No. 754,913. PATENTED MAR. 15, 1904.

A. BARNES.

RAILWAY RAIL JOINT.

APPLICATION FILED JUNE 29. 1903.

NO MODEL.

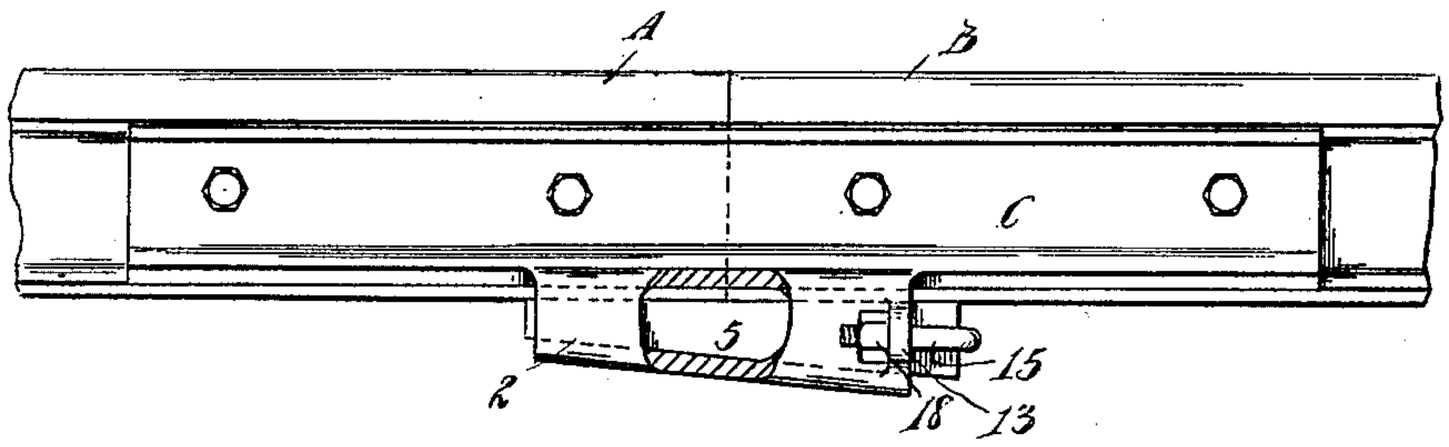

Fig 1.

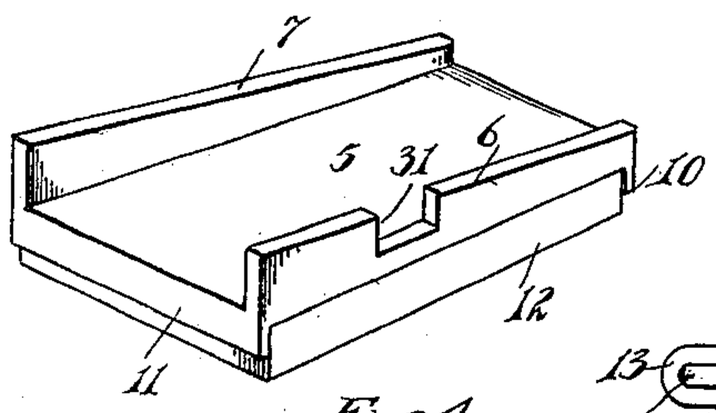

Fig 4.

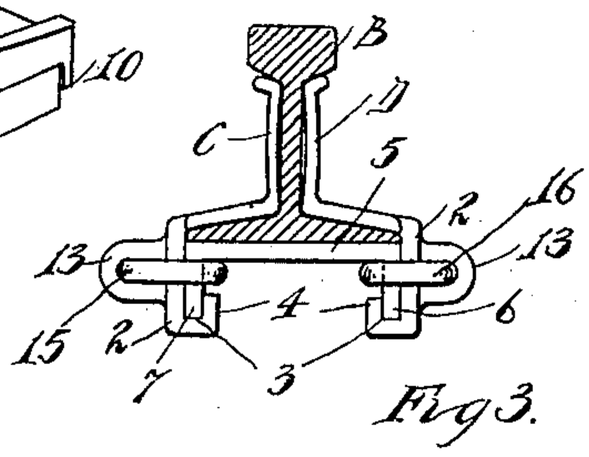

Fig 3.

