This invention relates to sheet metal stair structures.

Heretofore many different types of sheet metal stair structures have been provided in which the treads and risers are constructed in units adapted to be readily interlocked to assemble the stair structure. The types of structures heretofore used are not entirely satisfactory, however, since to obtain the interlocking construction two or more bending operations are required in addition to those required for forming the units with treads, risers and nosings. Moreover considerably more material is utilized to form the interlocking flanges than was required in the old bolted types of stair structures. Another objection has been that the curvature of a downwardly curved flange on the nosing results in the plastic filling usually used on the treads forming a feather edge over the curved portion of said flange which cracks or breaks away and leaves an unsightly joint between the nosing and the plastic material. Also the flow of the plastic material under the nosing is interfered with by provision of a downwardly turned, interlocking flange on the nosing.

In accordance with one heretofore suggested form of stair structure, interlocking tanges are struck down from the top nosing flange, but this construction utilizes considerably more metal due to the width of the interlocking flange on the tread. The apertures in the nosing of this type of stair structure must have the plastic material forced therein to the surface and the material in these apertures appear as spots of contrasting color.

The present invention has for its object the provision of a stair structure of the above type in which a minimum of metal is employed, in fact but little more than required for the old bolted constructions, in which only one bending operation is required to form a single narrow flange upon the tread portion of each unit, in which there are no feather edges of plastic material formed at the joints between said material and the nosing, in which the plastic material flows without interference under the nosing, and in which the presence of unsightly apertures in the nosing is avoided.

The foregoing and other purposes of the invention are attained in the sheet metal stair structure illustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific form thereof shown and described.

Of the accompanying drawings,

Figure 1 is a longitudinal section through a stair structure embodying the invention;

Figure 2 is an enlarged detail section showing the interlocking connection between the tread and riser units;

Figure 3 is a section on line 3—3 of Figure 2; and

Figure 4 is a perspective view of a portion of a tread and riser unit showing the arrangement of interlocking clips thereon.

Referring to the drawings, the numeral 10 designates one of the stringers which may be suitable metal strips, preferably channels into which angle-brackets 11, 11 for supporting the stair structure may be secured as by spot welding or the like indicated at 12, 12. The stair structure includes tread and riser units 13, 13, each of which is formed with a rearwardly and angularly bent flange 14 on the front edge of the tread and with a forwardly extended channel shaped portion 15 at the top of the riser portion to provide a nosing. Each unit has secured thereto inside of the channel nosing a series of spaced clips 16, 16 secured thereto as by welding and providing downwardly turned channels with which the flange 14 of another unit may interlock with the forward margin of the tread of the other unit engaged in the lower side of the nosing channel. The clips 16 preferably are located as low as possible in the nosing channel so that flange 14 may be of minimum width and so that the clips are spaced from the upper flange of the nosing 15 whereby the plastic material 17 filled on the treads between the nosing and riser may flow without interference under the top flange of the nosing. The interlocked units may be secured upon the
angle-brackets 11 in any suitable way as by bolts 18, 18.

It will be apparent that the joint at 19 between the nosing 15 and the material 17 is defined by an abrupt edge of the sheet metal so that there will be no feather edge of the plastic material 17 formed at this point to crack or break away and become unsightly or form an obstacle over which one may trip and fall.

It will be apparent from the foregoing that a simple, effective and more economical interlocking sheet metal stairway structure has been provided by the invention. Modifications of this structure may, of course, be resorted to without departing from the spirit of the invention or the scope of the appended claims.

What is claimed is:

1. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing at a point spaced downwardly from the upper part of the nosing, said tread having a flange on its forward edge extending rearwardly at an angle whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

2. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing at a point spaced downwardly from the upper part of the nosing, said tread having a flange on its forward edge extending rearwardly at an angle whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

3. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing at a point spaced downwardly from the upper part of the nosing, said tread having a flange on its forward edge whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

4. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing at a point spaced downwardly from the upper part of the nosing, said tread having a flange on its forward edge whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

5. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing, said upper part of the nosing being imperforate and having an abrupt end for defining a joint between the nosing and plastic material filled on the tread, and said tread having a flange on its forward edge extending rearwardly at an angle whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

6. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing, said nosing being imperforate, and said tread having a flange on its forward edge extending rearwardly at an angle whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

7. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing, said upper part of the nosing being imperforate and having an abrupt end for defining a joint between the nosing and plastic material filled on the tread, and said tread having a flange on its forward edge whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

8. An interlocking sheet metal stair structure comprising tread and riser units each formed of sheet metal with a nosing at the top of the riser, and spaced clips secured inside the nosing, said nosing being imperforate, and said tread having a flange on its forward edge whereby one unit may be interlocked with another by engagement of the forward portion of the tread on one unit with the nosing on an adjacent unit with said tread flange engaged under said clips.

9. An interlocking sheet metal stair structure including tread and riser units each formed with a nosing at the top of the riser,
and spaced clips secured within the nosing at a point below the top of the nosing, said units having a flange on the forward portion of the tread to engage in the nosing of an adjacent unit under said clips to interlock the units.

10. An interlocking sheet metal stairway construction including tread and riser units, each unit being formed with an imperforate nosing at the top of the riser and having spaced clips within the nosing, each of said units having a flange on the forward portion of the tread to engage with the nosing and clips of an adjacent unit to interlock the units.

THEODORE L. COOK.