

(No Model.)

W. GOLDIE.
RAILROAD RAIL CHAIR.

No. 426,530.

Patented Apr. 29, 1890.

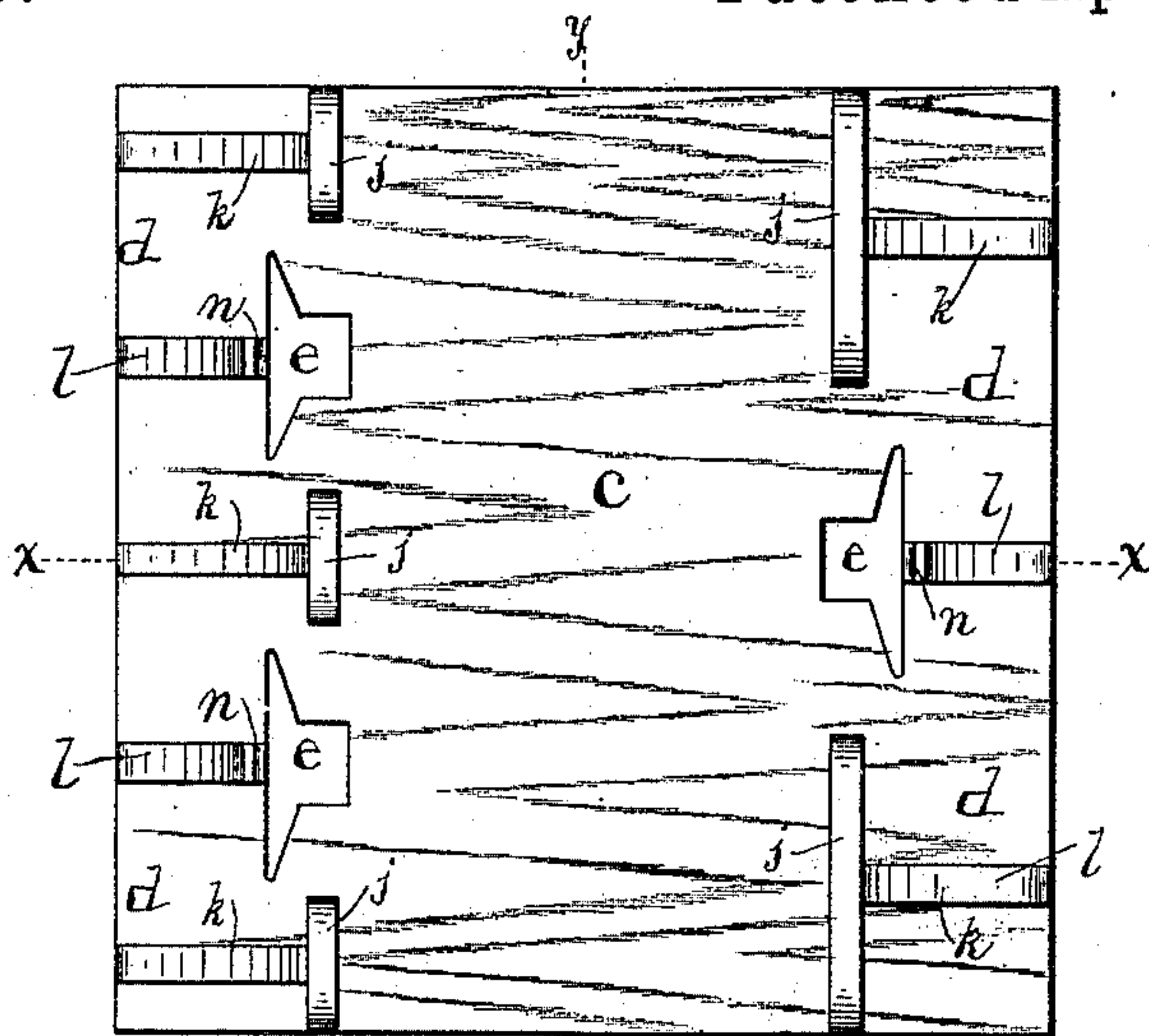


Fig. 1.

