Nov. 18, 1924. 1,515,727

E. W. CARUTHERS ET AL

GUARD RAIL CLAMP

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Fig. 1.

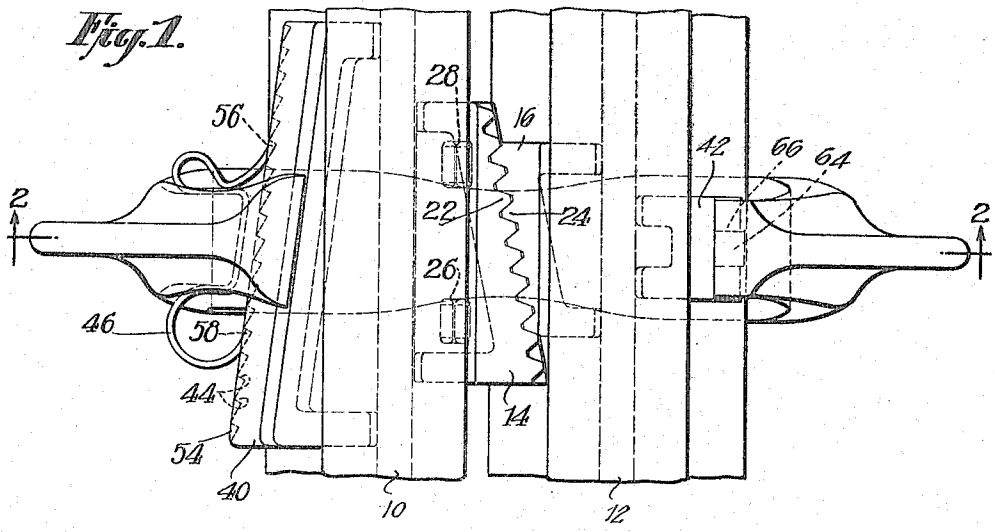

Fig. 2.

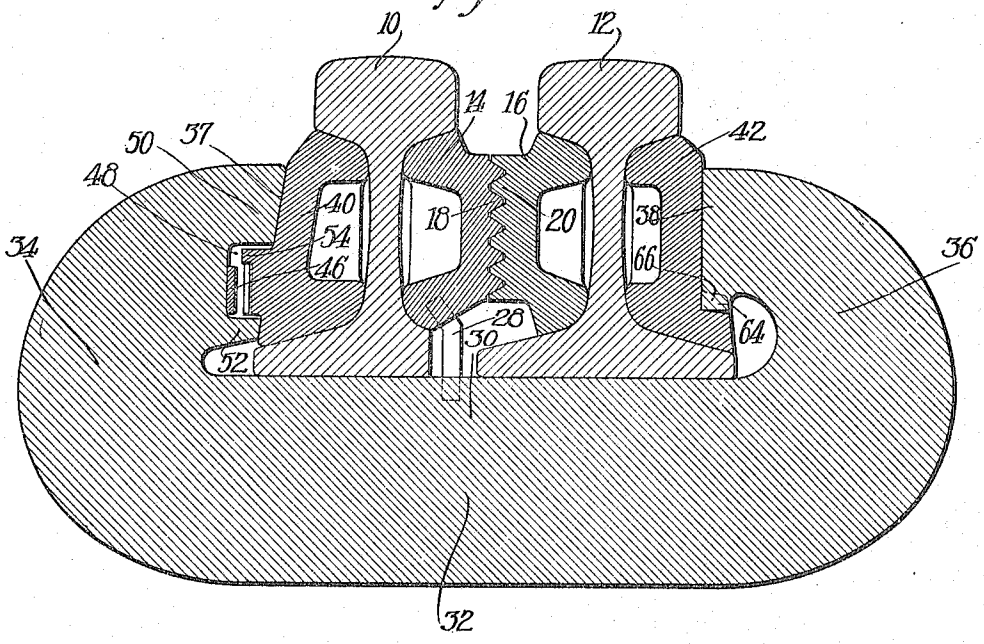

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Fig. 3.

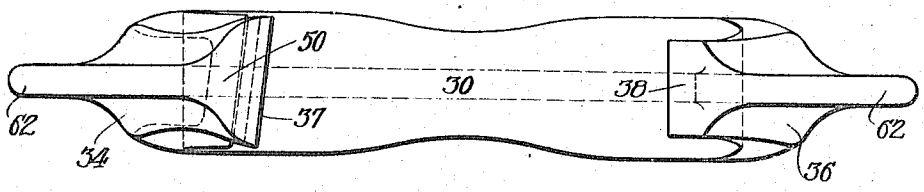


Fig. 4.

