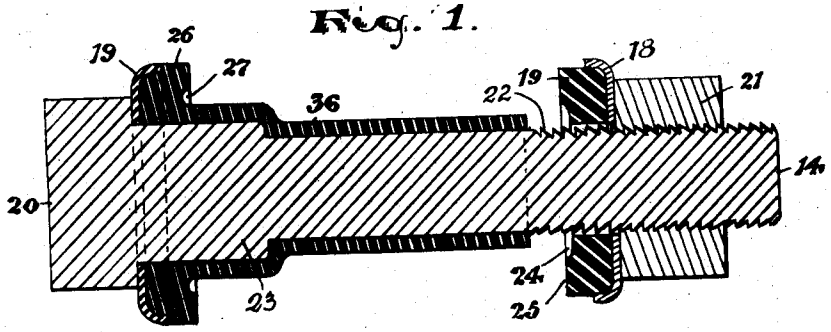
No. 813,998. PATENTED FEB. 27, 1906.

B. G. BRAINE.

INSULATED RAIL JOINT.

APPLICATION FILED OCT. 31, 1903.

Fig. 1.



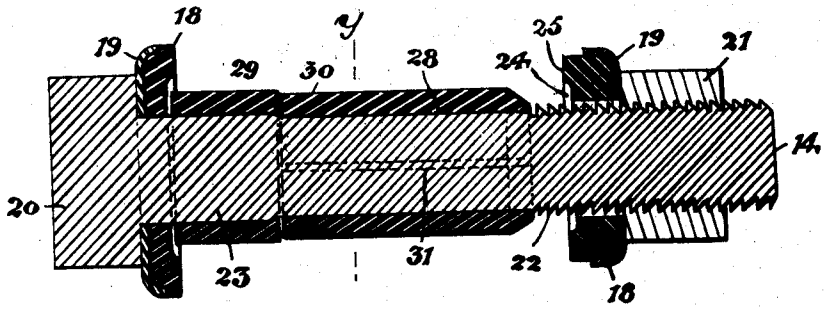


Fig. 2.

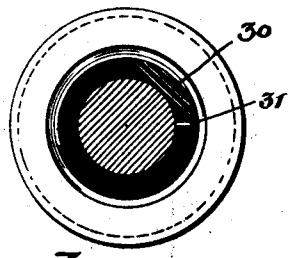


Fig. 3.

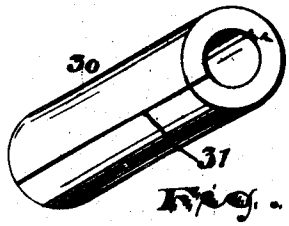


Fig. 4.

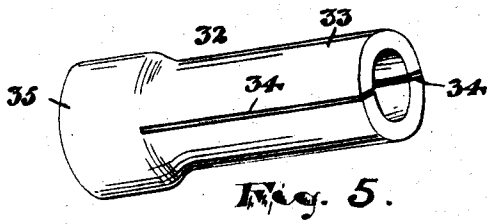


Fig. 5.

WITNESSES:

Henry Kay

Russell M. Everett

INVENTOR:

Bancroft G. Braine,

BY

Charles H. Peck

ATTORNEY.

BEST AVAILABLE COPY

UNITED STATES PATENT OFFICE.

BANCROFT G. BRAINE, OF NEW YORK, N. Y., ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE RAIL JOINT COMPANY, A CORPORATION OF NEW YORK.

INSULATED RAIL-JOINT.

No. 813,998. Specification of Letters Patent. Patented Feb. 27, 1906.

Application filed October 31, 1903. Serial No. 179,295.

To all whom it may concern:

Be it known that I, BANCROFT G. BRAINE, a citizen of the United States, residing at New York, in the borough of Brooklyn and State of New York, have invented and produced a new and original Improvement in Insulated 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, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to certain improvements in bolts and washers for use on the insulation of railway rail-joints.

The objects of the present improvements are to secure a washer at the end of the bolt which will not be forced at its inner edges into the bolt-perforation in the fish-plate, to at the same time provide a firm and solid seating of the washer against the plate, to secure an insulating-sleeve which will not slide off the bolt, and to obtain other advantages and results, some of which may be referred to hereinafter in connection with the description of the working parts.

The invention consists in the improved clamping-bolt and in the arrangements and combinations of parts of the same, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

Referring to the accompanying drawings, in which like numerals of reference indicate corresponding parts in each of the several figures, Figure 1 is a central longitudinal section of the bolt and its insulating means, and Fig. 2 is a similar section showing certain modifications of construction. Fig. 3 is a cross-section of the bolt and its insulation, as upon line *y*, Fig. 3. Fig. 4 is a perspective view of the insulating-sleeve shown in Fig. 2, and Fig. 5 illustrates a further modified form of sleeve.

