Oct. 4, 1949. P. A. STURTEVANT 2,483,741

TRACK COUPLER

Filed March 14, 1946

Fig. 1

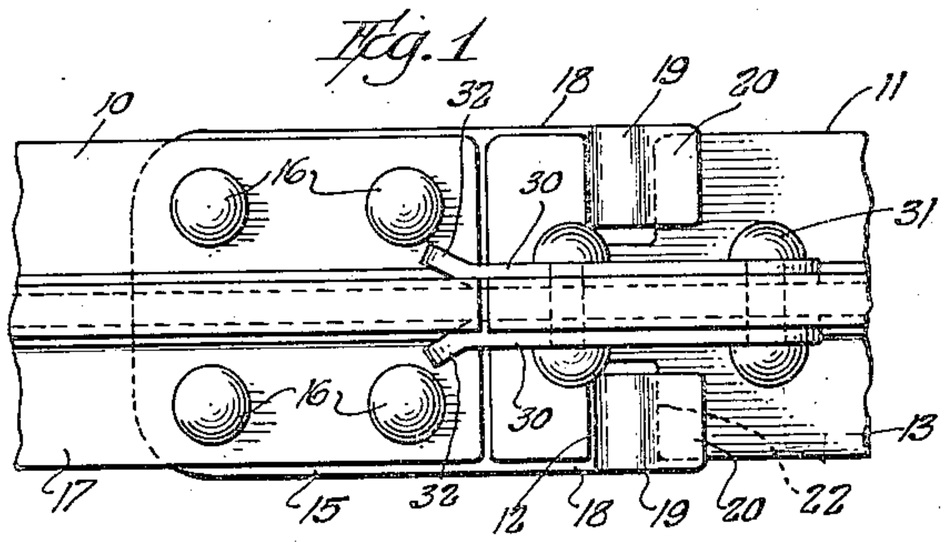


Fig. 7

