E. T. BENNINGTON.

RAIL SUPPORTING CLAMP FOR OVERHEAD CARRIER SYSTEMS.

APPLICATION FILED SEPT. 4, 1920.

1,412,830. Patented Apr. 18, 1922.

Fig. 1.

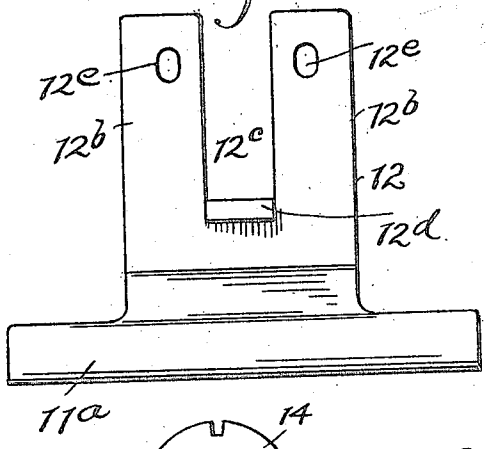


Fig. 2.

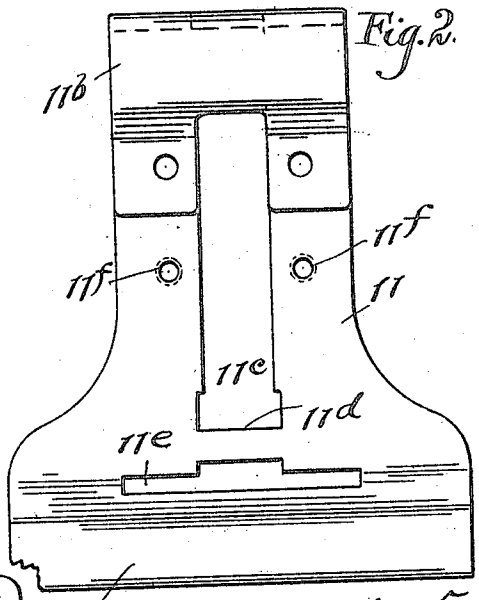


Fig. 3.

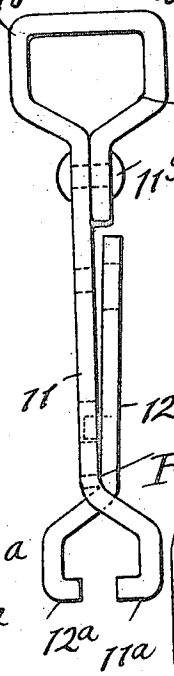
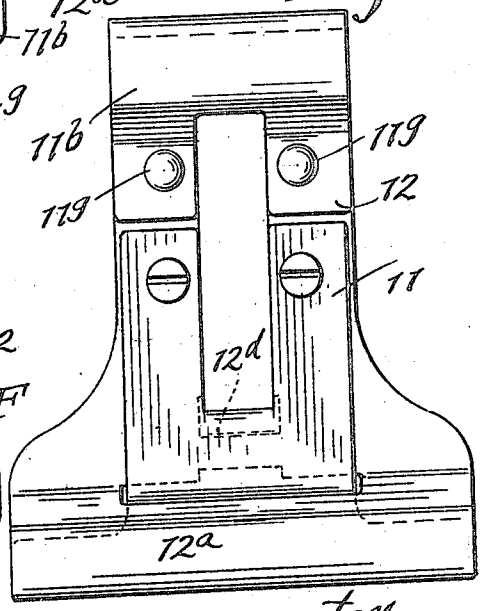


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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RAIL-SUPPORTING CLAMP FOR OVERHEAD CARRIER SYSTEMS.

1,412,830. Specification of Letters Patent. Patented Apr. 18, 1922.

Application filed September 4, 1920. Serial No. 408,241.

To all whom it may concern:

Be it known that I, EARL T. BENNINGTON, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Rail-Supporting Clamps for Overhead Carrier Systems, of which the following is a full, clear, and exact description.

This invention relates to a rail supporting clamp adapted particularly for overhead monorail carrier systems.

