

R. O. BELLES.
COUNTERBALANCED STAIRWAY OR LADDER.
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972,595.

Patented Oct. 11, 1910.

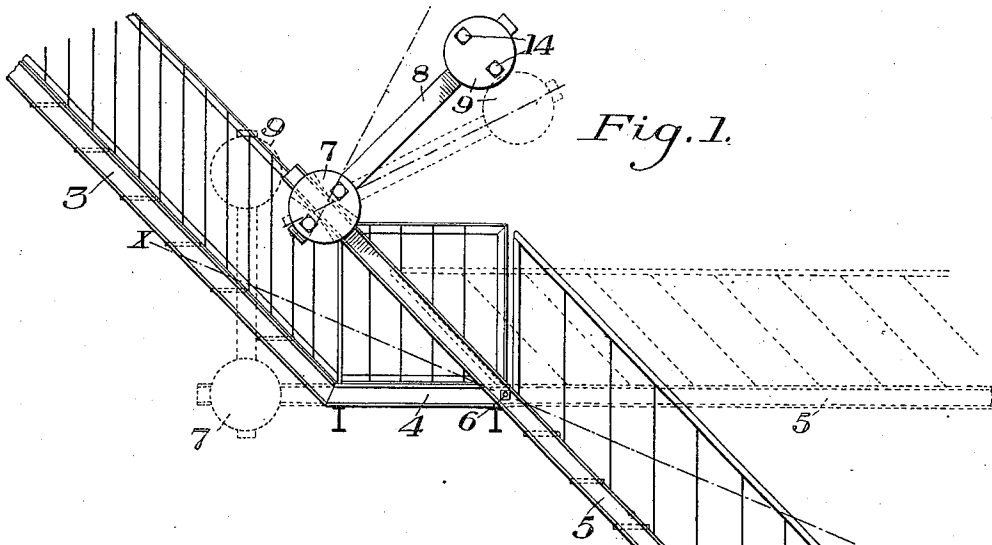


Fig. 1.

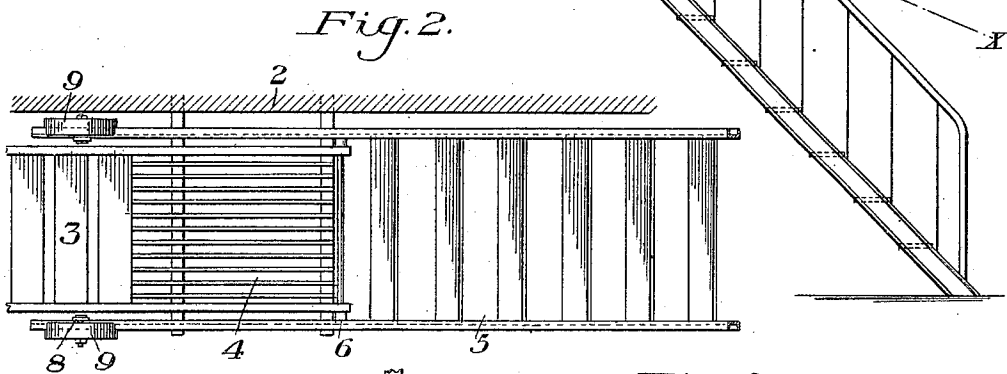


Fig. 2.

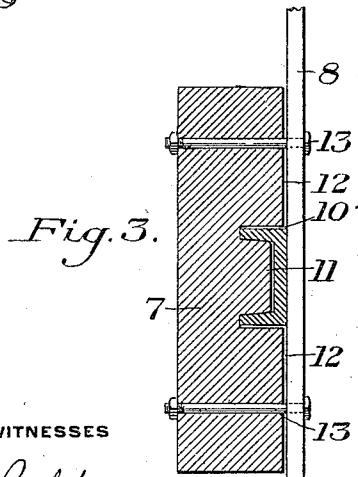


Fig. 3.

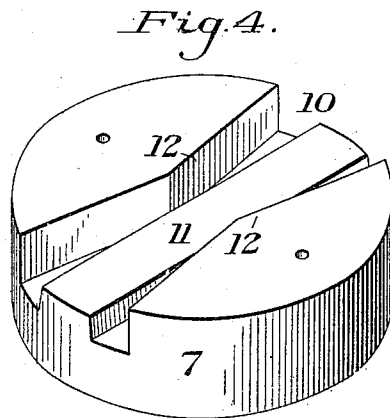


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

REUBEN O. BELLES, OF PITTSBURG, PENNSYLVANIA.

COUNTERBALANCED STAIRWAY OR LADDER.

972,595.

Specification of Letters Patent.

Patented Oct. 11, 1910.

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To all whom it may concern:

Be it known that I, REUBEN O. BELLES, of Pittsburgh, county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Counterbalanced Stairways or Ladders, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side view of a stairway embodying my invention, being shown in its lowered position in full lines and in its raised position in dotted lines and also showing by dotted lines adjustments of the counterbalance weight; Fig. 2 is a plan view of a portion of the stairway; Fig. 3 is a sectional view showing one manner of attaching the weights; and Fig. 4 is a perspective view of one of the weights.

