June 24, 1930. P. E. HUNTER 1,765,488

BRIDGE STRUCTURE

Filed April 30, 1928

Fig. 1.

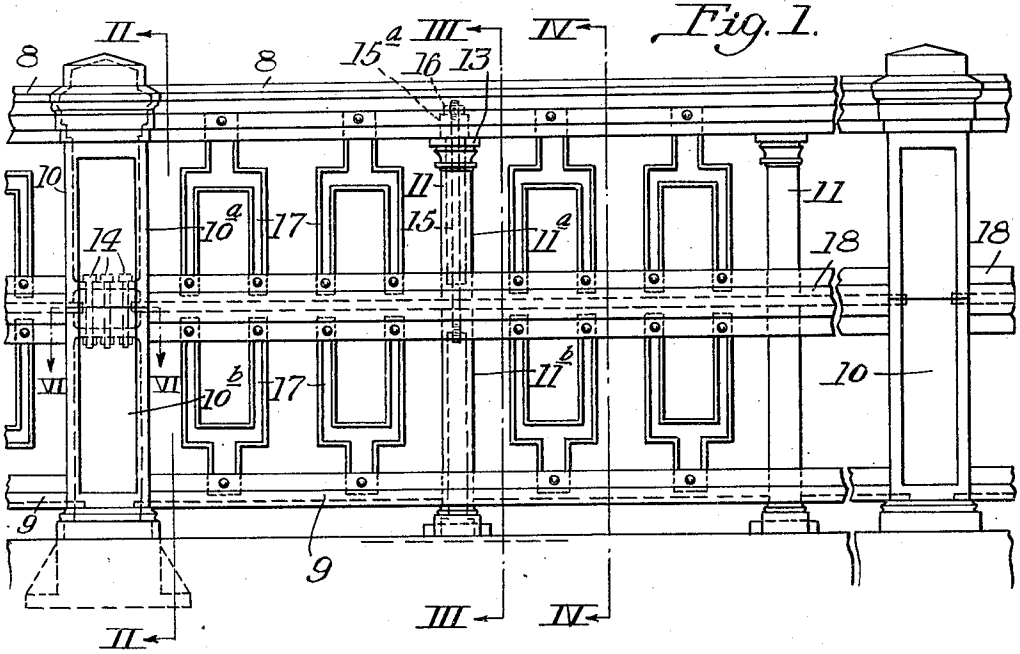


Fig. 2.

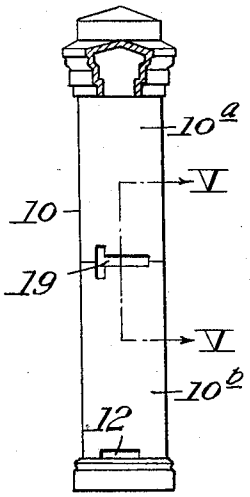


Fig. 3.

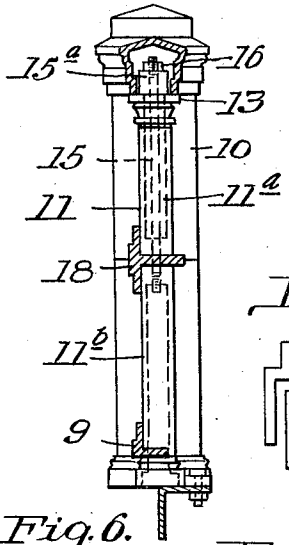


Fig. 4.

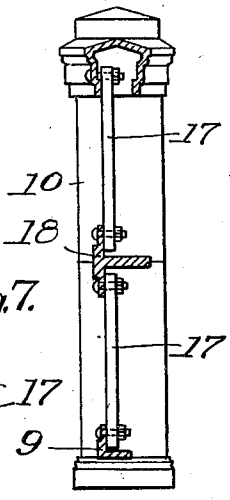


Fig. 7.

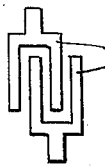


Fig. 5.

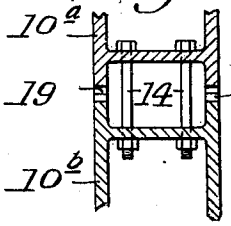


Fig. 6.

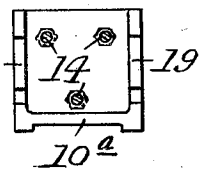


Fig. 8.



