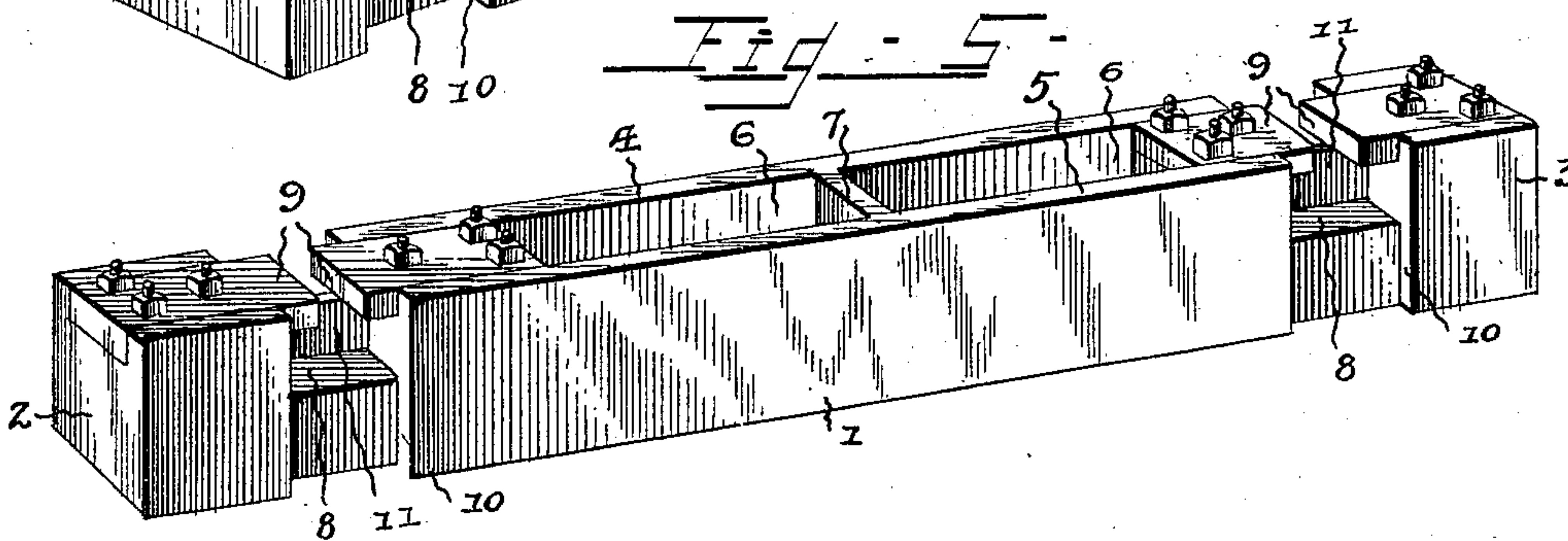
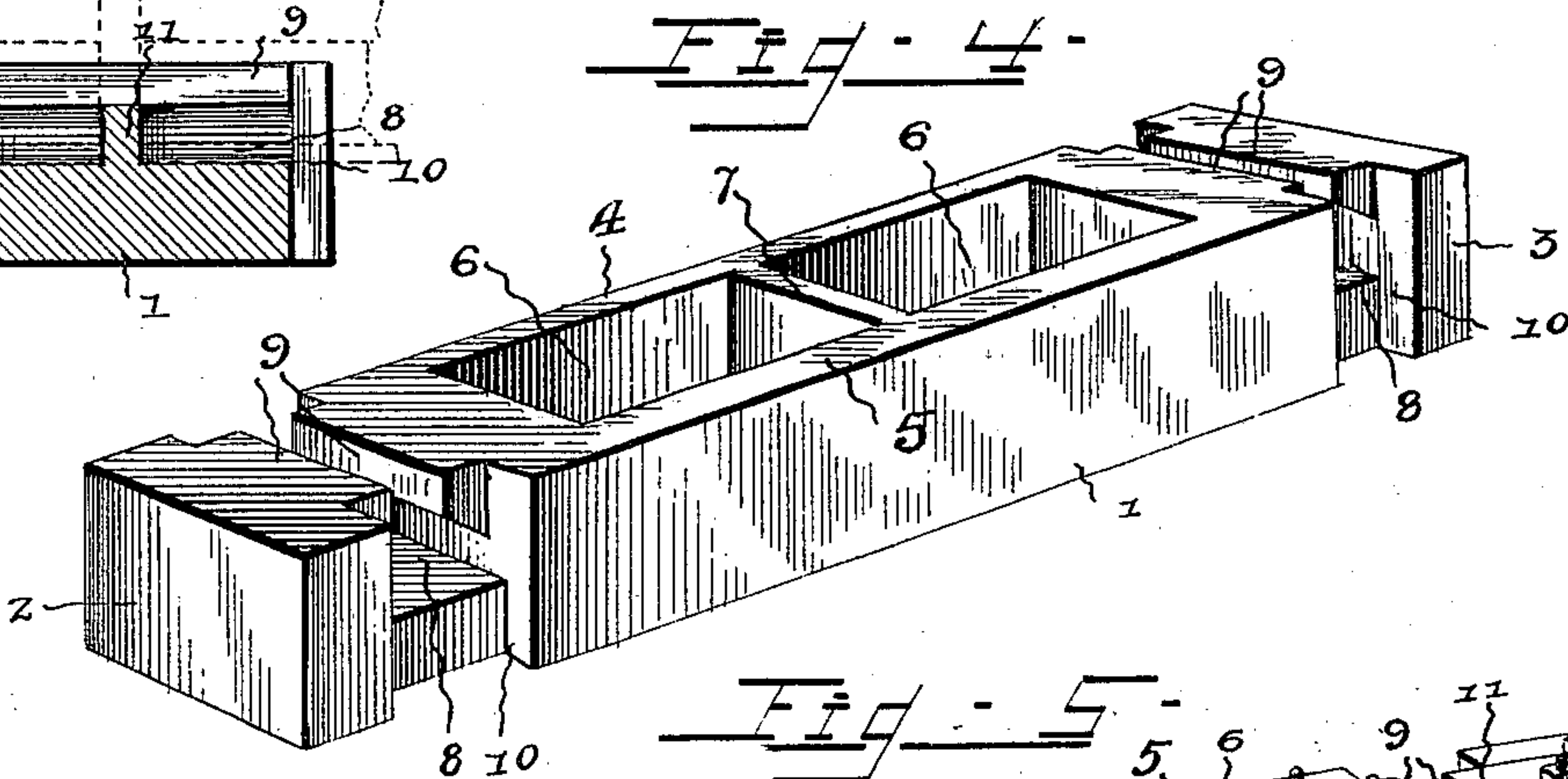
