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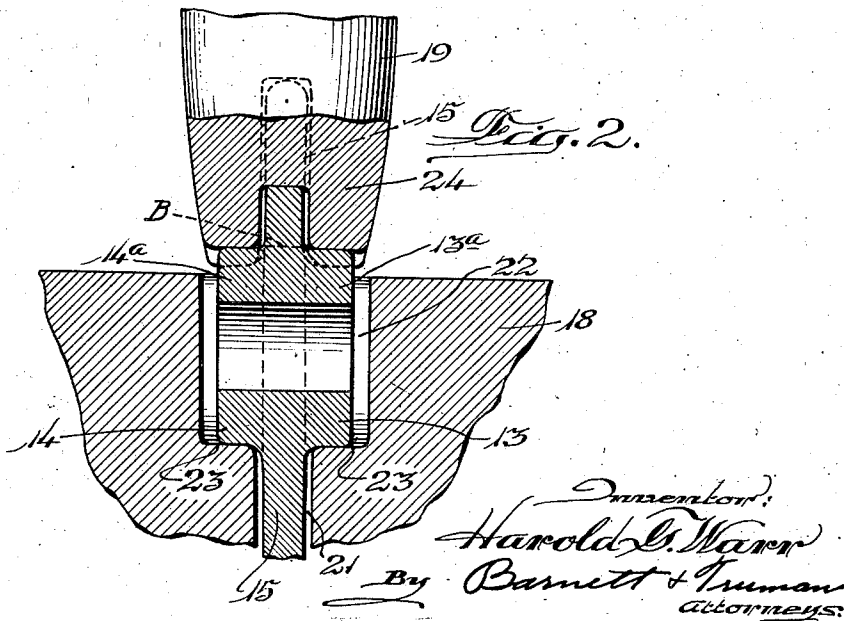
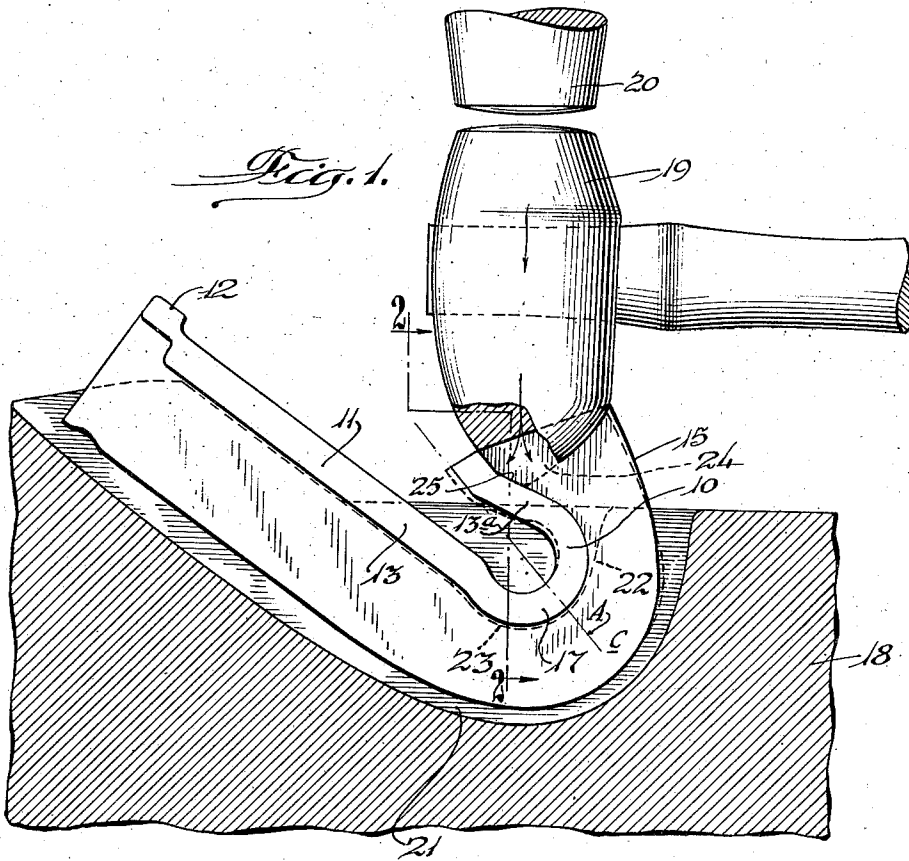
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METHOD AND IMPLEMENT FOR RESETTING RAIL ANCHOR JAWS