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1,765,488

UNITED STATES PATENT OFFICE

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BRIDGE STRUCTURE

Application filed April 30, 1928. Serial No. 273,874.

My invention relates to bridge structures, and more particularly to guard railings therefor, but is susceptible of use also in various other relations.

One object of my invention is to provide a bridge railing structure of such form that the individual parts may be more conveniently and cheaply made than those of the type heretofore employed.

Another object of my invention is to provide a railing structure containing panel members composed of parts which are individually of smaller dimension and lighter weight than those of older types, but the completed structure being of such form that it is more effective than various older structures in withstanding impacts or shocks from moving vehicles, etc.

Still another object of my invention is to simplify and improve generally the construction and effectiveness of bridge structures.

One form which my invention may take is shown in the accompanying drawing, wherein Figure 1 is a side elevational view of a portion of a bridge railing structure; Fig. 2 is a view taken on the line II—II of Fig. 1; Fig. 3 is a view taken on the line III—III of Fig. 1; Fig. 4 is a view taken on the line IV—IV of Fig. 1; Fig. 5 is a view taken on the line V—V of Fig. 2; Fig. 6 is a view taken on the line VI—VI of Fig. 1; Fig. 7 is a schematic plan view of two panel members of Fig. 1, showing relative positions occupied thereby in a casting mold, and Fig. 8 is a modification showing another cross-sectional form of the intermediate rail of Figs. 1, 3 and 4.

The railing structure includes top rails 8 and bottom rails 9 which are supported by main posts 10 and intermediate posts 11. The ends of the bars 8 project slightly into the cap portions of posts 10 and are thereby firmly supported against displacement. The bottom rails 9 are of angular form in cross section as shown more clearly in Figs. 3 and 4, and their horizontal flanges are somewhat longer than their vertical flanges so that the ends of such horizontal flanges will project into openings 12 of the posts 10, as shown in Fig. 1. The intermediate posts 11 each carries a plate 13 on its upper end that serves to support intermediate portions of the top rails. At the lower portions of the posts 11 portions are cut out or omitted from the horizontal flanges of the bottom rails 9.

The posts 10 are formed of upper and lower sections 10^a and 10^b that have webs which are secured together by bolts 14, as shown more clearly in Figs. 5 and 6. This feature is claimed in my divisional application, Serial No. 402,073, filed Oct. 23, 1929.

The intermediate posts 11 are composed of upper and lower sections 11^a and 11^b that are secured together by a bolt 15 that extends through webs in the abutting ends of said sections 11^a and 11^b. The upper end of the bolt 15 extends upwardly above the top of the post 11^a and through the plate 13 and a collar 15^a. The lower end of the bolt is in threaded engagement with the post section 11^b and the parts are rigidly clamped together by means of the nut 16 on the upper end of the bolt.

Panel members 17 are suitably bolted to the top rail 8 and bottom rail 9 as shown more clearly in Figs. 1 and 4. These panels are made in half sections, whose adjacent ends are bolted to the vertical flanges of an intermediate rail 18 that is of T form in cross section. The horizontal flange of the intermediate rail 18 extends between the post sections 11^a and 11^b as more clearly shown in Fig. 3, the said flange being clamped in that position by the bolts 15. The horizontal flanges of the rails 18 serve as strengthening members to resist lateral thrusts. The ends of these intermediate rails 18 are reduced so that they will extend into slots 19 formed at the abutting ends of the post sections 10^a and 10^b.

From the foregoing, it will be seen that the parts of the rail structure are firmly held in assembled relation and are capable of withstanding the severe impacts from moving vehicles or the like. The intermediate rail 18 not only serves to support the panel members 17, but, being disposed at the inner side of the railing structure and at a vertically intermediate position, will also take the direct impact of a vehicle hub, bumper, etc.,

thus protecting the panels from damage. Furthermore, vehicles will usually strike the intermediate rail at such angle that they will be deflected in a direction generally longitudinally of the rail, thus preventing such sudden stopping of the vehicle that the railing structure is broken down.

In those cases where no protection such as the intermediate rail 18 is provided for the panels, the hub or other portion of a vehicle will catch against the panels thus breaking them out if they are not excessively heavy, or causing the wrecking of a vehicle if the panels are of sufficient weight and strength to withstand the shock. By my arrangement, the panels may be considerably lighter than heretofore deemed necessary and the railing structure will nevertheless possess sufficient strength to withstand the blows to which it is frequently subjected.

