

March 27, 1928.

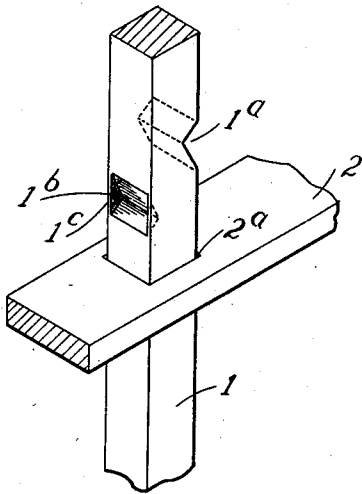
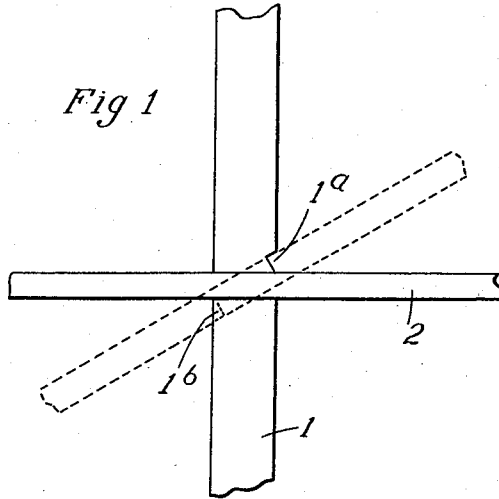
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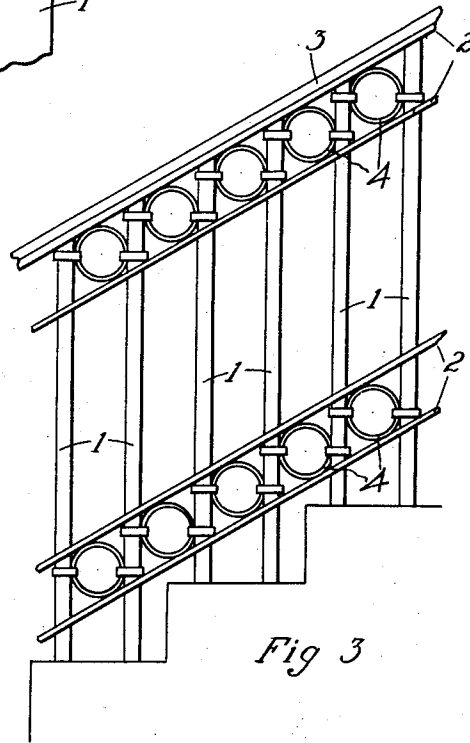
ORNAMENTAL IRON STAIR RAIL STRUCTURE

Filed May 6, 1926

*Fig 1*



*Fig 2*



*Fig 3*

Inventor

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# UNITED STATES PATENT OFFICE.

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## ORNAMENTAL IRON STAIR-RAIL STRUCTURE.

Application filed May 6, 1926. Serial No. 107,087.

My invention relates to an ornamental iron stair rail structure, more particularly to the means of securing the separate members of the side railing of stairs together, and the objects of my invention are: first, to provide a stair-rail structure of this class in which the separate members are rigidly secured together without welding, riveting or the like; second, to provide a stair rail structure of this class in which the vertical bar members are provided with recess portions made by a punch press and in which the separate members are interlocked with each other, thereby secured rigidly together without other fastening means; third, to provide a stair rail structure of this class in which the separate bars may be readily arranged so that they will fit steps that vary in width and height to a large degree; fourth, to provide a novelly constructed ornamental iron structure for the sides of stairs and, fifth, to provide a structure of this class which is very simple, economical of construction, durable, efficient, easy to assemble and disassemble and which will not readily deteriorate or get out of order.

With these and other objects in view as will appear hereinafter, my invention consists of certain novel features of construction, combination and arrangement of parts and portions as will be hereinafter described in detail and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon which form a part of this application in which:

Figure 1 is a side elevational view of the vertical and angular bars showing by solid lines the position of the angular bar at approximately a right angle to the perpendicular bar before being secured rigidly together, and showing by dotted lines the angular position of the bar when the members are rigidly secured in position and ready for use. Figure 2 is a perspective view of the vertical and angular bars with the angular bars shown slightly below the position in which they are securely positioned, and Figure 3 is a fragmentary side elevational view of a stair rail constructed of a plurality of the perpendicular and angular bars in their assembled position.

Similar characters of reference refer to similar parts and portions throughout the several views of the drawings.

The vertical bars 1, and angular bars 2,

constitute the principal parts and portions of my ornamental iron structure. The vertical bars 1 are preferably made of square material about one-half ( $\frac{1}{2}$ ) inch square. However, they may be polygon shaped if desired. They are each provided in opposite sides with notches 1<sup>a</sup> and 1<sup>b</sup> which are preferably made by a punch press. It will be noted that on the one side there is a thin web 1<sup>c</sup>, in each of the notches and on one side only. The angular bars 2 are preferably about one-quarter ( $\frac{1}{4}$ "') by one (1"') or one and one-quarter ( $1\frac{1}{4}$ "') inches and they are provided with square holes 2<sup>a</sup> which holes are made to conform to a cross-section of the bar 1. In this case it is shown square and is slightly larger than the bar so that the bars 2 will readily slide over the bar 1; and the upper inner corner of the walls surrounding the hole 2<sup>a</sup> is adapted to fit into the notch 1<sup>a</sup> and the lower inner corner is adapted to fit into the notch 1<sup>b</sup> in the bar 1 when the member 2 is positioned in the proper angular position to the member 1 for forming the proper angle for the stair rail, as shown best in Figure 3 of the drawings it being noted that the notches 1<sup>a</sup> and 1<sup>b</sup> are positioned relatively to each other so as to provide approximately the proper angle of the stair rail when finished, it being noted that the web 1<sup>c</sup> is crushed when the members 1 and 2 are forced to the angular position with each other as shown by solid and dotted lines in Figure 1 of the drawing, the web providing for a rigid, tight fit of the members 1 and 2 relatively to each other where there is slight variation between the various steps of the stairs.

