

R. C. SHAY & F. P. SALEME.
RAILWAY TIE AND RAIL FASTENER.
APPLICATION FILED JAN. 23, 1909.

919,783.

Patented Apr. 27, 1909.

2 SHEETS—SHEET 1.

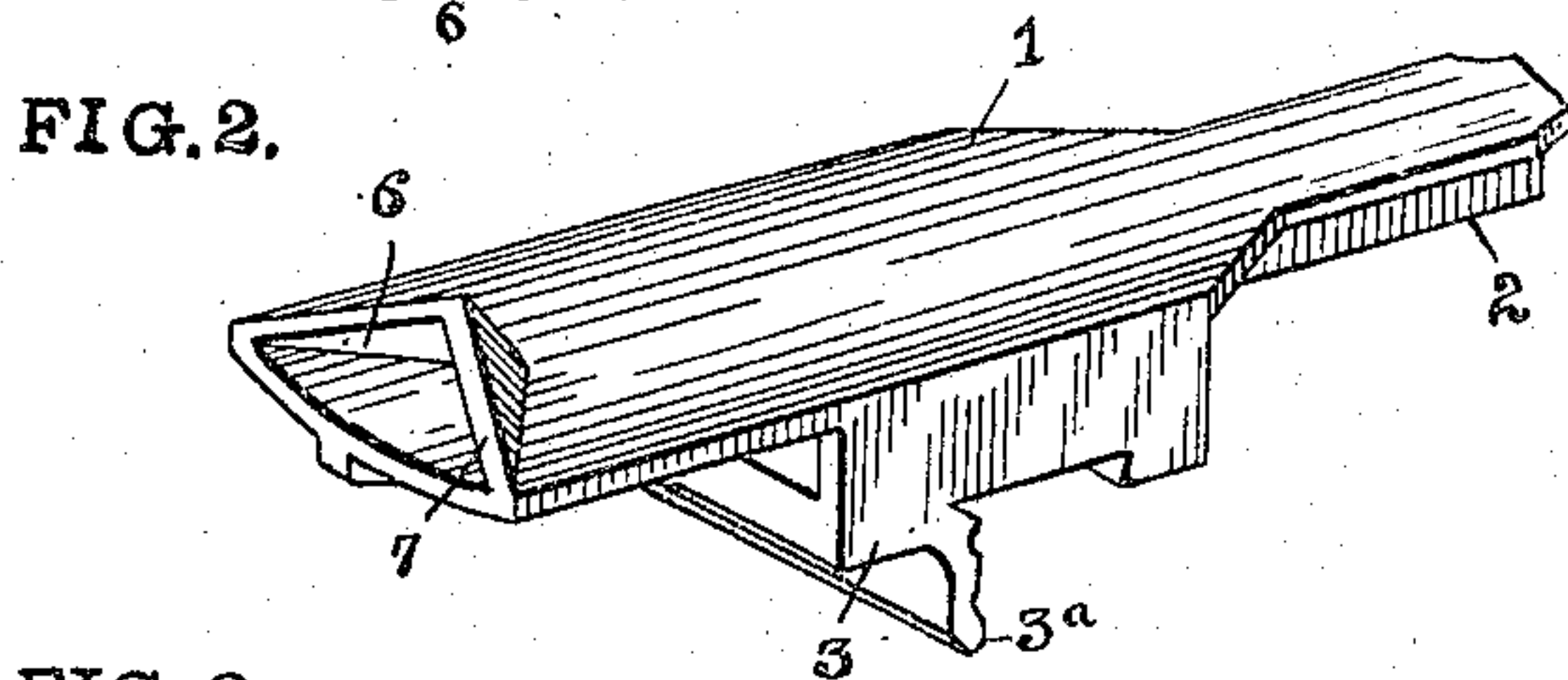
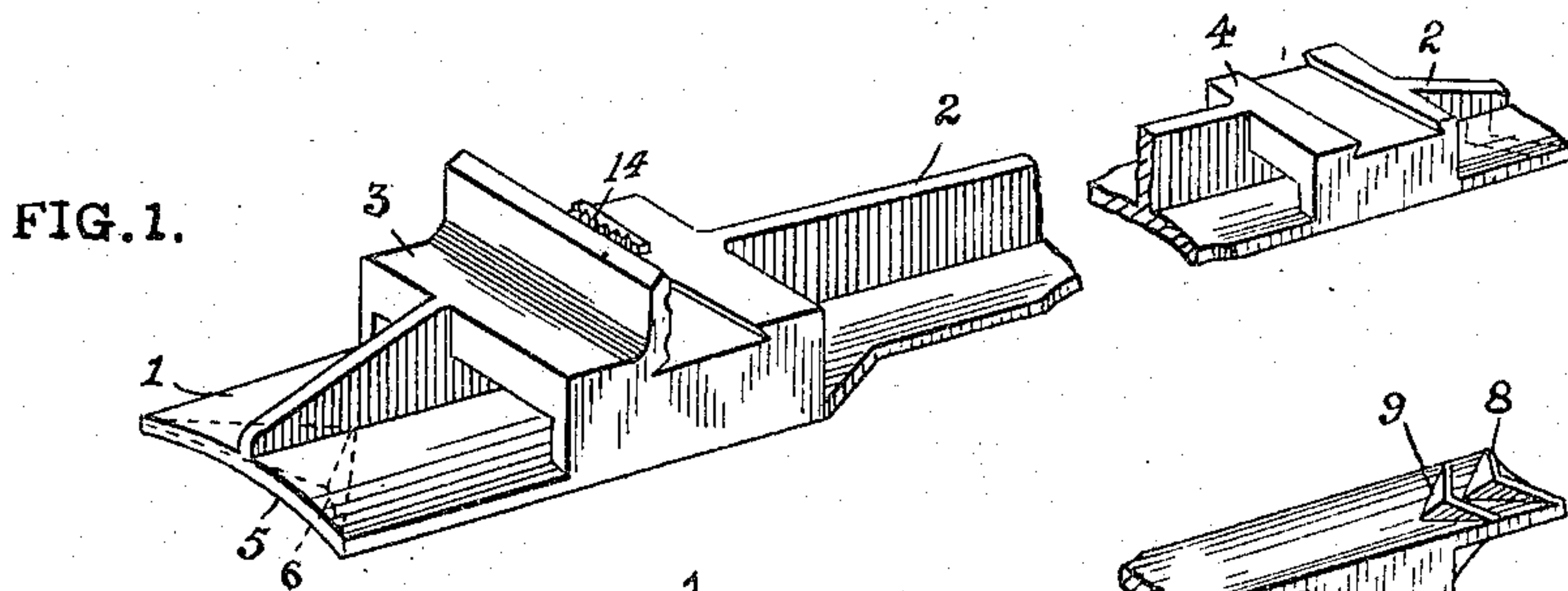


