Jan. 18, 1938. G. S. VON SCHANTZ 2,105,565

METAL STAIR CONSTRUCTION

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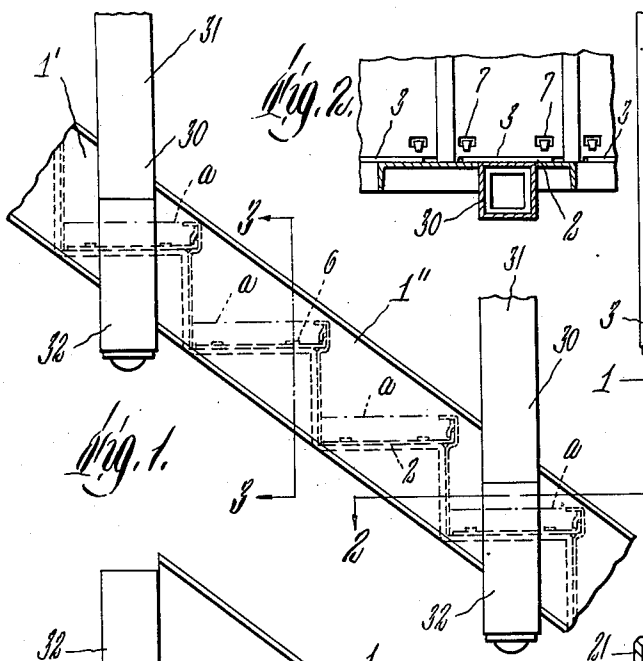

Fig. 1.

Fig. 2.

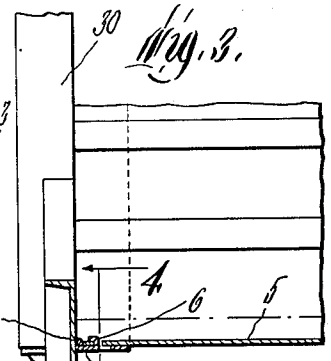

Fig. 3.

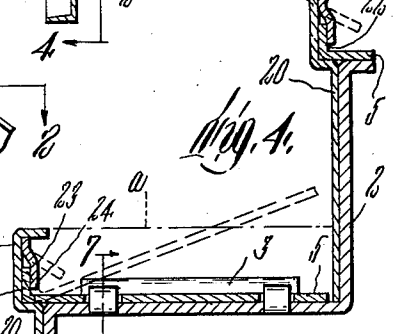

Fig. 4.

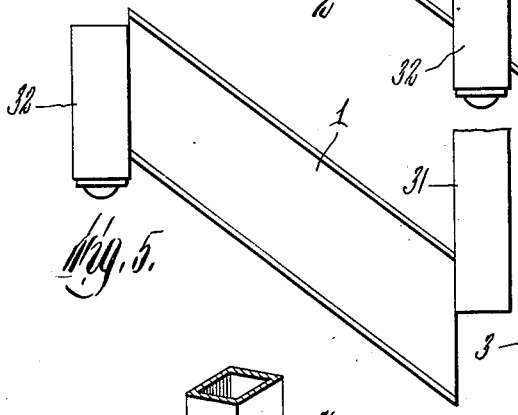

Fig. 5.

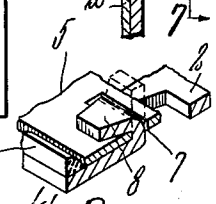

Fig. 7.

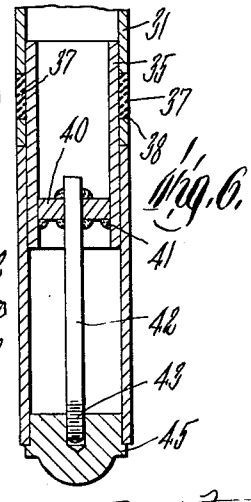

Fig. 6.

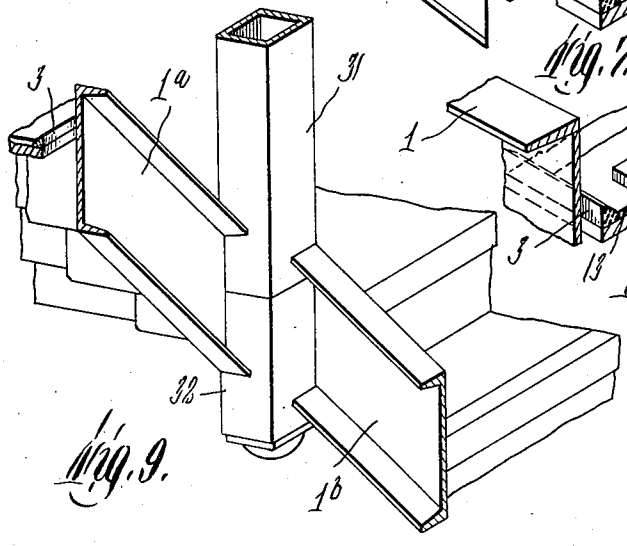

Fig. 9.

