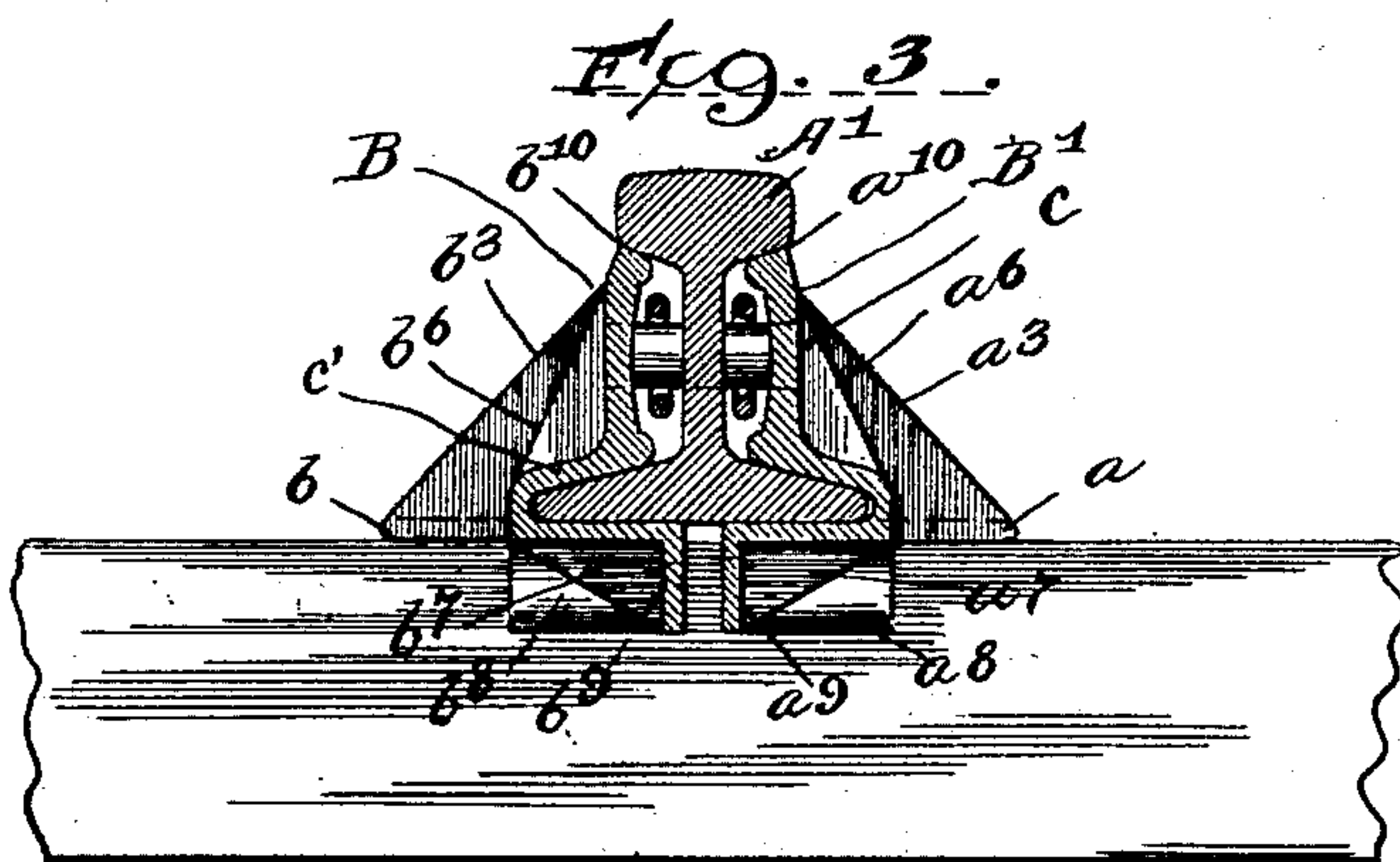
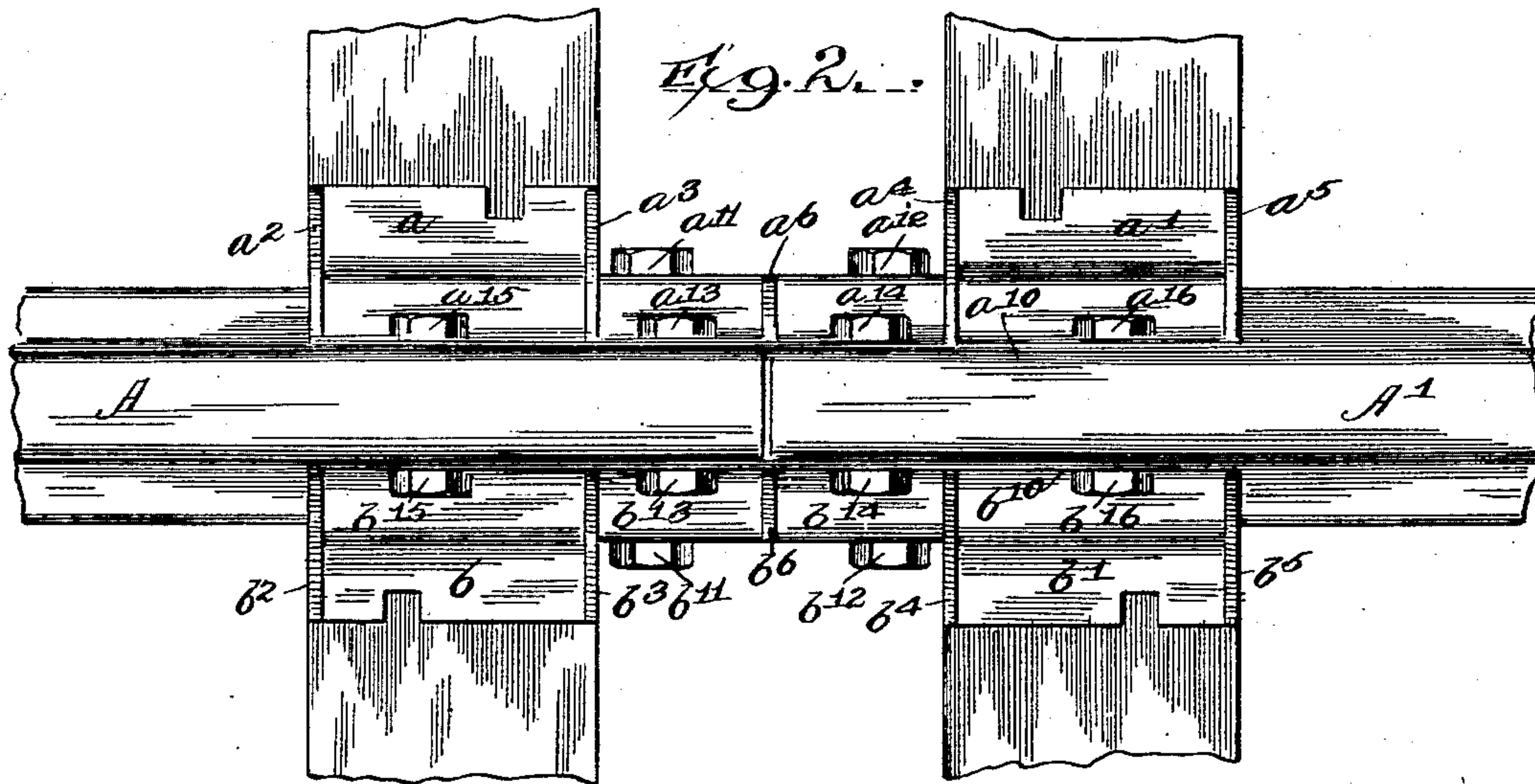