My invention has relation to counterbalanced stairways or ladders, such as are usual in fire escapes, and is designed to provide a stairway or ladder of this character, in which the counterweight is so arranged and applied that it will operate to hold the stairway or ladder in either its raised or lowered position.

Referring to the accompanying drawings, the numeral 2 indicates the side or wall of the building having a fixed fire escape ladder or stairway 3, terminating at its lower end at a point some distance above the ground in the platform or landing 4. The lower section of the fire escape ladder or stairway is formed by the counterbalanced section 5, to which my invention relates. This lower section is shown as pivoted to the landing or platform 4, at the point 6, the section being arranged to swing about this pivot as a center into the lowered position shown in full lines in Fig. 1, and also into the raised position shown in dotted lines in said figure.

Secured to the side rails of the pivoted ladder or stairway section 5 and near their upper ends are counterbalance weights 7, having extending from them counterbalance arms 8 to the outer end portions of which are secured other counterbalance weights 9. The weights 7 and 9 may be secured in a variety of ways, so as to permit of the desired adjustment. In the drawing, I have shown each of these weights as provided with a diametrically extending groove or recess 10, having a projecting bottom rib 11, and double beveled side walls 12, said side walls ap-

proaching each other toward the center of the weight and diverging toward each side thereof, as shown. The side rail of the pivoted stairway or ladder section seats within the recess 10, and is shown as being of channel form to engage the rib 11. The arm 8 passes behind the channel, and is secured to the weight by bolts 13. By slacking these bolts, it will be obvious that the weights may be moved not only bodily up or down on the channel, but may also be rocked thereon into any desired adjustment within the limits shown by the dotted lines in Fig. 1. The weight 9 may be made similar to the weight 7 and adjustably secured on the arm 8 by the bolts 14. In this manner, I provide for a very easy and correct adjustment of the weights. These are so adjusted that the pivoted section will balance when in a position intermediate its raised and lowered positions, such as the position indicated by the dotted line X—X of Fig. 1. When the section is lowered for use, the counterweights are brought into such relation to the pivot 6, as to hold the section in its lowered position and prevent its tilting upwardly. On the other hand, when the section is moved into its horizontal raised position, the weights are thrown sufficiently back of the pivot 6 to securely hold it in this position.

By the arrangement shown, I provide simple and effective counterweighting means which will hold the stairway or ladder section in either raised or lowered position, without the necessity for shifting or adjusting the counterweights, all that is required being a movement of the ladder or stairway section 6 from one position to the other.

While in the drawings I have shown counterweights applied to both side rails of the ladder or stairway section, it will be obvious that a single and heavier weight might be used, and may be connected to the section in various ways. Various other means may be provided for obtaining a proper adjustment of the weight. The ladder or stairway may, in itself be of any usual or desired construction. The counterbalancing arrangement may be applied to other devices, such as furnace doors, etc.

I claim:

1. A pivoted ladder or stairway structure having a counterweighted-arm secured thereto above the pivotal axis of the structure and projecting forwardly at an oblique angle thereto, and a weight carried by said arm,

said weight being substantially vertically over the pivotal axis of the structure when the latter is in its down position and shifted by the movement of the structure to a raised position to a position behind the pivotal axis, said weight and arm normally moving rigidly with the structure; substantially as described.

2. The combination with a pivoted ladder or stairway, of an upwardly and forwardly projecting counterweight arm secured to the ladder or stairway above its pivot, said arm and its counterweight normally moving rigidly with the ladder or stairway, substantially as described.

3. The combination with a pivoted ladder or stairway, of an upwardly and forwardly projecting counterweight arm secured to the ladder or stairway above its pivot, and a counterweight adjustably mounted on said arm, said arm and counterweight normally moving rigidly with the ladder or stairway, substantially as described.

4. The combination with a pivotal stairway or ladder, of a counterweight secured to the stairway or ladder above its pivot, and a forwardly and outwardly extending counterweight arm also secured to the stairway or ladder above its pivot, said arm being normally rigid with respect to the stairway or ladder, substantially as described.

5. The combination with a pivoted stairway or ladder, of a forwardly and outwardly

projecting counterweight arm secured to the ladder or stairway above its pivot, and means for securing an angular adjustment of the said arm to vary its counterweight action, substantially as described.

6. A pivoted element, and a counterweight connected to the upper portion of said element above its pivotal axis, said counterweight being secured to the element to move rigidly therewith, and also being connected to the element through a distance arm, whereby the movement of the element shifts the weight bodily from one side of a neutral line to the opposite side thereof; substantially as described.

7. A pivoted structure having an extension beyond its pivotal axis, a weight mounted on said extension, and a second weight also carried by said extension and in different relation to the pivotal axis, said weights moving rigidly with the structure, and the second weight being arranged to be shifted bodily by the movement of the structure from a position over or in front of the pivotal axis of a structure to a position behind such axis; substantially as described.

In testimony whereof, I have hereunto set my hand.

REUBEN O. BELLES.

Witnesses:

R. A. BALDERSON,
H. M. CORWIN.