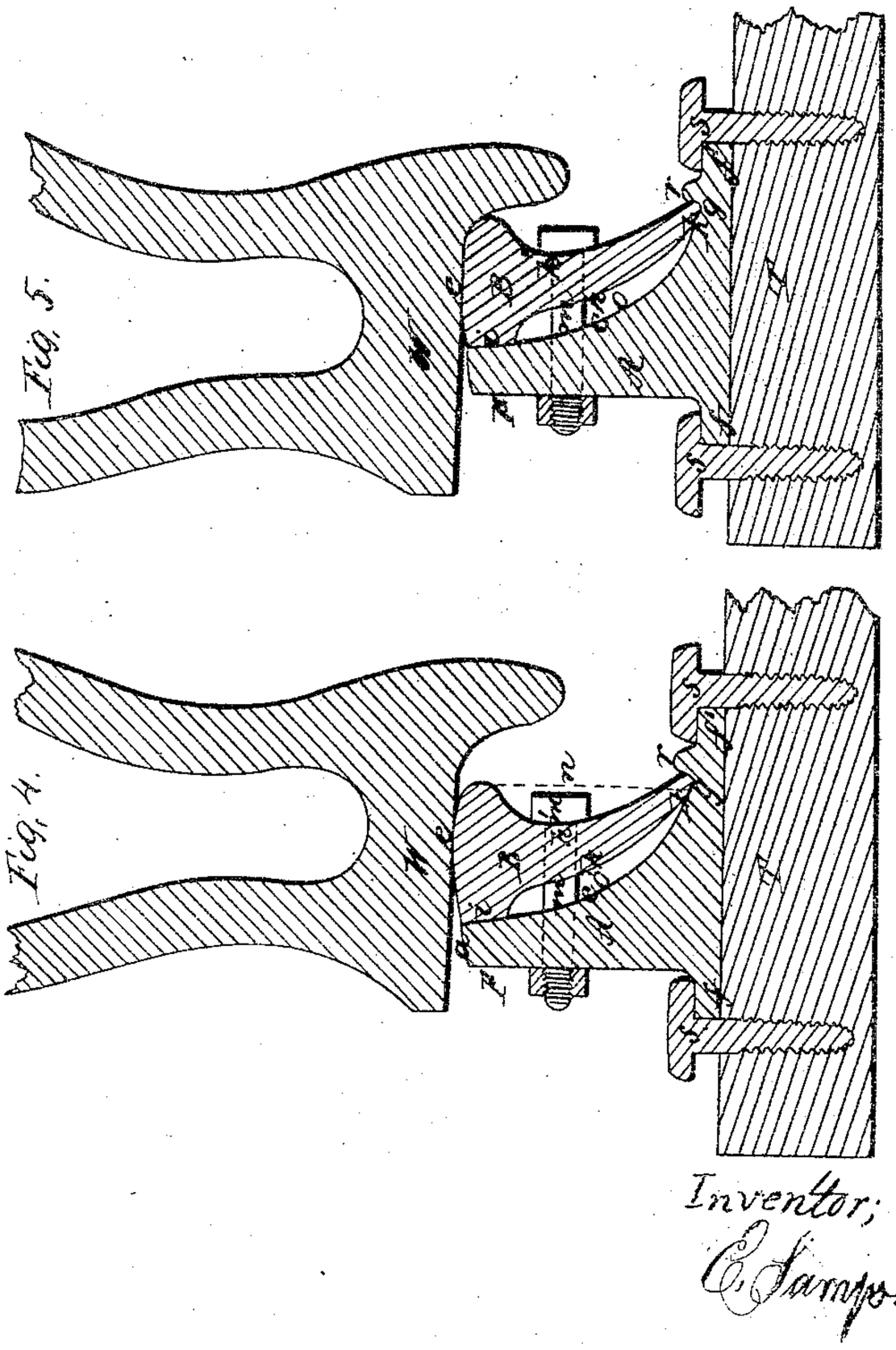

Fig. 5.