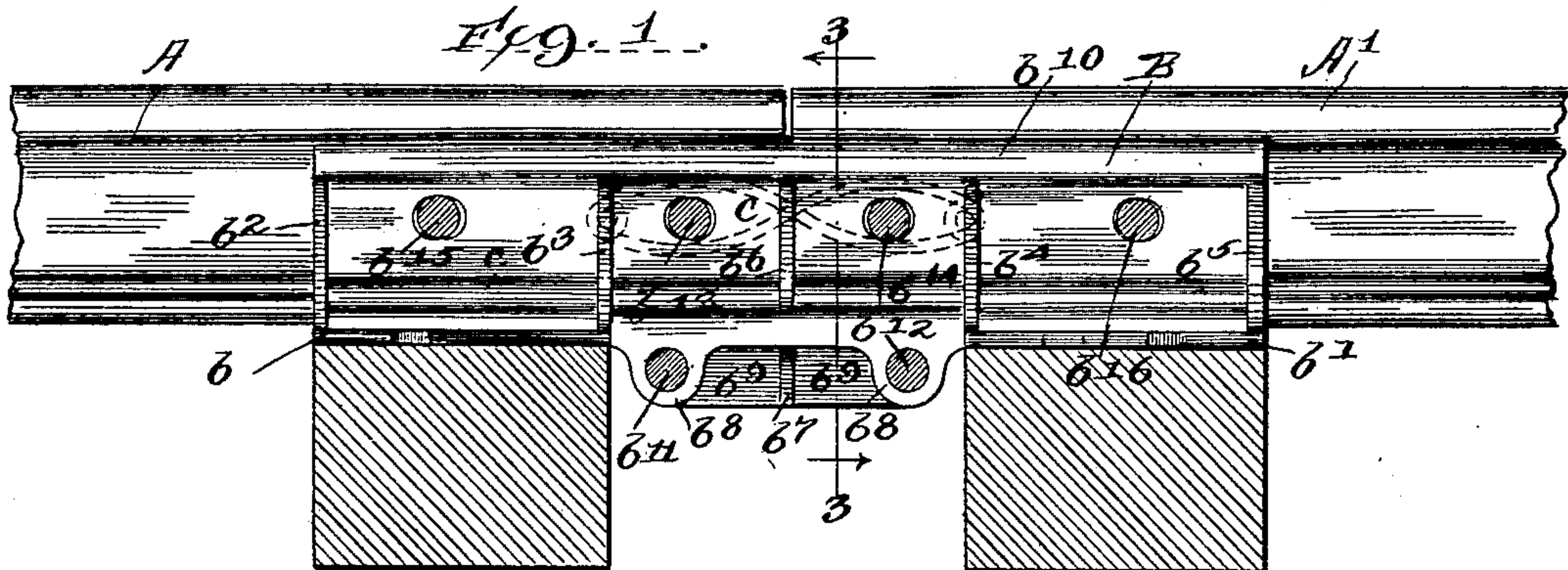