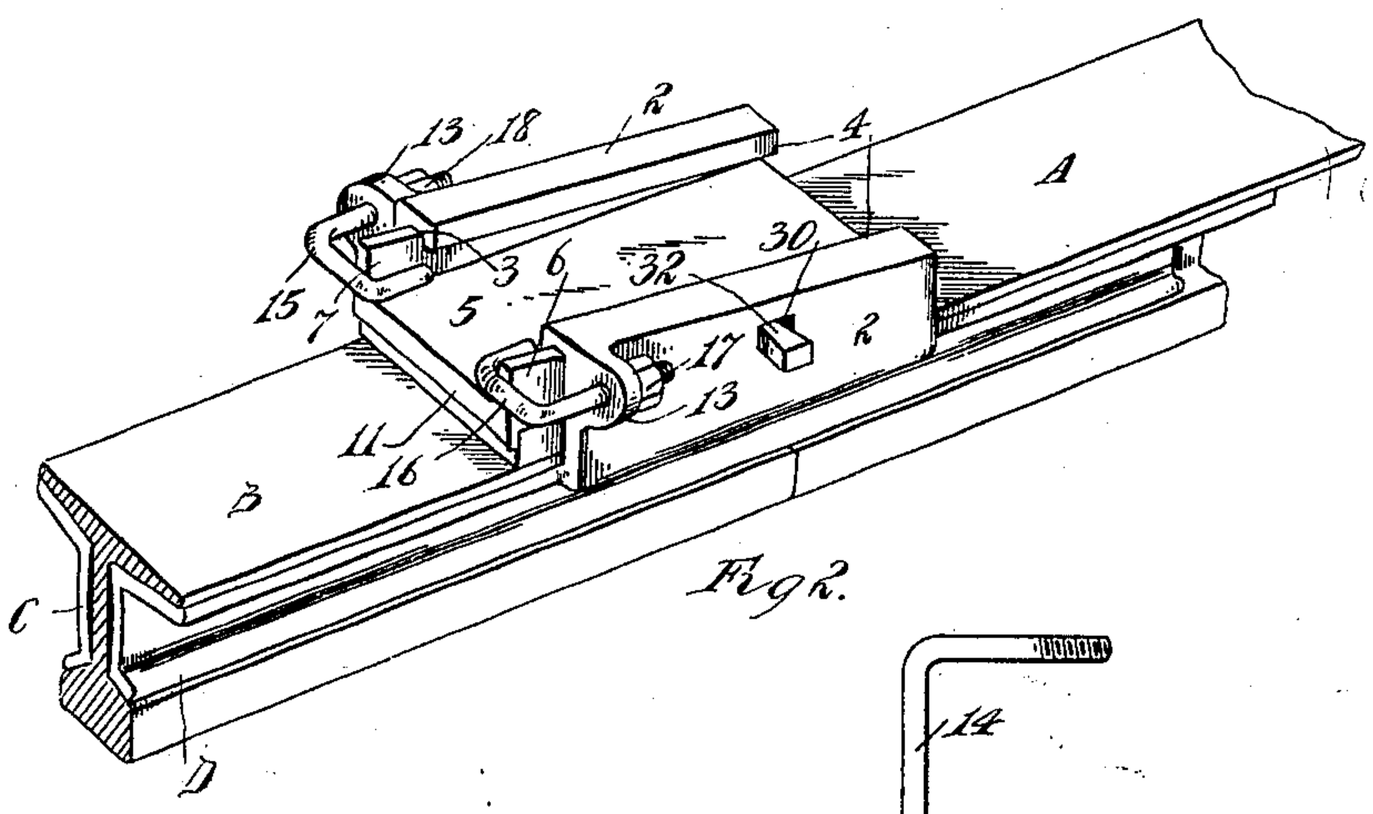

Fig 2.

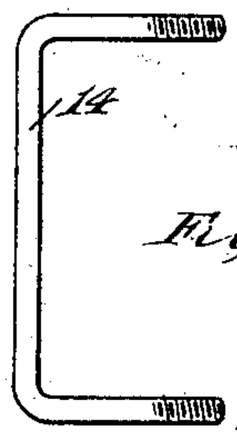

Fig 5.

WITNESSES
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No. 754,913. Patented March 15, 1904.

UNITED STATES PATENT OFFICE.

AMOS BARNES, OF DETROIT, MICHIGAN, ASSIGNOR OF TWO-THIRDS TO WILLIAM BARNES, OF PONTIAC, MICHIGAN.

RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 754,913, dated March 15, 1904.

Application filed June 29, 1903. Serial No. 163,562. (No model.)

To all whom it may concern:

Be it known that I, AMOS BARNES, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Railway-Rail Joints; and I 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 pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to railway-rail joints, and has for its object a coupling upon which the meeting ends of railway-rails are supported and by which the rails are held together firmly and yet with a degree of flexibility that corresponds to the flexibility of the rail itself.

