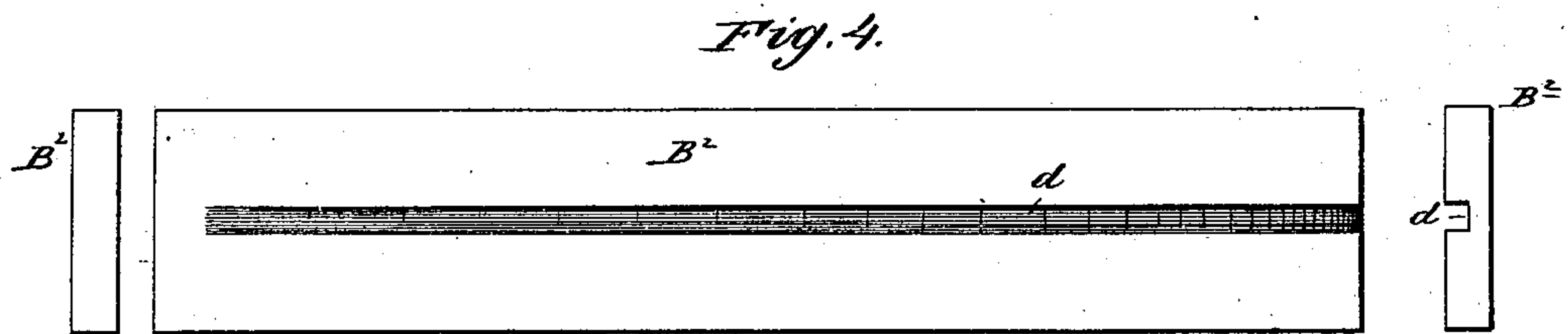
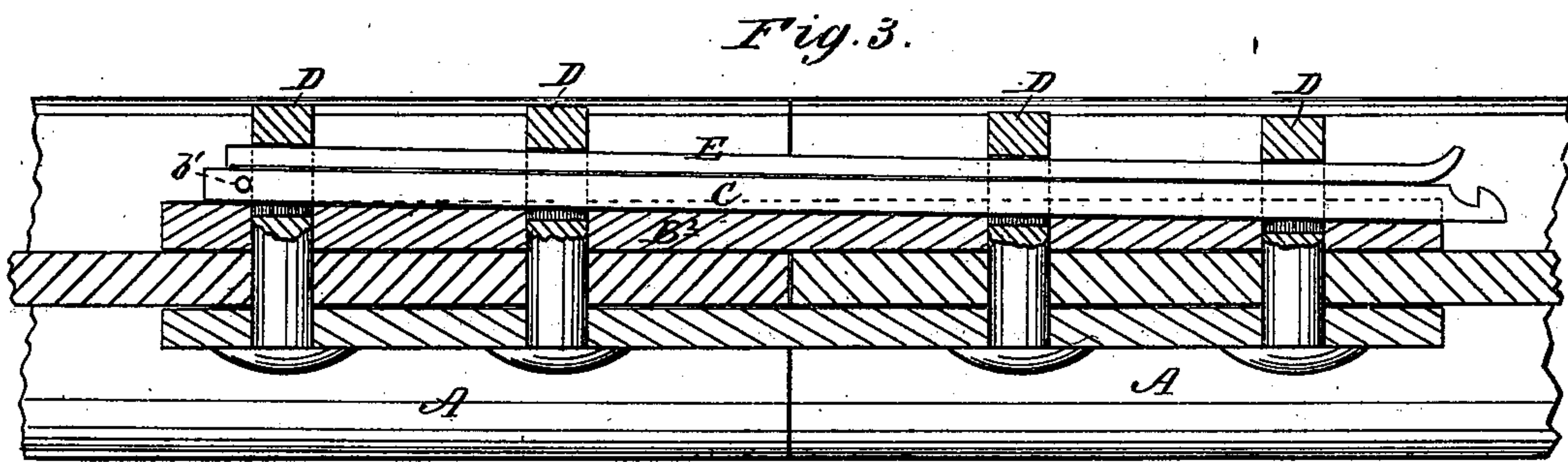