Fig. 4.

Witnesses;
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ELNATHAN SAMPSON, OF LANSINGBURG, NEW YORK, ASSIGNOR TO HIMSELF AND E. CHAMBERLAIN, OF SAME PLACE.

Letters Patent No. 62,691, *dated March* 5, 1867.

IMPROVED RAILROAD RAIL.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ELNATHAN SAMPSON, of the town of Lansingburg, in the county of Rensselaer, State of New York, have invented a new and improved Rail for Railroads; and I do hereby declare that the following is a full and exact description thereof.

The nature of my invention consists of using two bars or rails in combination, and so placed that the ends of either rail will come to the centres of the others; and thus each lapping the other half its length, alternate, forms a continuous rail. One of these rails we call the supporting or chair-rail. This rai may be made of ordinary iron, and when constructed of greater width on its bottom or base than ordinary rails, the chair now used can be dispensed with, and in this case the rail can be made from three-quarters to one inch lower than the rails now used. The top of this chair-rail is about one-half inch wide, and its out-track side is perpendicular, with a flange of suitable width running out from it. Its in-track side is in form or outline, first, a slight angle, falling into a concave line, which runs outward, falling downwards to a point about two or two and one-half inches from the perpendicular of the other side, and about five-eighths of an inch from the lower line of the base, where it drops down slightly so as to form, with a rib which projects up, a groove about three-eighths of an inch deep. The projecting rib is about five-sixteenths of an inch in width on its face, its side running down perpendicular about half an inch to the flange, which starts out from it. This chair-rail is secured to the ties. The other rail we call the track or bearing-rail. This rail is made of steel or a superior quality of iron, and is of such height as to project slightly above the top of the chair-rail, and of width to afford the necessary face for the wheel to run on. The outline of an end view of this rail is on its top a flatted curve, which terminates at the point where it rests against the top of the in-track side of the chair-rail. From this point it runs down about half an inch, slightly out of the perpendicular, in a line corresponding with the angle of the chair-rail, and then in a shallow ogee line to the groove of the chair-rail, in which it sits, then curving upwards into a concave line, which falls into a convex line, ending in the flatted curved line of the face, giving the rail an appearance not unlike a comma, with its head or dot flatted. This bearing rail is placed in the chair-rail, its lower edge resting in the groove of the chair-rail, and the angular edge of the top or face leaning against the angle of the chair-rail, and the whole face of the bearing rail contained within a line running one-fourth of an inch from and on a perpendicular with the bearing or lower edge of the rail, so that whatever weight is brought to bear on the rail its centre of gravity will always be in a line between the rib and the inside line of the chair-rail, and necessarily press the bearing rail against it. The concave side of the chair-rail with the ogee side of the bearing rail leaves, of necessity, a space between the two rails. This space is for the passage of air, which can circulate, and thus, to a degree, lower the temperature to which the rail may be heated in the summer months by solar action.

In putting down these rails, the chair-rail is first laid down and properly secured to the ties by spikes or bolts, as rails are now secured. The bearing-rail is then put down, or rather set in the chair-rail, as described, its lower edge resting in its groove, the inside edge of the face resting against the top of the concave side of the chair-rail, and at the same time the ends of the one rail meeting at the centres of the other; and when thus placed they are secured together by square or oval head-bolts passed through the bearing-rail first, then through the chair-rail, and tightened by nuts on the perpendicular side, or by rivets, or their equivalents.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation, reference being had to the accompanying drawings, and the letters of reference marked thereon, the same letters referring to like parts.

Figures 1 and 2 are perspective views of rails.

Figure 3 is a top view showing jointings and fastenings.

Figures 4, 5, and 6 are a cross-section with wheels running straight and on curve.

