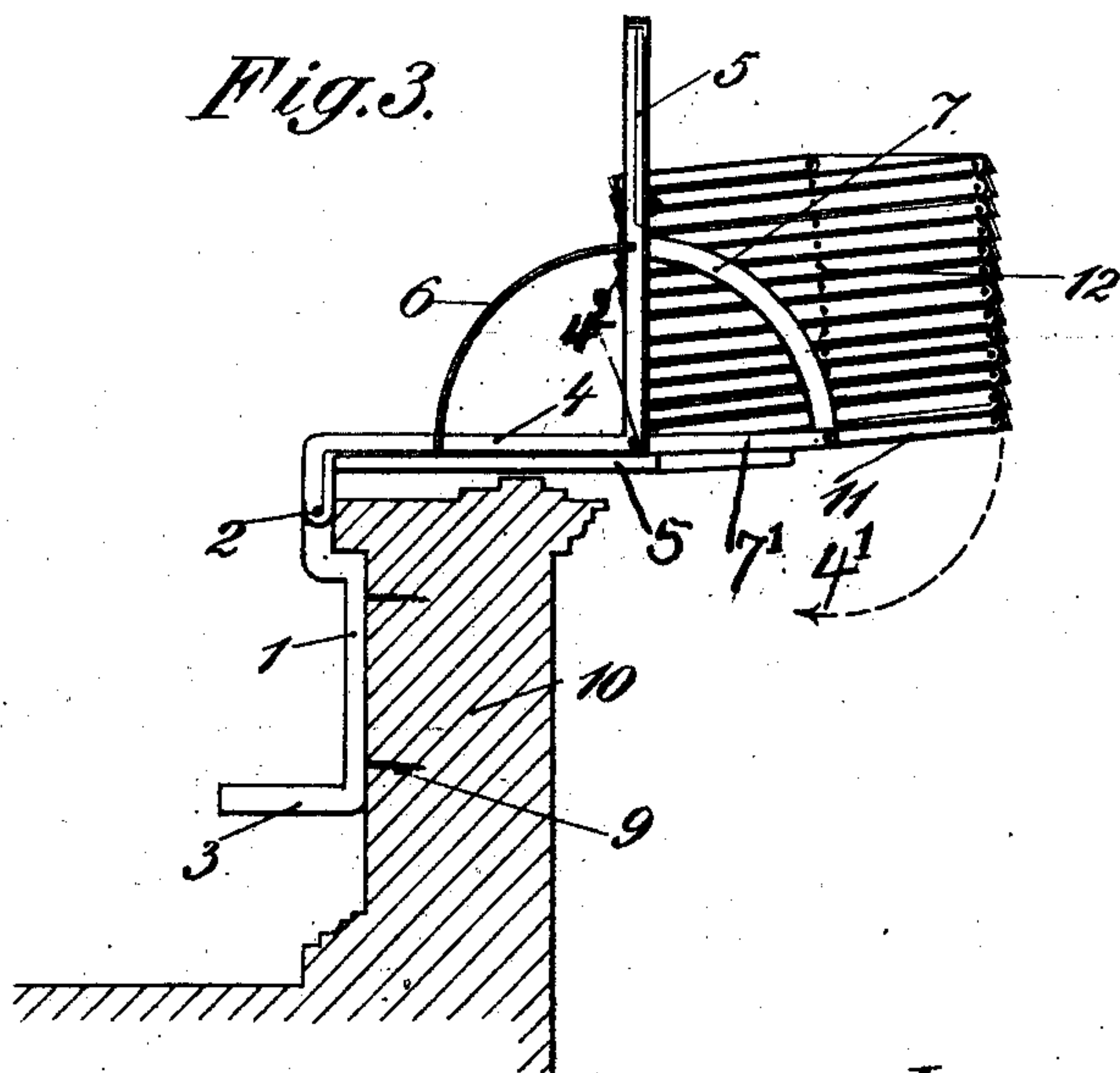
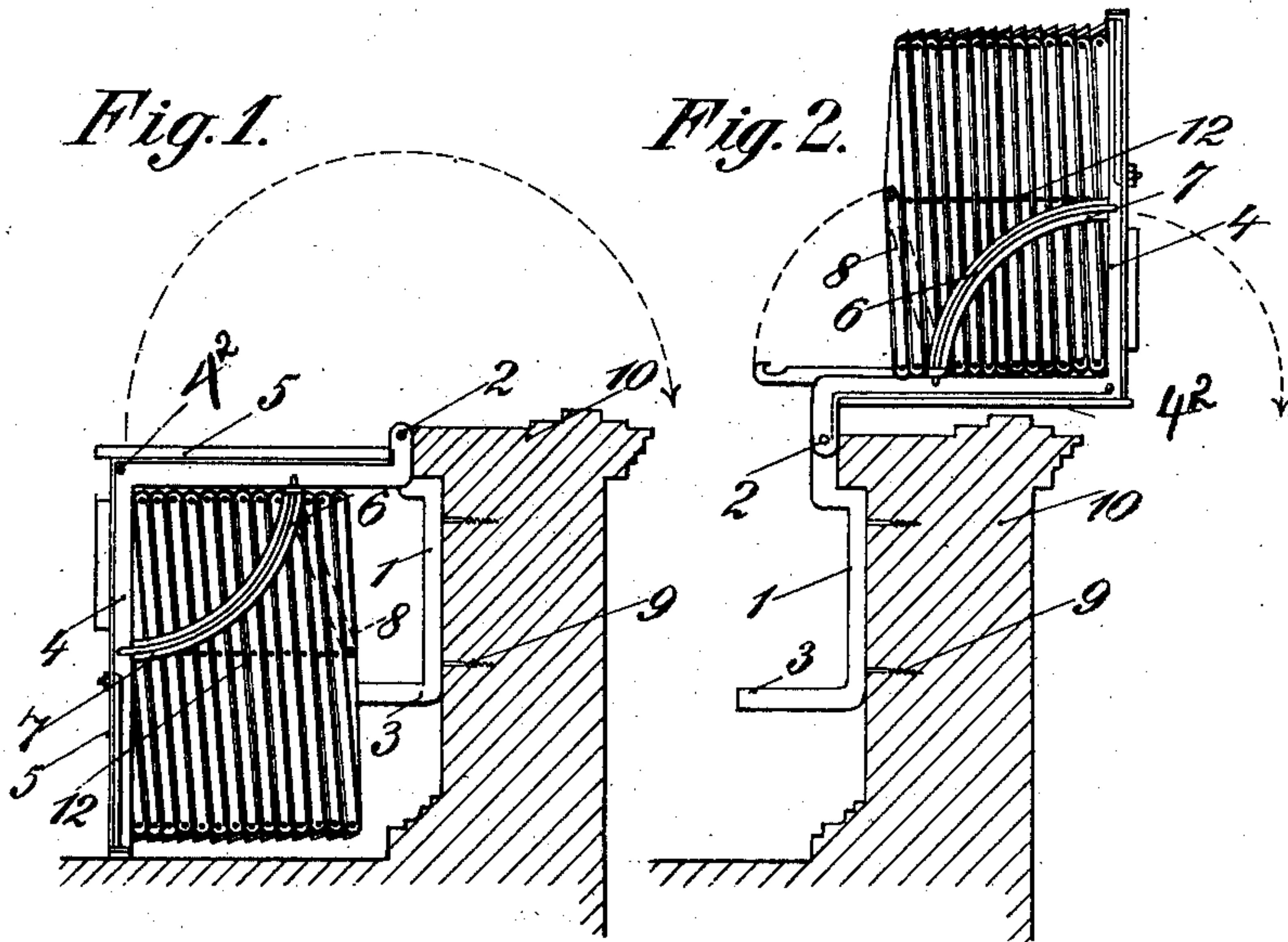


H. C. SPONHOLZ.  
FIRE ESCAPE LADDER.  
APPLICATION FILED JULY 22, 1907.

906,954.

Patented Dec. 15, 1908.

2 SHEETS—SHEET 1.



Witnesses:  
*Walter H. