My invention relates to joints, more particularly to joints for use in the tracks of railroads and the like, and it consists in the construction, arrangements and combinations herein shown and described.

An object of my invention is to provide a joint which when used upon railroads will accommodate the passage of the train therealong without jarring or otherwise vibration of the passing wheels due to irregularities existing at said joint.

A further object of my invention is to provide a joint of the type described, the parts of which are so formed and related that deformation or disarrangement of the elements forming the joint by expansion or contraction of such elements due to variations in temperature is avoided.

A further object of my invention is to provide a joint of the type described which by means of a simple reinforcement structure eliminates the necessity of the use of a great number of fasteners for securing the elements of the joint in fixed relation.

A further object of my invention is to provide a joint the portions of which are so constructed and arranged that the forces exerted on said joint are resisted without deformation or derangement of the elements with a minimum use of material.

A further object of my invention is to provide a joint for use on railroad tracks and the like which will permit a smooth passage of the train thereover without the noises usually caused by said passage due to the unevenness of the top surface of the joint.

A further object of my invention is to provide a device of the type described which is simple to manufacture, has few parts, and does not get out of order easily.

Other objects and advantages will appear as the specification proceeds and the invention will be more particularly defined in the appended claims.

The device is illustrated in the accompanying drawings forming a part of this application, in which:

Figure 1 is a perspective view of the device as used in a rail joint;

Figure 2 is a transverse sectional view of the device;

Figure 3 is a sectional view on line 3—3 of Figure 2;

Figure 4 is a sectional detail view of a portion of the device.

As is well known to those engaged in railroading, the top surfaces generally indicated at 1 in Figure 1, are of arcuate formation with the central portion 2 thereof of greater elevation than the sides 3. In applying my invention to use on railroad tracks I take advantage of this fact to provide a joint of such construction and arrangement that jarring and vibrations of the wheels of the passing trains are eliminated. This is accomplished by having the greater portion of the seam of the joint at the substantial transverse center of this top surface of the rail and extending longitudinally so that no abutments or striking edges meet the incoming wheels, which due to this arcuate formation of the surface engage the rail at this point 2. It will be obvious from an examination of Figure 1 that the passing wheels of the train would not engage the transverse shoulders 4 and 5 and 6 and 7 but would engage the longitudinally aligned portions 8 and 9 of the joint.

In constructing a joint in accordance with my invention the vertical walls of the adjacent rails 8 and 9 are enlarged to approximately double the normal thickness which exists throughout the length of the rail as is clearly shown at 10 and 11. This is done to accommodate the elements of my device as well as to provide greater strength and rigidity at the joint.

These ends are then formed in a similar but oppositely disposed fashion providing interengaging portions for engagement with the strengthening means as well as the fasteners soon to be described. Thus the rail 8 is provided with the transverse rectilinear shoulders 12 and 13 in spaced relation. At an angle to these shoulders are the shoulders 14 and 15 respectively which are cut in the wall 10 at an angle oblique to the direction of the shoulders 12 and 13 respectively. A longitudinal rectilinear wall 16 connects the
oblique shoulders 14 and 15. This wall 16 is formed by splitting the rail at the transverse center between the shoulders 14 and 15 and cutting away the portion not needed. The rail 9 is formed in a similarly but oppositely disposed manner providing the shoulders 17, 18, 19 and 20 and wall 21 for engagement with the shoulders 18, 12, 15 and 14 and wall 16, respectively.

For strengthening the joint as well as allowing for the expansion and contraction of said strengthening means and its associated elements the walls 16 and 21 of the rails 8 and 9 are provided with elongated channeled recesses 22 and 23, respectively. These recesses 22 and 23 when brought together encompass a suitable chamber for the reception of the reinforcing or strengthening member 24. As appears most clearly in Figure 2, this reinforcing member 24 terminates in spaced relation to the ends of the chamber thereby allowing spaces 25 and 26 for accommodating expansion. As is shown in Figure 3 this reinforcing member 24 may be rectilinear in cross section to snugly engage the walls of the recesses or it may be constructed in any other suitable manner if desired. Apertures 24a are provided for receiving the fastening bolts.