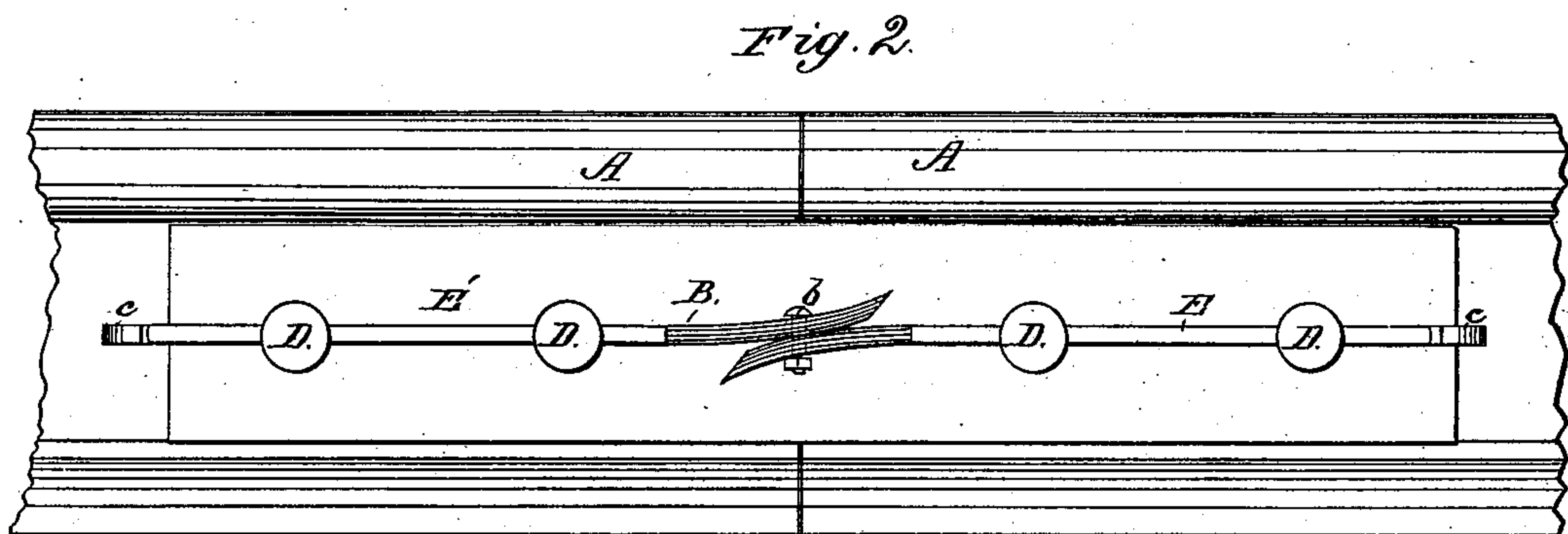
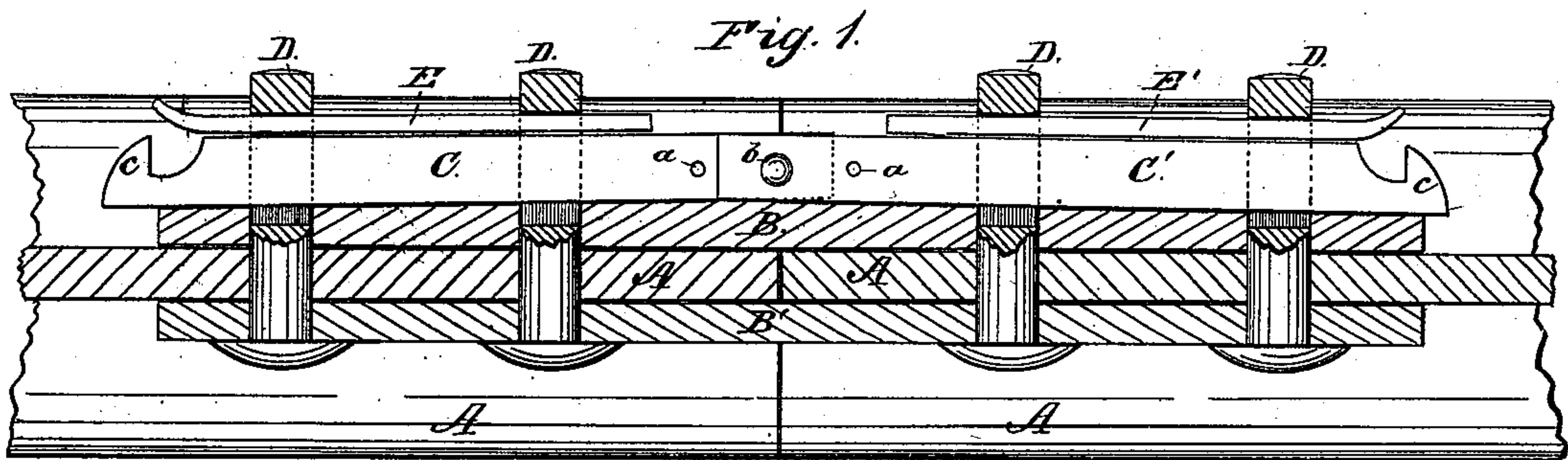


