

No. 694,687.

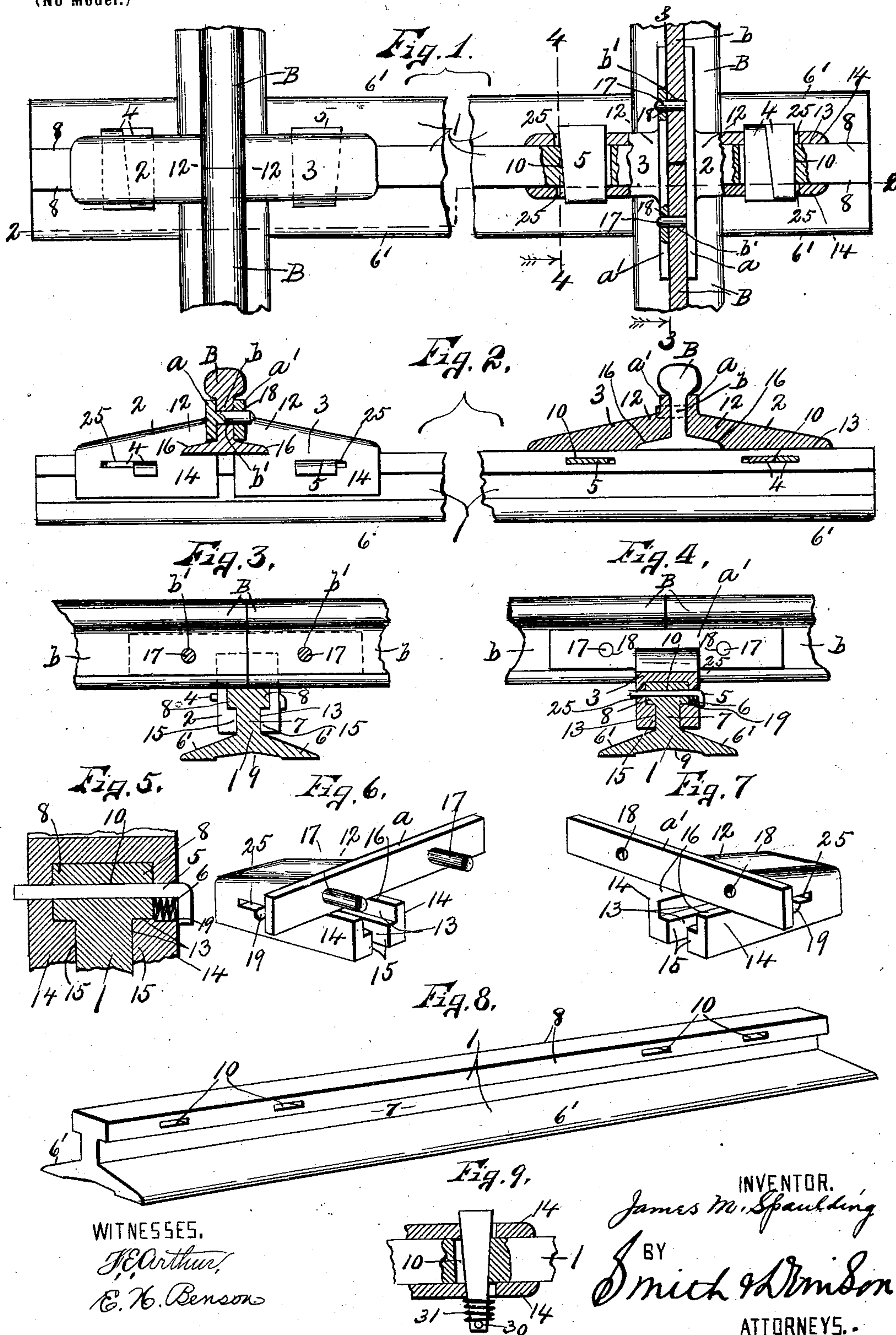
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J. M. SPAULDING.

RAIL FASTENER.

(Application filed July 15, 1901.)

(No Model.)



WITNESSES.

J. C. Arthur,
E. H. Benson

INVENTOR.

