June 26, 1934. J. H. BUZBY 1,964,660

REENFORCED CONCRETE STAIRS OR STEPS

Filed May 25, 1932

Fig. 1.

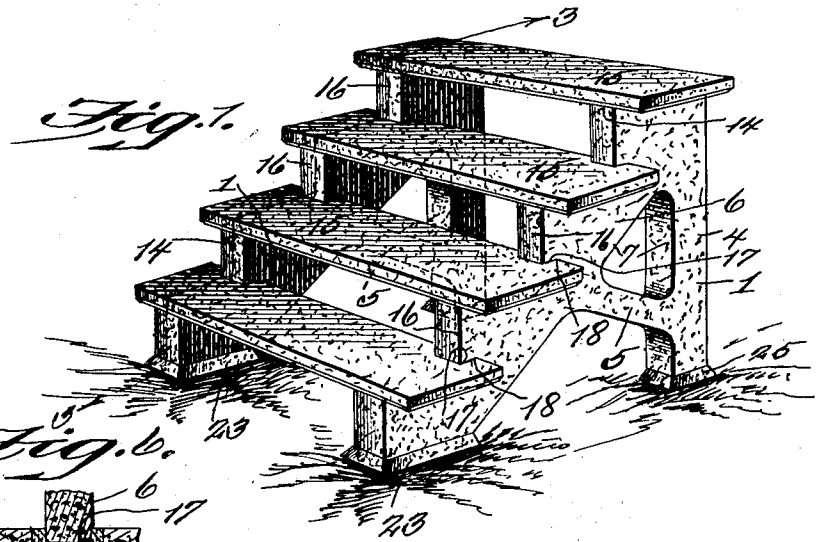


Fig. 6.

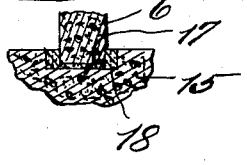


Fig. 3.

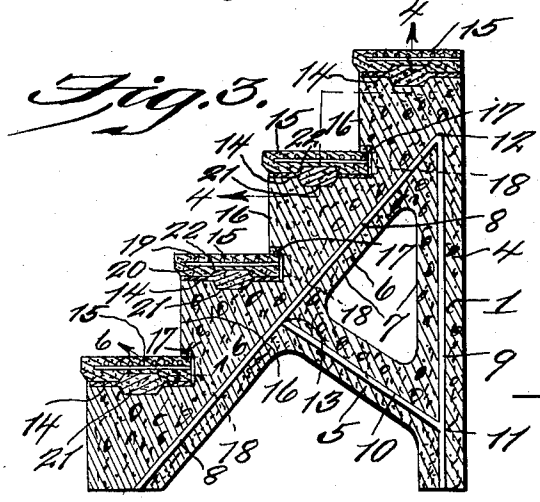
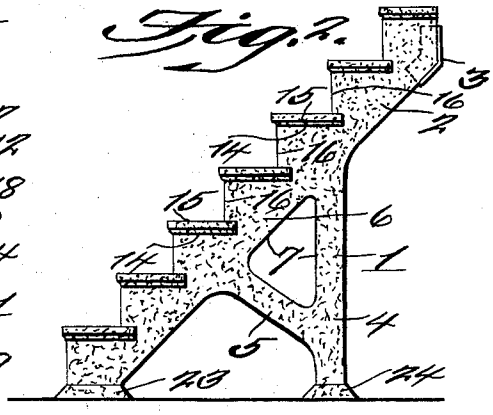


Fig. 2.



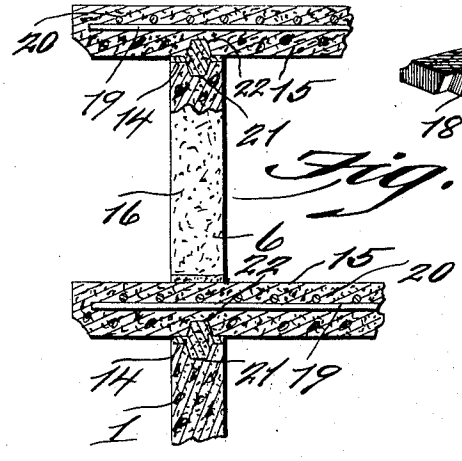
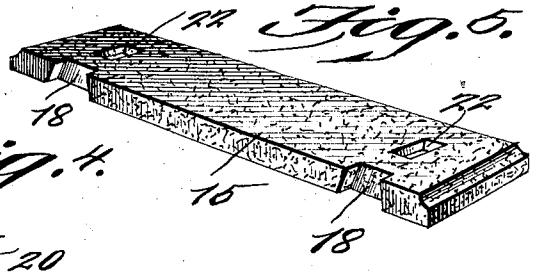


