Aug. 5, 1924. 1,503,880

P. BROMAN

LADDER RUNG

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Fig. 1.

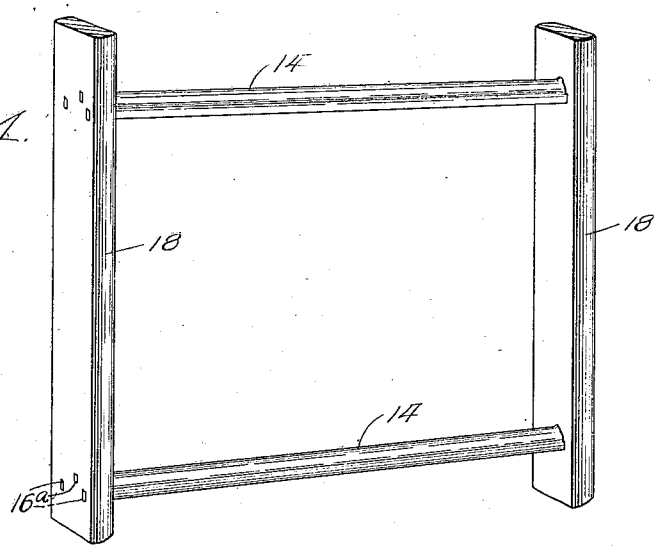


Fig. 2.

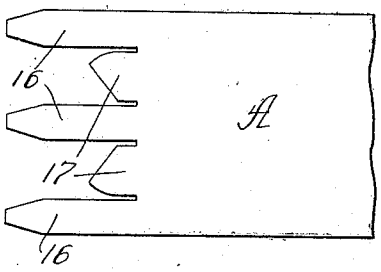


Fig. 3.

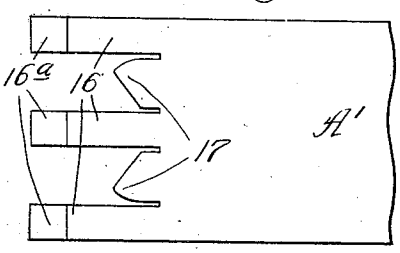


Fig. 4.

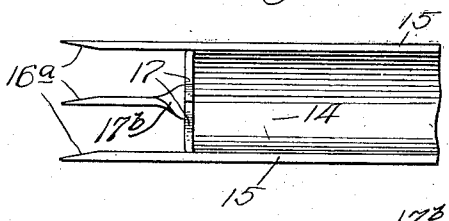


Fig. 5.

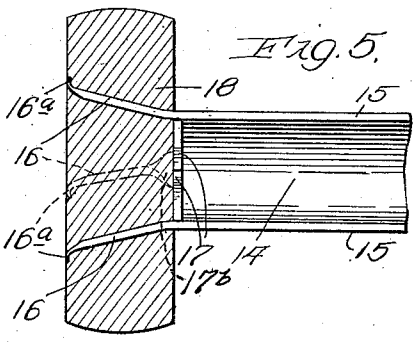
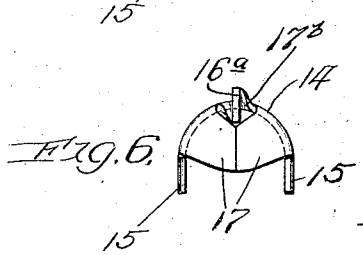


Fig. 6.



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Fig. 7.

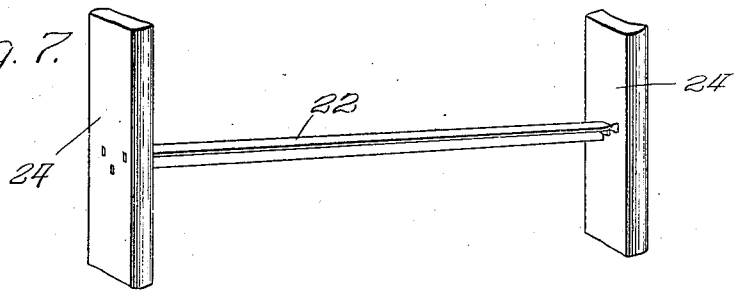


Fig. 8.

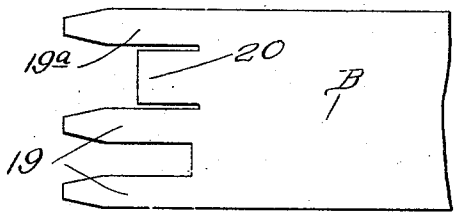


Fig. 9.