James M. Spaulding

BY

Smith & Wadson

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES M. SPAULDING, OF SYRACUSE, NEW YORK.

RAIL-FASTENER.

SPECIFICATION forming part of Letters Patent No. 694,687, dated March 4, 1902.

Application filed July 15, 1901. Serial No. 68,367. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. SPAULDING, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Rail-Fasteners, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in rail-fasteners, having more particular reference to certain improvements upon my former patent, No. 671,734, of April 9, 1901.

The object of my present device is to afford better securement for the meeting ends of the rail upon the support or tie by locking the rail and fastening members to each other in the manner hereinafter set forth.

A further object is to provide means for automatically taking up any wear in the key, and thereby insuring a perfect contact between the rail and the adjacent faces or ends of the fastening member.

To this end the invention consists in the combination, construction, and arrangement of the parts of a rail-holding mechanism, as hereinafter fully described and claimed.

Referring to the drawings, Figure 1 is a top plan view of a tie with the rails and fastening members mounted thereon, the central portion of the tie being broken away and one of the rails and the adjacent fastening member being partially broken away for more clearly setting forth the essential features of my invention. Figs. 2, 3, and 4 are vertical sectional views taken, respectively, on lines 2 2, 3 3, and 4 4, Fig. 1. Fig. 5 is an enlarged transverse section through the keyway of the tie and fastening member, showing the means for automatically forcing the key endwise for taking up the wear of the key or way. Figs. 6 and 7 are perspective views of adjacent fastening members of one pair. Fig. 8 is a perspective view of a support or tie. Fig. 9 is a horizontal section of a slightly-modified form of key and means for automatically moving the same endwise.

Similar reference characters indicate corresponding parts in all the views.

As seen in the drawings, my invention consists, essentially, of a support or tie 1, oppositely-arranged fastening members or locking members 2 and 3, keys 4 and 5, and springs 6 for automatically moving said keys in the direction of their taper.

The support or tie 1 preferably consists of an elongated bar of steel or suitable material which may be readily rolled or pressed into the desired form and which is generally provided with oppositely-arranged base-flanges 6' 6', a web 7, projecting upwardly from the base, and oppositely-arranged lengthwise flanges 8 8, projecting from the upper edge of the web 7. The base or rather the flanges 6' 6' of the tie preferably incline downwardly from the web 7 for forming a lengthwise recess 9 in its lower face for the purpose of reducing the weight of the tie and bracing the same against any superimposed load. The lower faces of the outer edges of the flanges 6' 6' are usually flat and are disposed in substantially the same horizontal plane and together with the upper walls of the recess form a wide and ample bearing for the tie, thus permitting the gravel or ballast to be tamped or worked into the ends of the recesses for leveling or lining up the rails. The ballast thus filled in beneath and between the flanges forms a broad bearing for the tie and rails to prevent undue lateral movement or displacement thereof. The web 7 is usually of just sufficient height between the upper and lower flanges 6' and 8 to permit the fastening members 2 and 3 to be readily and easily placed or moved into operative position and may be of any desired thickness to meet the requirements of its function, the purpose being to make the tie as light as may be consistent. The flanges 8 serve the purpose of forming a suitable seat for the rails and cooperate with the fastening members 2 and 3 for holding the rails in a fixed position. The ends of the tie 1 are formed with transverse slots 10 10, preferably extending through the flanges 8 on opposite sides of the rail-seat for receiving the keys 4 and 5, presently described. These slots are generally formed of substantially the same width, being slightly greater than their respective keys 5 for a purpose hereinafter mentioned. One of the side walls of each of the inner slots 10, and preferably the walls more remote from the rail-seat, are inclined from one end to the other for forming bearing-faces for the keys throughout the width of the flanges or upper portion of the tie, and thereby distributing the lateral strain upon the keys, which may be transmitted from the rails through the fastening members.