FIG. 3.

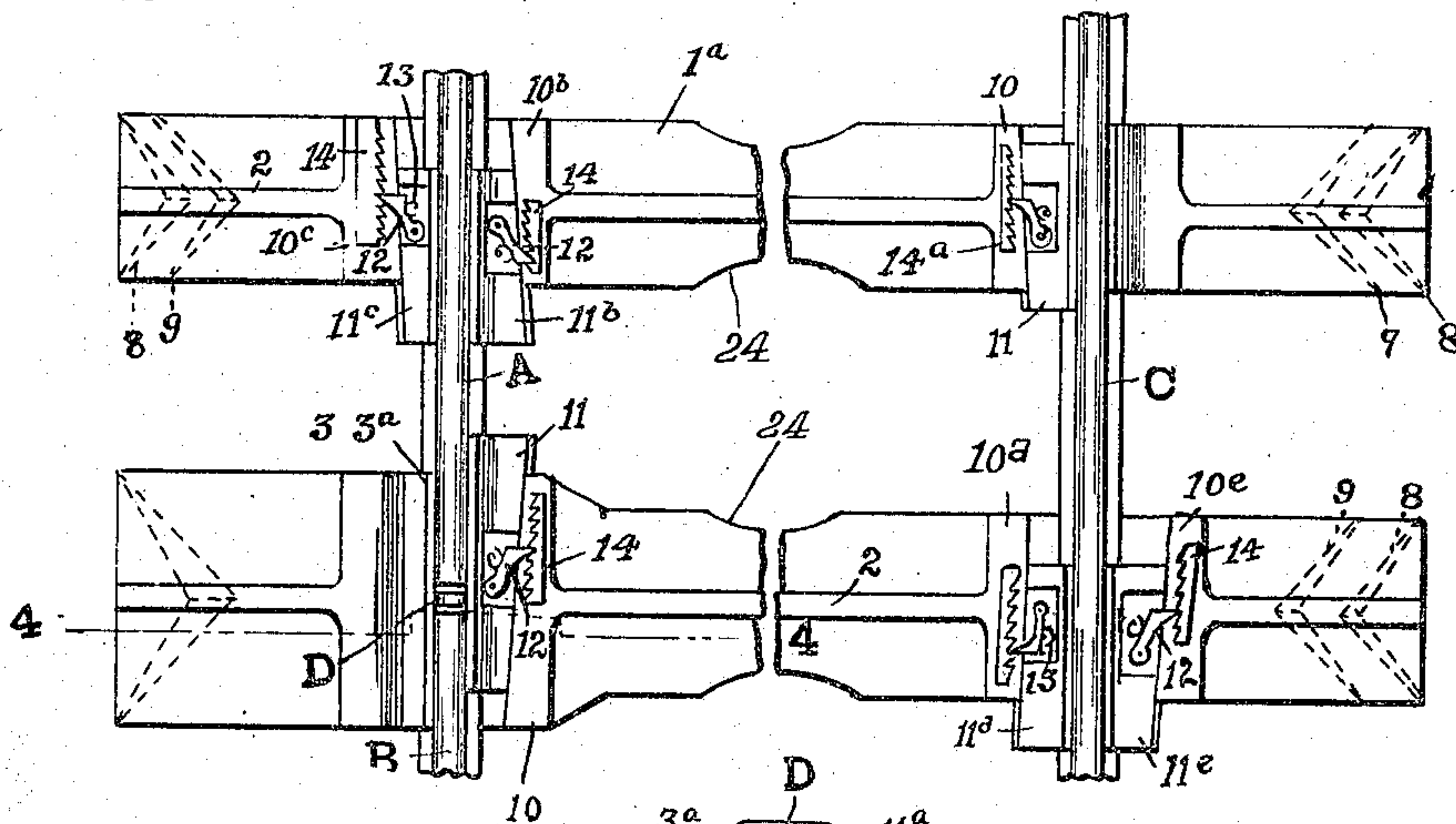
