

No. 834,292.

PATENTED OCT. 30, 1906.

E. A. GILLCHRIST.

RAIL JOINT.

APPLICATION FILED DEC. 21, 1905.

FIG. 1

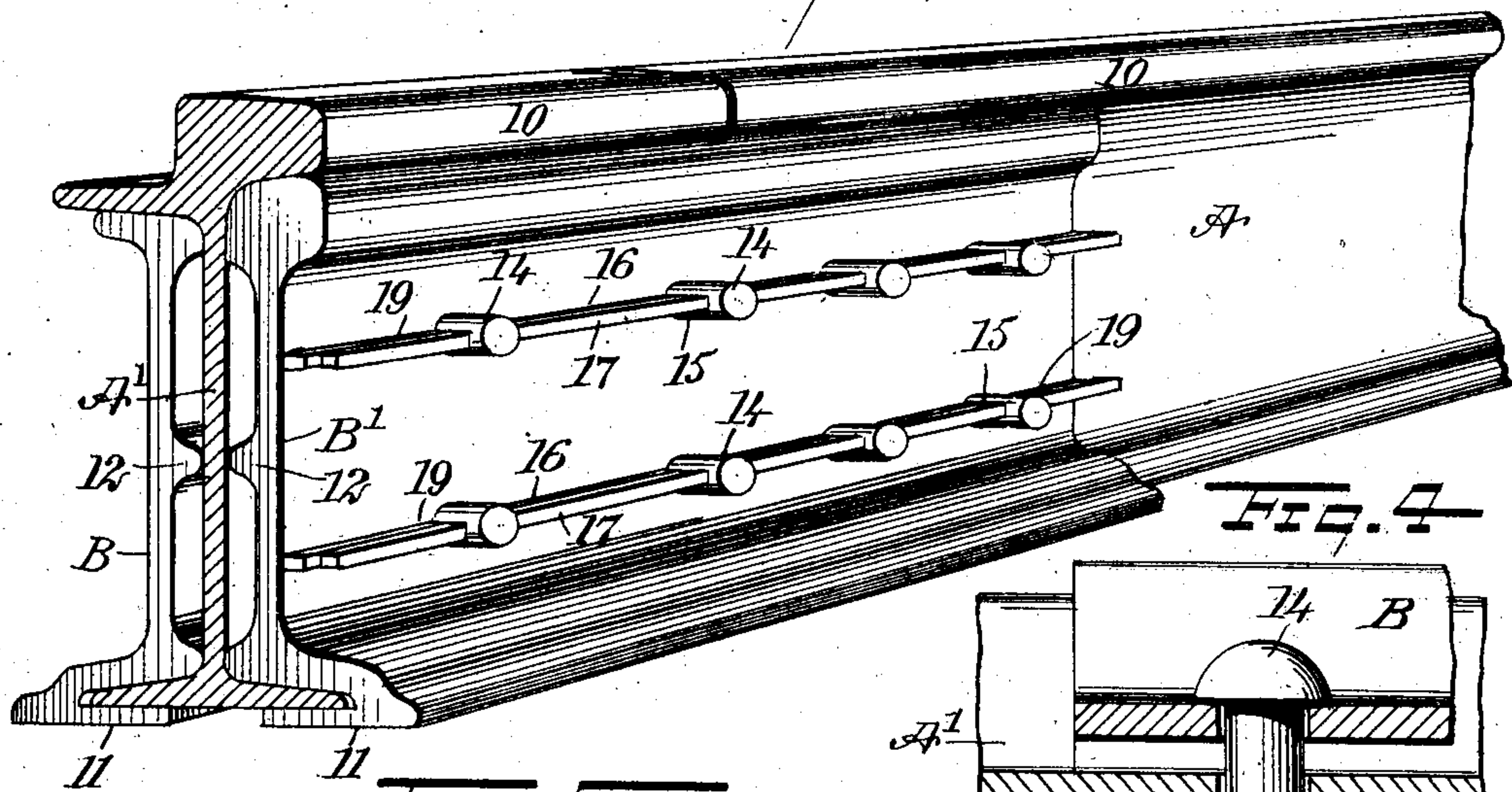


FIG. 4

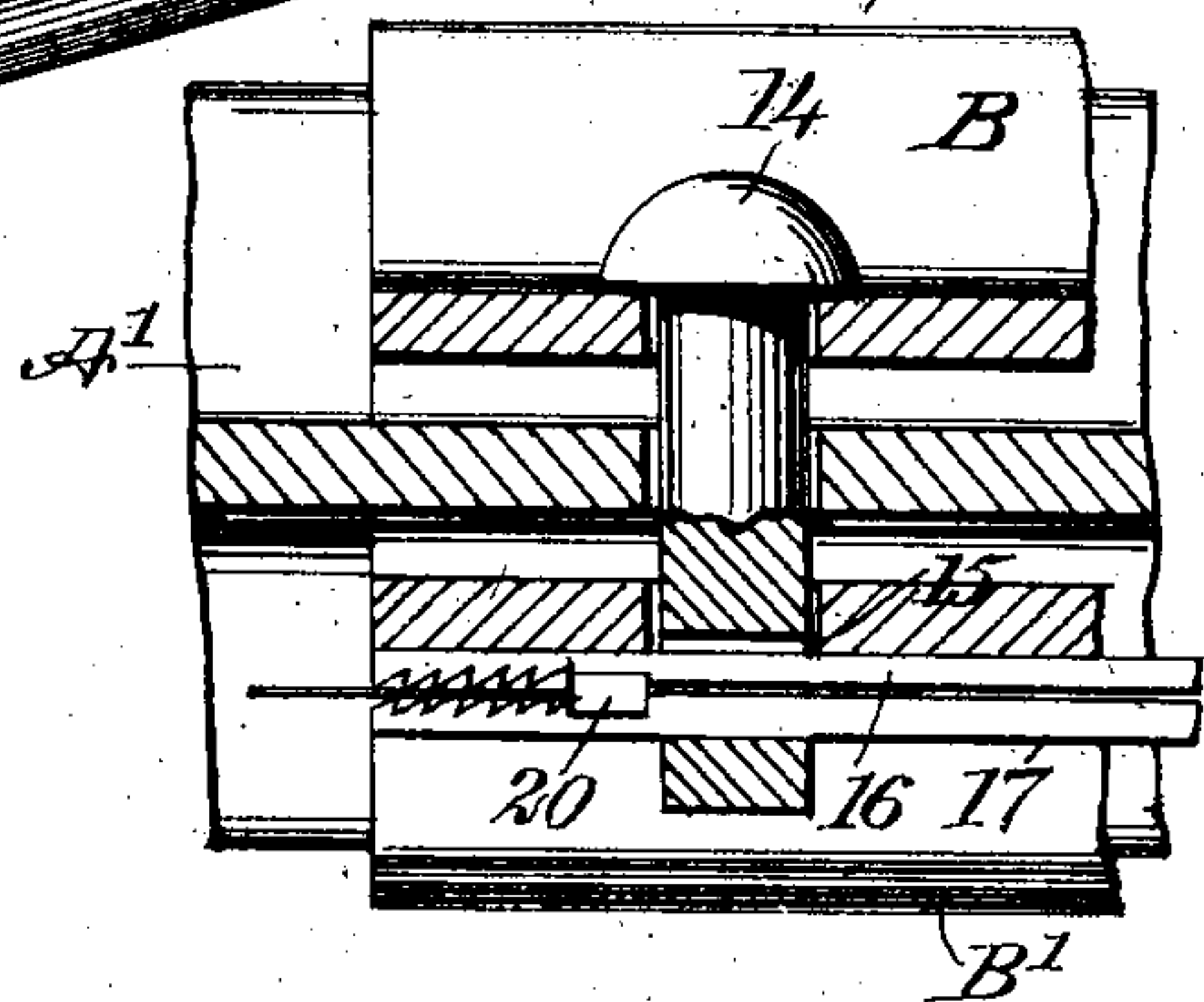


FIG. 5

