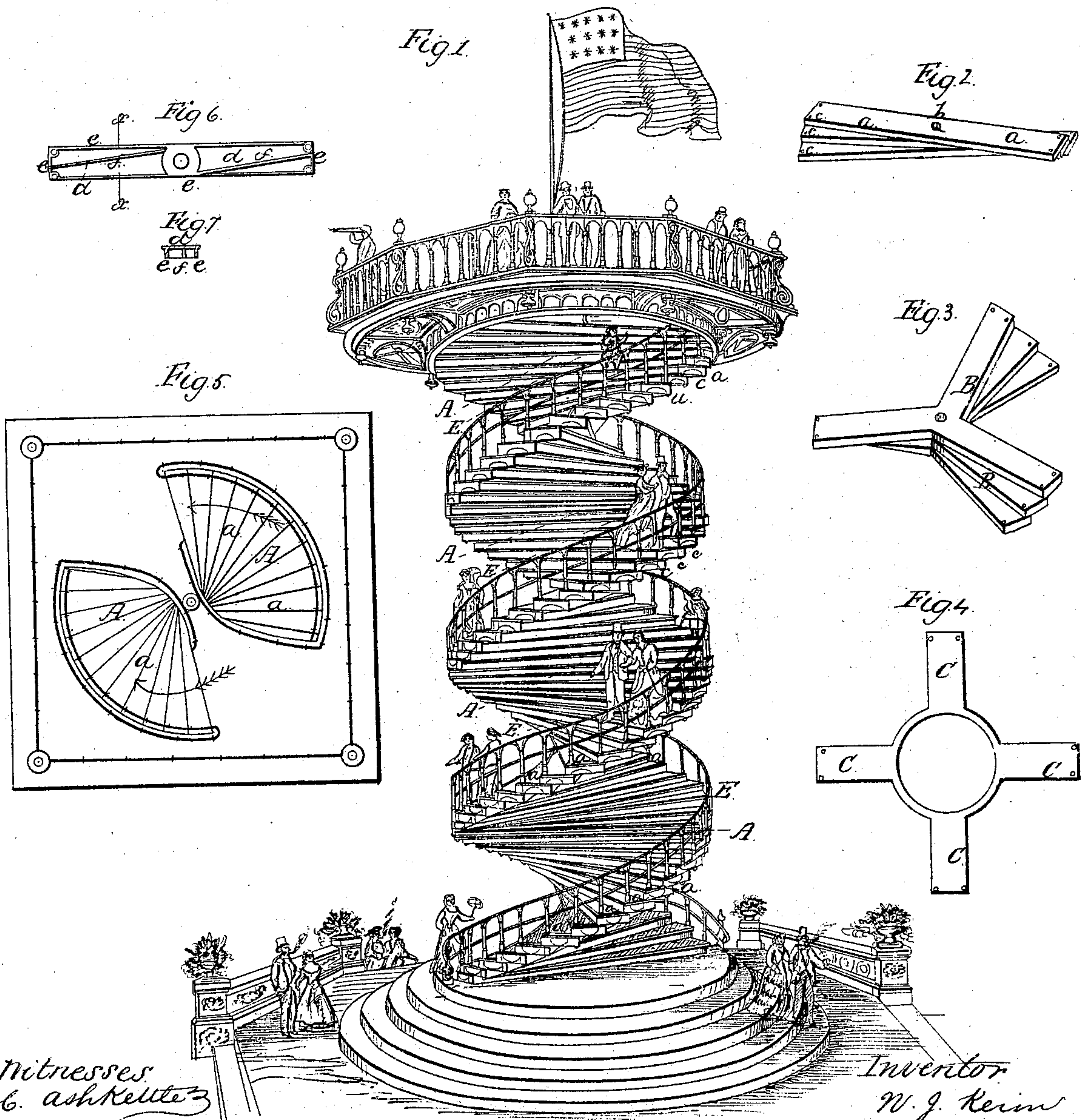


W. J. Keim.

Winding Stairs.

No. 79,985.

Patented Jul. 14, 1868.



Witnesses
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WILLIAM J. KEIM, OF NEW YORK, N. Y.

Letters Patent No. 79,935, dated July 14, 1868.

IMPROVED SPIRAL OR WINDING STAIR.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, WILLIAM J. KEIM, of the city, county, and State of New York, have invented a new and useful Improvement in Spiral or Winding Stairs; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a perspective view of my improved cockle-stairs.

Figures 2 and 3 are detail perspective views of double and treble steps.

Figure 4 is a plan or top view of a quadruple step.

Figure 5 is a plan or top view of the upper end of a double staircase.

Figure 6 is an inverted plan view of a metallic step.

Figure 7 is a detail transverse section of the same, taken on the line *x x*, fig. 6.

Similar letters of reference indicate corresponding parts.

This invention relates to a new method of constructing winding stairs, and consists in so constructing them that by one set of steps two or more separate stairways can be produced.

The steps, if made in shape of straight bars, are perforated through the centre, and secured around a central post, that fits through the central hole, so that each end of the bar forms a separate step for a separate staircase opposite to another step and staircase formed at the opposite side of the central post.

In the same manner can treble and quadruple stairs be made by using steps in which three or four arms radiate from the post.

A, in the drawing, represents a double winding staircase, composed of steps, *a a*, that are, as in fig. 2, fitted around the common centre *b*, so as to form two sets of stairs.

The steps *a* are plates or bars of straight, S-shaped, or other form, perforated in the centre, and are then adjusted, one above the other, in such a manner that they overlap somewhat, as in fig. 2, the overlapping portions of two steps being connected by means of pins, nails, or screws, *c*, or by the baluster of the railing *E*, as shown.

The steps may be made of wood or metal, or of any other suitable material. If made of metal, they may be made as in figs. 6 and 7, each step being simply a thin plate, *a*, perforated in the centres with flanges, *e e*, around it, and with diagonal braces, *f*, as shown, the lower edges of said braces forming the points of contact with the step below.

A staircase thus made can be used in buildings of all classes, in light-houses, or as a look-out tower.

It is fully strong enough to sustain itself, and will serve to strengthen the building in which it is arranged. When large crowds have to pass up and down, one flight may be used for going up and the other for going down, as indicated in fig. 1.

B, in fig. 3, represents three-armed steps for a treble staircase, and C, in fig. 4, a four-armed step for a quadruple staircase.

If desired, still more arms can be arranged. The invention can also be applied to the construction of other articles which are produced by arranging the plates or steps around the central part.

I claim as new, and desire to secure by Letters Patent—

An arrangement of winding steps, constructed in such a manner as to give two or more flights within the same space, substantially as described.

W. J. KEIM.

Witnesses:

WM. F. McNAMARA,

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