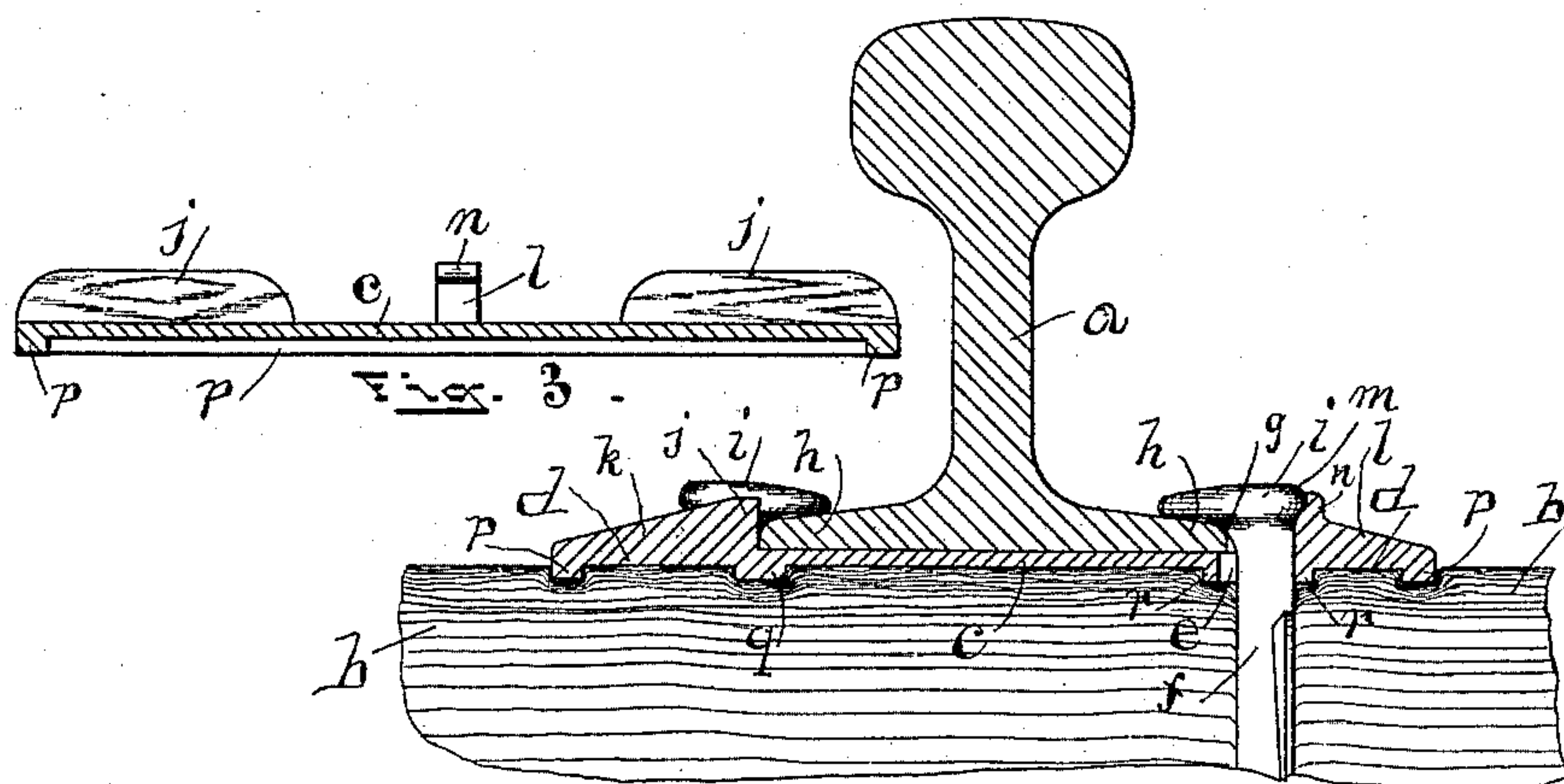


Fig. 2.