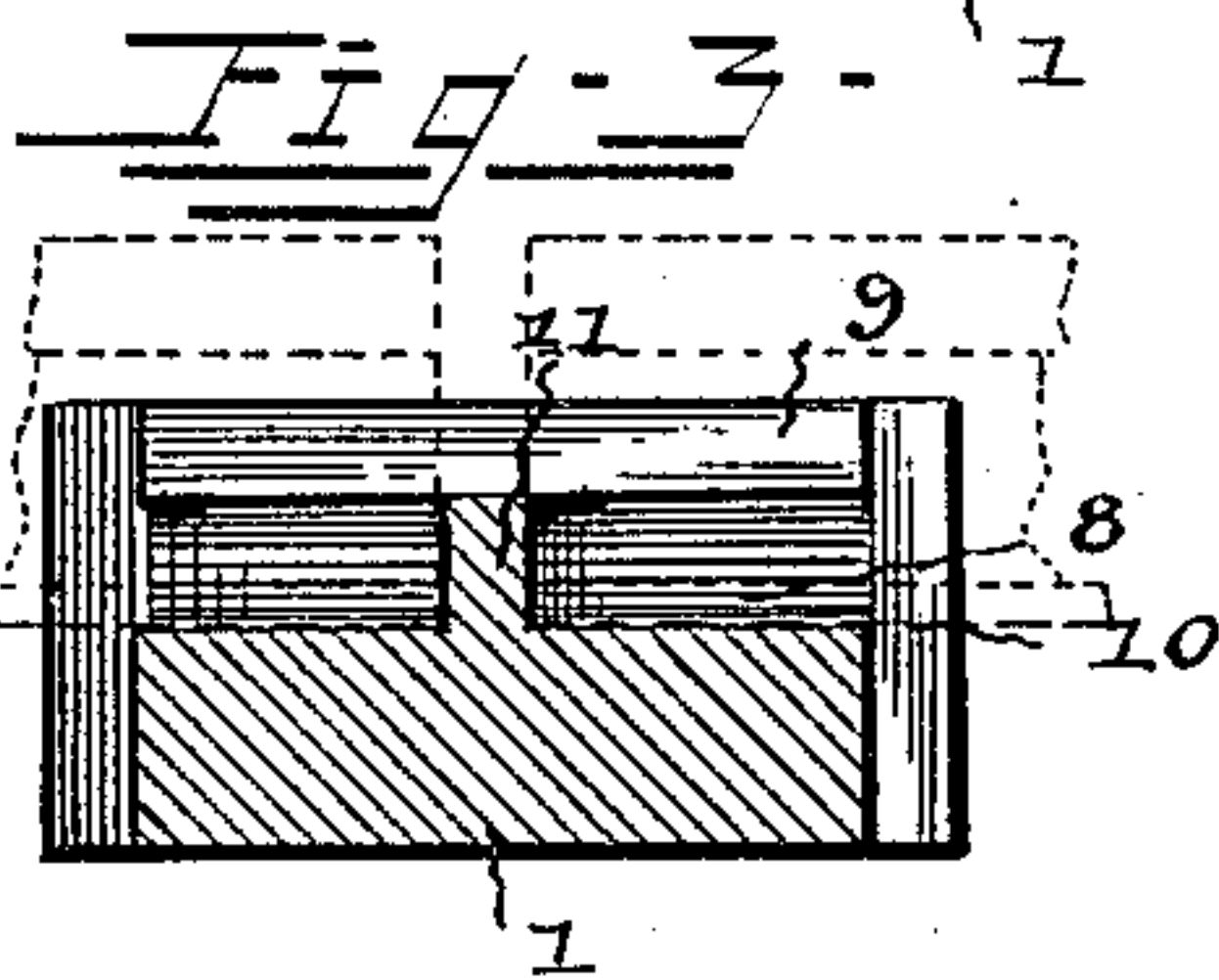