Filed March 17, 1944

2 Sheets-Sheet 1



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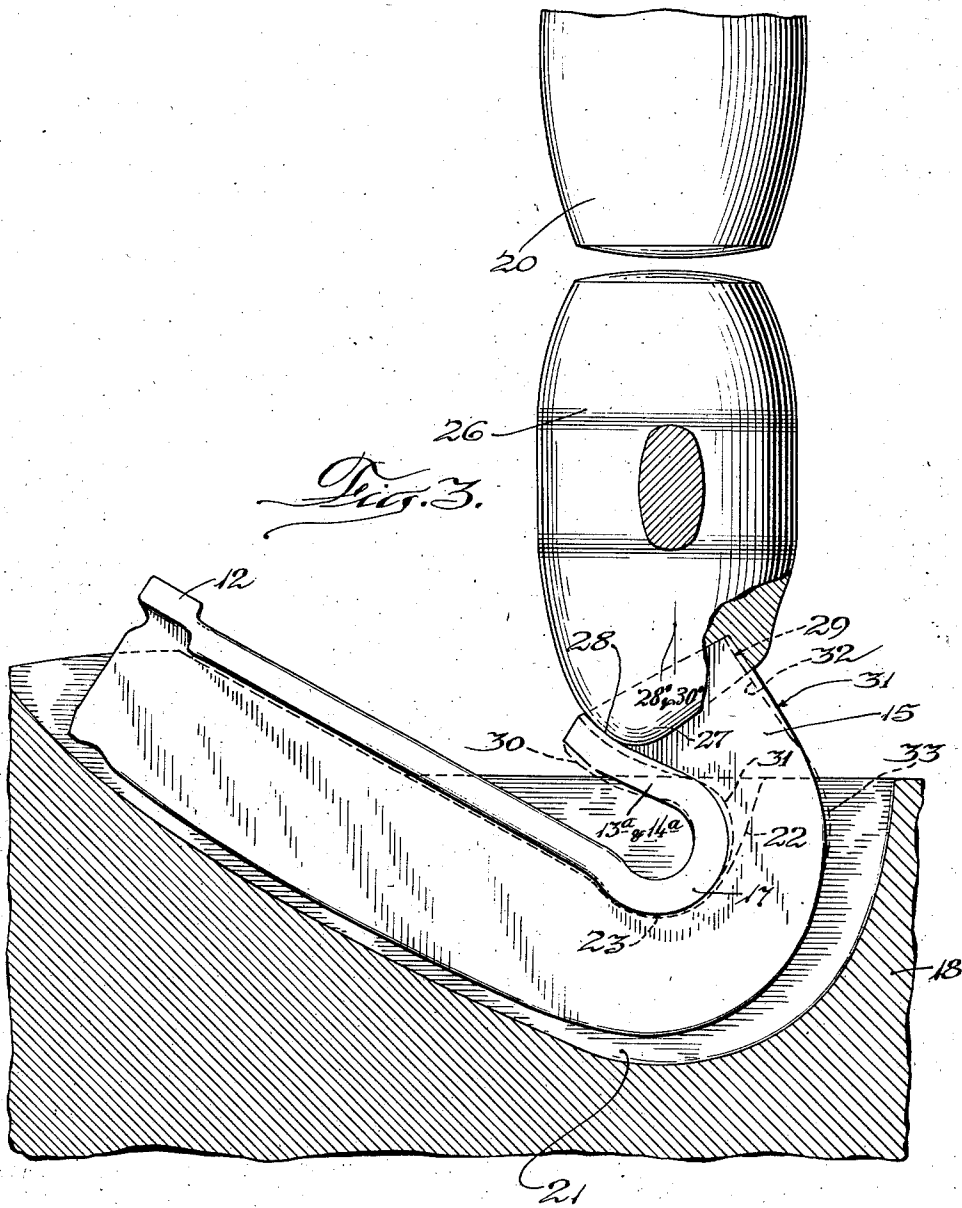
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METHOD AND IMPLEMENT FOR RESETTING RAIL ANCHOR JAWS

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3 Claims. (Cl. 153-48)

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This invention relates to an improved method of resetting the rail gripping jaws of rail anchor devices and also to certain improved implements for use in carrying out the several steps of the method.