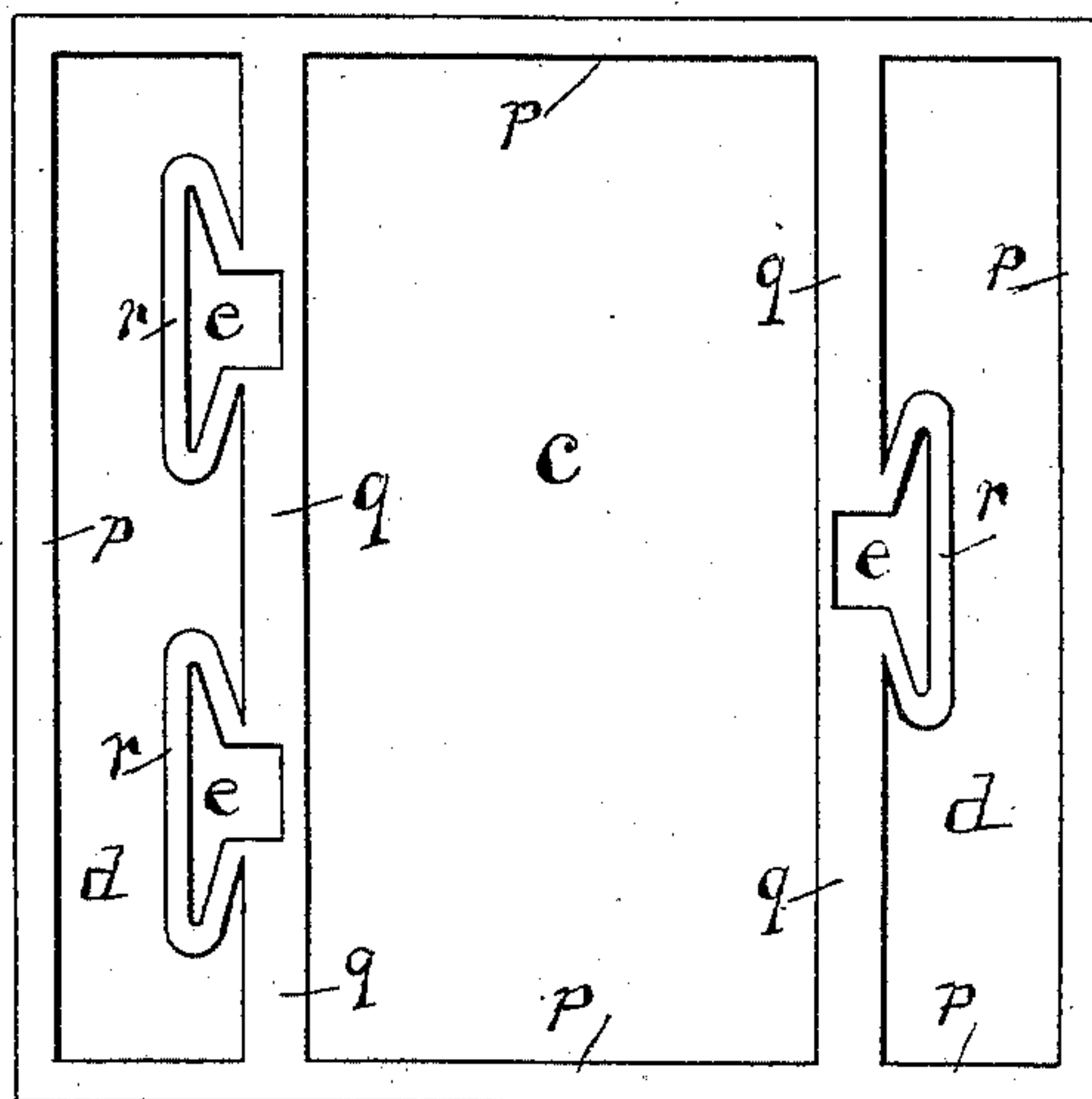


Fig. 3.