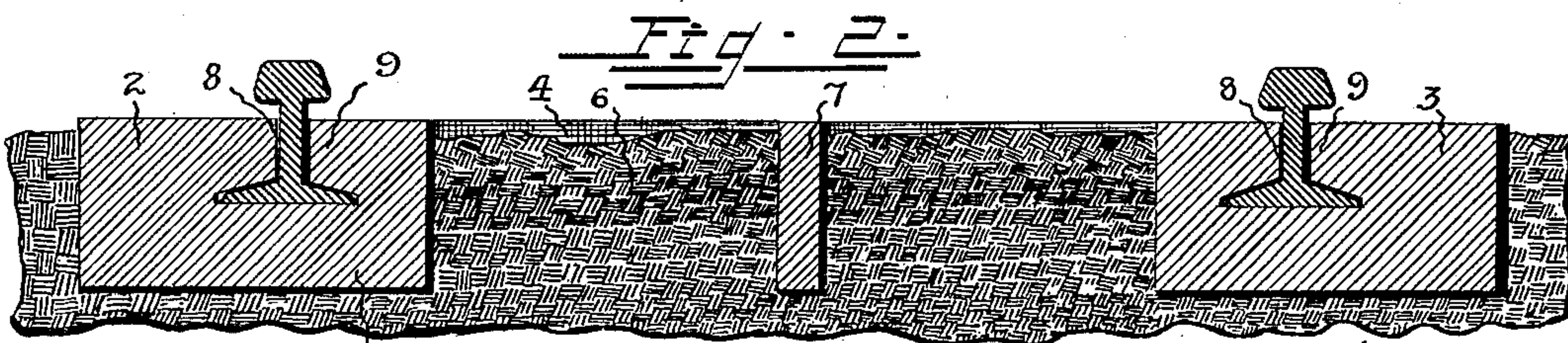
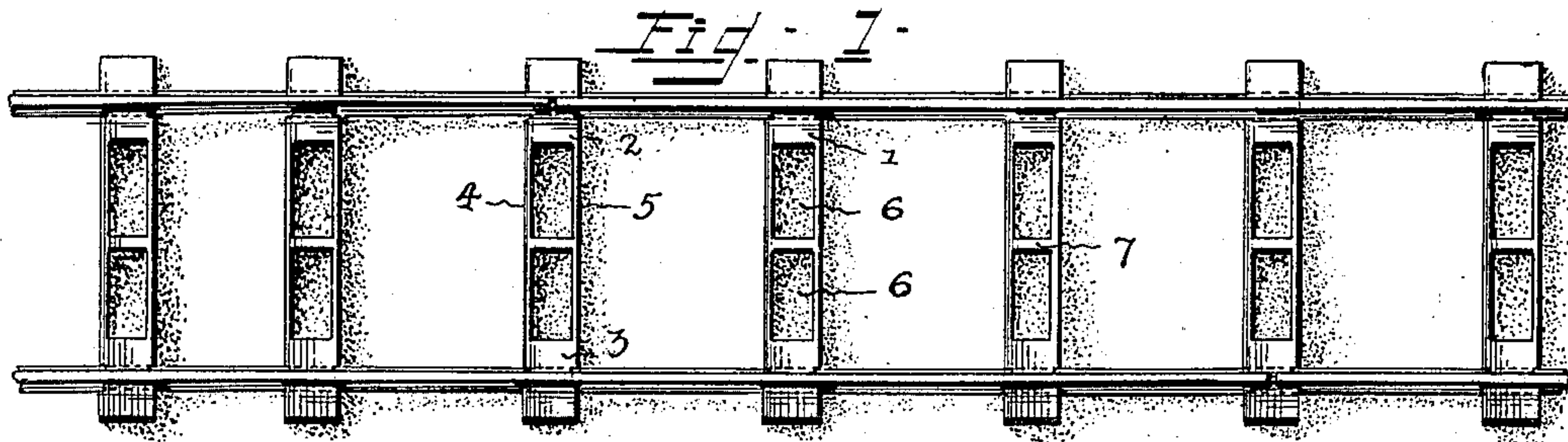


