Oct. 13, 1925. 1,557,285

A. S. HUGHES

SAFETY TREAD STEP CONSTRUCTION

Filed April 21, 1922

Fig. 1.

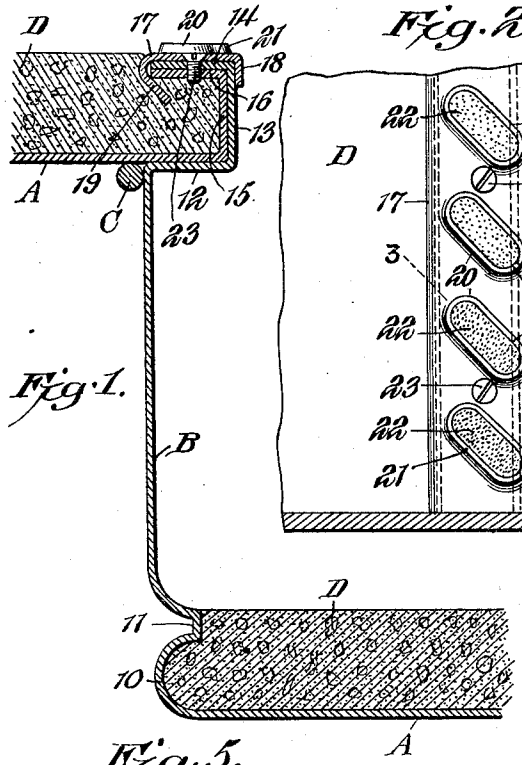


Fig. 2.

Fig. 3.

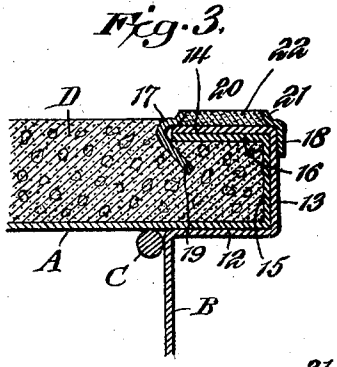


Fig. 4.

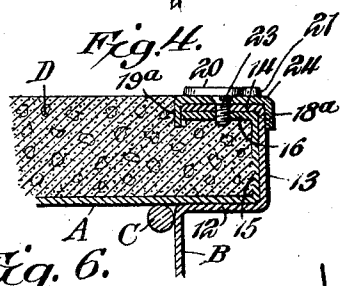


Fig. 5.

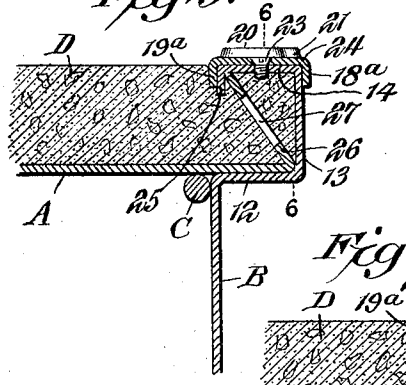


Fig. 6.

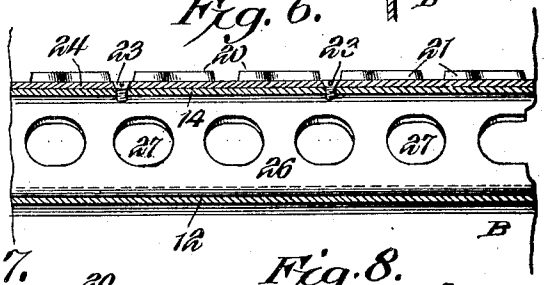


Fig. 7.

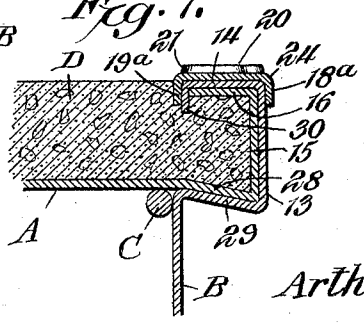
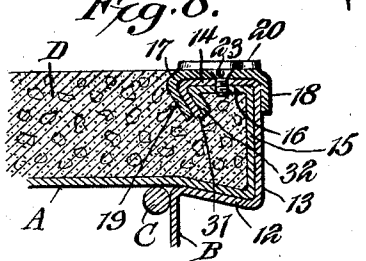


Fig. 8.



Arthur S. Hughes, INVENTOR,

WITNESSES

Howard D. Orr.

J. P. Smith.

BY E. G. Siggers.

ATTORNEY

Patented Oct. 13, 1925. 1,557,285

UNITED STATES PATENT OFFICE.

ARTHUR SHERIDAN HUGHES, OF MANSFIELD, OHIO.

SAFETY-TREAD-STEP CONSTRUCTION.

Application filed April 21, 1922. Serial No. 555,907.