Certain general types of rail anchors are made by bending steel bars into hook form to provide one or more jaw portions for resiliently gripping one or both flanges of the base portion of a railway rail. Ordinarily, an anchor device of this character includes an underrail portion which extends across beneath the rail base so as to lockingly engage a vertical edge portion of a rail base and bears against a vertical face of an adjacent cross-tie so as to resist lengthwise movement of the rail in the direction of traffic. When a device of this character is applied to the wedge-like base flange of a rail, its rail gripping jaws are driven onto the wedge-like flange of the rail base. Consequently the jaws are flexed outwardly from their normal positions so that the tendency which the jaws have to resume their normal positions exerts a resilient grip on the rail base.

When rail anchors of the above character are removed from a rail after a long period of service, it is frequently desirable to reset or bend the jaws to their original positions before reapplying the anchor device to a rail. However, it is extremely important in the resetting operation to avoid excessive and localized bending of the jaws. If the space between a jaw and the anchor body is made too small or if the bending incident to the resetting operation is confined to a local area, the reapplication of the anchor device to a rail base flange may result in spreading the hook portion of the anchor beyond its elastic limit, thereby weakening the normal resilient grip of the anchor on the rail base flange.

There are two general methods which have been heretofore employed to reset the jaws of rail anchors of the above character. One of these methods involves the application of a squeezing force to the extreme end of an anchor jaw, as shown in United States Patent No. 2,195,450. The other general method contemplates supporting the anchor device in a horizontal position, such as shown in the patent above referred to and delivering a sudden impact force downwardly against the outer upper surface of the jaw adjacent the extreme end of the jaw so as to impart a permanent set to the jaw in a direction toward the anchor body.

The first mentioned method has been used to some extent in connection with anchors made from heavy bars of rectangular cross section, but

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it is not entirely satisfactory for use in connection with rail anchor devices made from bar stock of T-shaped or angular cross section.

The sudden impact force delivered by the second mentioned method is quite effective for imparting a permanent set to the anchor jaw. It has been practiced occasionally by uninformed workmen, but it is not an approved method since there is a pronounced tendency for the sudden impact force against the jaw, the latter being supported in a horizontal position, to bend the jaw only at a localized area, particularly along the line marked A on Fig. 1 of the drawings. Furthermore, the method, as heretofore practiced, cannot be used effectively in connection with rail anchors made from bar stock of T-shape or angular cross section. Anchors of these specific forms present the further difficulty in that they include an outwardly projecting rigidifying flange which is relatively wide and thin. It is impractical to apply a bending or resetting force wholly against the rigidifying flange because the said flange has insufficient body to transmit the force to the lateral flanges of the jaw. It is equally impractical to apply the bending or resetting force wholly against the lateral flanges of the jaw, since this manner of applying the force exerts excessive strain at the base or juncture of the vertical flange with the horizontal flanges of the jaw. In such case there is a strong tendency to rupture the rigidifying flange at the point of its junction with said horizontal flanges of the jaw.

A principal object of the present invention is to provide an improved method of resetting rail anchor jaws by applying the resetting pressure to the jaw portion of the anchor at a predetermined angle, whereby the end of the jaw is given a permanent set inwardly toward the body of the anchor device and the curvature of the hook-forming bend of the anchor is enlarged.

Another object is to provide an improved method of resetting rail anchor jaws of T-shaped cross section whereby a strong impact force may be delivered against and uniformly distributed over the hook end portion of the anchor so as to impart a permanent set to the anchor jaw in both inward and outward directions.

The improved method and implements used herewith are shown in the accompanying drawings, wherein:

Fig. 1 is a side view partly in section and partly in elevation, illustrating the manner in which a rail anchor device of T-shaped cross section is supported in a fixed die member in position to

receive the downwardly directed impact force for bending the anchor jaw to its original position.

Fig. 2 is a cross sectional view, taken on line 2—2 of Fig. 1, to illustrate the bifurcated construction of one of the implements and the manner in which it engages the anchor jaw, and

Fig. 3 is a view similar to Fig. 1 but illustrating a modified impact receiving implement.