The bolt-body 14 is inclosed by a sleeve 36, of insulating material, the holes in the rail-web and fish-plates (not shown) being large enough to loosely receive the same, and at the ends of this sleeve, outside the fish-plates, are washers 18 18, of insulating material. The outer sides of said washers are protected by metal washers or shields 19 19, and against these latter are adapted to bear, at one end, the head 20 of the bolt and at the other end a nut 21, screwing upon the threaded end 22 of the bolt. The end of the bolt-shank next its end 20 is preferably made oval in cross-section, as at 23, or angular, so as to lie in a correspondingly-shaped perforation of the fish-plate and prevent turning or twisting of the bolt.

Heretofore the insulating-washers 18 have been flat on both sides or of uniform thickness, and in their use a great difficulty has been experienced from the fact that that portion of the washer at its inner annular margin had no bearing at the face of the washer against the fish-plate because of the large perforation made to receive the bolt and its insulating-sleeve. In usage and under the constant pressure of tightening the nuts 21, therefore, the said inner marginal portion of the insulating-washers 18 were pressed or forced into the perforation for the connecting-plate until the washer practically lost its shape. In carrying out my invention, however, I cup or recess the inner face of the washer, as at 24 in Figs. 1 and 2, so that an outer annular bearing-surface 25 is secured to fit firmly against the fish-plate around its perforation for the clamping-bolt. Obviously this recess may vary in depth and also in diameter so long as the difference in diameters of the recess and central opening of the washer is not less than the difference in diameter of the perforation in the fish-plate and the insulating-sleeve upon the bolt which lies in said perforation. By this construction the inner face of the insulating-washer does not engage the edges of the perforation in the fish-plate, but simply a flat surface, and wear is greatly reduced. In the event of the washer being formed integral with the sleeve at one end, as shown at 26 in Fig. 1, the recess becomes an annular groove 27 in the washer just outside the line of meeting of the walls of the sleeve with said washer. Further trouble has been experienced by reason of the insulating-sleeves sliding off the bolts, as in handling, and to obviate this I make that portion of the bolt next to its threaded end of somewhat smaller diameter than the said threaded portion, as at 28 in Fig. 2, the measurement of the threaded portion being taken from the outer edges of the threads. The insulating-sleeve is then made to fit this

reduced portion 28 of the bolt and is slit or slotted longitudinally to allow it to expand to slide over the threaded end portion of the bolt. When in place, its resiliency closes it around the reduced bolt portion, and its sliding off endwise is prevented by engagement with the threads 22.

Under some conditions I may make separate insulating-sleeves 29 and 30 for the oval and round portion of the bolt, and in this case only the sleeve 30 for the round portion of the bolt is slotted at one side, as at 31 in Figs. 2, 3, and 4, since the oval sleeve 29 will readily spring over the threaded end of the bolt. Where the oval and round portions of the sleeve are in one piece 32, as shown in Fig. 5, the round portion 33 is slotted at opposite sides, as at 34 34, clear up to the oval portion 35, so as to allow it to spring over the threaded end 22 of the bolt.

It will be noted that the split sleeve described enables the bolt and its insulation to be manufactured separately and assembled afterward at pleasure. Under some conditions, however, the insulating-sleeve may be molded or otherwise formed directly upon the shank of the bolt, so that it becomes an integral part of the bolt and is not removable therefrom except by breakage. In this case the insulated bolt is a single article of manufacture.

Preferably the end of the insulating-sleeve upon the bolt is tapered at its end next the threaded end of the bolt, as shown in Fig. 2, so that the bolt and sleeve together will more readily enter the bolt-holes in the fish-plates and web of the rail.

Having thus described the invention, what I claim as new is—

1. The combination with the bolt having a head at one end and a screw-thread at the opposite end, of an intermediate sleeve of insulation hugging said bolt, and washers at the ends of said sleeve and having recesses at the sides toward said sleeve.

2. The combination with a bolt having a reduced portion intermediate of its extremities with shoulders or stops at the ends of said reduced portion, of a split insulating-sleeve upon the reduced portion.

3. The combination with a bolt having a head at one end and a threaded portion at the other, and being reduced intermediate of said ends, of a resilient split insulating-sleeve upon said reduced portion.

4. The combination with a bolt, of an insulating-sleeve upon the shank of said bolt, and an annular portion of insulation at one end of said sleeve, projecting peripherally beyond the same, and having its side next the sleeve annularly recessed.

5. The combination with a bolt, of an insulating-sleeve upon the shank of said bolt, and a washer at the end of said sleeve having in its side adjacent to the sleeve an annular recess of greater diameter.

6. The combination with a bolt having a reduced portion intermediate of its ends, an insulating-sleeve upon said reduced portion, and an annular portion of insulation at one end of said sleeve, projecting peripherally beyond the same, and having its side next the sleeve annularly recessed.

7. The combination with a bolt, of an insulating-sleeve upon the shank of said bolt and having its end next the entering end of the bolt tapered at the outer edges, and an annular portion of insulation at the other end of the sleeve, next the head of the bolt, projecting peripherally beyond the same, and having its side next the sleeve annularly recessed.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of October, 1903.

BANCROFT G. BRAINE.

Witnesses:
CHARLES H. PELL,
RUSSELL M. EVERETT.