Nov. 19, 1935. N. T. MacKENZIE 2,021,457

STAIR CARRIAGE

Filed Dec. 7, 1932

Fig. 2

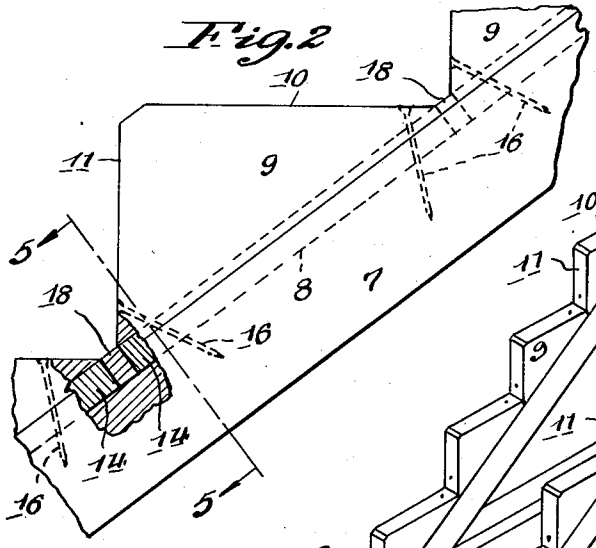


Fig. 1

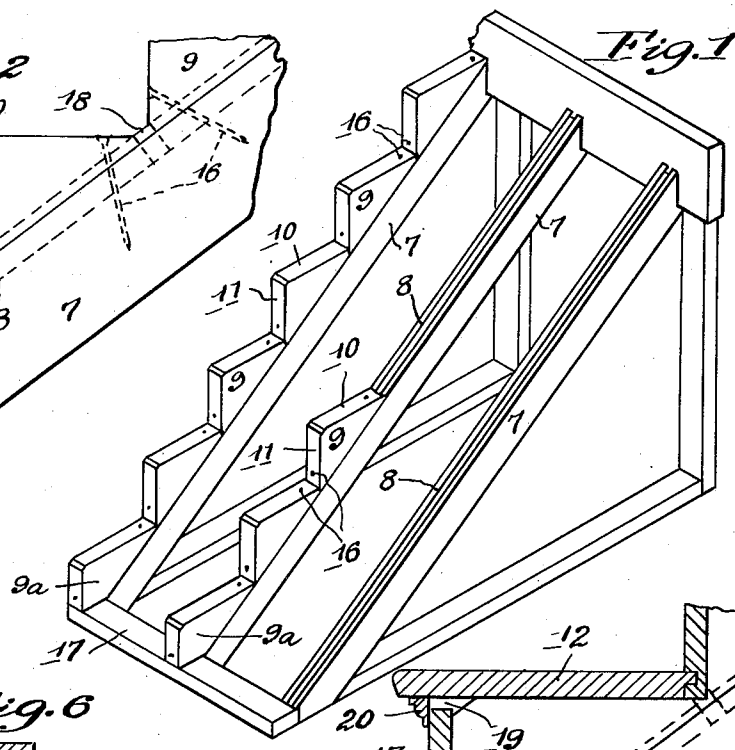


Fig. 5

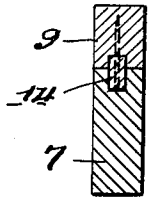


Fig. 6

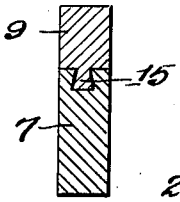


Fig. 3

Fig. 4

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STAIR CARRIAGE

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Application December 7, 1932, Serial No. 646,043

3 Claims. (Cl. 20—10)

Heretofore good construction of wooden stair stringers has required skilled carpenters and has been expensive because of the high grade of lumber demanded and the large amount of time consumed in the necessary hand work. It is common to use 2" x 10" or 2" x 12" stock which is marked and sawn by hand, after computation of the proper dimensions, and triangular portions cut from the stringers are usually wasted. Stock of adequate grade and of such dimensions is expensive and even slight errors in the computations or sawing result in poor construction. As the ceiling heights vary widely, special computations are necessary to obtain the rise and run of the steps in each case. Under these circumstances a desirable degree of accuracy is difficult to obtain with old methods and materials.

It is an object of this invention to obviate these difficulties, and at the same time to reduce the cost of construction, by providing a stair carriage having a novel arrangement of stringers and individual tread supports which are adjustable along the stringers, the tread supports and coacting elements of the stringers being accurately cut in advance by the use of power machines at the factory and from relatively inexpensive stock.

Other objects will appear and be more fully pointed out in the following specification and claims.

In the drawing, which illustrates the best form of my device at present known to me:

Figure 1 is a perspective view of my improved stair carriage with some of the adjustable tread supports removed;

Fig. 2 is a fragmentary side elevation of the device, partially in central, vertical section;

Fig. 3 is a vertical section through suitable stair treads and risers, showing their relation to my improved carriage;

Fig. 4 is a detail illustrating a method of economically cutting a number of tread support blocks from a piece of suitable stock;

Fig. 5 is a section taken on the line 5—5 of Fig. 2, and

Fig. 6 is a similar section showing an alternate form of connection between the stringer proper and tread support block.

