May 24, 1949. O. SAFIR 2,471,352

CONSTRUCTION OF STAIRCASES

Filed Feb. 18, 1946 2 Sheets-Sheet 1

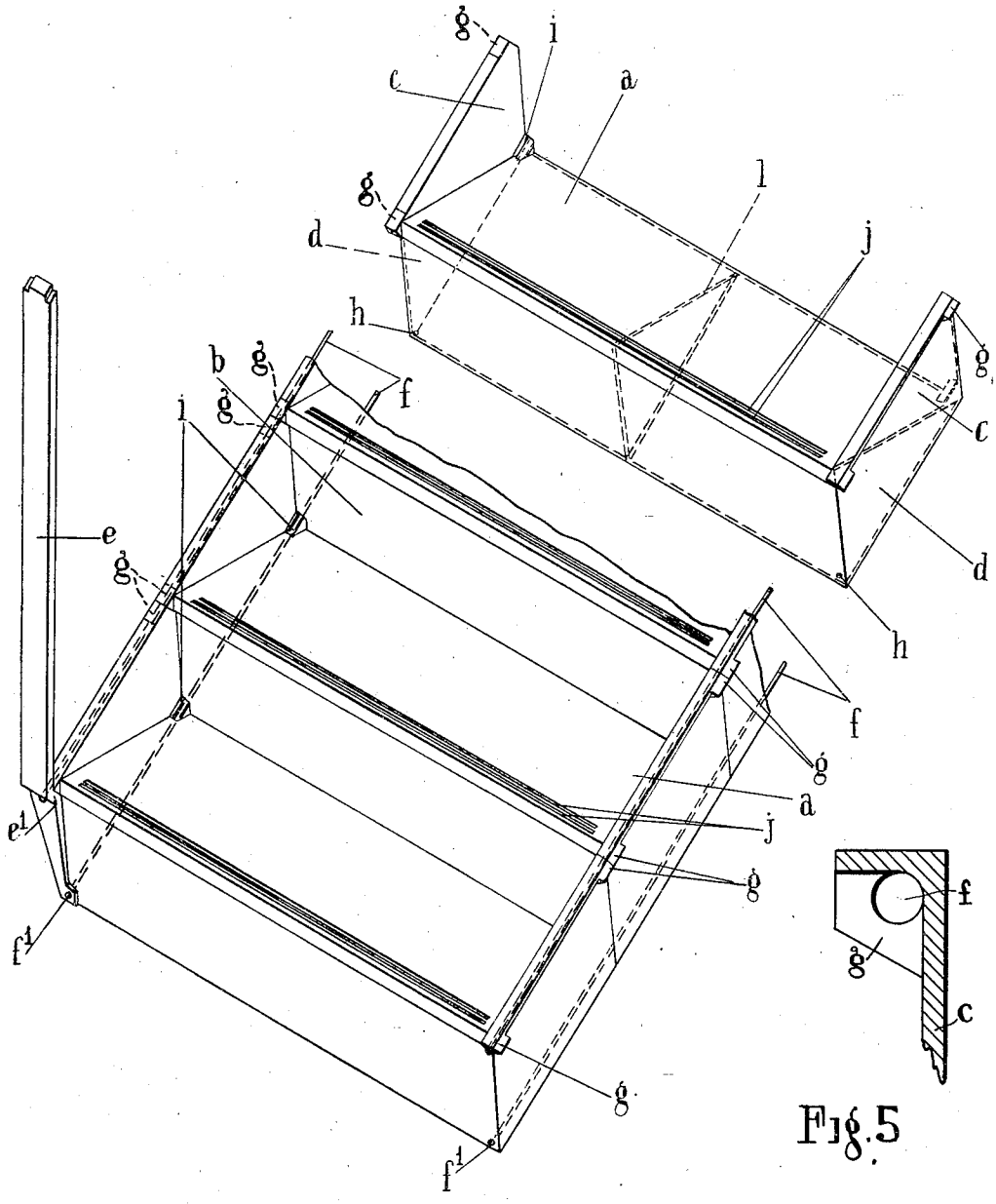


Fig. 1.

Fig. 5

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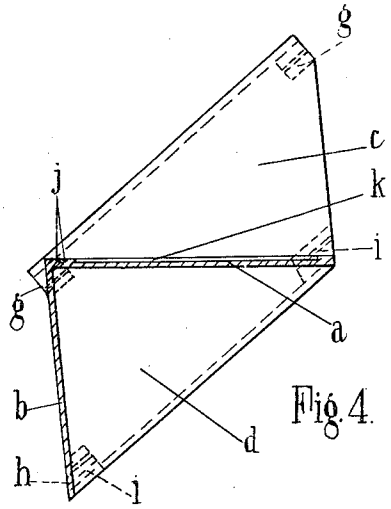


Fig. 4.

Fig. 2.

Fig. 3.

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CONSTRUCTION OF STAIRCASES

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Application February 18, 1946, Serial No. 648,262
In Great Britain September 29, 1945

4 Claims. (Cl. 189—43)

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This invention relates to a system of construction of staircases.