Fig. 4.

Fig. 5.



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REENFORCED CONCRETE STAIRS OR STEPS

Joseph H. Buzby, Philadelphia, Pa.

Application May 25, 1932, Serial No. 613,507

4 Claims. (Cl. 72—96)

This invention relates to an improved set of stairs, which prior to erection, the various parts or elements of the stairs are manufactured in a knock down condition, enabling transportation of various elements of the stairs to the location where the stairs are to be erected. The stairs may be used either at the back or the front of a dwelling, or may be erected within a dwelling, for use from the first floor down into the cellar or basement, or may be used at any location, where such construction of stairs may be found suitable.

The invention has for its purpose, to provide, in a set of stairs, a skeleton stringer molded of concrete or other cementitious material and it comprises a standard extending down from the body of the stringer, an arch and a strut, the latter extending from the standard merging toward and connected to the body of the stringer, the interior of the concrete stringer being reenforced, which together with the construction of the stringer insures strength and durability.

Another purpose is to provide, in a set of stairs a plurality of treads, constructed of concrete or other cementitious material, which are cemented and locked in such wise as to render the treads rigid and firm when in place, said treads having transverse and longitudinal reenforcings imbedded in the material, hence insuring considerable strength and durability.

A further purpose is to provide a set of stairs, wherein the treads have their rear edges notched for cooperative straddling engagement with notches of the riser edges of the stringer, thereby assisting in locking the treads in place when applied and preventing upward movement of the treads, the notches of the treads having their end walls inclined, thereby permitting a binding agent, such as some suitable cementitious material, or cementitious mortar to enter the notches, to insure locking the parts together, that is to say enter the notches after the treads have been placed in position, the cement or mortar being fed from the top.

Another purpose is to provide a set of stairs, wherein the various parts are molded or constructed in separate molds or forms, and in their knock down condition transmitted to the location where the steps are to be erected.

It is to be understood that the particulars herein given are in no way limitative, and that while still keeping within the scope of the invention, any desired modification of details and proportions may be made in the construction of the appliance according to circumstances.

The invention comprises further features and combination of parts to be hereinafter set forth, shown in the drawing and claimed.

In the drawing:—

Figure 1 is a view in perspective of the set of stairs constructed in accordance with the invention.

Figure 2 is a view in side elevation of a modified construction, wherein the skeleton stringers are extended at their upper portions for the purpose of erecting a set of stairs of a greater height.

Figure 3 is a sectional view on line 3—3 of Figure 1 taken through one of the skeleton stringers and the various treads, showing the reenforcing for the stringer and the locking connections between the treads and the stringer.

Figure 4 is a sectional view on line 4—4 of Figure 3.

Figure 5 is a detail perspective view of one of the treads 5.

Figure 6 is a sectional view on line 6—6 of Figure 3.

Referring to the drawing 1 identifies each skeleton stringer of the set of stairs or steps, which is constructed of cementitious material and may be of any size. If of increased size to that shown in Figure 1, the stringers may have an extension 2, for the purpose of erecting a set of stairs or steps of a greater height than that shown in Figure 1, and in this instance brackets 3 are employed at the upper ends of the stringers for the purpose of steadying the stringers in position until the treads are locked in place. The brackets may remain in position if desired, but they are not entirely necessary.