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WILLIAM GOLDIE, OF WEST BAY CITY, MICHIGAN.

RAILROAD-RAIL CHAIR.

SPECIFICATION forming part of Letters Patent No. 426,530, dated April 29, 1890.

Application filed February 16, 1888. Renewed October 16, 1889. Serial No. 327,166. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GOLDIE, a citizen of the United States, residing at West Bay City, in the county of Bay and State of Michigan, have invented certain new and useful Improvements in Railroad-Rail Chairs; and I do 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, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in chairs for railroad-rails which are placed between the rail and its supporting tie or sleeper.

With the common practice of building railroads the ties or sleepers, which are designed for holding and supporting the rails in position, are placed across the road-bed at suitable intervals, and the rails, usually of a T form, are laid across the surface of the ties and firmly held thereon by spikes, which are driven into the ties or sleepers in such a position that a projecting portion of the head of the spike will reach over and engage with the bottom flange or that portion of the rail which rests upon the surface of the tie. This form of rail-fastening is for a short time usually firm and solid, and perhaps safe; but after being in use for a very short time the rails thus secured by the compressing action and crowding strain of the passing trains, together with the effects of rain and damp weather upon the timber of the tie directly beneath the rails, become loose in their fastenings and unevenly supported by the ties, and are liable to spread apart and allow the cars to drop between or to become fractured and cause a derailment of the train, and the road hence requires continual care, attention, and labor to repair the track and retain the road in a reasonably safe and passable condition, and these difficulties obtain more especially when the supporting-ties of the road are of soft or porous wood, (cedar being largely used on account of its durability against decay,) which is more easily obtained than the harder and more dense varieties.

My invention consists, first, in a thin plate

or web of metal provided with suitable holes or openings for the spikes, and having projecting downwardly from the outer edges of its under side, and also from the edges of the spike-openings, a bead or portion raised from the under surface of the web or plate, whereby the greater compression of the timber beneath the plate will obtain at the outer edges thereof and at the edges of the spike-openings; second, in a thin plate of metal placed between the rail and the tie and provided with spike-openings and upwardly-projecting brace-pieces, forming guide-stops, and having brace portions projecting upwardly from the surface of the chair on the outside of the spike-openings and adapted to bear against the rear or outer side of a driven spike for supporting that portion of the spike which remains above the surface of the tie, the transverse dimension of the said brace portions being less than the width of the spike-body, whereby the spike may be withdrawn from the tie by the ordinary spike-drawing implements.

The first object of my invention is to provide a device of metal to be placed between the rail and tie which will receive the chafing or grinding action of the rail, instead of the tie or supporting-sleeper.

A second object is to provide a metal chair for railway-rails which connects at the surface of the tie the outer with the inner spike in such a manner that a crowding strain upon the rail will be sustained by both of the said spikes.

A third object is to provide a means of preventing during rainy and wet weather the water from saturating the wood at the surface of the tie of the portion directly beneath the rail, whereby the firmness and rigidity of the timber are preserved in the portions of the tie receiving the greatest wear, and which receives the compressing action of the passing loaded trains.

A fourth object of the invention is to furnish a means of supporting and sustaining on the rear or outside that portion of the spike which remains above the surface of the tie in such a manner that the ordinary spike-drawing implements may be used without change for withdrawing the spike from the tie.

A fifth object is to provide the rail with a metal support which will cover an area of the surface of the supporting-tie greater than the width of the rail-flanges and receive the sliding and compressing action of the passing train, whereby the surface of the tie is preserved from abrasion and mutilation.