No. 685,739.

Patented Nov. 5, 1901.

J. H. BRYAN.  
METALLIC RAILWAY TIE.  
(Application filed Apr. 23, 1901.)

(No Model.)



Witnesses:-

*C. J. Henry*  
*H. A. Bunker*

*James H. Bryan, Inventor:-*

By *his* Attorneys.

*C. A. Snow & Co.*



# UNITED STATES PATENT OFFICE.

JAMES H. BRYAN, OF HUTCHINSON, KANSAS.

## METALLIC RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 685,739, dated November 5, 1901.

Application filed April 23, 1901. Serial No. 57,121. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES H. BRYAN, a citizen of the United States, residing at Hutchinson, in the county of Reno and State of Kansas, have invented a new and useful Metallic Railway-Tie, of which the following is a specification.

My invention relates to improvements in ties for railway-tracks; and the object that I have in view is to provide a light, substantial, and durable construction of tie by which a railway-track may be laid without requiring the employment of ordinary fish-plates, bolts, or spikes, thus effecting material economy in the installation of the track both as respects the cost of the material and the labor of assembling and fastening the parts.

A track when laid with ties constructed in accordance with my invention reduces the liability of wrecking the trains owing to spreading of the rails, as there are no bolts or fish-plates to work loose and the parts cannot be removed by malicious or evil-disposed persons, and the tie is constructed to effect economy in its manufacture while decreasing the weight. The ends of the tie are solid to furnish firm bearings for the rails. The tie may be embedded in the ballast both externally and internally, and it is so firmly secured in place that it cannot be displaced through service or accident.

A further object of the invention is to construct the tie in a manner to overcome expansion and contraction of the rails and also to promote the attachment of said rails to the solid or firm bearings of the structure.

To the accomplishment of these ends the invention consists in the novel construction and arrangement of parts which will be hereinafter fully described and claimed.

To enable others to understand the invention, I have illustrated the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a view of part of a railway-track having its ties constructed in accordance with the invention. Fig. 2 is a sectional view taken longitudinally through a tie embodying my invention and showing it embedded externally and internally in the ballast of the road-bed. Fig. 3 is a sectional elevation

through the tie, illustrating the abutment between the meeting ends of two rails. Fig. 4 is a detail perspective view of one construction of the tie; and Fig. 5 is a similar view illustrating another construction of the tie, having an abutment in the rail-seat for the meeting ends of the rails to bear against.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