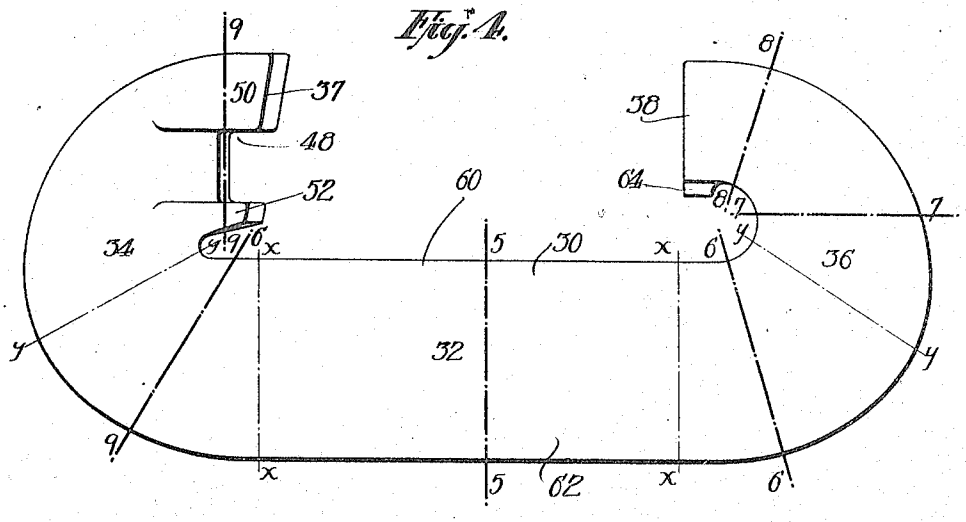


Fig. 4a.

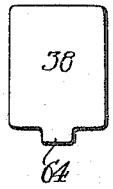


Fig. 5.

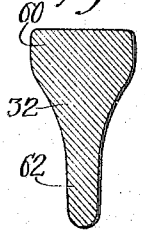


Fig. 6.

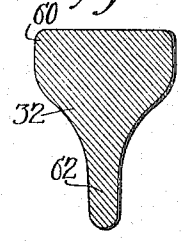


Fig. 7.

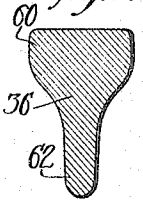


Fig. 8.

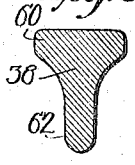
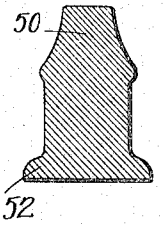


Fig. 9.



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Patented Nov. 18, 1924. 1,515,727

UNITED STATES PATENT OFFICE.

EUGENE W. CARUTHERS, OF SECANE, AND RUSSELL C. PAXSON, OF UPPER DARBY, LLANERCH, PENNSYLVANIA.

GUARD-RAIL CLAMP.

Application filed March 27, 1924. Serial No. 702,216.

To all whom it may concern:

Be it known that we, EUGENE W. CARUTHERS and RUSSELL C. PAXSON, citizens of the United States, and residents of Secane, in the county of Delaware and State of Pennsylvania, and Upper Darby, Llanerch, in the county of Delaware and State of Pennsylvania, respectively, have invented certain new and useful Improvements in Guard-Rail Clamps, of which the following is a specification.

This invention relates to an improvement in rail clamps one object being to provide a clamp suitable for holding the guard rail in proper spaced relationship with another rail and to so form the clamp that it will be of maximum strength in those portions where clamps heretofore used are elongated or fractured under the terrific strains to which such clamps are subjected. Other objects will be apparent from the following specification when read in connection with the accompanying drawings which illustrate a preferred embodiment of the invention.

Fig. 1 is a top plan view showing the clamp holding two rails in spaced relationship;

Fig. 2 is a cross-section on line 2—2 of Fig. 1;

Fig. 3 is a plan view of the yoke member of the clamp;

Fig. 4 is a front elevation thereof;

Fig. 4ª is a detail of the inner end of one of the hooked portions of the yoke;

Figs. 5, 6, 7, 8 and 9 are sectional views on the correspondingly numbered section lines of Fig. 4.

Referring in detail to the drawings 10 and 12 are two rails which are adapted to be firmly held in fixed spaced relationship, 10 being the guard rail and 12 being a suitable running rail. Between the rails are located throat blocks 14 and 16 which are formed with interengaging teeth 18, 20, 22 and 24. The teeth 22 and 24 as shown in plan are on a line which is at an angle to the sides of the rail heads and these are adapted to be engaged in different positions to permit the rails 10 and 12 to be held in different spaced relationships. The block 14 is provided with lugs 26 and 28 which project downwardly and engage the sides of the bridge portion 30 of a yoke 32. This yoke is formed with hooked ends 34 and 36 which curve outwardly and upwardly and terminate at the inner ends 37 and 38 where they engage respectively with a wedge member 40 and a clamp chock 42. The wedge member 40 is provided with a number of notches or steps 44 which are adapted to coact with a spring lock 46 of known construction. The spring lock 46 lies within a pocket 48 formed between jaws 50 and 52 on one end of the yoke member. The wedge 40 is formed with a flange 54 which overhangs the ends 56 and 58 of the spring lock. This flange 54 provides means whereby the spring lock may be temporarily held out of line with the steps or shoulders 44 so that the wedge member may be moved relatively to the yoke when changing rails or making other adjustments. At such times the ends 56 and 58 are sprung outward and the spring lock 46 is lifted slightly so that the ends ride on the outer face of the flange 54.