No. 677,167.

Patented June 25, 1901.

F. BAIN.  
RAILWAY RAIL JOINT.  
(Application filed Feb. 21, 1901.)

(No Model.)



Witnesses:  
H. P. White.  
Ray White.

Inventor:  
F. Bain



# UNITED STATES PATENT OFFICE.

FORÉE BAIN, OF CHICAGO, ILLINOIS.

## RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 677,167, dated June 25, 1901.

Application filed February 21, 1901. Serial No. 48,253. (No model.)

*To all whom it may concern:*

Be it known that I, FORÉE BAIN, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented  
5 certain new and useful Improvements in Railway-Rail Joints; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable  
10 persons skilled in the art to which it appertains to make and use the same.

The object of my invention is to provide a rail-joint by means of which the abutting ends of the adjacent rails in a railway-track may be so firmly and intimately held together  
15 as to produce a result that, for all intents and purposes, is equal in effect to that of a continuous unbroken rail.

By means of my joint the head of the rail is supported in a vertical position and a bodily support against lateral strain is also afforded. By providing an unbroken metal support under the base of the ends of the rails through the entire length of the joint a vertical relative displacement of the rails is  
25 prevented. The curved vertical portion contained between the head and flange and on either side of the rail is reinforced at points where the rails meet, which adds great strength to withstand the transverse vertical  
30 and lateral stress and shock to which the joint is subjected.

The distribution of metal in the general form and construction of my joint provides the highest realization of strength, rigidity,  
35 and sufficient elasticity for the purpose designed.

In the drawings, Figure 1 is a side elevation of my joint, showing it applied to the ends of two abutting rails. Fig. 2 is a plan  
40 view of the same. Fig. 3 is a transverse section through lines 3 3 of Fig. 1.