1 designates a railway-tie, which is cast in a single piece of metal. This tie is of skeleton construction for the purpose of securing lightness in the weight of the article and to effect economy in the amount of metal required for the manufacture of the tie. The parts of the tie upon which the rails are seated are made solid for stability and strength, and in the drawings I have shown the skeleton tie as constructed with the solid end bearings 2 and 3. The solid bearings are joined together by the longitudinal webs or plates 4 and 5, which are integral with the solid bearings 2 3, and said webs or plates are arranged parallel to each other and spaced at a proper distance apart to provide the opening or space 6. The webs or plates are braced at a point intermediate of their length by the transverse strut 7, which is arranged midway between the solid end bearings and is cast or formed integral with the webs or plates, so as to form a permanent part of the tie structure and contribute materially to the strength of the web or plate. The solid end bearings 2 and 3 of the skeletonized metallic tie are formed with transverse seats for the reception of the rails, which are fitted in the seats in a manner to wholly overcome any tendency to become displaced therein. These seats in the solid end bearings of the tie are formed by transverse slots or channels 8, which in vertical section conform to the contour of the rail-foot, and the end bearings 2 and 3 are formed with integral flanges 9, which overhang the slots or passages 8 and are spaced apart a sufficient distance to form a throat, which opens into the slot 8 and is adapted to accommodate the web of a rail.

In the vertical side faces of the solid end bearings forming integral parts of the tie are provided the vertical grooves 10, which lie



in the vertical plane of the slots or passages 8 and which intercept with the slots at the ends thereof.

The ties which receive the rails at points intermediate of their length are formed with the slots or passages 8, that extend continuously across the upper face of the tie and are unobstructed, substantially as shown by Fig. 4, thus permitting of the ready introduction of the rails or their endwise adjustment in the seats of the ties when applying the rails to the ties in the installation of the track. The ties which receive the meeting ends of the rails are shown by Fig. 5, and they are constructed with abutments 11, that limit the endwise movement of the rails under expansion and contraction due to change in temperature. The abutments 11 are made as integral parts of the solid end bearings 2 and 3 of each tie, and each abutment is located in one of the seat-slots 8, at a point about midway of the length thereof, thus leaving ample space within the seat-slot and on opposite sides of the abutment for the accommodation of the adjacent ends of two rails which are fitted to the tie. This abutment 11 extends across the slot 8 in the direction of the length of the track, and it rises from the bottom of the slot up to the flanges 9.

In lieu of making the flanges 9 as integral parts of the tie separate plates may be used, which are fastened to the solid end bearings so as to overhang the seat-slots 8 in the tie, and this employment of separate plates serves to facilitate the laying of the rails in the seat-slots of the solid end bearings of each tie. The removable fastening-plates are shown by Fig. 5 of the drawings. If desired, the abutment 11 may also be made separate from the tie, and in case removable plates and abutments are used the parts may be secured in place by any suitable fastening means.

In laying a track with ties of my invention they are placed at proper distances apart on the road-bed and the ballast is placed between the ties and in the spaces 6, formed by the parallel plates or webs used in the construction of the tie to produce the skeleton structure. The rails are fitted in the seat-slots of the ties, and where the ends of two rails meet they bear against the abutments 11. The rails are firmly and securely held in the seats, and the solid end bearings of the ties afford

firm and solid supports for the rails. As the ties are permanently embedded in the ballast of the road-bed, they cannot be displaced by the rolling-stock of a railway, and the ties equipped with the abutments 11 hold the rails so firmly in place that the rails are prevented from expanding and contracting under changes of temperature.

A railway-tie constructed in accordance with my invention possesses maximum strength and durability and at the same time is comparatively light in weight without sacrificing strength to an appreciable degree. The tie is capable of manufacture economically and rapidly, and it can be laid and rails attached thereto with a minimum amount of labor, thus furthering economy in the installation of the track.

It is evident that changes in the form and proportion of parts may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of the invention.

Having thus described the invention, what I claim is—

1. A skeleton metallic railway-tie having the solid end bearings, the transverse seat-slots therein, and abutments which extend across the seat-slots and are adapted to receive the meeting ends of rails which are fitted in the seat-slots, substantially as described.

2. In a railway-track, the skeleton metallic ties embedded in the ballast of the road-bed and having their slotted end bearings provided with fixed abutments in the seat-slots thereof, combined with rails fitted in the slots of said ties and the meeting ends of adjacent rails bearing against said abutments, substantially as described.

3. A skeleton metallic railway-tie provided with the solid end bearings, having transverse seat-slots therein, disposed below the plane of the tie, and longitudinally-adjustable plates seated in recesses in said end bearings to overhang the seat-slots therein, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JAMES H. BRYAN.

Witnesses:

FRED W. COOTER,  
B. J. RAGLAND.