My improved rail-chair is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the chair. Fig. 2 is a longitudinal vertical section of the same at $x x$, with a transverse section of the rail. Fig. 3 is a transverse section of Fig. 1 at $y y$. Fig. 4 is a plan of the under side of the improved chair.

a represents the railroad tie or sleeper, and b is the rail above and at right angles with the tie.

c is a thin web or plate of metal placed between the rail and tie, and is provided with the portions d , projecting laterally beyond the rail, and suitable openings e are formed in the portions d for the spikes f , which are driven into the tie a in the usual manner, the openings e being of any desired number and form required, and are suitably located to allow the neck or upper portion g of the spike-body to bear firmly against the lateral edges of the supporting-flange h of the rail, while the projecting portion of the spike-head i reaches over the upper surface of the rail-flange h and retains the rail, together with the chair, in position upon the tie.

Upon the upper surface of the laterally-extending portions d of the chair, and with their sides bearing against the lateral edges of the rail-flange h , are formed the raised portions j , and extending outwardly from the portions j are the brace-supports k . These stops or portions j are fitted to bear firmly against the lateral edges of the rail-flanges, which, together with the supporting brace portions k , operate to support and stiffen the plate and to distribute the weight of the rail partially to the lateral portions d , and to prevent the portions d from bending upwardly from the resistance of the tie beneath the plate and outside of the portions directly beneath the rail-flanges, and the stops j by having a wearing-surface of greater area prevent and relieve the neck g of the spike from the usual abrasion and cutting action of the rail-flanges. Upon the portions d , outside of the spike-opening e , are formed the upwardly-projecting brace portions l , beginning at the outer edges of the openings and extending to the edges of the web or plate, and are of a sufficient height above the edges of the openings to reach nearly to the upper portion of the spike-head, and are so arranged that in driving the spike the rear portion m thereof will engage with and force back to a slight distance the top or upper portion n of the brace-supports, which adapts the portions n to allow a slight adjustment to conform to the inequalities of different spike-heads. The lateral dimension of the brace portions l is somewhat less than the

width of the neck of the spike, which allows the ordinary spike-drawing implements to grasp the spike without change of construction.

One of the most essential features of this invention is the exclusion of water from the portion of the tie directly beneath the rail, and thereby prevent the saturation and softening and decaying of the said parts, which so quickly obtain with the common form of rail-fastenings, and this aim is accomplished by forming upon the edges of the under surface of the web c the portions p , projecting slightly below the surface of the web in such a manner as to form a continuous rim around the central portion of the web, so that when the chair is secured in position the greatest compression of the wood of the tie-surface thereof obtains at the edges of the plate. The dimension of this projecting portion in cross-section is such as to allow the rim or bead to be impressed slightly into the face of the tie without breaking or cutting into the grain of the timber, (which would not accomplish the result sought,) so that by closing together and packing the grain of the wood beneath the edge of the chair an obstruction is formed which prevents the water in rainy weather from passing beneath the chair and softening the timber at the portions of the tie which receive the greatest wear and which support the loads passing over the rails. Around the edges of the spike-opening e , and projecting downwardly from the under surface of the web c , are arranged the raised portions r . These portions r are of a form and dimension similar to the projecting rim p and perform the same function—i. e., prevent the water which may pass within the openings e from passing beneath the plate or chair—and, also, by compressing the timber at the surface of the tie around the spike-opening after the spike is in position another and very important result is obtained—that is, the spike is provided at the surface of the tie with an additional support at the tie-surface, a point where the greatest resistance is required against a crowding strain, and, also, the grain of the wood being forced firmly against the spike by downward compression at the tie-surface effectually closes any space which may exist between the spike and the walls of the opening, as the compressed grain of the timber is expanded toward the spike-body by the action of the dampness or wet and prevents the entrance of water around the spike, and thereby avoids the soaking and softening of the walls of the opening which support the spike-body, and retains the said walls in a firm and solid condition.

