May 26, 1970 A. SUCKNO 3,513,547

CIRCULAR STAIRCASE

Filed Oct. 4, 1968

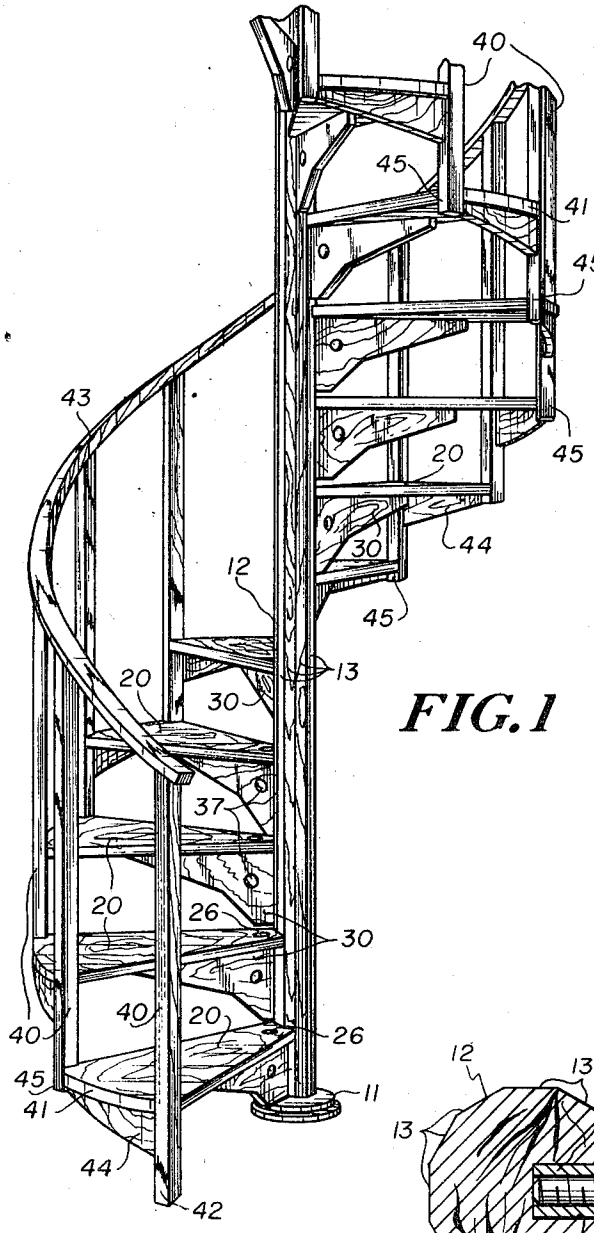
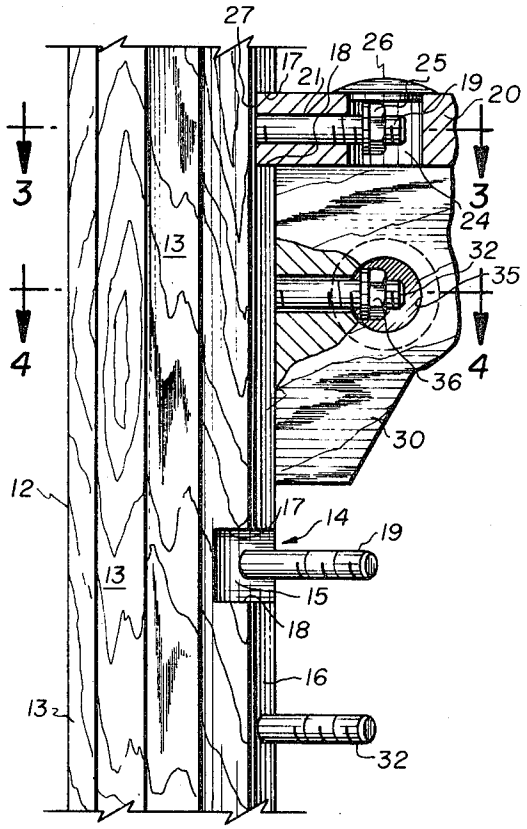