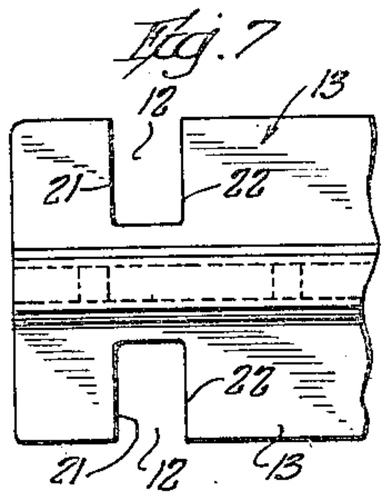


Fig. 2

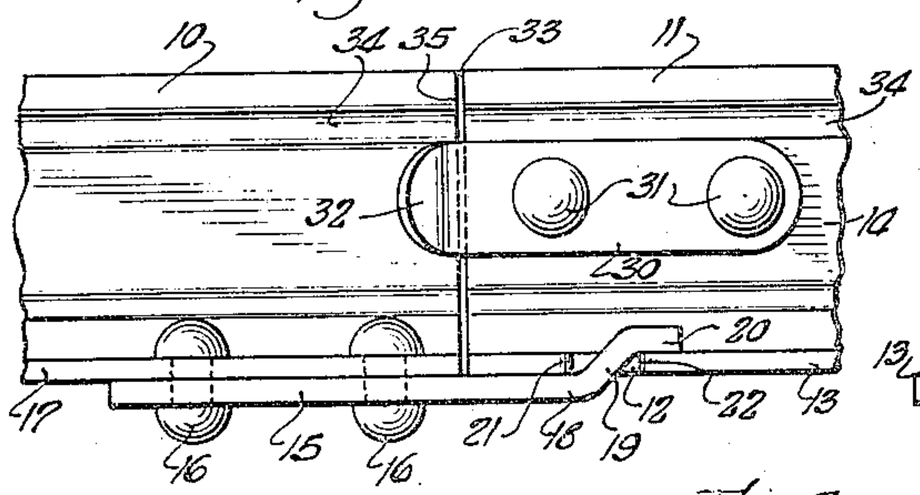


Fig. 3

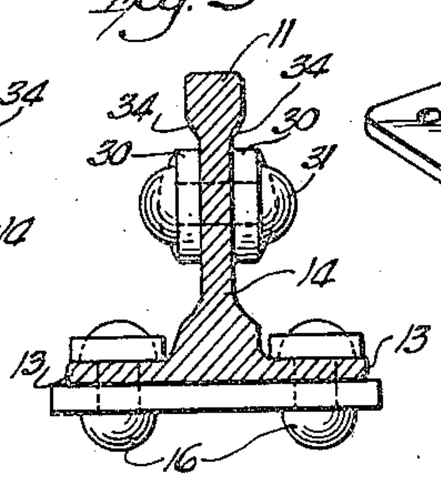


Fig. 8

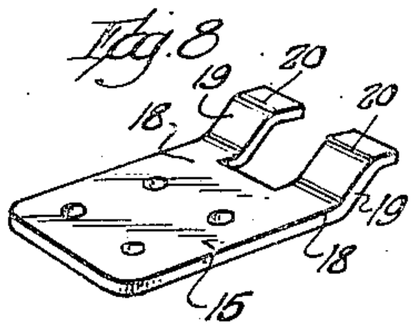