The principal object of the invention is to provide a rail supporting clamp which can be produced inexpensively, and which effectively supports the rail.

More specifically considered, it is one of the objects of the invention to provide a construction by which an efficient clamping and supporting action is obtained on the rail with the screw or screws which fasten together the parts of the clamp relieved entirely of the supported load created by the weight of the rail and of the carrier passing over it.

Other more specific objects are to provide a construction which enables the supporting clamp to be formed of sheet metal instead of cast metal as heretofore used, and to permit the use of much smaller screws for fastening together the component parts of the clamp than required with previous clamps.

The invention may be briefly summarized as consisting in certain novel details of construction, and combinations and arrangements of parts which will be described in the specification and set forth in the appended claims.

In the accompanying sheet of drawings wherein I have shown the preferred embodiment of the invention, Figs. 1 and 2 are side views of the two parts of the clamp; Fig. 3 is an edge view of the clamp with the parts of Figs. 1 and 2 assembled; Fig. 4 is a vertical transverse sectional view of the complete clamping and supporting unit with the clamp engaging the head of a rail to be supported; and Fig. 5 is a side view of the clamp.

Referring now to the drawings, 10 represents a monorail which is to be supported at intervals by my improved supporting clamps which in turn are suitably supported from the ceiling or other overhead structure.

My improved clamp consists of two main parts or members designated 11 and 12, these being preferably stamped out of sheet steel. These two clamping members 11 and 12 are provided at their lower ends with clamping jaws 11^a and 12^a which envelop the head 10^a of the rail as shown in Fig. 4, the rail having lower flanges 10^b on which the wheels of the carriers are adapted to travel. Before considering the details of the two clamping members 11 and 12 it might be mentioned that it is one of the features of the present invention that the clamping members have crossed portions which enable the clamping effect to be had on the head of the rail with a so-called pincers or scissors action, as will be subsequently explained.

The member 11 of the clamp is somewhat larger and longer than the part 12, though the clamping jaws 11^a and 12^a are of the same dimensions. This member 11 has at the top a head 11^b which is formed in the bending operation by folding one part of the metal over onto itself, forming a recess which accommodates a nut 13 mounted on a supporting bolt 14 which can be of any suitable length and is designed to be attached to the ceiling of a building or other appropriate supporting part by the use of suitable fittings. The head 11^b of the member 11 is provided at the top and bottom with openings which accommodate the bolt 14, and beneath the head 11^b the flat side or face of the member 11 has a slot 11^c which extends from a point just beneath the head, downward to a short distance above the clamping jaw 11^a. The lower part of the slot is somewhat wider than the remaining part, and at the bottom of the slot there is a shoulder 11^d for a purpose to be referred to presently. The function of the slot 11^c is to accommodate the shank on the supporting bolt 14, and also to accommodate a supporting lip on the companion part 12 which is designed to rest on the shoulder 11^d.

Below the slot 11^c is a slot 11^e which is wider than the slot 11^c lengthwise of the jaw portion, but vertically considered is narrow. It is through this slot 11^e that the shank or body portion of the companion clamping

member 12 is extended to enable the two parts to be crossed and the pincers or scissors action to be obtained. The middle portion of the slot 11^e is somewhat deeper than the end portions, as shown in Fig. 2.

On opposite sides of the slot 11^e the flat face or body of the clamping member 11 has a pair of tapped openings 11^f to accommodate clamping screws, and a suitable distance above these screw openings, openings are provided to accommodate rivets 11^g by which the free end of the member 11 is fastened to the body thereof just beneath the head 11^b.

The clamping member 12 has a jaw 12^a, already referred to, which is similar to the jaw 11^a, and above the jaw it has a body portion consisting of two upstanding parts 12^b separated by a slot 12^c which when the parts are assembled, coincides with the slot 12^c to accommodate the supporting bolt. The body portion, composed of the two parts 12^b, laterally considered are of such width that they may be inserted through the lower slot 12^e of the clamping member 11 in the manner illustrated in the drawings, and at the base of the slot 12^c there is a laterally projecting lip 12^d. It will be understood that the parts of the member 12 including the jaw 12^a, upstanding portions 12^b, and lip 12^d are all formed integrally from one piece of sheet metal. Near the upper ends of the parts 12^b are elongated screw openings 12^e.