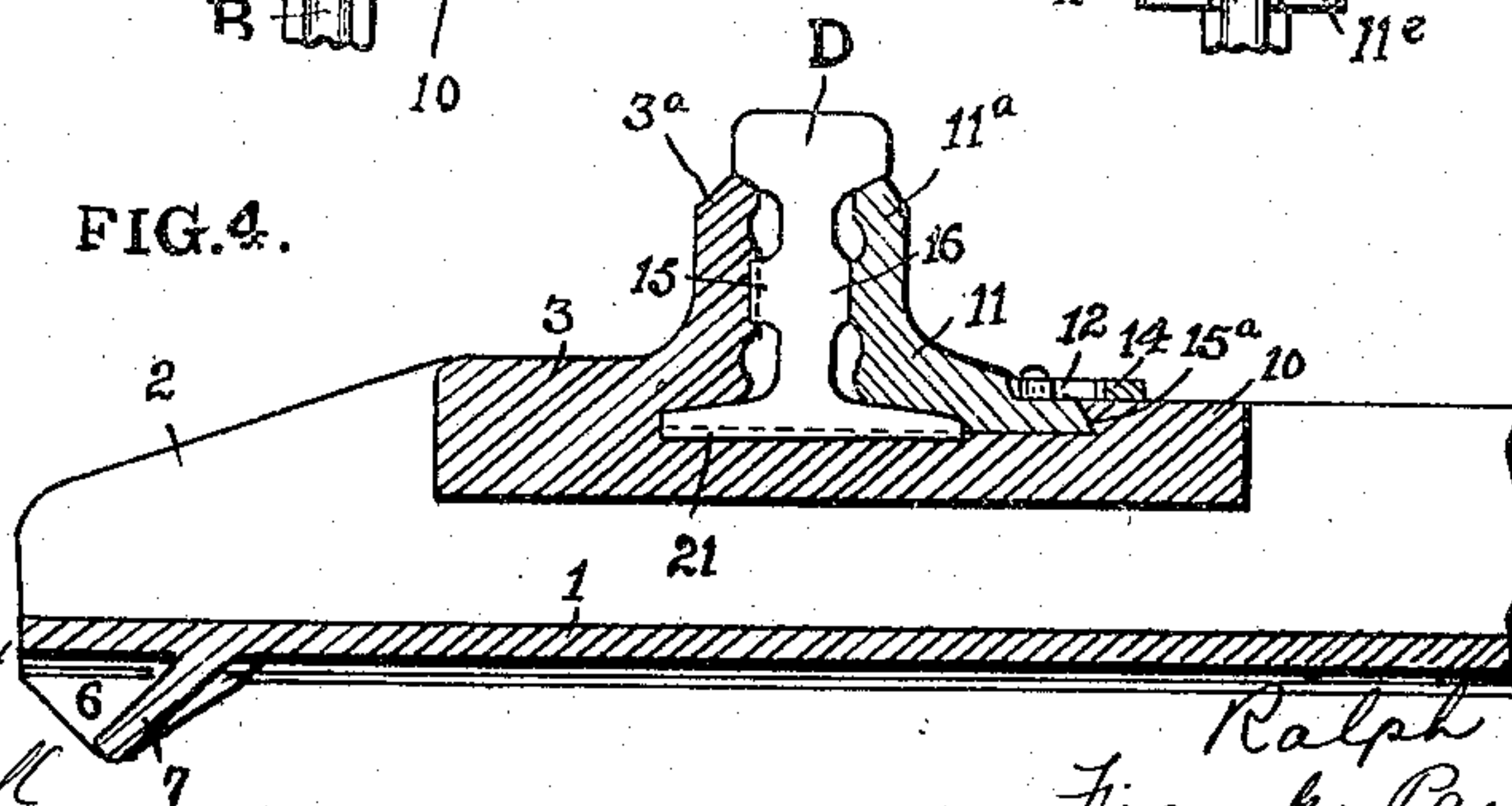


FIG. 4.