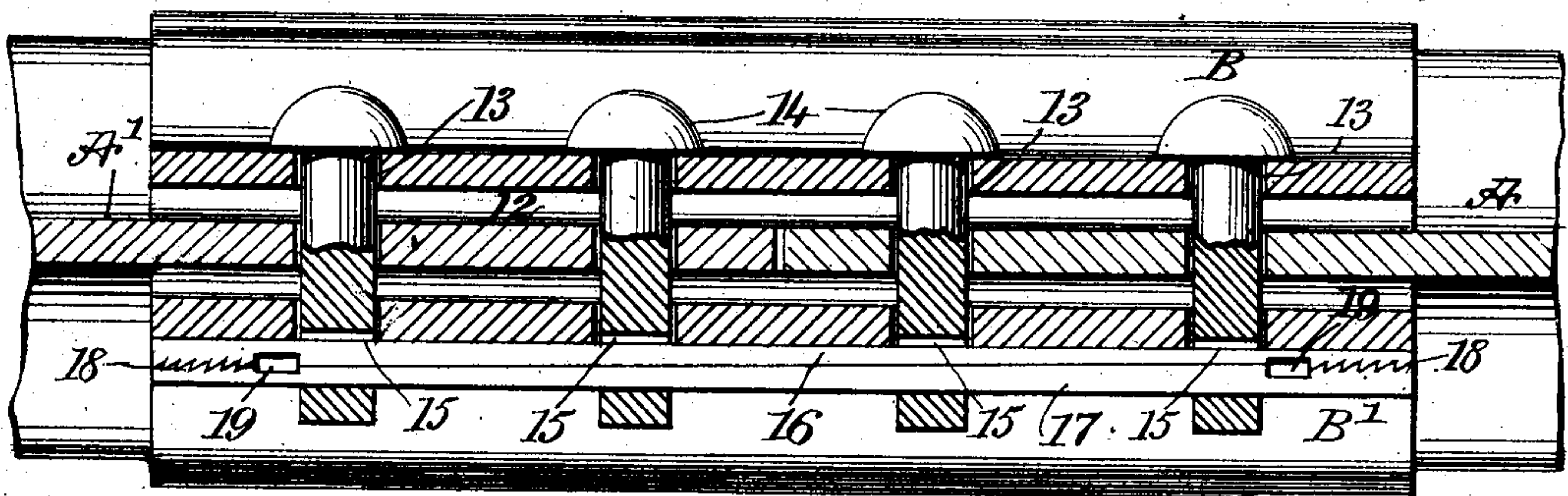
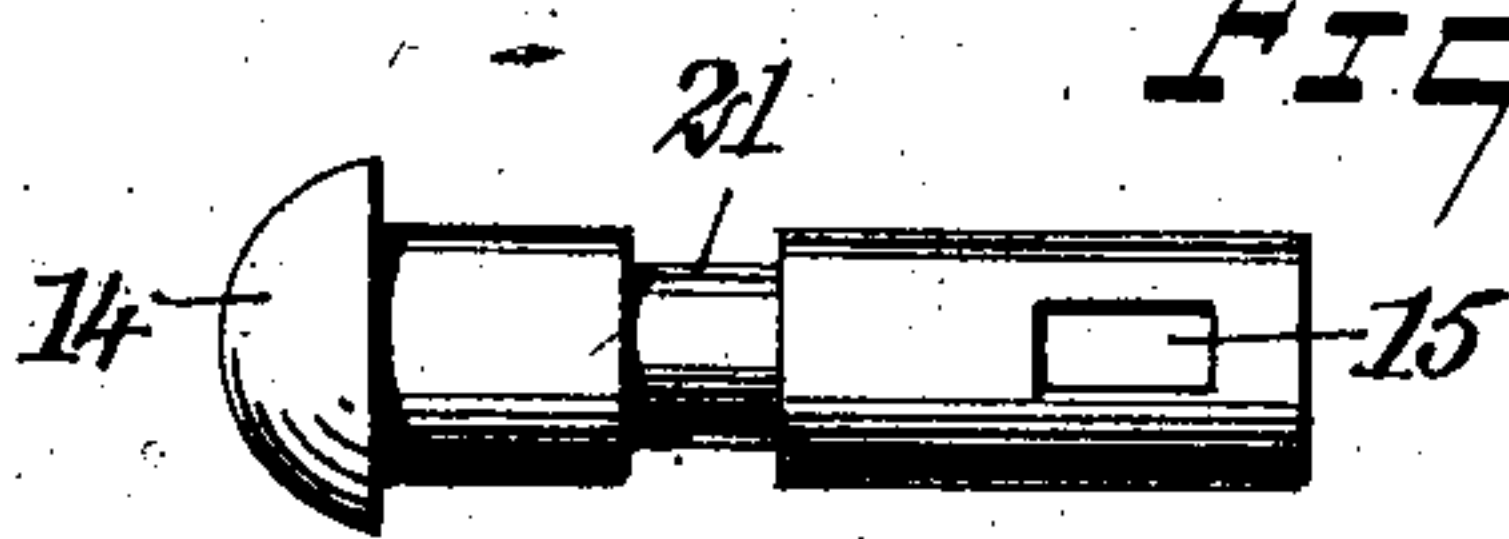
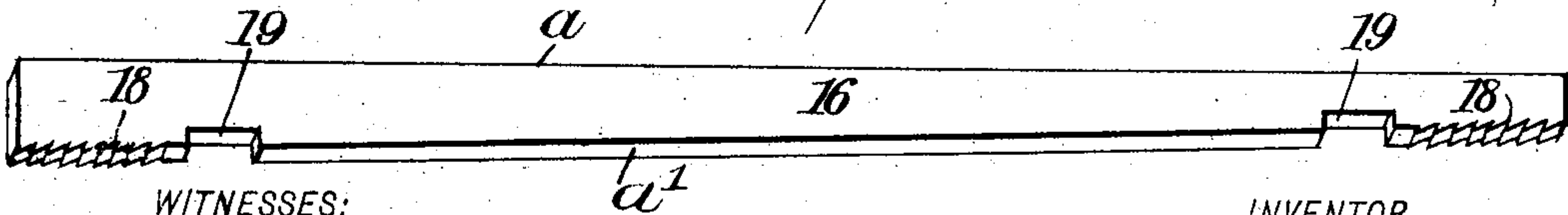