$q q$ are stiffening-ribs formed across the under surface of the plate c , and are so located that the center of their widths is directly beneath the line of the lateral edges of the rail-flanges, and they project below the surface of the web c to about the same distance as the portions p and extend to a short dis-

5 tance upon each side of the said line of the
 lateral edges of the rail-flanges and form
 stiffening braces or supports at the points of
 the chair which receive the greatest strain,
 and, being considerably wider than the rim
 10 *p* at the outer edges of the web, form a greater
 resistance for the portions of the web at the
 edges of the rail where the compressing-power
 is applied than at the outer edges of the por-
 15 tions *d* of the web, whereby the entire plate
 is forced evenly in position without bending
 the web at the lateral sides of the rail-flanges,
 and the portions *q*, which extend entirely
 across the web and join with their rim *p*, also
 20 form a further stop or impediment to prevent
 the water which may have entered beneath
 the lateral portions *d* from saturating the tie
 directly beneath the rail.

25 The effect upon the tie of the rim *p*, which
 entirely surrounds the central portion of the
 web, and the portions *q*, which join the rim *p*
 at their ends, is of very great benefit, as the
 saturation of the tie directly beneath the rails
 in the common mode of fastening operates to
 30 soften and disintegrate the fiber of the tim-
 ber, and the trains passing over the rails com-
 press and mutilate the fiber and cause the
 rail-flanges to sink into the tie-surface, and as
 the rails always remaining in position upon
 the ties prevents evaporation the parts below
 the rails are held in a saturated and softened
 condition for an indefinite period, so that the
 wood in this portion of the tie, which receives
 all of the wear and which sustains the entire
 35 load of the train, is during a great portion of
 the time saturated and damp and deprived of
 the required firmness and solidity.

40 A further and very important feature of my
 improvement is the thinness and light weight
 of the chair, which, together with the peculiar
 construction described, adding to the strength
 and efficiency of the chair, accomplishes the
 same result in relation to supporting the rail
 as would be obtained by a heavier and more
 45 cumbersome device, and greatly reduces the
 cost of its manufacture, as well as of its ap-
 plication to use in roads already in operation.

The form of the openings *e*, as herein shown,
 is adapted to be used with a spike having
 wings projecting laterally from the edges of 50
 its rear side; but the form of the openings
 may be changed to conform to the peculiar
 form of any other spike, and is in no way es-
 sential to the operation of my invention.

Having described my improvement, what 55
 I claim as new, and desire to secure by Let-
 ters Patent, is—

1. A rail-chair consisting of a thin web of
 metal placed between the rail and tie, and
 having portions extending laterally beyond 60
 the edges of the rail-flanges and provided with
 spike-openings, and provided upon the edges
 of its under side with a downwardly-project-
 ing continuous rim, substantially as and for
 the purpose set forth. 65

2. A rail-chair consisting of a thin web of
 metal placed between the rail and tie, and
 having its ends projecting laterally beyond 70
 the rail-flanges and provided with spike-open-
 ings, and provided upon the edges of its un-
 der surface with a downwardly-projecting
 continuous rim and with downwardly-pro-
 jecting portions or rims upon the edges of the
 said spike-openings, substantially as and for
 the purpose set forth. 75

3. The combination, with the rail and tie,
 of a thin web of metal placed between the
 rail and tie, and having its ends projecting
 beyond the rail-flanges and provided with
 spike-openings, and having brace-supports, as 80
 7, projecting upwardly from the portion of the
 web outside of the said spike-openings, and
 the spikes passed through the said openings
 into the tie, and with their rear sides bearing
 against the said brace-supports, substantially 85
 as and for the purpose set forth.

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

WILLIAM GOLDIE.

Witnesses:

JAS. E. THOMAS,
 FRANK H. DURELL.