The traditional timber staircase consists generally of two string beams along both sides of the flight, in between which are supported the individual treads and risers of each step. This construction results in a great number of joints between the various timber pieces, and, especially if the timber used is not very well seasoned and if the workmanship is not up to the required high standard, these joints are apt to open and the whole staircase to creak. Moreover, the surface of the boards forming the treads is not generally considered suitable for use without further covering, and a stair carpet is found necessary.

It is known to construct staircases from units of moldable material consisting of solid blocks, suitably interlocked, all the blocks being connected together by a rod extending through them in a direction parallel to the assembled staircase. It is also known to form the staircase from units of moldable material comprising a horizontal tread, a vertical riser and a triangular web at each end without stringing them together by rods, the individual steps being secured at one or both ends to an adjoining wall. The main object of the invention is to provide an improved construction of staircase which is built up of units and is freely spanned between landings.

According to the present invention the staircase is constituted by an assembly of step units cast in aluminium alloy, each unit comprising a horizontal portion forming the tread, a vertical or slightly undercut portion forming the riser, both having a length corresponding to the required width of the staircase and at both ends, above and below the tread, triangular webs corresponding to parts of the usual string beams. The end webs are provided with means which enable all the units to be interconnected by steel rods to form a flight of any required length which can span between its ends without any supporting structure. This means may preferably consist of lugs cast at the upper and lower ends of the webs, outside thereof, or at the upper end outside and at the lower end inside thereof, holes being provided therein for the passage of the steel rods.

According to a further feature of the invention part of the surface of the tread is preferably recessed to receive a walking surface of rubber, linoleum or other resilient material. The recess does not extend right up to the edge of the tread,

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the casting being preferably provided at this point with grooves to form a non-slip edging.

According to a still further feature, the uprights for holding the rail, usually provided only on one side of the staircase, are also aluminium casts, and they are fitted at suitable distances apart from each other between the units above referred to, being kept assembled therewith by the interconnecting steel rods.

In order to form a flight of any required length the required number of step units together with the uprights are assembled on four steel rods—two to each string—which are threaded through the holes in the lugs cast on the webs. The ends of the steel rods are screw-threaded and receive washers and nuts which are tightened to the required extent enabling the flight as a whole to span.

In the accompanying drawings,

Figure 1 is an isometric view of part of a staircase constructed according to the present invention, and Figure 2 is a sectional elevation thereof taken in its longitudinal direction.

Figure 3 shows on an enlarged scale a sectional elevation of a unit used in connection with an adjacent upright for the support of a rail.

Figure 4 shows, also on an enlarged scale, a sectional elevation of a modified construction of the unit and

Figure 5 is a transverse section through the top part of the web looking in the direction of the lug provided with the hole for the passage of the rod.

Referring to the drawings, each unit consists of a horizontal tread portion *a*, a riser *b* and triangular webs *c*, *d*, at each end, one extending above the horizontal tread and the other one below the latter, between it and the riser. *e* are rail-supporting uprights interposed between some of the units, the rail not being illustrated. *f* are steel rods by which the units and uprights are assembled together to a flight, the rods being tightened by screw nuts *f'*. Some of the rods pass through holes provided in lugs *g* at the top of the upper webs *c*, and others through holes *h* at the lower end of the riser *b* and through holes in lugs *i* cast at the back of the unit between the horizontal tread portion *a* and the upper web *c*. In the modification illustrated in Figure 4, all the lugs *g* and *g'* for the reception of the steel rods at the upper and lower edges of the webs *c* and *d* respectively are cast outside the webs *c*, *d*. For the purpose of easy assembly, the uprights *e* are preferably cranked, as shown at *e'*.

The units are preferably provided near the edge

of the tread *a* with grooves *j* to form a non-slip edging. Figure 4 also shows the tread recessed from front to back (see *k*) to receive a walking surface of rubber, linoleum or other resilient material.

The step unit may be cast with one or more stiffening ribs between the tread and the riser; such a rib *l* is shown in connection with the unit illustrated at the top of Figure 1.

The width of the horizontal portions of each unit may be approximately 9'' and the height of the riser about 7½''. It is however to be understood that the invention is not limited to any particular dimensions, nor to the details hereinbefore given.

I claim:

1. A staircase comprising a number of step units cast in aluminium alloy, each unit consisting of a horizontal portion forming the tread, a riser, and at each end two triangular webs corresponding to parts of the usual stringer beam, one above and the other below the tread, in combination at each end with two rods by which the said units are assembled to form a flight of the required length, the one rod running parallel to and near the upper edge of the web lying above the tread and the other rod running parallel to and near the lower edge of the web lying below the tread.

2. A staircase as claimed in claim 1, including uprights also cast in aluminium for the support of a rail, which uprights are kept assembled between the said units by the said rods.

3. A staircase as claimed in claim 1, in which the said webs of the cast units have lugs with holes therein for the passage of the assembling rods.

4. A staircase as claimed in claim 1, in which the said cast units have lugs with holes cast in between the tread and the web above it, and the risers have holes, for the passage of the assembling rods through them.

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