In assembling the clamp, the body portion of the member 12 is inserted through the slot 11^e of the member 11 so that the jaws envelop the upper head of the rail. When the jaws are in clamping engagement with the rail, the upper part of the member 12 is not parallel with the face of the member 11 but extends outwardly at an angle thereto, as shown in Fig. 3. Then the parts are drawn tightly together by means of screws 15 until the face or body portions of the two clamping members are in engagement for their full length. When this takes place the members 11 and 12 move relatively about a fulcrum F, which is at the top of the slot 11^e, just above the jaws, and in consequence a very great leverage is obtained which causes the rail to be clamped very tightly. Furthermore, when the parts are thus assembled, the lip 12^d extends over and rests on the shoulder 11^d at the bottom of the slot 11^e and relieves the screws entirely of any load, this being rendered possible by reason of the elongated slots 12^e through which the screws extend in passing through the member 12. The advantage of this feature is that the sole function of the screws is to fasten the parts together and hold them in clamping engagement, and since they are relieved of all of the load supported by the clamp, they are not subjected to any shearing stresses, and in consequence small screws can be employed, and at the same time there is no danger of the rail becoming loosened in the clamp so as to permit it to drop or to get out of alignment at any point as has been the case heretofore. Further, the fact that the screws simply clamp the parts together and support none of the load, minimizes danger of the screws working loose in the tapped openings of the clamping member 11.

With my improved rail supporting clamp the rail can be leveled or adjusted simply by turning the supporting bolt 14 in the nut 13 which is held from turning in the head 11^b. This permits an adjustment to the exact height desired and is superior to constructions generally used heretofore which involve the use of spaced projections and notches between the two parts of the clamp and which permit adjustments depending solely on the spacing of the notches.

While I have shown the preferred construction, I do not wish to be confined to the precise details or features shown and described, as certain changes can be made without departing from my invention as defined in the appended claims.

Having described my invention, I claim:

1. A rail supporting clamp for an overhead rail comprising two members having rail engaging jaws at the bottom, and having body portions crossed, means for securing said body portions together, and means for relieving the securing means of the supported load.

2. A rail supporting clamp composed of two members having rail engaging jaws and having body portions clamped together, one or more devices passing through said portions to hold them in clamped engagement, one of said members having a shoulder and the other a part which rests on the shoulder to relieve the securing device or devices of the supported load.

3. In a rail supporting clamp, a pair of clamping members having jaws to engage the rail and having crossed portions and body portions clamped together, one or more securing devices extending through said members to hold said body portions in clamped engagement, and one of said members having a shoulder and the other part engaging the shoulder to relieve the securing device or devices of the supported load.

4. A rail clamp composed of two members having jaws adapted to engage a rail, one having a slot through which the other extends to form crossed portions, said members being clamped together beyond the jaws and the crossed portions, one or more securing devices for holding them in clamped engagement, one of said members having a shoulder and the other a part which rests on the shoulder to relieve the securing device or devices of the supported load.

5. In a rail clamp, a pair of members clamped together and provided at the bottom with clamping jaws adapted to engage the rail, and said clamp having at the top a head, and means for supporting the clamp and for raising or lowering the same comprising a nut in said head and a bolt extending through said nut lengthwise of the clamp.

6. A rail supporting clamp for an overhead rail composed of two rail clamping members having jaws adapted to engage the rail, the said members being clamped together, one of said members having at the top a head, and both having slots beneath the head, and means for supporting the clamp comprising a nut seated in the head, and a bolt passing through the head and nut and extending into said slots.

7. A rail supporting clamp for overhead rails comprising two members formed from sheet metal and provided with rail engaging jaws and with portions clamped together to hold the jaws in rail engaging position, one of said members having at the top thereof a portion bent to form a head, a nut seated in the head, and a clamp supporting and adjusting bolt through the head and nut and lengthwise through the clamp.

In testimony whereof, I hereunto affix my signature.

EARL T. BENNINGTON.