

(No Model.)

O. O. WINTER.  
RAIL JOINT.

No. 505,181.

Patented Sept. 19, 1893.

Fig. 3.

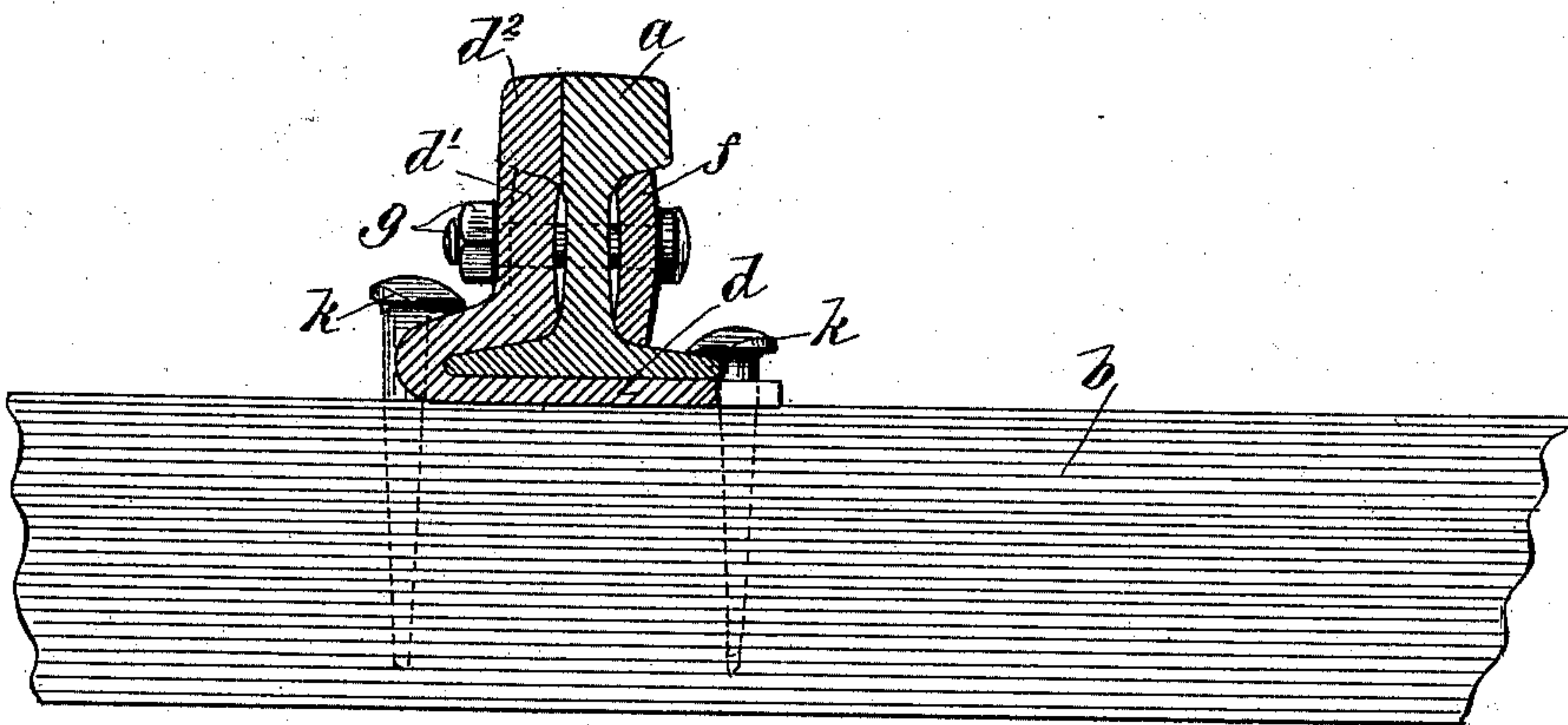


Fig. 2.