A, figs. 1, 2, 3, 4, 5, 6, is the chair-rail, made of ordinary quality of iron, and of the usual length of other rails, and in height from three to four inches. The top of this rail, *a*, is about one-half inch wide, and made with a slight sloping curve, so that the wheel W, figs. 4, 5, and 6, will not touch it, and at the same time slide the dust and sand that may fall on it off; though, if thought best, the top line *a* may be made straight or at

right angles with the line *p*, as shown in Figure 7, so that if the bearing-rail be made of iron instead of steel, the wheels can be carried over the jointings of the ends of the bearing-rail without the jumping motion which usually attends the passing of the wheels over their ends where joined. The outside line P, figs. 4, 5, and 6, falls perpendicular to the flange *f*, which is made of suitable width and thickness. The inside line *c* is concave, and runs out to fall in the groove *g*, which is partly formed of the rib *r'*, from which there starts another flange, *f'*, of width and thickness of flange *f*. This rail A is firmly secured to the ties T by means of the spikes or bolts, *s s*. This rail A supports and holds another rail, B, called the bearing-rail. This rail is made of the best quality of iron, or steel. The top, *e*, of this rail is made a curve slightly flatted, so that the wheels will have sufficient bearing surface. The inside edge, *i*, of the head of the rail is slightly bevelled, to meet the bevel or angle of the top of the concave line *c* of the rail A, figs. 1, 2, 4, 5, 6. From the lower termination of this bevel line *i*, the line turns under and down, forming the ogee shape line, *h*, which terminates at the bottom edge of the rail at *k*. This bottom edge *k* rests in the groove *g*. The outside line of this rail, B, commencing at the face line, is first convex and then concave, forming another ogee line, *h'*, and terminates at the bottom edge *k*. The concavity of this line *h'* permits the head of the bolt *m* to draw under edge of the head of the rail which projects over, and protects the bolt from contact with the flange of the wheel W when turning a curve, as in fig. 5. The bottom edge *k*, standing in the groove *g*, projects out beyond the outer edge of the head of the rail, as shown by the dotted lines *n*, fig. 4, so, whatever pressure is brought to bear on the rail B, its centre of gravity, being between the concave line *c* of the rail A and the dotted line *n*, tends to press the rail B harder against the rail A; and whether running in a straight line, as in fig. 4, or on the outer track, fig. 5, or on the inner track, fig. 6, the bevel of the wheel W being always the same, does not affect or change line of the centre of gravity. The chair-rail A being first laid and secured, as has been described, the rail B, with its lower edge, *k*, in the groove *g*, and its edge, *i*, against the side of the top of A, is so placed that their ends will meet at the centres of the rails A, fig. 3, and when so placed, the rails A and B are properly secured with the bolts *m m* or rivets; and when thus placed, we have the space or passage-way *o* running throughout the whole length of the rails.

The advantages of this rail over others are these: first, we can dispense with chairs; second, the chair-rail A can be made of common or ordinary iron, and yet be rendered safe by the rail B, which is of steel or of the best quality of iron; third, a steel or a better quality of iron rails can be afforded at one-half the price they are now obtained, as the quantity of that material is less than one-half in this rail B than those of the various forms now used; fourth, the bearing-rail B can be taken out, when worn, and replaced, in less than one-half the time now required to replace any other rail now in use; fifth, these rails, A and B combined, will support greater weight and resist greater strain than any other rail used, as the bearing edge *k* reacts against the bevelled edge *i*, when pressure is brought upon it, and combined with the stiff support of the rail A will more effectually resist the side strain which attends the turning of curves by the train when passing over the rails; sixth, the space *o* admits the circulation of air through the rail, and tends to counteract the expansive action of the sun.

I do not claim making rails continuous, or fastening them with bolts, rivets, or their equivalents.

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

1. The chair-rail A, constructed with its sides P C, top *a*, groove *g*, and rib *r*, together with the usual base and flanges, substantially as set forth and described.

2. The bearing-rail B, constructed with its track face *e*, bevelled inner edge *i*, sides *h h'*, bearing edge *k*, substantially as set forth and described.

ELNATHAN SAMPSON.

Witnesses:

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