Stringers 7 are preferably cut from 2" x 4" or 2" x 6" stock and have in their normally upper edges, straight, continuous grooves or guideways 8. Tread support blocks 9 of substantially triangular shape are machine cut to provide horizontal edge surfaces 10 and vertical edge surfaces 11 to support the treads 12 and risers 13 of the stairway. Extending along the oblique, lower edge of each block 9 is a spline 14 formed to fit in the guideways 8 of the stringers 7. The splines 14 may be secured to the blocks 9 by gluing or by nailing, as in Fig. 5, or the splines may be formed integral with the blocks, as indicated by the tongue 15 shown in Fig. 6. Obviously splines of other shapes may be provided and the integral tongues may be made dovetail shaped, as in cross section in Fig. 6 or they may be otherwise formed, in each case to correspond to the shape of the guideways 8 in the stringers 7. The several blocks 9 are thus arranged to be movably aligned with the stringers 7 by the interengaging members of the blocks and stringers. After a block has been properly located on a stringer, nails 16 are driven through the upper and lower ends of the block into the stringer 7.

Where the minimum rise and run for a given set of blocks 9 is required, the lower end of one block may be allowed to rest on the upper end of the block beneath and the lowest block 9a of the stairway may be supported on a foot piece 17 extending across the bottom of the stairway, as shown in Fig. 1. In cases where a rise and run in excess of the minimum obtainable with a given set of blocks 9 is desired, small spacers 18 are placed between the end of the blocks 9, as indicated in Figs. 2 and 3. Spacers of a thickness such that the sum of their thicknesses for a given stair will produce the desired increase over the minimum run and rise are selected. The spacers may be either left in place in the finished stair or removed as the blocks 9 are secured to the stringers 7.

As shown in Fig. 3, treads 12 and risers 13 of standard width may be used even where a run and rise in excess of the minimum is desired. Thus, the blocks 9 are machine cut to such dimensions as to correspond to a standard, minimum width of treads and risers and when the spacers 18 are used the increase in the rise at each step produces a small opening 19 between the upper edge of the riser 13 and the bottom surface of the tread 12. This opening is closed by a molding strip 20 of common or suitable pattern. The use of the spacers 18 also results in slightly increasing the run at each step and this may be compensated for by providing treads 12 of a width sufficient to give a suitable overhang, above the step below, when spacers 18 of suitable maximum thicknesses are used. In practice there is seldom need for spacers of a thickness in excess of one-half inch.

As shown in Fig. 4, economies in the use of

lumber are effected by cutting the blocks 9 from short pieces of otherwise waste stock. Such stock is cut obliquely along parallel lines 21 and also along parallel lines 22 extending at right angles to the lines 21.

The stringers 7 and blocks 9 are carried in stock by the lumber dealers and shipped to the jobs in units to meet specifications. As each size of block may be used for ceiling heights varying from about three inches to five inches (depending on the angle of the stairs), by providing the blocks of about a half dozen different sizes all of the common ceiling heights and runs may be accommodated.

Much time is saved in the construction of stairways by the use of my improved carriage and it is obvious that machine cut blocks afford the desired uniformity and true surfaces to support the treads and risers. At less cost than the old stair stringers, stronger construction is afforded because selected structural stock of the sizes 2" x 4" and 2" x 6" may be obtained at much lower cost than the 2" x 10" or 2" x 12" stock formerly used.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A stair carriage comprising, a wooden stringer formed with a longitudinally straight, upper edge, a series of wooden tread supports adjustable longitudinally on said edge, tongue and groove means for movably aligning said supports with the upper edge of said stringer, means for securing said tread supports in spaced relation to each other on said stringer and risers and treads formed and arranged to be adjustably secured to said supports, whereby the rise and run of the stairway may be adjusted.

2. A stair carriage comprising, a stringer having a longitudinally straight upper edge, a series of substantially triangular blocks slidable longitudinally on said edge and each having faces to support the risers and treads of a stairway respectively, treads of substantially greater width than the top of said blocks mounted thereon, spacers for separating said blocks along said edge and means for securing said blocks on said edge, said treads being adapted to be secured in various positions on said blocks to compensate for the spacing of said blocks.

3. A stair carriage comprising, a stringer having an inclined, longitudinally straight, upper edge, a series of substantially triangular blocks slidable longitudinally on said edge to support the risers and treads of the stairway, risers and treads mounted on said blocks, said treads being substantially greater in width than the top of said blocks, spacers for separating said blocks equally along said edge and interconnecting members extending longitudinally of said stringer and blocks to align them, said treads and risers having interlocking engagement with each other and being adjustable relative to the supporting blocks to compensate for the separation of said blocks by said spacers.

NEAL T. MacKENZIE.