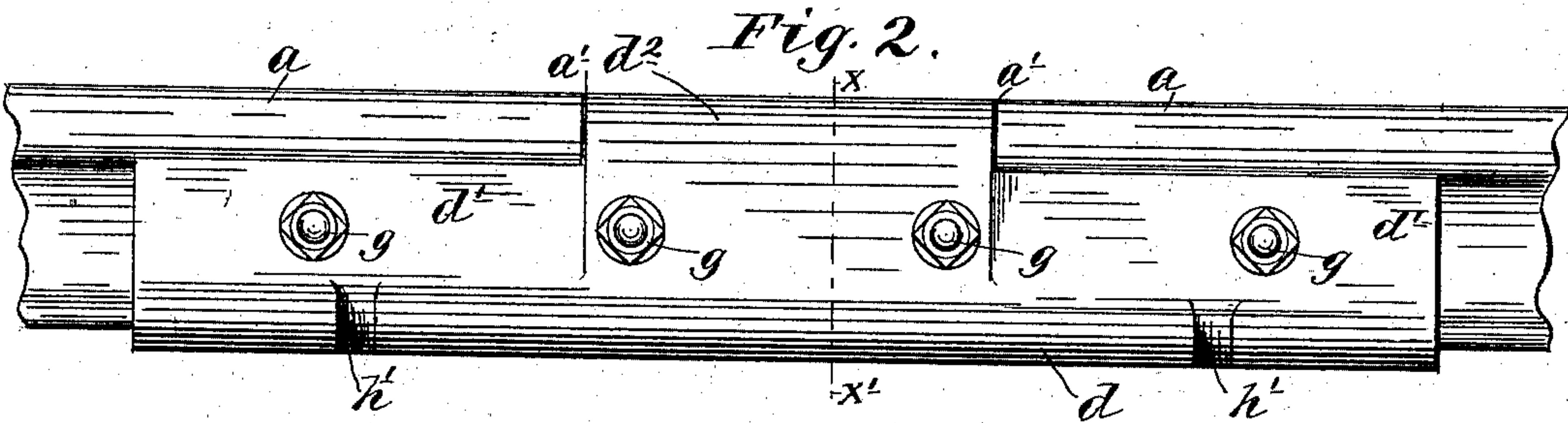
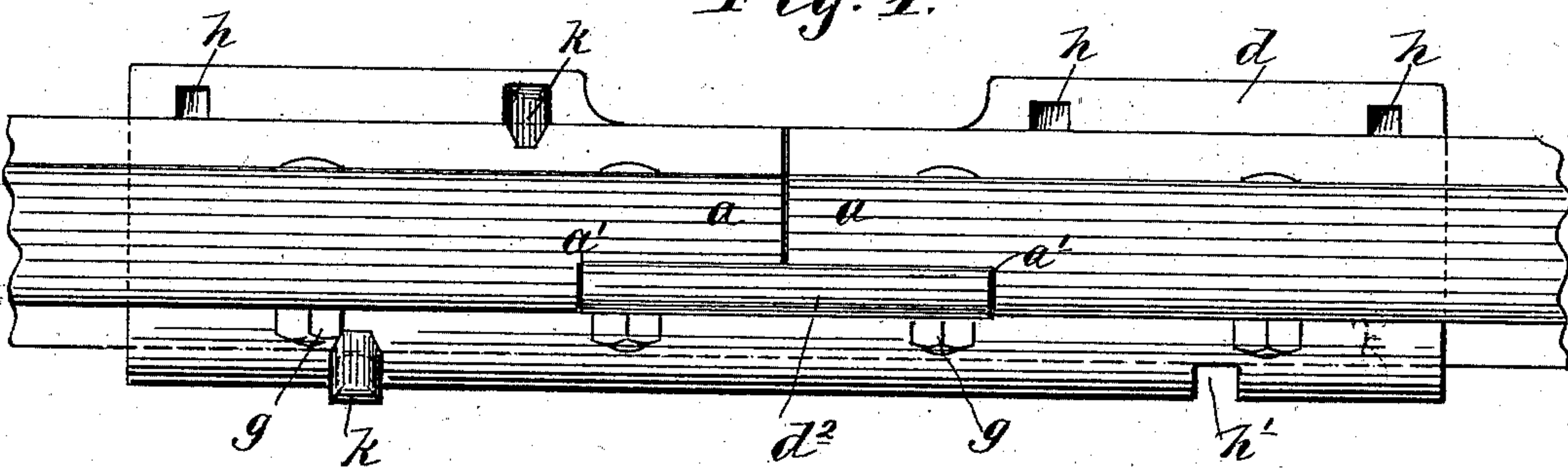


Fig. 1.



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# UNITED STATES PATENT OFFICE.

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## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 505,181, dated September 19, 1893.

Application filed May 5, 1893. Serial No. 473,096. (No model.)

*To all whom it may concern:*

Be it known that I, OSCAR O. WINTER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Rail-Joints; 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.

My invention relates to railway rail joints.

Great annoyances are produced to travelers, and great wear and tear both on the rails and rolling stock by the pounding which occurs at the open joints between contiguous rails. No matter how carefully a road may be ballasted, or how securely the rails may be held by the ordinary forms of chairs or fishplates, at the joints, there still remains the concussion or violent blows, when the wheels pass the joints of the rails. The life of the rail is measured by the life of the least durable part. These least durable parts are the ends of the rails; which on account of the concussions or constant series of violent blows, before referred to, wear away with rapidity, as compared with the body of the rail.

The object of my invention is to overcome all these limitations, both in respect to the excessive wear and tear on the rails at the joints, in respect to the excessive wear on the rolling stock from the said poundings or concussions, and in respect to the annoyances or discomforts to the passengers. I accomplish this result by providing a bridge plate, arranged both to span the joint between contiguous rails, and to serve as a carrier or bearing surface for the car wheels. For the purposes of giving the best support to the bridge-plate, for reinforcing the rails, and for giving great strength and rigidity to the joints, I construct the bridge-plate integral with an angle bar and chair, the whole device being applied as hereinafter fully described.

My invention in its preferred form, and in the preferred way of applying the same, is illustrated in the accompanying drawings.

Like letters refer to like parts throughout the several views.