Fig. 8.

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METAL STAIR CONSTRUCTION

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7 Claims. (Cl. 189—43)

This invention relates to metallic stair construction and has for an object to simplify and cheapen the construction, reducing the number and difficulties of operations required, particularly in the assembly of parts on the pob, and particularly to avoid the use of securing bolts and nuts, or rivets, of which a large number are necessary in the usual prior constructions.

A further object is to provide a construction which presents a neat and pleasing appearance, making it unnecessary to apply a covering to the under face of the stairs to conceal unsightly parts.

A further object is to provide an improved newel post construction and attachment to the stringers.

For a more complete understanding of this invention, reference may be made to the accompanying drawing in which

Figure 1 is a fragmentary side elevation of a stair construction embodying this invention, certain parts being shown in dotted lines.

Figures 2 and 3 are detail sections on lines 2—2 and 3—3, respectively, of Figure 1.

Figure 4 is a detail section on line 4—4 of Figure 3.

Figure 5 is a side elevation of a stringer showing newel post portions secured thereto.

Figure 6 is a fragmentary vertical section to a larger scale through the assembled newel posts.

Figure 7 is a detail section on line 7—7 of Figure 4.

Figure 8 is a view in part somewhat similar to Figure 7, but showing a modified construction.

Figure 9 is a fragmentary perspective showing a corner newel post.

Referring to the drawing, at 1 is indicated a metallic stringer shown as a channel member. To the inner or flat face of this channel member, which is inclined to the horizontal, is secured a flat strip 2 which is bent into zigzag form, one edge of the strip being secured to the inner face of the channel stringer as by a weld as at 3 (see Figures 2, 3 and 7). The opposite stringer (not shown) has likewise secured to its inner face opposed to the strip 2 a similar zigzag strip, this strip also being welded in the same manner to the inner face of the stringer. The member 2 forms a support for the tread plates 5, which are sufficiently shorter than the space between the channel stringers 1 to clear the welds 3 at each end. As shown in Figures 3 and 7, the strip 2 may have tongues 6 partly cut therefrom and pressed upwardly in the tread supporting portions thereof, and the tread plates 5 may have openings 7 (see Figures 2 and 7) through which the tongues 6 may pass, after which these tongues are bent over, preferably toward the stringers 1, as shown best at 8 in Figure 7, so as to secure the tread plates in position. Where it is not desired that openings should show on the lower surface of the stairs, the securing tongues may be formed as portions of angle pieces 10, one flange 11 of each of which being secured as by wedding to a strip 2, the tread plates being provided with openings such as 12 (see Figure 8) of sufficient size to receive the angles 10, whereupon the upstanding leg 13 of each of these angles may be bent down against the top face of the tread plate as shown in full lines.

Referring more particularly to Figure 4, a riser shown at 20 may bear against the forward face of each of the zigzag strips 2. This riser plate is shown as formed at its upper end with a nosing 21 of generally channel cross section. Each of the tread plates 5 is formed with an upstanding flange 22, which, when the tread plate is in position, abuts against the inner face of the nosing within the channel, and securing pieces 23 welded at their upper ends to the inside face of the nosing may, after the parts are in the position shown in Figure 4, be bent down at their lower ends 24 into the full line position to clamp each flange 22 to a nosing. The nosing defines with the tread plates and the inner faces of the stringers depressions to receive the tread composition, which may be of any suitable type, and which comes up to the level indicated by the dot and dash line *a* on Figures 1 and 4. This tread material fills in in front of the lower portion of each of the riser plates and holds it back against the strip 2, so that in general it is unnecessary to secure the riser strips in position to the strip 2, although this may be done additionally, if desired.