FIG. 2



WITNESSES:

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ATTORNEYS

FIG. 3



# UNITED STATES PATENT OFFICE.

EDWARD ARTHUR GILLCHRIST, OF McKEESPORT, PENNSYLVANIA.

## RAIL-JOINT.

No. 834,292.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed December 21, 1905. Serial No. 292,713.

*To all whom it may concern:*

Be it known that I, EDWARD ARTHUR GILLCHRIST, a citizen of the United States, and a resident of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Rail-Joint, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a special rail-joint, primarily intended for use upon steam and electric railways, but which can be used in structural work when conditions will permit, and to so construct the joint that it can be used in connection with any form of rail and in any form of fish-plates adapted to the rail.

Another purpose of the invention is to provide a rail-joint which will be of very simple construction and readily understood by any track-laborer, and which can be quickly and conveniently applied to the rails or removed therefrom when necessary, and also to so construct the joint that when applied the abutting rails will be firmly held together with little liability of spreading, and wherein, if by any possibility the joint should become slightly loosened it can be effectually tightened up by a few taps of the track-walker's hammer.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improved joint applied to the rails of an electric railway. Fig. 2 is a horizontal section through the central portion of the webs of the rails and the fish-plates. Fig. 3 is a perspective view of one of the quoins employed. Fig. 4 is a horizontal section through the rails and a fish-plate, illustrating how the quoins may be removed when necessary; and Fig. 5 is a side elevation of a modified form of bolt.

A and A' represent abutting rails, the heads 10 whereof may be of any approved type. In the drawings the head shown is that employed in electric railways, and B and B' represent fish-plates. These fish-plates may be of any desired character adaptable to the rails. As illustrated, each fish-plate is provided with a chair-base 11, which receives the flanges of the rail, and with a central longitu-

dinal rib 12 upon its inner side, whereby the inner portions of the webs of the fish-plates are substantially spaced from the webs of the rails, yet the fish-plates have a central bearing on the rails.

The webs of the rails and fish-plates are provided with the customary apertures 13 for the passage of bolts 14, which bolts are arranged in longitudinal series, one or more series being employed, but the bolts 14 differ from ordinary bolts in that they are provided with heads at one end, but they are not adapted to receive nuts at their opposite ends, as near said latter ends rectangular slots 15 are produced in the said bolts, and when the bolts are in position in the rails and fish-plates these slots are outside of the fish-plate adjacent to the slotted end, and the said slots in the bolts are horizontally positioned, as is shown in Figs. 1 and 2.