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2 SHEETS—SHEET 2.

FIG. 5.

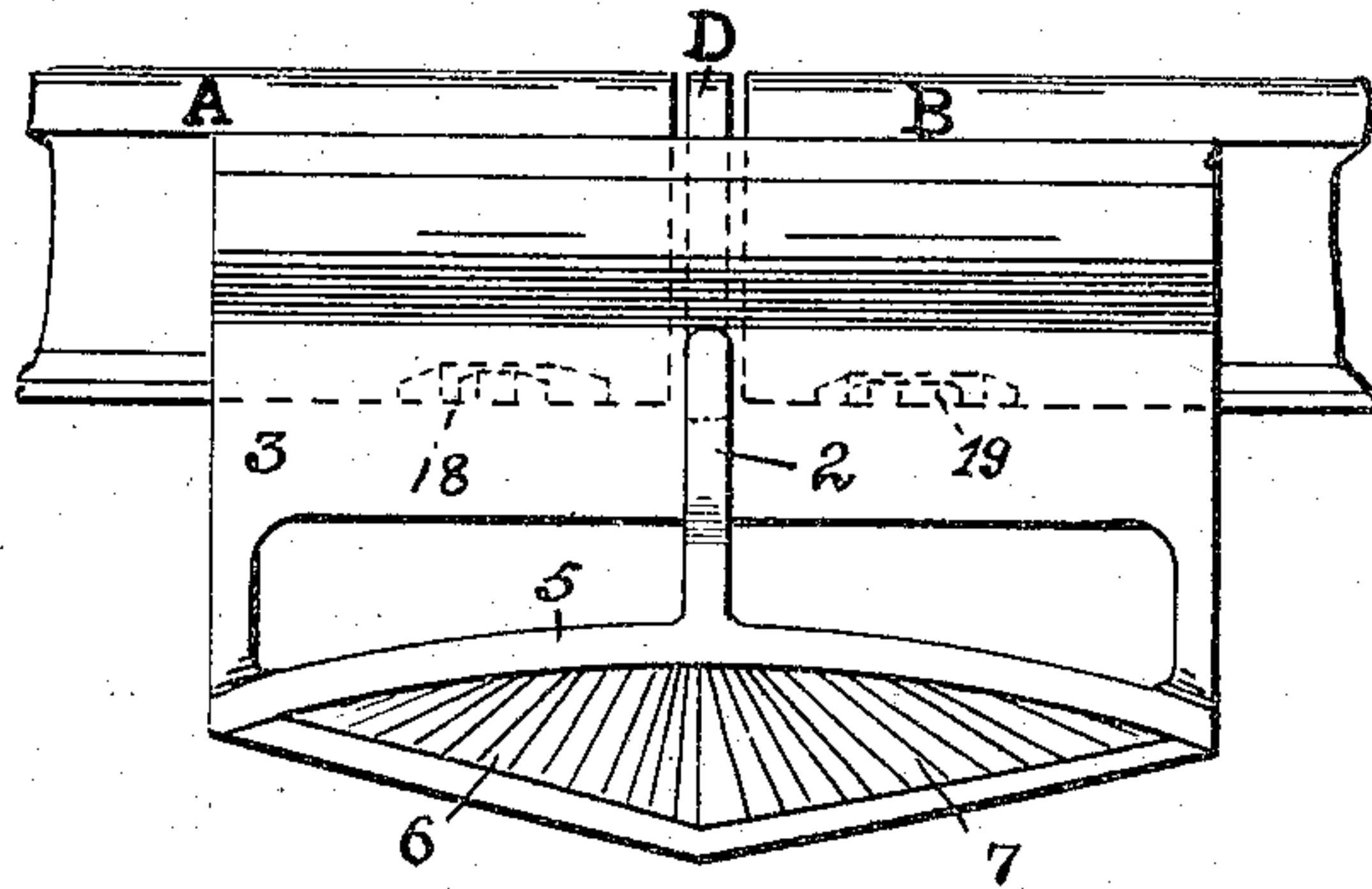


FIG. 6.