The rail 18 may be of various other cross-sectional forms than T-shape. For example, it may be of H section, as shown by the rail 18ª of Fig. 8.

Not only is there a saving in metal by making the panels of lighter weight, but a saving in labor is effected through the division of the panels into sections. This latter feature permits the panel sections to be assembled in a mold somewhat after the manner shown in Fig. 7, so that a shorter mold and much less volume of sand is required in forming each panel. These molds may be of such size that one man can handle them, whereas two men are ordinarily required to handle a mold wherein a single piece panel is cast.

Again, as the panels are rather thin, difficulty would be experienced in molding a full length panel as one piece, because the molten metal would not readily flow through all parts of the mold cavity.

Various of those advantages above-enumerated, arising from the forming of each panel in two pieces result from the casting of the posts 10 and 11, each in two pieces. The lack of strength which would ordinarily be expected in a railing structure made up of various relatively small parts, as above described, is avoided in my structure, by reason of the manner in which the various parts are bolted and otherwise secured together.

I claim as my invention:—

1. Railing structure for roadways, comprising posts, upper and lower rails supported by said posts, an intermediate rail of T form supported by said posts and having its stem flange disposed in a horizontal plane and extending rearwardly of the railing structure, and panels each composed of upper and lower sections, the adjacent ends of the panel sections being each secured to the rear side of one of the head flanges of said intermediate rail and their remote ends being secured to the upper and lower rails respectively.

2. Railing structure for roadways, comprising posts, upper and lower rails supported by said posts, an intermediate rail of T form supported by said posts and having its stem flange disposed in a horizontal plane and extending rearwardly of the railing structure, panels each composed of upper and lower sections, the adjacent ends of the panel sections being each secured to the rear side of one of the head flanges of said intermediate rail, and their remote ends being secured to the upper and lower rails respectively, and an intermediate post disposed between the first-named posts, the said intermediate post being composed of horizontally-divided sections that are secured to the said stem flange.

3. Railing structure for roadways, comprising posts, upper and lower rails supported by said posts, an intermediate rail of T form supported by said posts and having its stem flange disposed in a horizontal plane and extending rearwardly of the railing structure, and panels each composed of upper and lower sections, the adjacent ends of the panel sections being each secured to the rear side of one of the head flanges of said intermediate rail and their remote ends being secured to the rear sides of said upper and lower rails respectively.

4. Railing structure for roadways, comprising posts, upper and lower rails supported by said posts, an intermediate rail of T form supported by said posts and having its stem flange disposed in a horizontal plane and extending rearwardly of the railing structure, and panels each composed of upper and lower sections, the adjacent ends of the panel sections being in the form of laterally-spaced arms, and both arms being secured to one of the head flanges of the intermediate rail, and the remote ends of the panels each being in the form of a single arm, said ends being secured to the upper and lower rails respectively.

5. Railing structure for roadways, comprising posts, upper and lower rails supported by said posts, an intermediate rail of T form supported by said posts and having its stem flange disposed in a horizontal plane and extending rearwardly of the railing structure, and panels each composed of upper and lower sections, the adjacent ends of the panel sections being each secured to one of the head flanges of said intermediate rail and their remote ends being secured to the upper and lower rails respectively, the lower end of the intermediate post being adapted to rest upon a supporting surface and the upper end thereof having connection with the upper rail.

6. Railing structure for roadways, comprising posts, upper and lower rails supported by said posts, an intermediate rail of T form supported by said posts and having its

stem flange disposed in a horizontal plane, and panels each composed of upper and lower sections, the adjacent ends of the panel sections being each secured to one of the head flanges of said intermediate rail and their remote ends being secured to the upper and lower rails respectively.

7. Railing structure for roadways, comprising posts, upper and lower rails supported by said posts, vertically-extending panel-like members connected to said rails, and an intermediate rail of T form disposed between the first named rails and having engagement with said panel members, to afford lateral support therefor, the stem flange of the intermediate rail being disposed in a horizontal plane.

In testimony whereof I, the said PERCY E. HUNTER, have hereunto set my hand.

PERCY E. HUNTER.