FIG. 1

FIG. 2



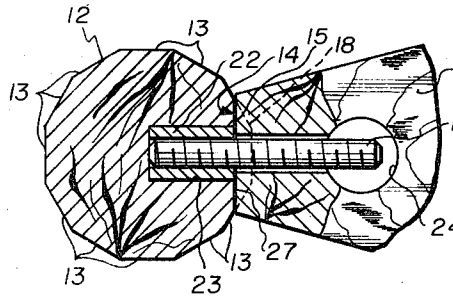


FIG. 3

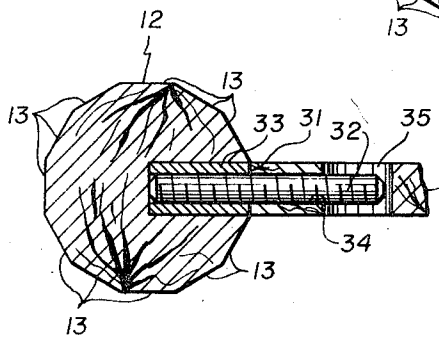


FIG. 4

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CIRCULAR STAIRCASE

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ABSTRACT OF THE DISCLOSURE

A circular staircase wherein treads are bolted to a central column and supported in horizontal channels therein; tread supports in abutment with the central column are bolted thereto; balusters and fascia attached to each other and the treads also reinforce them.

BACKGROUND OF INVENTION

This invention relates generally to circular staircases, and particularly to circular staircases made of wood that are designed with great rigidity and strength.

Circular staircases of metal are old and well known. The rigidity of metal makes it ideally suitable for use in a staircase where the peripheral edges of treads are unsupported, or supported only to a limited extent. Circular staircases fabricated of metal members supported on a central metal column are useful in commercial establishments, libraries, and the like, but are out of place in a private residence. Nevertheless, some residential design requires a circular staircase.

SUMMARY OF THE INVENTION

It has been found that a circular staircase of wood can be made, which has strength, rigidity, and aesthetic appeal. This is accomplished by providing a central column with horizontal support channels for treads, and flat vertical faces for horizontal supports. Balusters and fascias interconnecting the treads to preceding and successive treads provide additional reinforcement, so that the whole structure, with a rail, provides great rigidity and strength without sacrificing beauty.

DESCRIPTION OF DRAWINGS

These objects and advantages as well as other objects and advantages are attained by the device shown by way of illustration in the drawings in which

FIG. 1 is a perspective view of the circular staircase;

FIG. 2 is a vertical elevational view of a portion thereof, partially sectioned;

FIG. 3 is a horizontal cross-sectional view taken on the line 3—3 in FIG. 2 looking in the direction of the arrows; and

FIG. 4 is a horizontal cross-sectional view taken on the line 4—4 in FIG. 2 looking in the direction of the arrows.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring now to the drawings in detail, there is provided a base **11** to distribute the weight of the spiral staircase and to support a generally vertical central column **12**. The central column **12** may be circular in horizontal cross-section, or may have numerous other cross-sectional configurations, but a dodecahedron is preferred and is shown by way of illustration. A side **13**, a suitable distance above the base **11**, is provided with a horizontal channel **14** having a vertical wall **15** parallel to a corresponding face **16** and perpendicular to the radius of the column **12**, so that the top and bottom walls **17, 18** of the channel define symmetrical seats which have the shape of a truncated isosceles triangle (see dotted lines in FIG. 3). A tread bolt **19** is inserted into the

column **12** in the center of the channel **14**, equidistant from the ends of the channel **14** and extending radially from the column **12**. A generally triangular tread **20** is provided. The tread has a bolt passage **21**. The tread bolt **19** may be threaded into a threaded metal socket **22** inserted in a bore **23**. The socket may be cemented in the bore **23**. The opposite end of the bolt **19** is passed through the bolt passage **21**. A transverse slot **24** permits the application of a nut **25** to the bolt **19** so that the tread **20** is securely mounted in the channel **14**. The slot **24** may be capped with a domed plug **26**. The broad inner end **27** of the tread **20** is in flat engagement with the vertical wall **15** of the channel **14**.