Fig. 4

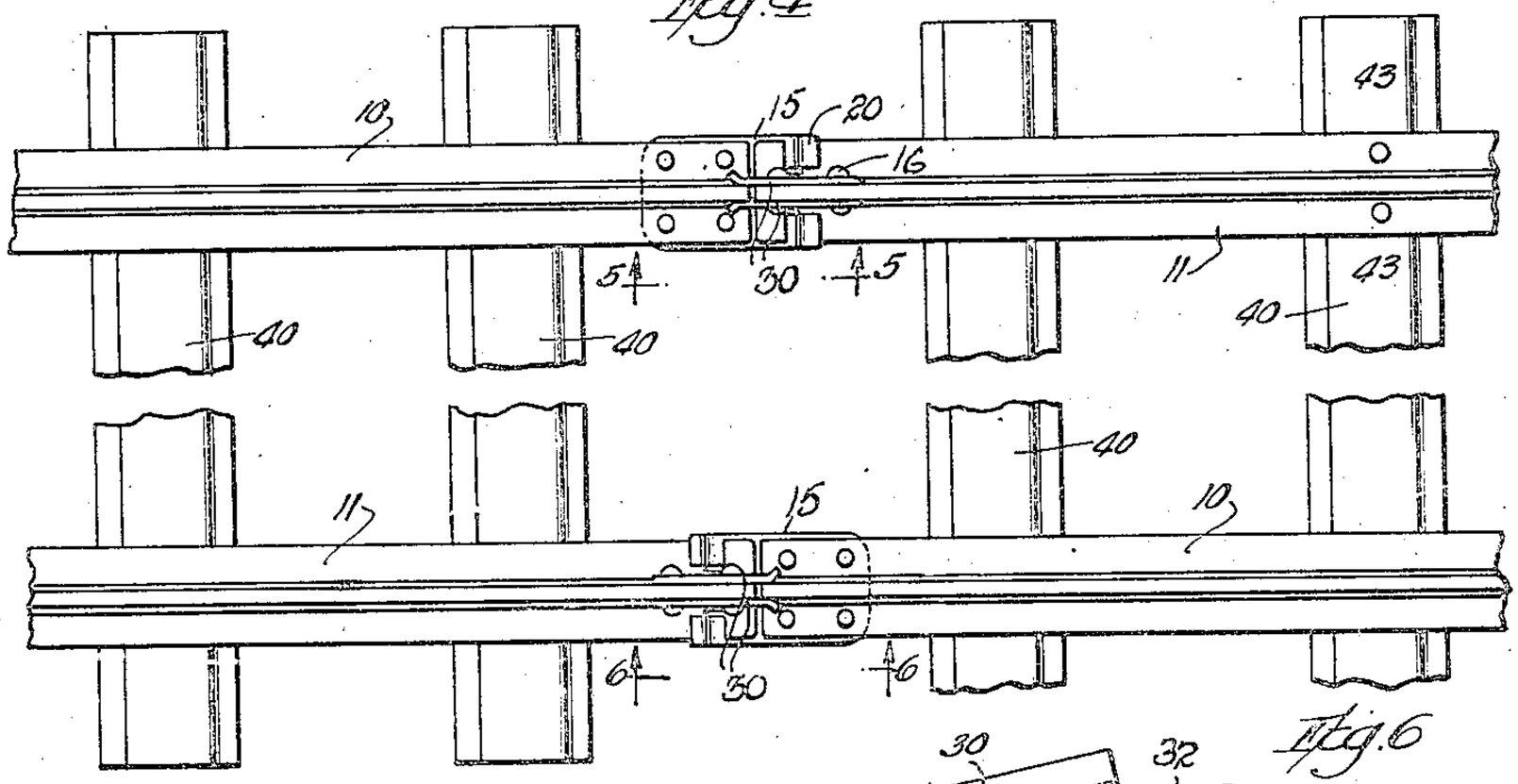


Fig. 5

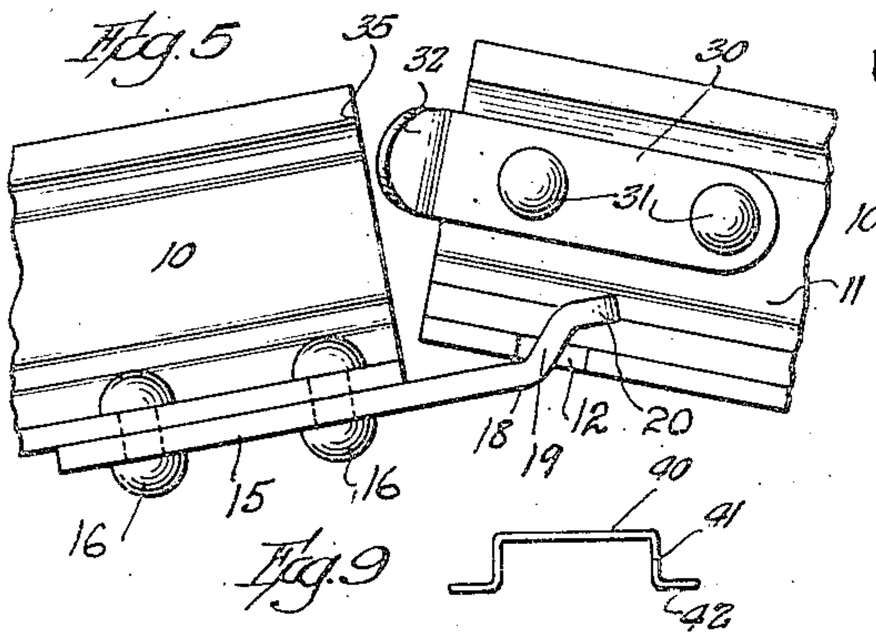
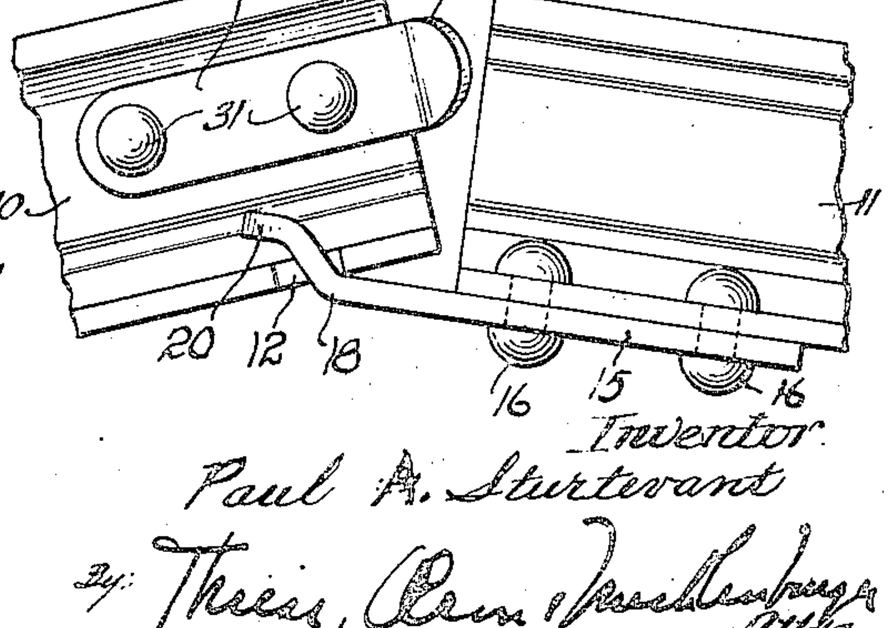


