(No Model.)

C. B. GODFREY.

STAIR CONSTRUCTION.

No. 553,487. Patented Jan. 21, 1896.

Fig. 2.

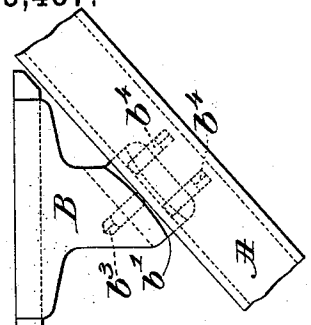


Fig. 3.

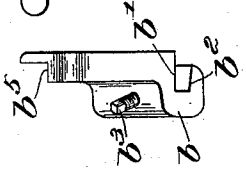


Fig. 4.

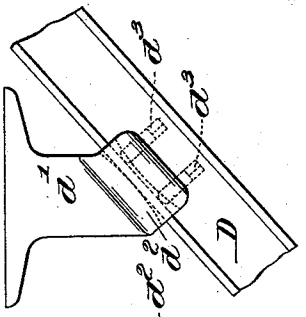


Fig. 5.

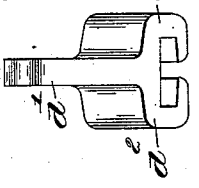
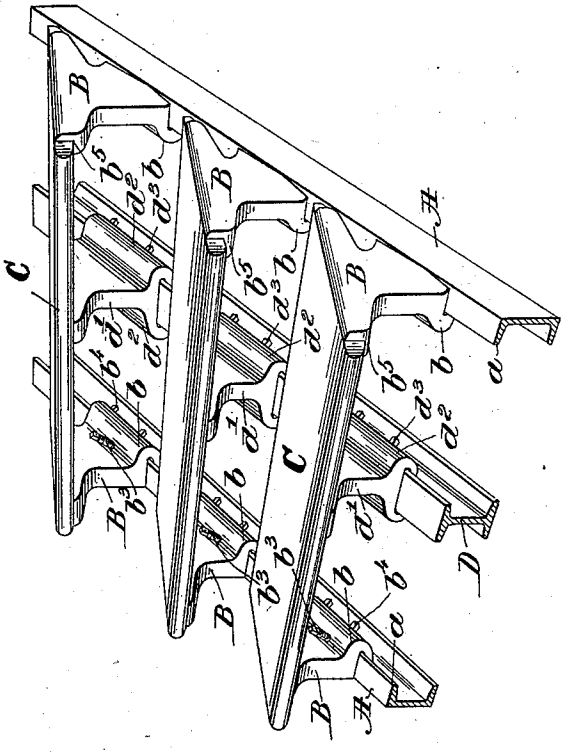


Fig. 1.



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UNITED STATES PATENT OFFICE.

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STAIR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 553,487, dated January 21, 1896.

Application filed May 1, 1895. Serial No. 547,758. (No model.)

To all whom it may concern:

Be it known that I, CHARLES B. GODFREY, of Milford, county of Worcester, State of Massachusetts, have invented an Improvement in Stair or Equivalent Construction, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to stair or equivalent construction, particularly to metallic construction.

In metallic-stair construction at the present time it is the usual custom to construct or cast special stringers and risings for each different flight of stairs wherein the angle of rise or height varies. To obviate the excessive expense attending such methods of construction, my present invention comprehends a construction which is adapted for any angle of pitch.

My invention also comprehends a support which may be called a "stringer," and upon which I arrange a plurality of tread-supporting brackets, with means for adjusting the angular positions of the brackets on and with relation to the said support to level the treads whatever may be the angle or pitch of the support.

In the preferred construction brackets are clamped in position upon the support by suitable devices, which also constitute adjusting devices for varying the angular positions of the brackets, and the said devices are also preferably so constructed as to throw the free or tread-supporting ends of the brackets against and to grip the ends of the stair-treads to firmly hold the latter in position.

The above, together with other features of my invention, will be hereinafter described and the several features pointed out in the claims at the end of the specification.

Figure 1 in perspective shows one embodiment of my invention; Fig. 2, an enlarged detail in side elevation of one of the outside tread-brackets in position; Fig. 3, a left-hand edge view of the bracket, Fig. 2; Fig. 4, an enlarged detail, in side elevation, of one of the intermediate tread-brackets in position; and Fig. 5 a left-hand edge view of the bracket, Fig. 4.

In the particular embodiment of my invention selected to illustrate the same, and shown in the drawings, A A are two stair-supports or stringers, shown as provided with inwardly-projecting flanges *a a*, which may be edge flanges of channel-irons, set on edge, as shown.