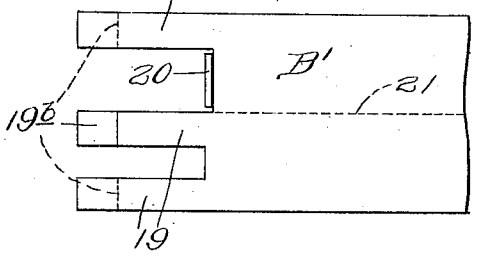


Fig. 10.

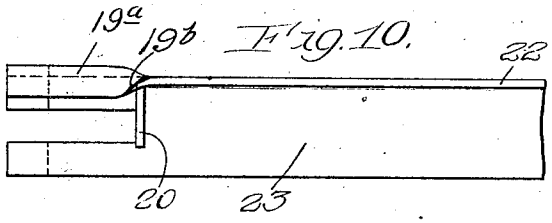


Fig. 11.

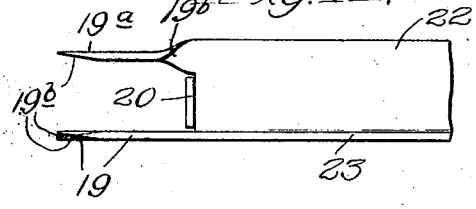


Fig. 12.

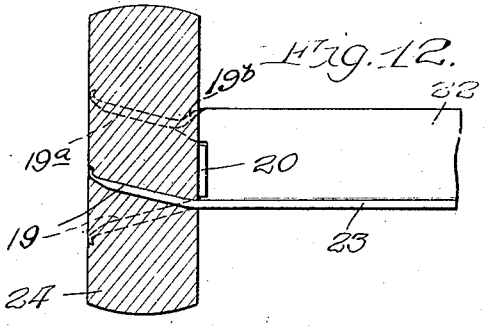
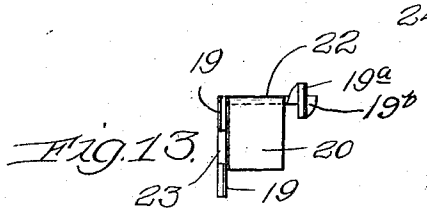


Fig. 13.



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Patented Aug. 5, 1924. 1,503,880

UNITED STATES PATENT OFFICE.

PETER BROMAN, OF CHICAGO, ILLINOIS.

LADDER RUNG.

Application filed July 21, 1921. Serial No. 486,394.

To all whom it may concern:

Be it known that I, PETER BROMAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Ladder Rung, of which the following is a specification.

This invention relates to ladder rungs and the process for making the same, and is fully described in the following specification and shown in the accompanying drawings in which Figure 1 is a partial perspective of a ladder embodying the invention;

Fig. 2 is a partial elevation of a blank showing the first step in making the ladder rung;

Fig. 3 is a similar view showing the blank after the second operation in the process of manufacture;

Fig. 4 is a bottom plan view of the rung after the third operation when it is ready for insertion in the side rail;

Fig. 5 is a similar view showing the rung inserted in a side rail;

Fig. 6 is an end view of the rung as shown in Fig. 5;

Fig. 7 is a partial perspective showing a modified form of ladder rung;

Figs. 8 and 9 are partial elevations showing the blank from which the ladder rung is made after the first and second operations respectively;

Figs. 10 and 11 are partial elevations at right angles to each other showing the completed rung ready for insertion in a side rail;

Fig. 12 is similar to Fig. 11, but showing the rung pressed into a side rail and

Fig. 13 is an end view of the rung shown in Fig. 10.

In the preferred embodiment shown in Figs. 4, 5 and 6, the rung has a tread 14 which is semi-circular in cross-section, the edges preferably terminating in straight parallel depending flanges 15.

This rung is best described by following the steps in the process of its manufacture. The blank A shown in Fig. 2 is punched at each end from a flat bar of the same width, thereby forming a plurality of tines 16, preferably three in number, with ears 17 extending therebetween. The blank A is of the same thickness throughout including the ends of the tines 16 which are pointed. The blank A′ as shown in Fig. 3 is the same but with the tines 16 beveled as at 16^a. This is preferably done by striking all of them on the same face with a hammer of any suitable form while the blank rests upon an anvil.