Fig. 9

Fig. 6



Inventor:
Paul A. Sturtevant
By: Theis, Cain & Breitenberger
Attys.

Patented Oct. 4, 1949

2,483,741

UNITED STATES PATENT OFFICE

2,483,741

TRACK COUPLER

Paul A. Sturtevant, Elmhurst, Ill.

Application March 14, 1946, Serial No. 654,307

10 Claims. (Cl. 238—241)

1

This invention relates to track rail couplers or joints and particularly to such as may be used for joining the rails of small industrial railroads, miniature railroads, toy electric and other trains, etc., and for assembling connecting beams in structural work.

Heretofore such devices have been more or less complicated, involving detachable parts, sliding connections, nuts and bolts, and the like, and are difficult to assemble, maintain and disassemble. Parts are liable to be mislaid or lost, to be distorted in attempting to assemble or take apart; the alignment is not good and the joints come apart.

It is one object of this invention to provide a coupler which is automatic in its locking and aligning features, which is extremely simple in its construction and method of assembly and disassembly, cannot be distorted in assembly or disassembly, has no separate pieces to be mislaid and lost, and which is rugged in construction, efficient in operation, economical in manufacture, and of long life.

In carrying out the invention in the preferred form, a coupling plate may be riveted or otherwise secured to a flange at one of the adjacent ends of the rail sections or connecting beams to be joined. The projecting end of the plate may be provided with spaced tongues or fingers which are bent to pass through openings or notches formed in a flange of the other adjacent rail section or connecting beam end, one on each side of the web of the rail. The end of the second section of the rail or connecting beam bears against these forwardly projecting tongues and the ends of the tongues bear against one face of the flange beyond the notches, while the slanting or diagonal parts of the tongues engage with the edges of the notches in the flanges and slide and lock the abutting ends of the sections in proper position with respect to each other.

To assist in the alignment of the rail sections or connecting beams and maintaining them in that condition, a pair of side rail clips may be riveted or otherwise secured to the web of the one section and grip the sides of the web of the other section when the two adjacent ends of the sections are brought together.

The attachment is conveniently made by tilting the adjacent sections upward slightly in order to permit the hooking of the supporting, positioning and locking fingers or tongues through the slots or openings in the flange of the other section. Then when the track or connecting beam sections are lowered or pushed downwardly, the

2

two sections are drawn together into proper position by the tongues and notches and the side clips engage the web of the opposite end, and both sections are thus tightly held together in perfect alignment both horizontally and vertically and are locked against longitudinal separation, and any weight imposed on the joints only tends to hold them the more tightly together.

The disassembly is equally simple and expeditious. The rail or connecting beam sections are simply raised at the joint and the sections will come apart or can be readily pulled apart. There are no nuts and bolts to take out and lose, no sliding members which stick and refuse to slide, and no loose pieces to be taken care of and apt to be mislaid and lost.

This ease and dispatch of assembly and disassembly is particularly important and valuable in connection with miniature trains and railroads for street carnivals and the like, which not only move frequently but where it is important to get the railroad and trains started early at new locations to attract attention and excite the interest of the public in the carnival as a whole as well as in the railroad and trains. Frequently, with this invention, the miniature trains and railroad are the first attraction operating at a carnival, and their quick and ready assemblage from the trucks to operative condition never fails to attract the public.