The fastening members 2 and 3 serve to firmly hold the rail in its operative position and permit the same to be readily adjusted or more securely fastened should the contiguous parts become worn or battered in use and are movable along the upper face of the tie in engagement with the flanges 8. Each of these fastening members preferably consists of a block or body of suitable metal, such as malleable or cast iron, having a jaw or transverse flange 12 and a T-shaped recess 13 extending upwardly from its lower face from end to end for forming suitable depending lengthwise flanges 14 and ribs or shoulders 15 projecting inwardly toward each other from the lengthwise lower edges of said flanges. The jaws 12 are provided with rail-engaging plates *a* and *a'*, which are adapted to engage the opposite faces of the meeting ends of the rails B, said plates *a* and *a'* being of substantially the same height as the depth of the web *b* of said rails and are arranged to fit closely against the upper and lower lengthwise flanges of the rails. These jaws are arranged upon the support or tie in pairs, one pair, as 2 and 3, for each rail of the track, the adjacent faces of the fastening members of each pair being formed with recesses 16 for engaging the base-flanges of the rail, the lower walls of the recesses 16 being extended beneath the rail for the purpose of forming as broad a bearing therefor as possible. The ends of the rails are arranged to meet upon the support or tie, normally resting thereon, and are each provided with one or more apertures *b'*. One of the plates of each pair of fastening members, as *a*, is provided with a plurality of studs or pins 17 and the other plate of the other fastening member is provided with corresponding sockets 18, said pins and sockets being alined with each other and with the apertures *b'* in the meeting ends of the rails B.

The plates *a* and *a'* of the fastening members 2 and 3 extend laterally beyond their respective bodies, thereby forming suitable lateral wings or arms lapping a suitable distance upon the meeting ends of the rails at either side of their meeting faces. When these fastening members 2 and 3 are placed in position at opposite sides of the meeting ends of the rail, the studs or pins 17 are forced through the apertures *b'*, with their ends projecting into and through the sockets or apertures 18. It is thus apparent that the ends of the rail are firmly locked together by said plates when the fastening members are secured in position by the keys, presently described.

The fastening members 2 and 3 are substantially the same in construction, except that one is provided with studs and the other with sockets and are interchangeable one with the other, being adapted to be used at either side of the rail, and one pair may be substituted for the other.

The tie or support is substantially T-shaped, the flanges 8 extending from end to

end, and are preferably unbroken, except for forming the slots 10 therein. The bodies of the fastening members 2 and 3 are each provided with T-shaped recesses of substantially the same cross-sectional form as the head of the supporting-tie, being also formed with transverse slots 25, extending through the flanges 14 and adapted to be alined with the transverse slots 10 of the rails B. The flanges 14 are also formed with sockets 19 for receiving suitable springs 6, the inner ends of which abut against the lateral faces of the head of the supporting-tie, and the other end engages the downturned portion of the keys, presently described.

In the drawings I have shown duplicate keys for each of the outer fastening members, these keys being tapered in opposite directions and are inserted through the slots of said outer fastening members and the adjacent slots in the tie from opposite sides, with their beveled edges in contact, the slots in the supporting-tie and fastening members being of slightly-greater width than the combined width of the keys 4, inserted therein, the outer edge of the outer key being arranged to engage the outer wall of the slot of the supporting-tie and the inner edge of the inner key being arranged to engage the inner walls of the slot in the fastening member, so that as said keys are driven from opposite directions the fastening member will be forced into engagement with the rail. The keys 5 for the inner fastening members usually consist of a single piece of metal tapered lengthwise and inserted into the inner slots of the tie and inner fastening member, so that as said keys are driven in the direction of their taper they will force the inner fastening members into engagement with the inner face of the rails, and it is therefore apparent that when the keys are thus forced into operative position the rails are positively locked from lateral movement, the plates *a* and *a'* serving to additionally hold the meeting ends of the rails from endwise or lateral displacement and the lugs 17 interlocking with the apertures in the ends of the rails and also with the apertures 18 in the other plate and forming a particularly strong fish-plate connection for the rail ends, being without nuts or other devices which might become loosened by continued use. After the keys are inserted in position the springs 6 are inserted in the sockets 19, and the smaller ends of the keys are then bent upon the adjacent face of the fastening member, thereby concealing the spring and preventing the removal of the key. This spring 20 serves to automatically force the key in the direction of its taper for the purpose of taking up any wear on the key or the keyway and maintains the fastening members in firm engagement with the rail. Although this is a particularly simple and effective means of tightening the keys and keeping the fastening members in position, it is evident that other means may be employed for this

purpose, and I have therefore shown in Fig. 9 a slight modification for effecting this result, in which the key is inserted through the slots, as usual, and, as previously described, is provided at its outer or small end with a shoulder 30 and a spring 31, interposed between said shoulder and the adjacent face of the fastening member, the operation of which is apparent upon reference to the said figure.