B B are the shelf-brackets, which now constitute tread-brackets, shown as provided at their inner sides with hooked lips *b b*, which embrace the flanges *a a* of the supports. The opposite inner surfaces b' b^2 of these hooked lips—*i. e.*, those surfaces which lie at opposite sides of the flanges *a a*—constitute what I term "bearing-surfaces," and are preferably made convex, as best shown in dotted lines, Fig. 2, to permit the brackets to be rocked more or less over their supports to vary their angular positions on and with relation to said supports.

In the present instance of my invention, to clamp the brackets in position on their respective supports I employ clamping devices, which also constitute adjusting devices, for varying the angular positions of the brackets on their supports. These clamping devices are shown at b^3 b^4 as set-screws, (see dotted lines, Fig. 2,) the screws b^3 being shown as at the top sides of the hooked lips *b*, and the screws b^4 as at the under sides thereof, I preferably employing at each end bracket one screw b^3 and two screws b^4 arranged as shown. These tread-brackets are provided with suitable seats or supports for the stair-treads C, said supports being herein shown in the form of inwardly-projecting flanges b^5. (See Fig. 3.)

To erect a flight of stairs embodying this invention, the supports A A are arranged at the desired angle or pitch, the desired number of tread-brackets are arranged thereon at the proper points, and the treads C placed in position. The angles of the brackets are then adjusted by means of the screws b^4 to level the treads, said screws when turned acting about the screws b^3 at the opposite sides of the flanges or upon the crowns of the opposite bearing-surfaces as fulcra. The screws b^3 are then set tightly against the supports or the flanges thereof to clamp the brackets tightly in position upon the supports and in the angles previously fixed by the screws b^4, the said screws b^3 at the same time, by reason of their

positions, as shown, at one side the brackets proper, and preferably at a slight angle, acting to throw or swing the free or tread-supporting ends of the brackets inwardly against the ends of the treads C to grasp and hold the same firmly in position.

By the use of my novel stair construction the same parts will answer for practically all runs of stairs, whatever the angle of rise or the width of tread, for when the supports are in position the tread-brackets can be spaced at the proper distances and their angular positions adjusted to bring the treads level, and then clamped to the supports.

When the treads or shelves are long, I provide one or more intermediate supports D, only one being herein shown, it preferably having opposite side flanges d, it may be of an **I**-beam. Upon this intermediate support I arrange the intermediate tread-supporting brackets d', which are shown as provided at the opposite sides with the hooked lips d^2, which embrace and slide on the flanges d of the support. For each of these intermediate brackets I employ two or four clamping and adjusting screws d^3 arranged at one—preferably the under—side of the hooked lips, as shown in dotted lines, Fig. 4, though said screws may be varied as to number and position, as desired. The opposite inner faces of the hooked lips d^2 constitute bearing-surfaces and are preferably made convex, as shown, and as with the brackets B.

So far as known to me, I am the first to devise a stair construction in which the supports or stringers may be arranged at any angle and the independent tread-brackets placed thereon and their angular positions varied or adjusted to level the treads, regardless of the detail construction; and while my invention is particularly adapted for stair construction, the invention comprehends any use to which it is adapted.

I claim—

1. An adjustable stair construction comprising the stringer-like supports; the tread brackets adjustable longitudinally thereon; and means to vary the angular positions of said brackets on and with relation to said supports for the varying angles of pitch, substantially as described.

2. The combination with a flanged support, of one or more removable brackets engaging and held by said flange, and means to vary the angular positions of said brackets on said supports, substantially as described.

3. The combination with a support, of one or more brackets clamped upon said support, having opposite convex or crowning surfaces, and means to vary the angular positions of said brackets within the limits of said convex bearing surfaces, substantially as described.

4. The combination with two substantially parallel supports; of tread-brackets arranged on the respective supports; stair-treads arranged between the brackets, and clamping devices to clamp said brackets in position on said supports, movement of said devices in clamping, acting to move said brackets laterally, one toward the other to grip and thereby hold said stair-treads, substantially as described.

5. The combination with two outside laterally flanged supports, and an intermediate flanged support, of the stair-treads, the tread-brackets therefor on the respective supports; means to vary the angular positions of the several brackets on their respective supports, and means to throw the outside brackets, either or both, laterally against and to clamp the interposed stair-tread, substantially as described.

6. An adjustable stair construction comprising the stringer-like supports, the tread brackets adjustable longitudinally thereon, and a plurality of setting devices for each bracket for setting the same in longitudinally and angularly adjusted positions on said supports, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES B. GODFREY.

Witnesses:

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AUGUSTA E. DEAN.