To all whom it may concern:

Be it known that I, ARTHUR S. HUGHES, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented new and useful Improvements in Safety-Tread-Step Constructions (Case A), of which the following is a specification.

This invention relates to stair construction, particularly to that type including sheet metal tread members and risers secured together and having a tread proper of plastic material, and it has for its object the provision of a novel nose piece provided with a safety or non-slipping tread, which will tend to prevent accident to the user of the stairs, the nose piece also acting as a lock for positively holding together the tread member and riser and avoiding any displacement thereof.

An important object is the provision of a nose piece of this character which is capable of bodily removal to allow for replacement, the tread blocks being also individually renewable when desired.

Another object is the provision of a nose piece in which the tread blocks are so arranged that they will not act as a bank to retain dirt, dust and the like, but will permit ready sweeping off of any accumulation of such matter.

The construction and arrangement of the structural elements will be readily comprehended from a study of the description taken in conjunction with the accompanying drawings, though it is to be distinctly understood that the detailed disclosure is merely illustrative of the preferred embodiment of the invention, as I reserve the right to adopt many variations and make such modifications as will widen the field of its usefulness, provided always that such changes involve no departure from the salient features or spirit of the invention or the scope of the appended claims.

In the drawings:

Figure 1 is a vertical sectional view through a step embodying my invention;

Figure 2 is a plan view of a fragment of the step;

Figure 3 is a detail section on the line 3—3 of Figure 2;

Figure 4 is a cross section through a modified form of step;

Figure 5 is a similar view of a different form;

Figure 6 is a section taken on the line 6—6 of Figure 5;

Figure 7 is a section showing a still different form;

Figure 8 is a similar view illustrating another modification.

Referring more particularly to the drawings, I have shown a stair construction in which the step includes a tread member A and a riser B shaped and connected as shown. In this type of step, the tread member is supported by a transverse stay bolt or rod C, located near the free edge of the step at the underside thereof. The tread proper is formed of plastic material indicated at D which covers the tread member to the desired thickness. The juncture of the tread member with the riser is curved outwardly, as shown at 10, and is then bent straight upwardly as at 11, so as to provide a pocket with an overhanging shoulder, which operates to provide retaining means for the plastic material.

In Figures 1 to 3, inclusive, I have shown the upper portion of the riser formed with a horizontal shelf or portion 12, from which extends a vertical wall or portion 13, which has its free edge bent backwardly or inwardly to define a flange 14. The tread member A is formed at the front edge of the step with a vertical wall or portion 15, which is bent backwardly or inwardly to define a horizontal flange 16, the parts 13 and 14 fitting snugly against the parts 15 and 16, while the front end of the tread member rests upon and is supported by the shelf or horizontal portion 12. The flanges 14 and 16 have their free inner edges flush.

Located at the free front edge of the step upon the flange 14 is a nose piece 17 which is formed as an elongated channel-like strip, with one edge provided with a depending flange 18 lying against the vertical wall or portion 13 of the riser. The other edge of the strip is formed with an acute angle flange 19, which engages over and around the free inner edges of the flanges 14 and 16 and extends below the same and is embedded in the plastic material D. The strip 17 is formed with elongated or elliptical-shaped sockets or pockets 20 which extend diagonally and are spaced equal distances apart. These sockets may, in actual practice, be formed by punching the strip to define an upstanding flange 21 constituting the wall of the socket, the flange itself being

inclined so as to serve as a retaining means for a block or pad 22 of some non-slipping material, which projects slightly above the socket. The method adapted for forming the sockets is not material. The nose piece might be held in position by any one of a wide variety of means, though a convenient method is by screws 23 which are threaded into the flanges 14 and 16.

Figure 4 varies from the above described form only in the formation of the detachable nose piece 24, which has its flanges 18, 19a parallel.

In Figures 5 and 6, the horizontal upper flange 14 of the riser has its free edge formed with a depending flange 25, within the angle of which engages the upper edge of a forwardly inclined locking arm or member 26 provided on the free edge of the tread member so as to provide an interlocking connection. The member 25 is provided with a plurality of openings 27, through which may pass the plastic material of the tread during the molding thereof. The nose piece employed is identically the same as that shown in Figure 4, and is secured in the same manner.

In Figure 7 the contacting portions of the tread member and riser at the underside of the step are inclined downwardly, as shown at 28 and 29 respectively. The flange 14 is formed with a depending portion 30 which locks behind the edge of the flange member 16, but the same detachable nose piece is employed as in Figure 4.

Another modification is shown in Figure 8, in which the flanges 14 and 16 have their free edges formed with contacting depending flanges 31 and 32 respectively, which are inclined at an acute angle to form an interlock. The nose piece 17 used in Figure 1 must be employed in this form of the device.

In all forms of the invention regardless of the interlocking feature, it will be noted that I have provided a safety nose piece, which is readily renewable or replacable, and which will operate to insure the safety of the users of the stairs, on account of the non-slipping provision made. As the non-slip blocks or pads and their sockets are spaced apart, there will be nothing to cause dirt and dust to bank up or accumulate, as sweeping between the sockets may be readily effected.