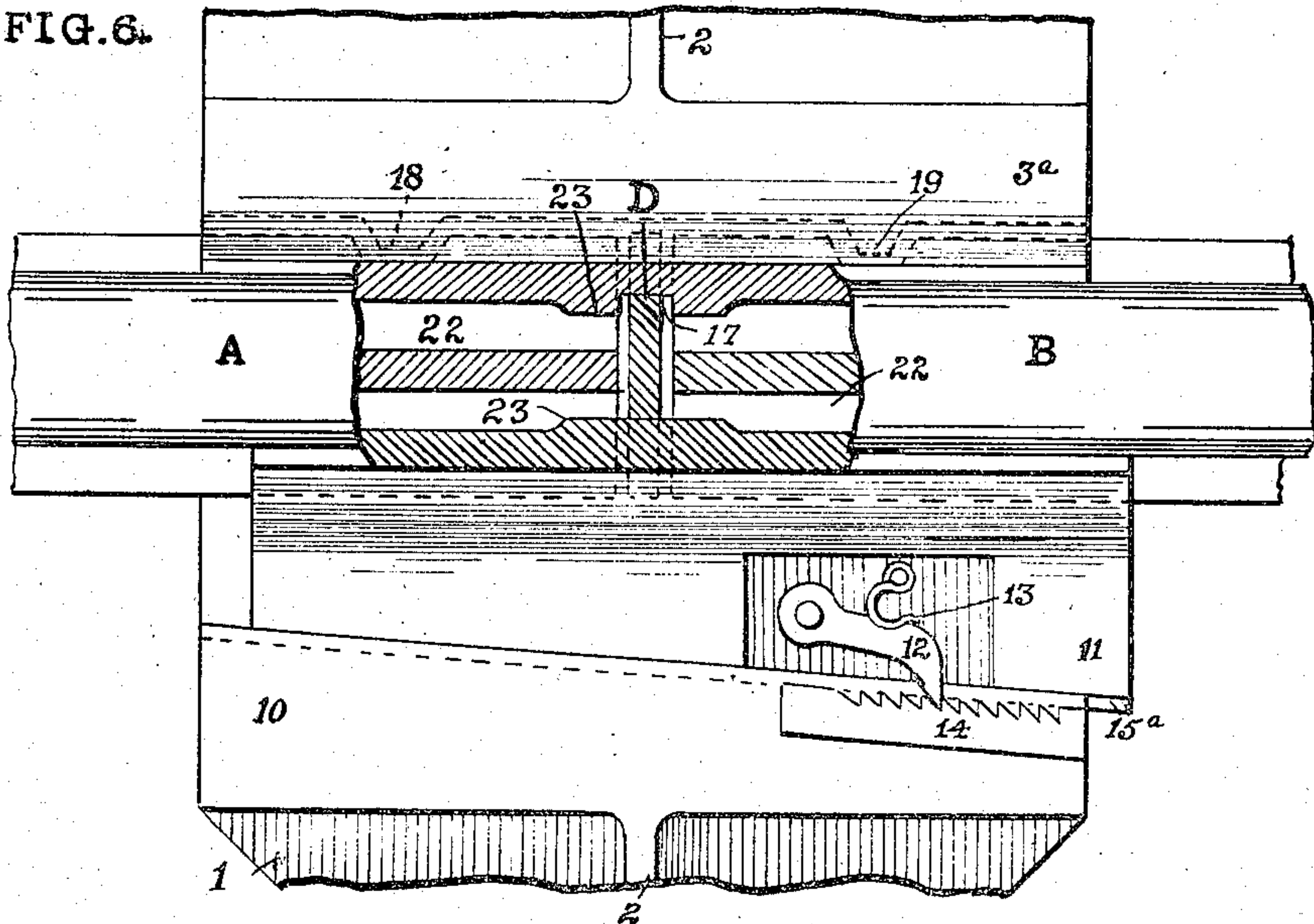


FIG. 7.