Each stringer comprises a standard 4, merging from which is a strut 5 arranged on an angle to the standard, as well as on an angle relative to the body 6 of the stringer. By means of the standard 4 and the strut 5 an arch 7 is caused to be formed. Each skeleton stringer in its body has rod reenforcing 8, which in Figure 2 is extended through the extension 2 of the skeleton stringer. The standard 4 and the strut 5 are provided with rod reenforcings 9 and 10, which are electrically welded together as at 11 and in turn welded at 12 and 13 to the rod reenforcing 8.

The skeleton stringers are of the usual design, namely comprising horizontally disposed supports 14 for the treads 15 and the riser edges 16. The riser edges 16 are notched at 17. The treads 15 can be of any length, of any width, and of any thickness, and constructed of any suitable cementitious material.

The rear edges of the treads have notches 18

which are adapted to coincide and cooperate with the notches 17. In other words the notches 18 straddle the riser edges 16, at points where the notches 17 are formed. Furthermore the notches 18 are longer than the thickness of the stringers, and the end walls of the notches 18 are inclined downwardly convergently, so as to permit of deposits of cement or cement mortar or other plastic material to be fed in place, to insure a secure bonding between the engaging parts, and thereby prevent upward as well as endwise movement of the treads.

The treads have imbedded therein longitudinal and transverse rod reenforcings 19 and 20, throughout the length of the treads, thereby not only making the treads staunch, but holding the particles of the cementitious material together.

The horizontally disposed supports or edges 14 of the stringers are provided with elongated cavities 21, while the under surfaces of the treads have similar cavities or recesses 22, which, when the treads are placed in position on the supporting edges 14, register with the cavities or recesses 21.

However previous to placing the treads in position the horizontally disposed supports or edges 14 are given a sufficient deposit of cementitious material or mortar, the cavities 21 also receiving a supply of said adhesive cementitious material or mortar, while the cavities 22 are provided with a supply of cement or cement mortar, so that when the treads are placed in position and tamped down, and such adhesive material troweled away to give a neat appearance, such cement or cement mortar material will provide a secure adherence bonding between the parts, that is to say a lock, which with the notch construction, will insure prevention of endwise or lateral movement of the treads.

The front lower ends of the stringers and the standards may rest on concrete or cement bases as identified at 23 and 24, and such bases may be imbedded below the surface of the ground.

The invention having been set forth, what is claimed is:

1. In a set of stairs, a pair of stringers having tread supporting edges and provided with riser edges, treads mounted on the tread supporting edges, and means for interlocking the rear edges of the treads and the riser edges, said interlocking means comprising interengaging notches on the rear edges of the treads and on the riser edges with a cementitious bonding between the notches.

2. In a set of stairs, a pair of stringers comprising the skeleton stringer bodies and including rear standards extending down from the bodies, struts connecting the standards and the bodies, and rod reenforcings imbedded in the stringers and conforming to the arrangement of said foregoing parts, said stringers having tread supporting and riser edges, treads supported on the former edges, and means interlocking the rear edges of the treads and the riser edges, said interlocking means comprising interengaging notches on the rear edges of the treads and on the riser edges with a cementitious bonding between the notches.

3. In a set of stairs, a pair of stringers having tread supporting edges and riser edges, treads arranged on said tread supporting edges, the under surfaces of the treads and the tread supporting edges having registering cavities, and a cementitious bonding between the under surfaces of the treads and the tread supporting edges, said bonding entering the cavities, thereby insuring a locking connection between the parts, the rear edges of the treads and the riser edges having interlocking cementitious bonding connections to insure against upward displacement of the treads as well as endwise movement.

4. In a set of stairs, a pair of A shaped frame stringers having imbedded therein an A shaped reenforcement, said stringers having tread supporting edges and riser edges, treads, arranged on said tread supporting edges, the under surfaces of the treads and the tread supporting edges having registering cavities, a cementitious bonding between the under surfaces of the treads and the tread supporting edges, said bonding entering the cavities, thereby insuring a locking connection between the parts, said treads having imbedded therein reenforcements, the lower portions of the riser edges of the stringers having notches, the rear edges of the treads having notches interengaging with the notches of the riser edges, a cementitious bonding in the interengaging notches of the treads and the riser edges, the end walls of the notches in the rear edges of the treads being divergent upwardly, thereby in association with the cementitious bonding in said notches acting to prevent upward movement of said treads.

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