For fastening the reinforcing member into tight locked relation with the ends of the rails 8 and 9 and for securing said ends in fixed relation the fastening means shown at 27 and 28 are utilized. These fastening means may consist of the conventional bolt and nut device in general use or any other suitable construction desired.

Suitable apertures 29 are provided in the rails 8 and 9 in alignment with apertures 24a for receiving the bolt. These apertures 29 are elongated as shown most clearly in Figure 2, to allow movement of the fasteners therein for accommodating the expansion and contraction of the rails 8 and 9. The apertures 24a having cooperation with the bolts or fasteners 27 and 28 may consist of a single bore as shown more clearly in Figure 3 snugly engaging the bolts 27 and 28 or in any other suitable fashion desired. It is obvious that if made in the form shown the piece 24 may expand or contract without injuring or clamping the fasteners 27 and 28, due to the elongated apertures 29 in the rails.

For engaging the fasteners in secure relation with the ends of the rails the plates 30 and 31 are provided. These plates have apertures 32 which as shown may consist of a single bore, expansion and contraction being accommodated by the elongated apertures 29.

From the foregoing description, the use and operation of my device are easily understood. The ends of the rails are formed in the manner described and positioned adjacent one another. The strengthening member 24 is then laid in one of the channels 22 or 23 and the other rail end thrown into snug engagement therewith. This brings the shoulders 12 and 18, 14 and 20, 13 and 17, and 15 and 19 and the walls 16 and 21 into close engagement. The plates 30 and 31 and fastening means 27 and 28 may then be engaged with the elements as shown in Figure 2 and the joint then set up for operation.

It is obvious that upon the passage of the wheels of a train said wheels will engage the portion 2 of the rail surface 1 and in passing over the joint will not engage the transversely positioned shoulders 4 and 5 and 6 and 7, which as can easily be seen cause jarring and vibration in the wheel, but will engage the longitudinally positioned seam formed by the abutting walls 16 and 21. This seam because of its longitudinal position does not set up vibrations and other disturbances which are incident to the engagement of the wheel with transversely projecting abutments. It is also obvious that due to the thickening of the walls 10 and 11 at the joint the forces exerted on the rails will be readily resisted without deformation or derangement of the parts.

The use of the strengthening or reinforcement member 24 because of its engagement with channels 22 and 23 will transmit to said rails a great number of the forces tending to separate the joint with consequent decrease in the resisting force required for the fastening means. This enables the use of a smaller number of fasteners 27 and 28 in the joint than when joints of customary construction are employed. In the embodiment shown only two of such fasteners are used whereas in a joint of ordinary construction a minimum of four would be required. It is obvious, however, that more fasteners can be used in my construction if desired.

The abutting shoulders 12, 18, and 13 and 17 being situated at right angles to the length of the track directly resist and reinforce the joint against forces exerted on the rails 8 and 9 in a longitudinal direction. This is obvious from an examination of Figure 2 wherein it will be observed that such shoulders will engage one another in direct abutting relationship. This relation of these shoulders compensates for the decreased resistance offered by the oblique positioning of the shoulders 14, 20, and 15 and 19 upon the transmission of forces in the longitudinal direction.

Upon expansion or contraction of the rails 8 and 9 the apertures 29 in said rails will be moved to change the positions of the fasteners relative thereto. It is thus easily seen that I have provided a rail joint which allows a noiseless and...
vibrationless passage of the wheels of a train thereover, which accommodates expansion and contraction of the rails and which requires a minimum number of parts for its efficient operation.

I claim:
A rail joint comprising a pair of rails in end to end abutting relationship, the abutting ends of the rails having similarly formed but oppositely disposed cut-away portions, the remaining portions providing longitudinal wall members, elongated recesses formed in the walls and extending over a major portion of said walls and together defining a closed chamber, a single elongated reinforcing member disposed in said chamber and of slightly less length than said chamber, re-inforcing plates upon opposite sides of said rail members, and said walls, said re-inforcing plate members having apertures for reception of fastening means, the apertures of said rail members having an elongated formation whereby said rail members may have limited longitudinal movements with respect to said reinforcing member.

HENRY J. LOEFFELHOLZ.