It will be noted that the upper member 2 as shown in Figure 3 of the drawing fits on the upper end of the uprights 1. Therefore the upper notch 1 is not complete, the upper portion being cut off. Then over the upper member 2 is provided a cover member 3 for covering the upper end. The lower end of the upright ordinarily rests upon the end of the steps of the stairs as shown best in Figure 3 of the drawing. When assembling this structure a plurality of the uprights 1 are placed in the holes 2<sup>a</sup> of a plurality of the angular bars 2 positioned adjacent the notches 1<sup>a</sup> and 1<sup>b</sup>, in spaced relation. Then the structure is forced to the angular position by raising the ends of the bars 2 relatively to the bars 1 and the bars 2 interlocking with the bars 1 as shown in Figure

3 of the drawing, and by dotted lines in Figure 1 of the drawings, after which they are secured at their ends, providing a rigid interlocking ornamental iron structure without welding, riveting or the like.

In order to further support the structure annular members 4 may be interposed between the separate members 1 and 2 and resting against said members as shown in Figure 3 of the drawings.

Though I have shown and described a particular construction, combination and arrangement of parts and portions, I do not wish to be limited to this particular construction, combination and arrangement but desire to include in the scope of my invention the construction, combination and arrangement substantially as set forth in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a structure of the class described, a plurality of polygon cross section bars provided with pairs of angular notches in opposite sides of said bars and a plurality of other bars connecting each of the former and provided with holes therethrough of substantially the same cross-section as the cross-section of said first mentioned bars between the opposed notches thereof and adapted to fit over said latter bars and fit in the notches in said first mentioned bars, the transverse axis of the last mentioned bars being at a right angle to the first mentioned bars and the longitudinal axis being at an acute angle thereto.

2. In a stair side rail, a plurality of bars provided with pairs of angular notches positioned in opposite sides of said bars, the one slightly above the other, and a plurality of other bars connecting each of the former and provided with holes therethrough conforming to the cross section of said first mentioned bars the wall surrounding said holes in said second mentioned bars being adapted to fit in the notches in the first mentioned bars, the longitudinal axis of said second mentioned bars being inclined at an acute angle relatively to said first mentioned bars whereby said bars are interlocked relatively to each other.

3. In a stair side rail, a plurality of bars provided with pairs of angular notches positioned in opposite sides of said bars, the one slightly above the other, and a plurality of other bars connecting each of the former and provided with holes therethrough conforming to the cross section of said first mentioned bars the wall surrounding said holes in said second mentioned bars being adapted to fit in the notches in the first mentioned bars, said second mentioned bars being fitted to an angle relatively to said first mentioned bars whereby said bars are

interlocked relatively to each other, and a web positioned at the end of one of said notches adapted to be engaged by the corner of the wall of the second mentioned bars.

4. In a stair side rail, a plurality of bars provided with pairs of angular notches positioned in opposite sides of said bars, the one slightly above the other, and a plurality of other bars connecting each of the former and provided with holes therethrough conforming to the cross section of said first mentioned bars the wall surrounding said holes in said second mentioned bars being adapted to fit in the notches in the first mentioned bars, said second mentioned bars being fitted to an angle relatively to said first mentioned bars whereby said bars are interlocked relatively to each other, a web positioned at the end of one of said notches adapted to be engaged by the corner of the wall of the second mentioned bars, and means interposed between said first mentioned bars and the second mentioned bars for holding said bars in rigid spaced relation to each other.

5. In a structure of the class described, a plurality of square upright bars in spaced relation with each other, each provided with pairs of oppositely disposed angular notches in said upright bars, and a plurality of angular bars positioned with their longitudinal axes at acute angles with the former and provided with holes therethrough conforming to the cross-section of said angular bars at said notches and adapted to fit over same and when moved to longitudinal angular position to fit in the notches in said first mentioned bars.

6. In a stair rail of the class described, a plurality of square, perpendicular members, provided with a plurality of pairs of spaced notches in opposite sides thereof and webs in said notches, and a plurality of spaced bars provided with holes adapted to fit loosely over said perpendicular bars and fit in said notches and to crush said webs when turned to an angular position on said bars.

7. In a stair rail of the class described, a plurality of square, perpendicular members, provided with a plurality of pairs of spaced notches in opposite sides thereof and webs in said notches, and a plurality of spaced bars provided with holes adapted to fit loosely over said perpendicular bars and fit in said notches and to crush said webs when turned to an angular position on said bars, and means interposed between said perpendicular and angular bars for holding said bars in separate spaced relation and rigidly securing them together.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 29th day of April, 1926.

ROBERT L. MAPSON.