In some of the modifications shown, the detachable nose piece acts as a lock for securing the tread member to the riser, while in other forms the nose piece operates as a reinforcement for stiffening and strengthening the structure at the front edge and insuring the maximum durability. The wear on a tread is confined to a small place at the front edge near the center. When this is worn to any extent, it has been necessary to replace the entire tread. With the arrangement disclosed, the substitution of a new nose piece is all that is necessary.

In practice, I use pressed steel, lead or carborundum, as a filling material for the sockets of the nose piece. Each socket is dove-tailed, as shown. They are placed at an angle of 45°, though it has been found that this angle offers more resistance to slipping and gives better results than any other position, as it facilitates sweeping and cleaning. Where a safety tread is applied having a corrugated surface extending the full length, as in ordinary practice, it is very hard to sweep and, therefore, keep the safety tread clean. While I have shown the safety nosing in the form of a narrow strip, it could be made into a much wider strip with successive rows of recesses or receptacles for the filler. If desired, the entire tread surface of the step may be thus formed.

What is claimed is:

1. In a stair construction, a step including a riser and a tread member interlocked at their front edges forming the nose of the step, and a separate nose piece applied over the nose at the top and provided with pockets filled with non-slipping material.

2. In a stair construction, a step including a riser and a tread member interlocked at their front edges and forming the nose of the step, and a separate piece applied over the nose at the top and provided with a series of spaced sockets containing non-slipping material.

3. In a stair construction, a step including a riser and a tread member interlocked at their front edges forming the nose of the step, and a separate nose piece applied over the nose at the top and provided with a series of spaced sockets containing non-slipping material, the sockets extending diagonally across the nose piece.

4. In a stair construction, a step including a riser and a tread member interlocked at their front edges forming the nose of the step, and a separate nose piece applied over the nose at the top and provided with a plurality of sockets spaced apart, and blocks of non-slipping material within and projecting above the sockets.

5. In a stair construction, a step including a riser and a tread member interlocked at their front edges forming the nose of the step, and a separate nose piece applied over the nose at the top and provided at its longitudinal edges with downwardly extending flanges to embrace the nose.

6. In a stair construction, a step including a riser and a tread member interlocked at their front edges forming the nose of the step, and a separate nose piece applied over the nose at the top and provided at its inner edge with a depending acute angle flange to

engage the horizontal portion of the nose.

7. In a stair construction, a step including a riser and a tread member interlocked at their front edges forming the nose of the step, and a separate nose piece applied over the nose at the top and reinforcing the same, said nose piece being formed at its longitudinal edges with downwardly extending flanges, the tread member being covered with plastic material, one of said flanges being embedded in said material and the other flange engaging about the front edge of the nose.

8. In a stair construction, a step including a metallic riser and tread member interlocked at their front edges forming the nose of the step, a separate nose piece applied to the upper face of the nose and carrying non-slipping material, and means for detachably securing the nose piece in position to both the tread and riser.

9. In a stair construction, a step having a tread member and a riser, the riser being formed at its upper portion with a horizontal shelf, a vertical wall extending upwardly from the front edge of the shelf, and a horizontal flange extending inwardly from the vertical wall, and the tread member having its bottom wall resting upon said shelf, a vertical wall extending upwardly from the bottom wall at the front, and a horizontal flange extending inwardly from the vertical wall, the vertical walls and the horizontal flanges of the riser and tread member fitting one within the other forming the nose of the step, and a separate nose piece fitted to said flanges, and operating as a lock for embracing and holding the tread and riser together.

10. In a stair construction, a step having a tread member and a riser, the riser being formed at its upper portion with a horizontal shelf, a vertical wall extending upwardly from the front edge of the shelf, and a horizontal flange extending inwardly from the vertical wall, and the tread member having its bottom wall resting upon said shelf, a vertical wall extending upwardly from the bottom wall at the front, said vertical wall contacting with the horizontal flange of the riser and fitting within the same and combining to form the nose of the step, and a separate nose piece having a pair of depending flanges, one of which engages the horizontal flange of the riser and the other flange engages the vertical wall thereof, said nose piece serving both as a reinforcement and a lock for the nose.

11. In a stair construction, a step including a riser and a tread member interfitted at their front edges forming the nose of the step, and a separate nose piece applied over the top of the nose and operating as a lock for embracing and securing the tread member and riser together at the front edges of the step.

12. In a stair construction, a step including a metallic riser and tread member interlocked at their front edges forming the nose of the step, a separate nose piece applied to the upper face of the nose and carrying non-slipping material, and means for detachably securing the nose piece in position to the tread and riser, the nose piece operating as a lock for embracing and holding the tread and riser together at the nose.

In testimony that I claim the foregoing as my own I have hereto affixed my signature.

ARTHUR SHERIDAN HUGHES.