In such places, too, there is frequently not sufficient time to even off the surface of the ground accurately where the railroad is to be laid, so that some of the joints between rail or track sections may not be well supported, but with these joints they support the load and trains regardless and any tendency to be depressed by the weight only locks them together the tighter.

And the same is true for toy trains and railroads, where perhaps for lack of room the track can be permitted to be laid on the floor for a limited time only and then must be taken away and stored. Children are apt to be impatient in getting ready to start the trains as well as in packing up afterwards, and may not have acquired sufficient mechanical skill to operate sliding or other tricky connectors which are difficult to handle, and they are apt to resort to force, such as jumping on the joints in an attempt to straighten them out, with the result that the parts are distorted or destroyed, and the difficulty may not be readily overcome.

But with this invention there are no loose parts to find and get together; the ends of the track sections are merely grasped, brought and hooked

together, and lowered to the floor. It is taken apart as readily.

The arrangement of the connections for the track sections is such that it does not make any difference which ends of the sections are brought together to be interlocked. This further reduces time and trouble of assembly, disassembly, loading and unloading thereof, and handling in general.

In industrial applications, likewise, the rugged nature of the joint, the self-aligning and locking features, enhanced by use, the ease and speed of relocation, if desired, and no loose parts, as well as cheapness of construction and efficiency of operation, all make it especially advantageous and important.

Further objects and advantages will appear from the detailed description and claims to follow, in connection with the accompanying drawing which illustrates, by way of illustration and not of limitation, an embodiment of the invention, and in which—

Fig. 1 is a plan view of the rail joint;

Fig. 2 is a side elevation thereof;

Fig. 3 is an end elevation, looking toward the right end of Fig. 2, the rail, however, being shown in section;

Fig. 4 is a plan view of the meeting ends of track sections with the joints applied to the rails;

Fig. 5 is a detail view of the rail joint looking in the direction of the line 5—5 of Fig. 4, but with the ends of the rails tilted up in position to thread or hook the tongues on one rail through the flange openings on the other;

Fig. 6 is a similar view on the line 6—6 of Fig. 4 showing the same parts and positions with respect to the other rail of the track sections;

Fig. 7 is a detail plan view of the end of the rail having the flange openings;

Fig. 8 is a perspective view of the bottom plate with its interlocking and supporting tongues; and

Fig. 9 is a cross section of the ties.

Referring to these drawings, the adjacent rail sections 10 and 11, as seen in Figs. 1 to 3, are preferably square-ended, the one rail 11 having openings 12, preferably in the form of open-ended slots or notches, Fig. 7, in one of its flanges near the end of the rail and one on either side of the web 14 of the rail. While openings 12 are shown in bottom flange 13, it will be understood that the structure shown is illustrative only and that openings 12 need not be located in bottom flange 13 solely.

A track coupling clip, Fig. 8, which may be in the form of a plate 15, is secured by rivets 16, or otherwise, to the underside of the bottom flange 17 of the abutting rail end 10. The plate 15 may be substantially the width of the bottom flange of the rails, if openings 12 are located in bottom flange 13, and is provided with two forwardly projecting spaced tongues 18 underlying the bottom of rail end 11. These tongues or fingers 18 may be bent or formed with slanting portions 19 passing up through the openings or slots 12, respectively, in the bottom flange 13 of the other rail end 11, and with end portions 20 extending over and bearing upon the top side of the bottom flange.

When the two rail sections are assembled as in Figs. 1 and 2, the bottom end of the rail section 11 rests upon the plate 15 and tongues 18 and is supported thereby, and the ends of the tongues rest and bear upon the flange 13 and are supported thereby, so that the two abutting ends of the rails interlock and support each other. Any tendency to separate longitudinally in use

or to pull apart is resisted by the portions 19 of the tongues 18 engaging the edges 21 of the slots 12, and both edges 21 and 22 of the slots engaging the slanting portions 19 tend to guide and bring the ends of the rails together in the desired positions when the joint is being assembled.