The present method has special advantages in connection with the resetting of the rail gripping jaws of anchor devices made from T-shaped stock. Therefore, for purpose of emphasizing these advantages the improved method and implements are illustrated herein in connection with such special form of anchor device. However, it should be understood that while the method has special advantages in connection with anchors of the special construction shown, it is not to be understood as being restricted in its utility to such limited use.

The rail anchor device herein shown is a well known construction. It is made according to the disclosure of United States Patent No. 2,244,755. The anchor device, briefly described, comprises a bar, T-shaped in cross section, which is bent upon itself at one end to provide a hook-shaped jaw portion 10. A portion 11 of the bar constitutes the body of the anchor and is adapted to extend across beneath the base portion of a rail in position to abut against an adjacent cross-tie. At the tail end of the body there is formed an offset portion which provides a locking shoulder 12 adapted to snap over a vertical edge of a rail base to lock the anchor in its position.

In applying the anchor to a rail the hook-shaped jaw portion 10 is driven upon the well known inclined base flange of the rail until the shoulder 12 snaps up over the opposite edge of the rail base. The applying movement of the anchor flexes the jaws outwardly relative to the body 11 so that the anchor exerts a resilient grip on the top and bottom surfaces of the base.

According to the present method the anchor is arranged in a position inclined in the direction of its length with the inner end of the jaw portion 10 facing upwardly at an angle substantially as shown in Fig. 1. The anchor is held in this position by means of a suitable support which engages the lower surfaces of the lateral flanges 13—14 of the anchor at opposite sides of the central rigidifying rib 15. This support also extends partly around the lower surface of the hook-forming bend 17. By applying a downwardly directed impact to the jaw portion 10, at an angle to the inclined end face thereof, the main line of force is divided into two force components. One of these lateral components is transmitted through the rounded end portion of an impact receiving member to certain of the outer inclined surfaces of the anchor jaw in a direction to bend the jaw toward the body of the anchor. The other component of the impact force is transmitted downwardly and outwardly against the end face of the rigidifying rib of the anchor in a direction lengthwise of the jaw so as to apply a compressive force on the jaw in the region of the bend whereby the bend is enlarged by an outward spreading thereof. In this way the downwardly directed impact force is distributed throughout the entire anchor jaw in a manner to spread the bending forces over a relatively large area and thereby avoid bending the jaw at a localized area, for example the area designated by the line A in Fig. 1.

By applying the impact force in the manner

above described a substantial portion of the force is applied to the end face of the rigidifying rib 15 overlying the jaw 10 and also to the horizontal flange portions designated 13^a—14^a of the jaw. This manner of distributing the impact force prevents undue strain and possible rupture of the anchor jaw at the base of the rigidifying flange, for example, along the line indicated by the reference character B in Fig. 2. The downwardly applied force, as previously indicated, functions to exert compressive force on the rigidifying flange at the location designated C. In this respect the invention distinguishes from all methods heretofore known, since the resetting methods heretofore known have applied a stretching force to the outer portion of the bend at a location corresponding to that designated C in Fig. 1.

The improved implements for carrying out the several steps of the improved method include a die block 18, a set hammer 19 or other impact receiving implement, and a suitable means 20, for example a sledge or a mechanically actuated drop hammer for delivering a heavy impact force to the set hammer 19. The die block 18 is provided with a recess 21 to receive the rigidifying flange 15 of the anchor device. It is also provided with a recess 22 adapted to receive the hook-portion of the anchor jaw. The lower surfaces 23—23 of this recess are made to conform substantially to the lower surface of the anchor jaw, including the lower portion of the bend 17. The said supporting surfaces 23—23 extend upwardly at a desired angle to provide a bearing surface which extends substantially the entire length of the anchor body. In this way the extended bearing surface prevents the tail end of the anchor from moving downwardly when the downward impact force is delivered to the end of the jaw.

In order to distribute the impact force over the several surfaces of the jaw, when the jaw is made of T-shaped cross section as herein illustrated, the set hammer 19 is provided with a bifurcated end portion 24 which fits over the end portion of the rigidifying rib 15. The lower end of the bifurcated portion is preferably rounded as indicated at 25 to conform generally to the curvature adjacent the end of the anchor jaw.