(No Model.)

R. E. GREENWELL.  
Railway-Joint.

No. 227,519.

Patented May 11, 1880.



WITNESSES:  
*W. W. Hollingsworth*  
*Edw. C. Byrnes*

INVENTOR:  
*R. E. Greenwell*  
BY *R. E. Greenwell*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

ROBERT E. GREENWELL, OF OSAGE MISSION, KANSAS.

## RAILWAY-JOINT.

SPECIFICATION forming part of Letters Patent No. 227,519, dated May 11, 1880.

Application filed March 26, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT E. GREENWELL, of Osage Mission, in the county of Neosho and State of Kansas, have invented a new and Improved Railway-Joint; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a horizontal section through the web of the rail, the fish-plates, and the bolts. Fig. 2 is a side view of the same. Fig. 3 is a horizontal section through the web of the rail, the fish-plates, and the bolts, showing a modification of the invention. Fig. 4 shows detail side and end views of the special form of fish-plates used in Fig. 3.

My invention relates to certain improvements in railway-joints of that form in which a set of bolts project through the fish-plates and have ends slotted lengthwise to receive a key which is driven in in a plane parallel with the bolt.

The invention consists in combining the fish-plates, the slotted fish-plate bolts, a key, and an elongated gib behind the key, which gib passes through two or more of the bolts and serves to tie them together and prevent them from being bent by the entrance of the key, as hereinafter described.

In the drawings, referring to Figs. 1 and 2, A A represent the abutting ends of the main rails. B B' are the fish-plates; C C', the keys; D, the slotted bolts, and E E' the gibs. In forming the fish-plates, one of them, B, is made with a gradual taper on its outer surface from each end to the middle, so that its thickest point lies at the joint of the two rails, and thereby strengthens the same. On the outer surface of the two inclines rest the keys C C', which are driven through the longitudinal slots of the bolts. The gibs E E' rest outside the keys and bear against the metal at the ends of the bolts, the said gibs being curved outwardly at their ends and serving the useful function of guiding the key into place and preventing it from burying in the metal of the bolts and bending the latter when the key is being driven in. In the adjacent ends of the keys C C' is formed a set of holes, *a*, and the said ends are at their edges beveled to a chisel-edge, as

shown in Fig. 2, so that when the keys are driven in from opposite ends of the fish-plate they lap the one upon the other, and when the holes register the keys are secured in this position by a bolt, *b*, which is passed through said registering holes.

For withdrawing the keys notches *c* are formed at the ends of the keys, so that the latter may be withdrawn without striking the other end with a hammer, which would have a tendency to upset it and jam it tightly in the slots of the bolts.

In making use of my invention I do not confine myself to making the fish-plate with a double-inclined seat for the keys, but may make the fish-plate with a single incline and a single key and gib, as shown in Fig. 3. In this case the fish-plate B<sup>2</sup> is constructed with an inclined groove, *d*, to receive the key, which groove is of a considerable depth at one end and runs out into the plane of the fish-plate at the other, the gib and key being used in the same relation as in the other case, and the key being held in place by a bolt, *b'*, driven through a hole in the key just outside of the last bolt.

As shown in both forms of my invention, headed bolts are employed, and with them it is obvious that the fish-plates are required to be of the special construction shown only on one side of the rail; but, if desired, I may dispense with the head of the bolt and slot each end of the same, and provide them on each side of the rail with the peculiar form of fish-plate, gib, and key.

In cutting the holes through the rails for the reception of the bolts, said holes are to be made elongated to compensate for temperature variations.

Instead of a bolt, *b*, for fastening the adjacent ends of the keys together, as in Fig. 1, a wire or other equivalent device may be employed.

In defining my invention more clearly, I would state that I am aware that a gib is a well-known workshop expedient to facilitate the passage of a key, and I do not claim it except when combined with two or more distant slotted fish-plate bolts, D D, in which relation it serves to connect the outer ends of said bolts and prevent them from being bent by the entering key. The gib, then, when made long



enough to connect and tie together the ends of the bolts, has value, whether the key be driven in at right angles or on an incline; but it has a special value when the keys are driven in diagonally upon a tapering fish-plate.

I am also aware that an inclined bearing for the key is not new, and I do not claim this broadly.

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

1. The combination, with the rails and fish-plates, of the slotted bolts D D, the key C, having its plane coincident with the plane of the axis of the bolt, and the gib E, arranged behind the key and connecting two or more of the separated bolts, so as to prevent the bending of the same from the entrance of the key, as described.

2. The combination, with the rails and the fish-plates having an inclined outer surface, of the slotted bolts D D, the key C, having its plane coincident with the axis of the bolts, and the gib E, passing through and connecting two or more of the slotted bolts, as described, to prevent the bending of the same by the entrance of the key.

3. The combination, with the rails and the slotted bolts, of the double-inclined fish-plate, the two keys having holes in their adjacent ends and chisel-edges, as described, and gibs arranged behind the keys, the whole being connected together, substantially as described.

ROBERT E. GREENWELL.

Witnesses:

EDWD. W. BYRN,  
SOLON C. KEMON.