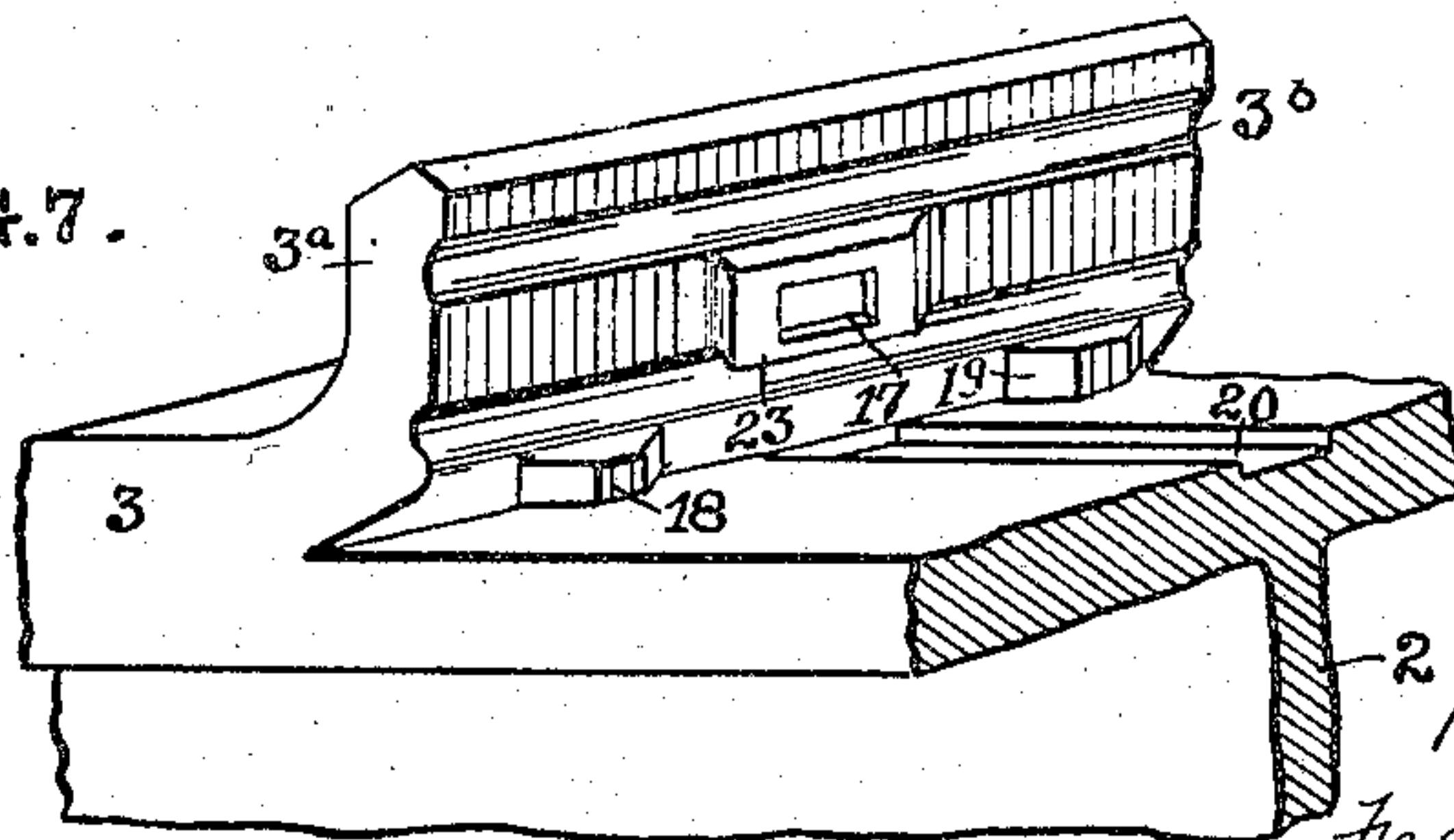
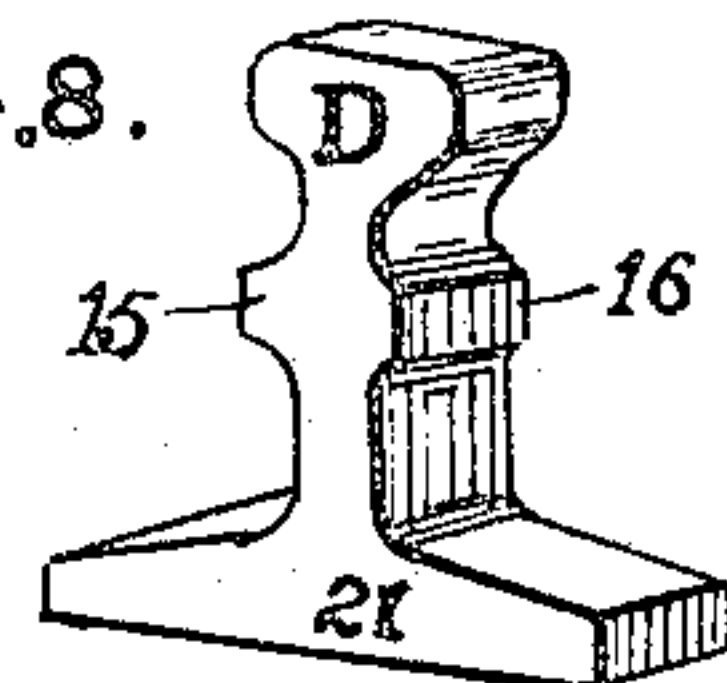


FIG. 8.



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RAILWAY-TIE AND RAIL-FASTENER.

No. 919,783.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, RALPH C. SHAY and FRANK PAUL SALEME, citizens of the United States, residing at Wilksburg, Allegheny county, State of Pennsylvania, and Altoona, Juniata station, Blair county, State of Pennsylvania, respectively, have invented new and useful Improvements in Railway-Ties and Rail-Fasteners, of which the following is a specification.