Figure 1. is a plan view of a rail joint constructed according to my invention. Fig. 2. is a side elevation of the same, looking at the

exterior of the rail. Fig. 3. is a cross section on the line  $x x'$  of Figs. 1 and 2.

$a a$ , are the adjoining ends of a pair of contiguous rails, shown as of the standard T-shape.

$b$  represents one of the ties.

$d, d', d^2$ , represent my improved rail joint; of which the part  $d$ , is the chair portion, the part,  $d'$ , the angle bar, and the part  $d^2$ , the bridge-plate. The ball portions of the rails,  $a$ , have their outer flanges cut away, as shown at  $a'$ , to form fractional parts of a seat for the bridge-plate,  $d^2$ . The joint is applied, as shown in the drawings, with the chair portion,  $d$ , underlying the ends of the rails, the angle bar,  $d'$ , bolted through the webs, and to an inside angle bar or ordinary fish-plate,  $f$ , and the bridge-plate,  $d^2$ , fitting in the seat,  $a'$ , with the top of the same flush with the top of the ball of the rail. The chair and angle bar portions of the joint are extended in each direction, beyond the bridge-plate,  $d^2$ , and the bridge-plate, as well as the angle bar, are bolted through the webs of the rails, and to the inside fish-plate,  $f$ , by the ordinary bolts and nuts,  $g$ . The angle bar portion,  $d'$ , of the joint, as well as the fish-plate,  $f$ , are made slightly curvilinear, to permit the necessary yielding action. The chair portion,  $d$ , is provided with spike holes,  $h$ , on its inner flange, and with spike notches,  $h'$ , on its outer or angular flange, for application of the spikes,  $k$ , for holding the same in position. It is obvious that with this construction, a perfectly rigid joint will be formed between the contiguous rails, and that the bridge-plate,  $d^2$ , will constitute a bearing surface for the car wheels, which is practically continuous with the bearing surface of the rails. In other words, the tread of the car wheel will be on the bridge-plate,  $d^2$ , before it reaches the joint between the rails, and will be thereby carried over and on to the next rail, without any drop or pound at the joint.

It is obvious that when the parts are in position, and the chair portion is spiked down to the ties with spikes both through the inside holes,  $h$ , and the outside notches,  $h'$ , that the joint iron,  $d, d', d^2$ , forms a lock with the rails. The joint is thus rendered extremely strong and rigid, and it is not possible for the bridge-plate,  $d^2$ , to become displaced by



the downward pressure thereon from the car wheels. Moreover, the part cut away from the rails to form the seat, *a'*, is compensated for by the bridge-plate itself, and, in virtue of the construction of the joint iron as an entirety, and its locked engagement with the rails, the ends or jointed portions of the rails will be rendered as strong or stronger than the body of the rails. It should, of course, be noted that provision will be made, in the customary way, for expansion and contraction, by applying the bolts, *g*, through elongated holes for the bolts, *g*, in the web of the rail. The inner flange of the chair portion, *d*, as shown, is cut away at *m*, simply for the purpose of using less material; but it might equally well be continuous. The parts have been shown as applied to a suspended joint, the opposite ends of the chair being spiked to the pair of adjacent ties, *b*; but of course, the rail joint would be equally applicable if the joint between the rails were directly over the tie, the only difference required, being in the location of the spike holes and spike notches.

It should be here noted, that the inner spikes *k* which are driven through the holes *h* in the chair plate *d*, and impinge upon the inner foot flange of the rail, in addition to their ordinary function of holding the rail, serve to securely lock and clamp the joint iron to the rail, with the outer foot flange wedged into the angle portion of the joint iron. This feature of construction is very important, and is almost indispensable in a practical device, of the class described. Taken as an entirety, my rail-joint affords a device which has great strength and durability and which gives great security in locking the rails, and which, at the same time, is of low cost.

My invention, in the form in which I have

shown the same, is of a perfectly practical character, and will save its cost, many times over, in the additional life which it will give to the rails and the rolling stock; while, at the same time, it will entirely remove the annoyance to passengers resulting from the concussions or poundings at the open joints, on railways as hitherto constructed.

What I claim, and desire to obtain by Letters Patent of the United States, is as follows:

1. The combination with a pair of rail ends, having their outer ball portions cut away to form the bridge-plate seat, of the joint iron consisting of the rail-chair, angle-bar and bridge-plate, formed integral with each other, said chair portion extending inward beyond the inner foot flange of the rail, and provided with spike holes, in line with the inner edge of said rail-foot, whereby the inner spikes may be made to lock said parts together, substantially as described.

2. The combination with a pair of rail ends, having their outer ball portions cut away to form the bridge-plate seat, of the joint iron consisting of the rail-chair, angle-bar and bridge-plate, formed integral with each other, said chair portion extending inward beyond the inner foot flange of the rail and provided with spike holes in line with the inner edge of said rail-foot, and the fish-plate on the inner side of the rail, said parts being clamped together by means of bolts, and secured to the tie by means of spikes, substantially as described.

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

OSCAR O. WINTER.

Witnesses:

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