In connection with each series of bolts two quoins 16 and 17 are employed, adapted to be placed edge to edge and to be passed through the slots 15 in a series of bolts. The outer faces *a* of the quoins are straight, and their inner or opposing faces or edges *a'* are tapering, whereby said quoins are larger at one end than at the other. When speaking of the outer edge *a* of the quoin 16, I mean that edge which engages with the outer face of the fish-plate, while the corresponding edge *a'* of the outer quoin 17 is that edge which engages with the outer walls of the slots 15 in the bolts 14, as is illustrated in Fig. 2. Each quoin is provided with a series of inclined teeth at its inclined edge *a'*, the teeth being at the end portions of the quoins, as is shown best in Fig. 3, and the said teeth 18 may be made to incline in the direction of the wider ends of the quoins. When the quoins are in use in connection with the bolts 14, the smaller end of one quoin is opposite the larger end of the opposing quoin, and by these means when the quoins are forced closely together the opposing teeth of the opposing quoins have a secure interlocking connection, and such inclination of the teeth serves to prevent the quoins from working out endwise.

Each quoin 16 and 17 is provided with a recess 19 in its inner or inclined edge *a'*, the said recesses being adjacent to both edges of the series of end teeth 18, as is also best shown in Fig. 3.

After the fish-plates have been placed in position relative to the rails A and A' and the bolts have been passed through the fish-



plates and rails the quoins are made to enter the slots in the bolts of the series, the smaller ends of the quoins being those which are introduced into the slots of the bolts, and then the quoins by hand are pushed in as far as possible and afterward are driven to place or so that they firmly engage with the adjacent fish-plate and with the outer wall of the slots in the bolts, thus wedging the fish-plates close to the rails and bringing the teeth of the opposing quoins in close and positive locking engagement, as is shown in Fig. 2. If by any possibility a quoin should become loosened, it can be readily tightened by the tap of a hammer.

When the fish-plates are to be removed, it is necessary to first remove the quoins from the bolts. In order to accomplish this, wedge-shaped spreading-tools 20 are driven into the recesses 19 of the quoins, as is shown in Fig. 4, separating the teeth of opposing quoins, since the recesses 19, when the quoins are in place, are outside of the end bolts 14 of a series, and after the quoins have been thus spread at their outer ends pieces of sheet metal are placed between their teeth, and the spreading-tools are driven out by tapping them upon their under edges, whereupon the quoins may be drawn out from the bolts in opposite directions, which enables them to be quickly and readily removed.

In Fig. 5 I have shown a modified form of bolt 14, which may be used to great advantage, said bolt being provided with an annular recess 21, adapted to receive the web of the rail, which recess permits of the expansion and contraction of the track-rails under varying conditions of temperature without effecting any strain on the bolt while holding the fish-plates in position.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a rail-joint, bolts provided with slots therein, and quoins having opposing inclined faces and teeth on their inclined surfaces at their end portions, the quoins being adapted to be passed through the slots of said bolts

with their inclined faces in engagement with each other and being provided with recesses adjacent to the teeth, for the reception of a spreading-tool whereby to separate the teeth of the respective quoins.

2. In a rail-joint, quoins having an outer straight edge and an inner inclined edge, and teeth on their inclined edges near each end, the teeth of the respective quoins being adapted to engage when the said quoins are placed with their inclined edges in contact, the inclined edges of said quoins being provided with recesses adjacent to the teeth for receiving a spreading-tool whereby to separate the teeth.

3. In a rail-joint, quoins having an outer straight edge and an inner inclined edge, and teeth on their inclined edges near each end, said teeth being inclined in direction of the wider ends of the quoins, each quoin being provided with recesses in its inclined face adjacent to the teeth, and spreading-tools adapted to enter said recesses.

4. In a rail-joint, a rail, a fish-plate and headed bolts passed through the fish-plate and rails, each bolt being provided with a rectangular slot in its headless end portion, the slotted portions of the bolts being outside of the adjacent fish-plate, and quoins having straight outer edges and inclined inner edges, the said inner edges being provided at their inner faces with teeth inclined in direction of the wider ends of the quoins, the said quoins being driven through the said recesses from opposite ends of the series of bolts with their narrow ends foremost, and with their inclined edges in contact whereby to engage the teeth of the respective quoins, the inclined edges of said quoins being provided with recesses adjacent to the teeth for receiving a spreading-tool whereby to separate the teeth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD ARTHUR GILLCHRIST.

Witnesses:

HARRY V. GERMAN,  
M. H. BASSLER.