A vertical tread brace **30** is also attached to the column but without a channel. Since a dodecahedral column **12** is provided, the brace **30** has a flat inner end **31** in top-to-bottom engagement with a portion of a face **13** of the column. A brace bolt **32** is inserted into the column **12**, in the middle of a face, and is preferebly threaded into threaded socket **33** cemented into the column **12**. The brace bolt **32** is passed through a bore **34** in the brace **30**. A transverse slot **35** intersecting with the bore **34** enables the application of a nut **36** to the end of the brace bolt **32**. A suitable plug **37** may be used to cap both ends of the slot **35**. The brace **30** supports the tread **20** and may extend approximately two-thirds of its radial length.

Each end of the peripheral edge **41** on the tread **20** is notched to receive balusters **40, 40**, which are secured thereto in any suitable manner. A succession of treads **20**, each offset from its predecessor, are similarly attached in rising ranks around the column **12** in precisely the same manner. A first baluster **42** has its bottom end resting on the same surface as the base **11**. The succeeding balusters **40, 40** etc. are each attached at the bottom to the inner edge of the peripheral edge **41** on the inferior tread **20**, and also to the outer edge of the peripheral edge **41** on the next succeeding superior tread **20**. In this manner, the treads **20** are supported at both the inner and outer edges of their peripheral edges **41**. The balusters **40** rise sucessively higher and are supports at their upper end for a rail **43**. Each baluster **40**, etc. has a bottom end **45** that extends below the tread **20** and a fasica **44** extends between the end **45** and the preceding baluster **40**, and is attached to the end **45**, the preceding baluster, and the bottom of the tread **20**. This reinforces the treads **20** at their outer end by attaching them to each preceding and succeeding tread and incorporating the support given by each preceding and succeeding brace. In this manner, the strength and rigidity of metal is imparted to a circular staircase of wood. The aesthetic appeal of natural wood and the fluid charm and delicacy of the design impart a quality of grace that renders the wooden circular staircase suitable for residential use, where the rugged functional design of the metal circular staircase renders it unsuitable.

The foregoing description is merely intended to illustrate an embodiment of the invention. The component parts have been shown and described. They each may have substitutes which may perform a substantially similar function; such substitutes may be known as proper substitutes for the said components and may have actually been known or invented before the present invention; these substitutes are contemplated as being within the scope of the appended claims, although they are not specifically catalogued herein.

What is claimed:

1. A circular staircase comprising:
   (a) a vertical column,
   (b) a plurality of flat vertical faces on the column,
   (c) a first horizontal channel in the vertical column defining a seat for the inner end of the stair tread,

(d) a first bolt attached to the column and extending radially from the first channel,

(e) a generally horizontal first stair tread, having a bolt passage at its inner end, seated in the first channel with the first bolt in the bolt passage,

(f) a transverse slot in the bottom of the stair tread intersecting with the bolt passage defining a cavity for the application of a nut to the first bolt.

(g) a nut engaged with the first bolt to affirmatively seat the first tread in the first channel

(h) a second bolt, below the first bolt, attached to the column and extending radially from a flat face of the column,

(i) a generally vertical first brace,

(j) a horizontal bolt passage in the first brace,

(k) an inner end on the first brace in flat abutment with the vertical face from which the second bolt extends and the second bolt in the bolt passage of the vertical brace,

(l) a transverse slot intersecting with the bolt passage of the vertical brace defining a cavity for the application of a nut to the second bolt,

(m) a nut engaged with the second bolt to affirmatively engage the first brace with the vertical face,

(n) the top of the first brace disposed in supporting engagement with the bottom of the first tread,

(o) a first baluster attached to the ouer edge of he first stair tread.

2. The device according to claim 1, and

(a) a second horizontal channel in the vertical column defining a seat for the inner end of a stair tread,

(b) a generally horizontal second stair tread attached to the vertical column in the second horizontal channel,

(c) a generally vertical second brace attached to the

vertical column attached to the second stair tread in supporting relation therewith,

(d) a second baluster attached to the outer edge of the second stair tread, and the inner edge of the first stair tread.

3. The device according to claim 2, and a rail supported by the balusters.

4. The device according to claim 1, and a fascia attached to the bottom of the tread and to the first and second balusters.

5. The device according to claim 1, and a vertical wall of the first horizontal channel is disposed horizontally perpendicular to the radius of the column.

6. The device according to claim 1, in which the bottom of the first horizontal channel defines a generally flat, truncated, isosceles triangular seat for the inner edge of the first stair tread.

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