These tongues or fingers 18 are hooked or inserted through the openings 12, as indicated in Figs. 5 and 6, by slightly raising the adjacent ends of the rails and directing the ends 20 into and through the openings 12 in the bottom flange of the other rail, and then lowering the two ends. In such lowering of the ends, the edges 21 and 22 of the openings or slots tend to engage and slide along the inclined or offsetting portion 19, so that when in horizontal position, as shown in Fig. 2, the ends of the rails are drawn closely together in alignment positions and are automatically locked against longitudinal separation or movement by the tongues and notches. A slight clearance is left between the ends of the rails for expansion and contraction purposes, 1/64 of an inch being sufficient in the particular instance of Fig. 4. The joint is thus self-supporting vertically by the interlocking hooks or tongues and openings and any rotational tendency is prevented.

Side clips 30 of relatively heavy material are secured, as by rivets 31 or otherwise, to the web of one rail end, in this instance the end 11, and project forwardly to engage and tightly grip the web of the opposing rail end when the joints are assembled, as in Figs. 1, 2 and 3. The free ends of these side clips are bent, curved or flared outwardly a little, as at 32, to receive between them the end of the web 14 of the opposite rail section as the two rails are lowered into final locking position after being hooked together by the tongues 18. Thus, as shown in Fig. 5, at the first hooking of the rails in their tipped-up position, the clips have not engaged the opposite rail web. But, as the two ends of the rails are pressed down or lowered to the horizontal position, the clips slip over the two sides of the web and slide down into the position of Fig. 2. The flaring ends 32 ensure this proper action even though the two rails, at this time more or less loosely hooked together should not have their webs in exact alignment at the start. The side clips thus continually align or ensure the alignment of the webs and assist the bottom clip in aligning the two rail sections in the joint.

The track surfaces of head or heads of the rails are at the same level at the juncture 33, Fig. 2, since the rails are of the same height and the bottom of rail 11 is supported on the tongues 18 and plate 15, which extend forwardly from the bottom of rail 10.

The coupler is thus automatic in its positioning, locking and aligning features.

While aligning side clips 30 are shown attached to the rail section having the slots 12 in the lower flange, they may be applied to the other section so far as their main functions are concerned. But the arrangement shown is preferred for various reasons, including the strengthening of the end having the notches cut in the flange, ease of manufacture, and other reasons.

Fig. 5 shows the invention embodied in complete track sections, such as may be used in miniature railroads, and the like.

In such track sections the rails and cross members, corresponding to ties in railroad lines, are all secured tightly together and are handled as such units in assembling, disassembling, transporting and storing.

In this figure the same reference characters, so far as they apply, are used. The cross members or ties 40 are preferably heavy sheet metal of inverted channel form, with the flanges 41 turned outwardly or laterally at the edges 42, as indicated in section in Fig. 9. The rails may be secured to the webs of the channels, as by rivets 43 or otherwise. The track sections are thus rigid units and are conveniently handled as such for all purposes, as for instance in assembling and laying the track, in taking it up, loading and unloading trucks, storage, and the like.

As shown in Figs. 4, 5 and 6, the bottom and side clips in such units or track sections are reversed in position on the two rails of the track at the joints. Thus, the two clips are attached to the upper rails in Fig. 4 in the same position as shown in Figs. 1, 2, 3 and 5, while they are reversed in position on the other rails of the joint as shown in said figure and in Fig. 6. Otherwise there is no difference in construction and operation.

The ends of the track sections may be coupled together by slightly raising their ends and substantially simultaneously threading the tongues 18 through the slots 12 of the lower flange of the other rail sections and then lowering or pushing down the hooked ends of the sections. In such lowering of the joints the track sections and rails are automatically aligned and locked, as described. Any load imposed on the rails and joints only holds them more tightly together in alignment both vertically and horizontally.

Several important advantages result from this reversal of position of the locking and aligning clips on the two rails of the sections. Whatever special stresses and strains may develop in one rail of the track, due to the location of the bottom clips on one rail and the slots and side clips on the other abutting rail at a joint of the sections will be offset or balanced by those simultaneously developed in the other rail of the joined sections. A better balanced and stronger joint of the track sections results.