The yoke member of the clamp is of improved design and is so formed that in practical use the same will not elongate or fracture. In practice these yokes are subjected to tremendous bending stresses and they frequently fail at the zone where the hooked ends curve outwardly and upwardly from the transverse bridge portions of the yoke. To overcome this defect we have designed a yoke in which the mass of metal is so distributed that the maximum strength is secured in the zone where the greatest strains occur.

As best shown in Figs. 3 to 9 the bridge portion 32 of the yoke is of the sectional shape shown in Fig. 5, its top face being narrowest at the center line as shown in Fig. 3. This bridge portion comprises a heavy bulb flange 60 and a web portion 62. The bulb flange widens out gradually in each direction from the center line to approximately the points indicated by the lines *x*—*x* in Fig. 4. At these points the section is substantially that shown in Fig. 6 where it is noted that the area of section is considerably increased over that shown in Fig. 5. This sectional contour and area is carried around in the zone where the hook ends begin to curve outwardly and upwardly to the points indicated by lines *y*—*y*. From these lines the contour changes and the sectional area gradually diminishes being of the shape shown in Fig. 7 in the zone of section lines 7—7. This distribution of the metal of the yoke gives a maximum sectional

area in the zone of greatest strain and provides a sturdy yoke which will not fracture under the severest services. The extreme inner ends of the hook portions of the yoke are subject to chiefly compressive strains and need not, therefore, be of such heavy sections. Fig. 8 shows the comparative contour and sectional area in the plane indicated by line 8—8 of Fig. 4. Fig. 9 shows the design of the extreme hooked end of the other side of the yoke. This end of the yoke is of modified shape chiefly for the accommodation of the adjusting wedge 40.

On the lower portion of one of the hook ends is formed a lug 64 which projects into a recess 66 formed in the clamp chock 42 so as to prevent relative movement between the yoke and the chock.

The clamp shown can be used on rails varying in size from an eighty-five pound to a one hundred and thirty pound rail and it may be formed of a heavy casting or forging.

Though we have described with great particularity details of the embodiment of the invention herein shown, it is not to be construed that we are limited thereto as changes in arrangement and substitution of equivalents may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What we claim is:—

1. A rail clamp including a yoke having hooked ends of thickened sectional area in the zone where the contour of the yoke changes from a straight to a curved outline.

2. A rail clamp including a yoke having hooked ends for taking the transverse stresses transmitted by the rails, the sectional contour and area of said yoke varying at different points so that greatest area of section is located at those portions where the greatest stresses must be resisted.

3. A rail clamp including a yoke having hooked ends for taking the transverse stresses transmitted by the rails, the bridge portion of said yoke comprising an upper heavy bulb-flange and a lower web merging into the bulb-flange, the hooked ends of the yoke being of substantially the same general contour as the bridge portion but of greater sectional area in the zone where they curve upwardly therefrom.

4. A rail clamp including a yoke having hooked ends for taking the transverse stresses transmitted by the rails, the bridge portion of said yoke comprising an upper heavy bulb-flange and a lower web merging into the bulb-flange, the hooked ends of the yoke being of substantially the same general contour as the bridge portion but of greater sectional area in the zone where they curve upwardly therefrom and of gradually diminishing sectional area toward the extreme inner end.

5. A rail clamp including a yoke comprising a bridge portion whose sectional contour is substantially as shown in Fig. 5 and whose contour and relative area in the zone indicated by lines x—x and y—y in Fig. 4 is substantially as shown in Fig. 6.

6. A rail clamp including a yoke having a bridge portion and hooked ends the central part of the bridge portion being narrower in plan than its outer portions and of uniform depth, and the hooked ends being of substantially the same depth as the bridge portion but wider at the zone where they merge outwardly and upwardly therefrom.

7. A rail clamp including a yoke having upwardly and inwardly curved ends, a clamp chock engaging one end of said yoke, adjustable throat blocks for spacing the rails, a spring lock for normally holding said wedge in a determined position with respect to said yoke, said wedge having a lip adapted to hold the spring lock in position to permit free movement of the wedge relatively to the yoke when the rails are changed or when the parts are adjusted.

In witness whereof, we have hereunto signed our names.

EUGENE W. CARUTHERS.
RUSSELL C. PAXSON.