In all the figures the same letters of reference indicate similar parts.

Two like sections of my device, which are  
45 designated generally as B and B', when placed on opposite sides of the rail and bolted together, as shown, constitute the joint.

a and a' and b and b' are outward extensions of the rail-base support.

50 c and c' are vertical curved sections, which form a bearing between the top surface of the base and the under surface of the head of the

rail. These angle-bars are perforated with holes for the admission of the bolts, which also pass through the rail.

Bolts  $a^{11}$  and  $a^{12}$  are designed to pass through the joint under the base of the rail. Between these bolts is a truss  $a^9$  and  $b^9$  for supporting the center of the rail. The respective trusses are braced by means of an angle-web  $a^7$  and  $b^7$ . This brace increases the cross-section of the joint at points where the two rails meet. Similar braces in the center of the joint  $a^6$  and  $b^6$  extend from a point near the top of the vertical curved portions to the bottom thereof and serve to further increase the cross-section at the point where the two rails meet by adding strength and rigidity to the joint at the point subjected to the greatest strain. This is a feature of great importance in my invention. By making these braces in this form great strength is secured, which is desirable, and the metal may be made thin, so that the malleable effect will extend sufficiently into it for the purpose of making the entire metal malleable, homogeneous, and tough.

$a^8$  and  $b^8$  are bosses on the lower part of the respective sections, through which the bolts  $a^{11}$  and  $a^{12}$  are designed to pass, by means of which the lower part of the joint is forced in contact with the sides of the rails. The ribs  $a^2$ ,  $a^3$ ,  $a^4$ , and  $a^5$  on the section B' extend from a point near the top of the vertical curved portion to the top of the laterally-extending extremity of the base-plate a, which passes also under the rails A and A'. These ribs form rigid braces for supporting the curved portion in a vertical position and for holding the base-plate in the proper relation thereto. The laterally-extending base-plate affords a larger surface in contact with the tie upon which the rails rest, so that the weight which comes upon the rail will not embed the rail into the tie on account of the large surface over which the pressure is distributed. There is sufficient space between the inner surface of the vertical outwardly-curved section and the vertical web of the rail for bonds, so that the rail may be bonded together and the bonds covered by the joint, and thus protect them from accident or intended injury.

When the joint-sections are drawn together by means of the bolts, the vertical curved



portions are wedged in tightly between the under surface of the rail and the top surface of the flange and do not come in contact with the vertical web of the rail. By this construction the head of the rail is directly supported thereby. A portion of the vertical stress comes directly through the rail-head and angle-bar and is distributed over a larger surface on the tie by means of the curved portions, rail-bases, braces, and tie-plates, which also sustain the rail in a vertical position against lateral thrusts and strains.

Having described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a rail-joint for securing the ends of rails together, the combination of two like vertical sections curved outwardly from the web of the rail, each adapted to fit the rail along its entire length between the under surface of the heads and the flange thereof, a rail-base plate under the base-surface of the rail extending longitudinally the entire length of the joint and extending laterally at each end, forming tie-plates, an intermediate folded portion between said base-plate and said curved vertical section, vertical webs connecting said vertical section, folded portion and tie-plates, and other vertical webs connecting said vertical outwardly-curved section and said folded portion at points inter-

mediate of said tie-plates, substantially as set forth.

2. In a rail-joint for securing the ends of rails together, the combination of two like vertical sections curved outwardly from the web of the rail, each adapted to fit the rail along its entire length between the under surface of the heads and the flange thereof, a rail-base plate under the base-surface of the rail extending longitudinally the entire length of the joint and extending laterally at each end, forming tie-plates, an intermediate folded portion between said base-plate and said curved vertical section, vertical webs connecting said vertical section, folded portion and tie-plates, other webs connecting said vertical, outwardly-curved section and said folded portion at points intermediate of said tie-plates, a perforated boss integral with each section under the rail, for the reception of a bolt, on each side of the longitudinal center, and a web joining said bosses to form a truss, substantially as set forth.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 19th day of February, A. D. 1901.

FORÉE BAIN.

Witnesses:

HARRY R. D. WHITE,  
M. F. ALLEN.