Again, with the clips and flange slots reversely disposed in this manner, the ends of the track sections are the same and it does not matter which ends of the sections are brought together for joining. There are no pairs or rights and lefts to be kept in mind in laying the track or in the handling, loading and storing of the sections. This is of importance in systems where speed of handling and track laying is imperative, as in miniature railroads, and is specially desirable in tracks for toy trains where children are intended to handle the same. No attention need be paid as to which ends of the sections are to be joined.

This arrangement also insures the proper joining of the rails at the ends of the track sections, since it is necessary to thread the tongues through the slots in both rails before they can be lowered even approximately for locking.

While the track rails are preferably of substantially the cross-section shown, they may be varied as desired. In practice, applicant has found that for commercial miniature railways, apparatus of the full scale of the drawings, save Fig. 4, is satisfactory, the rails being about one foot apart in the track and an all-metal or steel construction throughout being used. Obviously, for other purposes the dimensions and materials may be adapted therefor.

As previously stated, openings 12 and plate 15 need not be limited in their location to bottom flanges 13 and 17 because it is apparent that substantially the same results can be obtained in structures having these parts located elsewhere, as for example in the upper flanges as by recessing plate 15 in one rail section and extending tongues 18 downwardly through the openings 12 disposed in the adjacent rail section. It is intended therefore that the scope of the invention shall extend to cover such variations.

Moreover, the type of joint disclosed herein may be used for other purposes without departing from the scope of the invention. For example, connecting beams in structural work may have this joint applied therebetween. Such connecting beams have heretofore been tied together by bolts, bars and other tie plates that necessitated special assembly work by labor on the job and required time and additional tools to complete the same. The use of my improved type of joint provides an exceptionally strong connection and eliminates this special assembly work and labor. The application of a load or any increase thereof while the load is applied tends to increase the locking grip or action between the connecting beams. The parts cannot be dislodged but firmly hold together, the assembly being simple as heretofore explained while no removable part need be used.

Without further elaboration, the foregoing will so fully explain the gist of my invention that others may, by applying current knowledge, readily adapt the same for use under varying conditions of service, without eliminating certain features, which may properly be said to constitute the essential items of novelty involved, which items are intended to be defined and secured to me by the following claims.

I claim:

1. A track rail joint comprising a pair of rails having adjacent ends, one of said rails having openings in a flange thereof near its said end, and supporting members secured to the other rail end and projecting upwardly and forwardly in supporting engagement with the end of the opposed rail, said members passing through said openings and supportingly engaging the upper face of said flange whereby a self-supporting joint is formed between the pair of rails.

2. A track rail joint comprising a pair of rails having adjacent ends, one of said rails having openings in a flange thereof near its said end, and supporting members secured to the other rail and extending in supporting engagement with the end of said flange and slantingly upwardly through said openings in engagement with the forward edge of said openings and thence into bearing engagement with the top face of said flange beyond the openings whereby the said ends are drawn and held together and supported by said members, openings and flange engagements.

3. A track rail joint comprising a pair of rails having adjacent ends, one of said rails having openings in a flange thereof near its said end, and supporting members secured to the other rail and extending in supporting engagement with the end of said flange and slantingly upwardly through said openings in engagement with the forward and rear edges of said openings and thence into bearing engagement with the top face of said flange beyond the openings whereby said ends are drawn to and held in position and supported by said members, openings and flange engagements.

4. A track rail joint comprising a pair of rails having adjacent ends, one of the rails having

openings in a flange thereof adjacent but spaced from the end of the rail and one on each side of the web, and a pair of spaced supporting tongues secured to and projecting on opposite sides of the web from the end of the other rail, said tongues being engaged by the end of the first-named rail and having offset portions passing through said flange openings respectively and bearing at their free ends upon one face of the flanges adjacent the openings, whereby the said ends are interlockingly engaged and self-supported in alignment to form the rail joint.

5. A track rail joint comprising a pair of rails having adjacent ends adapted to form substantially a continuous track rail, one of the rails having an opening in a flange thereof near the end and on each side of the web of the rail, and a pair of spaced tongues secured to and projecting forwardly from the end of the other rail also one on each side of the web of said other rail, said tongues receiving and supporting the end of the opposing rail and having intermediate slanting portions passing through said openings respectively and adapted to engage the forward and rear walls of the openings, the free ends of the tongues engaging and supportingly bearing upon one face of the flange beyond the openings whereby when assembled the adjacent ends of the rails are positioned, interlocked and self-supported in alignment.