At the present time railway companies are using engines and cars of great weight, so heavy that it is practically impossible to produce a rail that is sufficiently rigid to sustain the weight without bending or yielding somewhat. As the rail yields directly under the supporting-point of the heavy weight above it, parts of the rail that are somewhat removed from the supporting-point rise or tend to rise somewhat, and as the weight on its supporting-rollers moves along the rail there is a constantly-moving wave of depression between waves of elevation. So long as the rail is homogeneous the wave motion is homogeneous, and two results are accomplished: first, the power of moving the car remains constant; second, the wear along the rail is evenly distributed; but where two rail ends meet if the chair or joint support is weak there is too great a depression at the joint, and one rail end is liable to be depressed more than the other, so that the wheel strikes against the end of the rail or the rail ends strike together, breaking, splitting, and chipping them. If, on the contrary, the rail-joint support is too rigid, the line of rails does not flex at the joint to correspond with its flexure at other points, and there is a consequent jolting and pounding of the car.

I have produced in this invention a rail-joint support which is sufficiently rigid to hold the rail ends so that they flex together and is sufficiently flexible to allow the rail ends to flex to correspond substantially with the flexure at other points.

In the drawings, Figure 1 is a side elevation, partly broken away. Fig. 2 is a perspective of the rail-joint with the rails connected. The rail and joint are shown in reversed position. Fig. 3 is a cross-section. Fig. 4 is a perspective of the joint-wedge and a cushion used with it. Fig. 5 is a plan of a tie.

A and B indicate the rails.

C and D indicate two fish-plates, one at either side of the rails. Each fish-plate is provided with a hanging extension 2, that hangs below the side of the rail and is bent inward and upward along its lower edge to form a channel or groove 3, that lies inclined with reference to the body of the fish-plate. The inner wall of the groove 4 is made as a strong flange to engage with and hold the flange of the wedge, next to be described.

5 indicates a wedge made from a sheet of metal, with flanges 6 and 7, whose faces are inclined with respect to the body of the wedge 5. The end 8 of each flange is wider than the end 9. The slant of the flange 6 corresponds to the slant of the groove 3. At each end of the wedge 5 a short flange is turned up on the side opposite the flanges 6 and 7, and these flanges 10 and 11 extend across the body of the wedge and are intended to hold a cushion-block 12 in place between the face of the wedge and the bottom face of the rail A and B. The flanges 10 and 11 may be omitted and the cushion-block 12 not employed; but I prefer to use the flanges and the cushion-block.

Each hanger 2 is provided at its broad end with an ear 13, perforated to receive the end of a tie. There may be a single tie 14 or two ties 15 and 16, as may be desired.

The fish-plates C and D are placed along the two rails A and B and bolted together by bolts that extend through holes in the webs of the rails in the usual manner. When so assembled, there is below the meeting ends of the rails a wedge-receptacle into which the wedge-block 5 is slipped or driven, with or without the

cushion-block 12 between it and the rail ends. After the wedge-block has been driven sufficiently a tie 14 or ties 15 and 16 are placed in position, with the ends of the tie or ties projecting through holes in the ears 13, and holding-nuts 17 and 18 are run on the ends of the ties. The wedge-block 5 interlocks, by means of its flanges, with the grooved flanges of the hanging parts of the fish-plates and serves as a tie to hold the fish-plates together and overcomes a difficulty that has been sometimes experienced with fish-plates having flanges that extend under the rail, in which it has been found that the vertical vibrations of the rail ends gradually bend the flanges downward and spread them. When this happens, the joint is weakened, the possibility of vibrations of the rail ends increases as the flanges of the fish-plate spread, and the entire coupling soon becomes useless. In the present invention the wedge-plate surface has a tie to hold the fish-plate together and itself takes the thrust of the rails.

A substitute fastening for the tie is shown in Fig. 3. A notch 31 is cut in the flange of the plate 5 and a square hole 30 cut through one of the hangers and a wedge 32 driven in.

What I claim is—

1. In a rail-joint support, in combination with fish-plates, each of which is provided with a hanger provided with an inturned inclined grooved flange, a wedge-plate provided with flanges adapted to engage in the grooves of the first-mentioned flanges, substantially as described.

2. In a rail-joint support, in combination with fish-plates, each of which is provided with a hanger having an inturned grooved flange with the bottom of the groove inclined to the body of the fish-plate, a wedge-plate provided with flanges, the face of the flanges being inclined to the body of the wedge-plate, and means for holding the wedge-plate in position in the grooved flange of the fish-plates, substantially as described.

3. In a rail-joint support, in combination with fish-plates provided with an inclined engaging part, a wedging tie-plate engaging the fish-plates underneath the rail, and means for holding the wedge in place, substantially as described.

4. In a rail-joint support, in combination with fish-plates provided with inclined engaging parts, a wedging tie-plate engaging the fish-plates underneath the rail and a cushion interposed between the wedge and the rails, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

AMOS BARNES.

Witnesses:
CHARLES F. BURTON,
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