The next step in the process consists of bending the ears 17 transversely inwardly until they stand at right angles to the tread, bending the entire blank about a longitudinal axis until the edges 15 stand in substantially parallel planes and twisting the central tine 16 about a longitudinal axis until it stands parallel to the edges 15, all as shown in Fig. 4.

This rung may then be inserted in wooden side-rails or stiles 18 as shown in Figs. 1 and 5 until the ears 17 engage the side-rails. The tines 16 are preferably of such a length that they may be passed through the side-rails and clinched on the opposite side. As the side faces of all the tines are parallel with each other, they may be disposed in line with the grain of the wood so as to minimize the danger of splitting the same.

The twisting of the central tines provides a twist or thread 16^b at the proximal end of each of them to thread or wedge into the adjacent stile 18 similar to a single screw thread to more securely attach the rung.

A modified form of rung is shown in Figs. 7 and 10 to 13. This rung is also made from sheet metal, preferably from strips the width of the blanks B and B′ shown in Figs. 8 and 9 and from these the finished rungs are formed.

The blank B is stamped from sheet metal with longitudinally extending tines 19 and 19^a which are preferably tapered at their ends as shown in Fig. 8. An ear 20 is found between two of these tines.

The next step in the process of manufacture consists of bending the ear 20 at right angles to the body of the blank and beveling the ends of the tines as 19^b, preferably by striking them with a suitable hammer while the blank rests upon an anvil.

The blank is then bent about the longitudinal line 21 forming an angle section as shown is Fig. 13, forming a flat tread 22 and a depending flange 23.

The tine 19^a is also twisted at right angles to the tread 22 so that the broad sides of all the tines lie in parallel planes and at right angles to the tread and the twist or thread is provided at 19^b.

Fig. 12 shows these tines inserted in the wooden side-rail 24 until the ear 20 engages the inner face of the side-rail.

While I have shown and described but two embodiments of my invention, it is to be undestood that it is capable of many modifications. Changes therefore in the construction and arrangement may be made which do not depart from the spirit and scope of the appended claims in which it is my intention to claim the invention as broadly as possible in view of the prior art.

What I claim as new, and desire to secure by Letters Patent is:

1. A ladder rung having a tread, a longitudinal flange at an angle to the tread, and a plurality of tines having beveled edges extending longitudinally from the end of the rung, the stile-penetrating edges of all tines being parallel, one of said tines extending from the horizontal part of said tread and being twisted into parallelism with the other tines.

2. A ladder rung having a stile-penetrating tine provided with a twist adjacent its proximal end.

3. A ladder rung having a tread and a stile-penetrating tine extending from the tread and provided with a twist adjacent its proximal end so disposing the distal end portion of the tine that its side faces are substantially longitudinal with respect to an engaged stile.

4. A ladder rung having a substantially arcuate tread, a stile-penetrating tine extending therefrom provided with a twist adjacent its proximal end, said twist disposing the distal end portion of the tine so that its greater transverse dimension is substantially radial with respect to the center of the arc of the tread.

5. A ladder rung having a plurality of stile-penetrating tines disposed with their side faces at the distal end portions in substantially parallel planes, and a stile-penetrating tine arranged on a line passing intermediate the first mentioned tines and twisted so that its side faces at the distal end portion thereof will lie in planes substantially parallel to the first mentioned planes.

6. A ladder rung having a pair of stile-penetrating tines, a stile-penetrating tine disposed on a line passing between the first mentioned tines and spaced therefrom, and inwardly extending ears intermediate adjacent tines, the rung being transversely deflected whereby the ears substantially close the adjacent end of the rung.

7. A ladder rung having stile-penetrating tines, a tread disposed out of the general planes of said tines, and a stile-penetrating tine extending from the tread, the side faces of said tines being in substantially parallel planes.

8. A ladder rung having a stile-penetrating tine, a tread disposed out of the general plane of said tine, a stile-penetrating tine extending from the tread having a twist adjacent its proximal end, the side faces of said tines being in substantially parallel planes, and an inwardly extending ear intermediate the tines.

9. A ladder rung having stile-penetrating tines extending from an end thereof, a tread arched above a plane intersected by the upper edges of said tines, a stile-penetrating tine extending from said tread and twisted so that its side faces are in substantial parallelism with the side faces of the first mentioned tines, and ears at said end extending inwardly intermediate the last mentioned tine and first mentioned tines to substantially close the said end of the rung.

PETER BROMAN.