The several fastening members 2 and 3 are removable only at the ends of the tie, and when assembling the various parts of my invention the inner fastening members 3 are first slipped over the ends of the T-shaped heads of the tie, with their jaws open outwardly and their slots alined with the slots in the tie. The keys 5 are then inserted in their respective slots. The rails are then placed in position against the jaws of the inner fastening members, which it is evident form a gage for the rails. The outer members are then slipped over the ends of the tie with their jaws opening inwardly and are moved into engagement with the outer faces of the rails, the keys 4 being then inserted in their respective slots, the studs or pins 17 being inserted through the apertures in the rail and inner fastening members, and the springs 20 are then placed in position, and the smaller ends of the keys are bent downwardly or in any other direction which may be desired against the face of the fastening member, thereby holding the keys in position and permitting the same to be driven further in, if desired, to more firmly grip the jaws of the fastening members against the rail.

The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that some change may be made in the detail construction of the parts of my invention without departing from the spirit thereof—as, for instance, a single key may be used in place of the double key 4 or double keys may be used throughout, and instead of providing lugs upon the fastening members suitable pins or lugs may be provided upon the rail and adapted to enter apertures in the fastening members, these changes being a mere reversal of the arrangement described, and therefore within the spirit of this invention. It is also evident that instead of using a coil-spring, as indicated in Figs. 5 and 9, I may employ a flat spring or rubber or any other device for the purpose mentioned. It may sometimes be desired to form the fastening members 2 and 3 without the lengthwise ribs 15, simply allowing the flanges 14 to engage the lateral faces of any suitable form of tie or support, so long as the tie or support is provided with transverse slots arranged in pairs adapted to receive tapering keys, it being understood that when the fastening members are thus constructed the slots will necessarily be deeper for receiving heavier keys. Further-

more, it may be necessary in some instances to provide the meeting ends of the rail with a plurality of apertures, in which instance the plates a and a' would be provided with a corresponding number of studs and apertures.

The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings.

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

1. A rail-fastener comprising a support having lengthwise flanges and transverse slots arranged in pairs, keys movable in the slots, and fastening members arranged in pairs corresponding to the pairs of slots, the fastening members of each pair being engaged with their respective keys and having laterally-extending arms engaging the rail.

2. The combination with a support and rails having their meeting ends carried by the support and provided with apertures, of a pair of keys engaged with the support and a pair of fastening members engaged with their respective keys and having adjacent ends formed with rail-engaging plates extending laterally beyond their respective bodies, one of the plates being provided with studs projecting through the rail-apertures and the other formed with sockets receiving the projecting ends of the stud.

3. In a rail-fastener, the combination with a support having a transverse slot, a fastening member secured to the support and engaged with the rail, a second fastening member opposite the former member for engaging the opposite face of the rail, said second member being provided with a transverse slot alined with the former slot, a tapering key inserted in said slots and a spring or its equivalent for automatically forcing said key in the direction of its taper for the purpose described.

4. In a rail-fastener, the herein-described rail-engaging member having a transverse recess in one end and a transverse plate extending laterally beyond the recess, said member being provided with a transverse slot through its body and formed with separate lengthwise flanges provided with inwardly-projecting lengthwise ribs.

5. In a rail-fastener, the herein-described rail-engaging member having separated lengthwise flanges provided with inwardly-projecting lengthwise ribs and transverse slots extending through the flanges above the ribs, said member being provided with laterally-extending arms, and studs projecting from said arms for the purpose described.

In witness whereof I have hereunto set my hand this 8th day of July, 1901.

JAMES M. SPAULDING.

Witnesses:

H. E. CHASE,
MILDRED M. NOTT.