Referring now to the modified embodiment shown in Fig. 3; the rail anchor and the die block shown in this figure are identical with the corresponding elements shown in Fig. 1 and therefore are identified by the same reference characters. The set hammer 26 of this embodiment is formed at its lower end with a recess 27 which provides a bifurcated construction which fits over the end portion of the rigidifying rib 15 of the anchor. The lower end of the set hammer is curved, as indicated at 28, so as to bear against the curved end portion of lateral extending flanges 13^a—14^a of the anchor device, whereby a downwardly direct impact force received by the hammer 26 is transmitted to the flanges 13^a—14^a in a direction to bend them toward the body of the anchor, as indicated in dotted lines 30 in Fig. 3. In order to relieve the tendency of this force from rupturing the flange 15 at its juncture with the horizontal flanges 13^a—14^a the outer end of the recess 27 of the set hammer 26 is closed so as to provide an abutment 29 adapted to engage the outer surface 31 of the rigidifying flange 15. Consequently the end portion of the rigidifying flange is moved as indicated by dotted line 32 in the same general direction as the lateral flanges 13^a—14^a, so as to relieve the said rib of excessive strains. In addition to the force component which bends the

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anchor jaw toward the body of the anchor, there is another force component which assumes a downward and outward direction and thereby tends to enlarge the curvature of the hook-forming bend, as indicated by the dotted lines 33 in Fig. 3. This pressure component, as before indicated, being in the nature of a combined compression and bending force, avoids objectionable distortion of the rigidifying flange such as normally results when the jaw is bent inwardly by application of pressure wholly to the outer surfaces of the jaw.

While the invention is shown herein in connection with certain specific forms of implements, it will be obvious to persons skilled in the art that implements of other similar forms may be used. It should be understood therefore that the specific arrangements and constructions herein shown are intended merely as illustrations and not as limitations. The invention contemplates all alternative forms of implements which come within the scope of the appended claims.

I claim:

1. Means for use in resetting a hook-shaped jaw portion of a rail anchor device formed with an outwardly projecting rigidifying rib, comprising a die block formed with a recess for receiving said rigidifying rib and with upwardly inclined bearing surfaces for supporting the anchor body and a lower portion of the bend forming hook at opposite sides of the rib, and a bifurcated set hammer positioned to embrace the said rib at the end of the hook and having surfaces for seating on the inclined end face and the inclined outer surfaces of the hook-shaped end, and means for delivering the impact force downwardly against said set hammer whereby the end of the hook-shaped end portion of the anchor is given a permanent set inwardly toward the body of the anchor and the curvature of the hook-forming end is enlarged.

2. Means for use in resetting a hook-shaped jaw portion of a rail anchor device formed from T-shaped metal stock to provide an outwardly projecting rigidifying rib, which is inclined at an

acute angle from the perpendicular, comprising a die block formed with a recess for receiving said rigidifying rib and with upwardly inclined bearing surfaces for supporting the anchor body and a lower portion of the bend forming hook at opposite sides of the rib, and a bifurcated set hammer positioned to embrace the said rib at the end of the hook and having surfaces for seating on the inclined end face and the inclined outer surfaces of the hook-shaped end, and means for delivering the impact force downwardly against said set hammer whereby the end of the hook-shaped end portion of the anchor is given a permanent set inwardly toward the body of the anchor and the curvature of the hook-forming bend is enlarged.

3. The method of resetting a hook-shaped jaw portion of a rail anchor device which consists in supporting the lower surface of the body of the anchor and a portion of the hook-forming bend in a fixed position, but leaving the end of the hook portion free for unrestrained movement toward the said body, bending the end of the hook portion inwardly toward the anchor body and simultaneously enlarging the curvature of the inner bend of the hook by applying an impact of sufficient force against the end face and an outer surface of the hook portion adjacent the end face and at an angle to said face and surface to simultaneously bend the hook portion inwardly toward the body without reducing the radius of the bend.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,804,792	Langford -----	May 12, 1931
956,522	Furlong -----	May 3, 1910
956,521	Furlong -----	May 3, 1910
1,685,255	Warr -----	Sept. 25, 1928
1,686,537	Schneider -----	Oct. 9, 1928
1,706,273	Woodings -----	Mar. 19, 1929
2,195,450	Denz et al. -----	Apr. 2, 1940