6. A track rail joint comprising a pair of rails having adjacent ends, one of the rails having openings in a flange thereof adjacent but spaced from the end of the rail and one on each side of the web, a pair of spaced supporting tongues secured to and projecting from the end of the other rail also one on each side of the web of said other rail, said tongues being engaged by the end of the first-named rail and having offset portions passing through said flange openings respectively and bearing at their free ends upon one face of the flanges adjacent the openings, and side clips secured to the opposite sides of the web of one rail end and embracingly engaging the web of the other rail end whereby the said ends are interlockingly engaged and self-supported in alignment to form the rail joint.

7. A track rail joint comprising a pair of rails having adjacent ends, one of said rails having openings in a flange thereof adjacent the end, one opening on each side of the web, a supporting plate secured to the bottom of the flange of the other rail and projecting beyond the end thereof, said plate having spaced tongues extending slantingly through said openings respectively and bearing on a face of the flange beyond the openings, said plate, tongues, openings and flange forming an interlocking self-supporting joint between said ends of the rails, and a pair of side clips secured to the opposite sides of the web of the rail having the openings in its flange, the free ends of said clips embracing the web of the opposing rail to hold the same in alignment.

8. A track rail joint comprising a pair of rails having adjacent ends, one of the rails having openings in one of its flanges near the end, one opening on each side of the web of the rail, and a supporting plate secured to a flange of the other rail and projecting beyond the end thereof, said plate having forwardly extending tongues spaced on opposite sides of the rail web and with inclined portions adapted to be passed upwardly through said openings respectively when the ends of the rails are raised to a relatively inclined position, the said inclined portions engaging the forward and rearward edges of the openings when the rail ends are lowered to the horizontal position whereby to position and lock the said rail ends together in alignment, the free ends of the tongues supportingly bearing upon the upper face of the flange beyond the openings and the end of the rail resting on the said plate and tongues in advance of the inclined portions whereby the rail joint is self-supporting.

9. A track rail joint comprising a pair of rails having adjacent ends, one of the rails having openings in a flange thereof near the end, one opening on each side of the web of the rail, a pair of clips secured to the opposite sides of the web adjacent the head of the rail and having projecting flaring ends, and a supporting plate secured to a flange of the other rail and projecting tongues with inclined portions adapted to be passed through said openings respectively when the ends of the rails are temporarily inclined longitudinally toward each other, said inclined portions engaging the forward and rear edges of said openings and the said clips embracing the web of the opposing rail when the said rail ends are depressed to the horizontal position whereby to position and lock the said rail ends together, the base of the one rail end resting on said tongues and the free ends of the tongues resting on the top of the flange beyond the openings whereby the ends are vertically self-supporting.

10. A track section joint, each section including rails and ties rigidly secured together, self-aligning and locking connections for the ends of the rails of the sections including openings in flanges of one rail end of each opposed pair of ends, tongues secured to the opposite rail end of each pair adapted to be threaded through said openings by tilting the sections at an angle to each other and passing the tongues through said openings, the engagement of the tongues and opening walls serving to position the ends in alignment when lowered to the horizontal, the end of the one rail engaging said tongues and the free ends of the tongues engaging a face of the flange beyond the openings whereby the joint is self-supporting, pairs of side clips secured to the web of one rail of each pair and adapted to clasp the web of the other rail when the joint is lowered to align the rails at the joints, the ends of said clips freeing the ends of the opposing rail when the two sections are inclined for connecting the said tongues and openings together.

PAUL A. STURTEVANT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
426,877	Stream	Apr. 29, 1890
901,857	White	Oct. 20, 1908
1,201,725	Hansen	Oct. 17, 1916
1,389,781	Peifer	Sept. 6, 1921

FOREIGN PATENTS

Number	Country	Date
175,631	England	June 15, 1922