Our invention relates to railway track construction, and more particularly to the construction of an improved metallic tie and rail fastener.

One object of the invention is to provide a metallic tie having means for gripping the road bed and ballast, so as to effectively prevent the tie from becoming displaced.

A further object of the invention is to provide a tie of the above character having improved means formed thereon for rigidly holding the rails in position.

A further object is to provide a chair of this character so constructed as to constitute a joint for the meeting ends of rails.

A still further object is to provide an improved joint chair in which the rail ends will be securely held, but which at the same time will permit of the free expansion and contraction of the rails, due to changes in temperature.

With the above and other objects in view, and to improve generally upon the details of construction of such devices, our invention consists in the combination and arrangement of parts hereinafter described and illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of our improved tie alone, parts being broken away. Fig. 2 is a similar view showing the under side of such tie. Fig. 3 is a plan view of a fragment of track illustrating the use of two slightly different forms of tie. Fig. 4 is a cross section on an enlarged scale on the line 4—4 of Fig. 3. Fig. 5 is an end elevation on an enlarged scale of our improved tie showing two rail ends in position thereon. Fig. 6 is a fragmentary plan of the same, parts being broken away. Fig. 7 is a fragmentary, perspective view showing the details of construction of the rail chair, and, Fig. 8 is a perspective view of an insert hereinafter described.

Referring to the drawings in detail, and

more particularly to Figs. 1 and 2 thereof, it will be seen that our improved metallic tie, which is preferably cast, is of substantially T-shape in cross section, and comprises a base 1, and a centrally extending, upwardly projecting flange 2. Near its ends, integrally formed rail chairs 3 and 4 are provided. By reference to Figs. 1 and 5, it will be seen that the base of the tie is concaved downward, as shown at 5, and at each end of the tie on its lower surface, we form ballast engaging pockets, as clearly shown in Fig. 2. These pockets are preferably V-shaped, and are formed of a pair of converging walls 6 and 7, which form a pyramid-shaped cavity or pocket, opening outwardly and downwardly from the bottom of the tie. We may provide each end of the tie with a single such pocket or with a series of such pockets, as shown at 8 and 9 in Figs. 2 and 3.

In Fig. 3, we have illustrated the use of a tie of the type shown in Figs. 1 and 2 in such places as joints in the rails occur, and have shown a slightly different form of tie, designated by the reference character 1^a, for use at such places as the rails are continuous. These two forms of tie differ slightly in the particulars hereinafter pointed out. We preferably cut away the tie at its middle, as at 24, so as to increase its stability and prevent its becoming center bound. The chair 3 has an integrally formed, upwardly projecting fish plate 3^a, which engages the head and base of the rail ends on one side. The chair is also provided with projecting lugs 18 and 19, which engage loosely with notches formed in the sides of the base flanges of the rail ends, as shown in dotted lines in Fig. 6. The rails are held in position by means of a fish plate 11, which is adapted to overlie the base flange of the rails, and which has a rail head engaging portion 11^a. The lower edge of the fish plate 11 is wedge-shaped longitudinally, and forms an under-cut sliding connection, as at 15^a, with a groove formed in the base plate 10, of the chair. After the parts are assembled, the fish plate 11 is inserted in the groove and driven up tightly, thus binding the rail ends together, and rigidly clamping them between the plates 11 and 3^a.

By reference to Fig. 3, it will be seen that the above description applies to the end of the tie which carries the joint between meeting rail ends, such as A and B. At the other

end of the tie, however, we provide two wedge-shaped fish plates 11^d and 11^e, which slide in grooves formed in base plates 10^d and 10^e, respectively. By thus providing the wedge-shaped plates on both sides of the rail C, we are enabled to first rigidly secure the meeting ends of the rails A and B in position, and then by manipulating the fish plates 11^d and 11^e, to secure the proper gage adjustment of the two rails. The tie shown in the upper part of Fig. 3, where no rail joint occurs, differs only from that just described, in that it is substantially of the same width throughout, and the chair arrangement is not so heavy or massive as in the joint construction. It will be seen, however, that the same principle is carried out in providing a single wedge-shaped fish plate at one end of the tie, coöperating with a fixed abutment, and a pair of such plates at the other end of the tie in order to secure the gage adjustment. In practice, it is preferable to lay the ties with the double fish plate ends extending alternately in opposite directions. In order to lock the wedge-shaped fish plates in position and prevent them from becoming loosened by the vibration to which they are subjected, we pivot upon each a pawl 12; normally urged, by means of a spring 13, toward the teeth of a ratchet 14, fixed to the base plate 10. As the fish plate is driven up, the pawl engages successive teeth of the ratchet, and finally locks the plate in its ultimate position. It will be observed that no bolts or other fastening devices, extending through the rail ends and fish plates, are employed. The rail ends are simply clamped between the fish plates, and rest easily in the chair, so that the necessary expansion and contraction may readily take place. For this reason, quite a large gap would frequently occur between the meeting ends of the rails, and this would cause excessive vibration in the rolling stock, and rapid deterioration of the rails. To obviate this, we employ the construction shown in the drawings, and more particularly in Figs. 4, 5 and 6 thereof. By reference to these figures, it will be seen that we employ a filler block or insert between the rail ends. This insert is preferably formed of hardened steel, and as shown in Fig. 8, is of substantially the same cross sectional shape as the rail itself. This insert D, however, has, projecting from opposite sides of its web, lugs or ribs 15, 16, the rib 15 being the longer. The fixed fish plate 3^a is provided with a longitudinally extending groove 3^b, and with a notch 17, into which the lug or rib 15 is adapted to fit, when the parts are assembled. The base plate of the chair 3 is also provided at its center with a groove or channel 20, in which the base 21 of the insert D snugly seats.