The newel post 30, as shown in Figures 1 and 5, is formed of separate upper and lower sections 31 and 32, respectively, the post being tubular and in the form shown square, though any other desired cross section may be employed. As shown best in Figure 5, a lower newel post section 32 is secured as by welding to the upper edge of the stringer 1 butting its lower flange and terminating below its upper flange, and an upper newel post section 31 is secured as by welding to the lower end of this stringer butting against the upper stringer flange and terminating short of the lower flange. When the parts are assembled, two stringers with their newel post portions, such as shown in Figure 5, are brought

into assembled relation with the upper section 31 of one newel post in axial alinement with the lower newel post section 32 secured to the other stringer. Thus, as shown in Figure 1, an upper stringer 1' with its upper newel post section 31 is arranged in axial alinement with a lower stringer section 1'' with its newel post base or lower sections 32 arranged in axial alinement with the upper section 31 of the upper stringer. The upper portion of the newel post extends above the stringers to receive the hand rail (not shown).

As shown in Figure 6 each upper newel post section 31 has positioned therein and telescopically related thereto a securing member 35. This member comprises a sleeve closely fitting within the upper section 31 and secured therein as by welding 37, filling one or more holes 38 through the walls of the upper section 31. The member 35 is shown as having a base member 40 welded thereto as at 41, and through this base member passes an extension piece 42 formed as a rod having its lower end threaded as at 43. This extension 42 is thus of smaller diameter than the member 35 and it may have threaded engagement at its lower end with an ornamental base cap 45 for the lower end of the newel post. The threaded engagement between the extension 42 and this cap serves to secure the member 35 to the lower section, and as this member 35 laps the joint between the upper and lower sections, it holds them securely in axial alinement. While in Figure 1 the upper and lower stringers are arranged in axial alinement, this newel post construction permits these stringers to be arranged in any other angular relationship desired, as shown, for example, in Figure 9 where the upper stringer 1*a* is at right angles to the lower stringer 1*b*, thus being positioned in a different plane from the stringer. The newel posts herein shown are square, which permits the post sections to fit together in either alinement, or right angularly related to each other. It should, of course, be evident that by making the newel posts round in cross section, the upper and lower sections will fit together in any angular position desired, or by making the newel post sections polygonal with other than four sides, various other special angular relationships may be provided for in accordance with the requirements of individual installations.

From the foregoing description of certain embodiments of this invention, it should be evident to those skilled in the art that various changes and modifications might be made without departing from the spirit or scope of this invention as defined by the appended claims.

I claim:

1. Stair construction comprising a pair of inclined stringer members having their ends substantially vertical, a lower section of a newel post secured to the upper end of one of said stringers and terminating below its upper edge, an upper section of a newel post secured to the lower end of the other stringer extending above said stringer and terminating above its lower edge, and means holding said sections in axial alinement.

2. Stair construction comprising a pair of inclined stringer members having their ends substantially vertical, a lower section of a newel post secured to the upper end of one of said stringers and terminating below its upper edge, an upper section of a newel post secured to the lower end of the other stringer extending above said stringer and terminating above its lower edge, means holding said sections in butting axial alinement, and a plurality of stair-supporting members carried by each stringer.

3. Stair construction comprising a pair of inclined stringers composed of structural beams having their ends substantially vertical, a lower section of a newel post secured to the upper end of the lower of said stringers, a top section of a newel post secured to the lower end of the upper of said stringers, and means for securing said newel post sections in alinement.

4. Stair construction comprising a pair of inclined stringers composed of structural beams having their ends substantially vertical, a lower section of a newel post secured to the upper end of the lower of said stringers and terminating below its upper edge, a top section of a newel post secured to the lower end of the upper of said stringers and terminating above its lower edge, and means for securing said newel post sections in butting alinement.

5. Stair construction comprising a pair of inclined stringers composed of structural beams having their ends substantially vertical, a lower section of a newel post secured to the upper end of the lower of said stringers and terminating below its upper edge, a top section of a newel post secured to the lower end of the upper of said stringers and terminating above its lower edge, and means for securing said newel post sections in butting alinement and with said beams arranged in different planes.

6. Stair construction comprising a pair of inclined channel beams having their ends substantially vertical, a lower section of a newel post secured to the upper end of one of said beams in butting relation to the lower flange of said beam and terminating below the upper flange thereof, an upper section of a newel post secured to the lower end of the other of said beams and butting the upper flange thereof and terminating at its lower end above the lower flange thereof, and means for securing said newel post sections in axial alinement.

7. Stair construction comprising a pair of inclined channel beams having their ends substantially vertical, a lower section of a newel post secured to the upper end of one of said beams in butting relation to the lower flange of said beam and terminating below the upper flange thereof, an upper section of a newel post secured to the lower end of the other of said beams and butting the upper flange thereof and terminating at its lower end above the lower flange thereof, means for securing said newel post sections in axial alinement, and stair tread supporting members secured to the flat faces of said beams.

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