In operation, the upper surface of the insert D is flush with the tread of the rails A

and B, as shown in Fig. 5, and the fish plate 11 abuts against the rib 16 of the insert in such manner that the insert is rigidly clamped between the fish plates 3^a and 11, as clearly shown in Fig. 4. By reference to Fig. 6, it will be seen that the fish plates have internally projecting portions 23, adjacent the insert, and are cut-away throughout the rest of their length, as shown at 22, so that they do not come in contact with the web of the rails at all. Thus the insert is firmly held in position, and takes the thrust due to the wedge-shaped fish plates, so that the rail ends themselves will be free to move under the influence of expansion and contraction.

It will thus be seen that we have provided a strong and simple metallic tie so formed as to positively grip the road bed and ballast, and maintain itself in position. It will also be seen that we have provided an improved chair and joint in connection with such a tie, in which a smooth tread at the rail joints is insured, and in which the rails themselves are rigidly held against lateral movement, while at the same time they are permitted to respond to variations in temperature, and it is therefore thought that the numerous advantages of our invention will be readily appreciated by those skilled in the art.

What we claim is:

1. A metallic railway tie of substantially inverted T-shape in cross-section, the base thereof being concave, and provided at each end thereof with pyramid-shaped pockets opening outwardly and downwardly, and adapted to engage the road-bed.

2. A metallic railway tie comprising a concave base having a longitudinally extending, centrally disposed, upstanding web, said base having at the end thereof a downwardly and outwardly extending pocket formed of a pair of triangular converging flanges, projecting from the lower surface of said base, such flanges adapted to penetrate the material of the road-bed.

3. A metallic railway tie having a rail chair at each end thereof, part of which is formed integral with said tie, a single wedge shaped fish-plate securing one rail in position, and a pair of similar fish-plates, securing the other rail, one on each side thereof, whereby the first rail may be clamped in position, and the proper gage adjustment secured by manipulating the fish-plates on each side of the other rail.

4. A metallic railway tie having rail chairs formed integral therewith, one of said chairs having an integral fish-plate on one side and a fish-plate guide, on the other side of the rail seat, and the other chair having fish plate guides on both sides of the rail seat, and wedge-shaped fish-plates co-operating with each of said guides, one such plate clamping the rail between itself and the integral plate, and the other two plates clamping the rail

between them, whereby proper adjustment of the rails may be secured.

5 5. A metallic railway tie having rail chairs formed integral therewith, each of such chairs comprising a fish plate guide, in combination with wedge shaped fish plates coöperating with said guides to clamp the rail, each of such plates carrying a spring pressed pivoted pawl, and a ratchet secured to the chair adjacent said guide, coöperating with said pawl, 10 to lock the plate in position.

6. The combination with a rail chair, and a pair of rail ends secured therein, of an insert or filler block located between said rails but unattached thereto, and a pair of fish 15 plates between which said rail ends and insert are clamped, the web of said insert being thicker than the web of said rails and serving to receive the thrust exerted by said fish 20 plates.

7. The combination with a rail chair, and the meeting ends of two rails secured therein, of an insert disposed between said rails but unattached thereto, said insert being of sub-

stantially the same cross-section as said 25 rails, and having oppositely disposed lugs projecting from the web thereof, and fish plates embracing said insert and rail ends, one of said plates having a notch adapted to receive one of said lugs. 30

8. The combination with a rail chair, and the meeting ends of two rails secured therein, of an insert of substantially the same cross-section as said rails disposed between the same, said chair being formed intermediate 35 its width with a groove or channel adapted to receive the base of said insert, and fish plates embracing said insert and rail ends, and serving to maintain the same in position.

In testimony whereof we have hereunto set 40 our hands in presence of two subscribing witnesses.

RALPH C. SHAY.

FRANK PAUL SALEME.

Witnesses.

S. B. HARÉ,

C. B. SHAY.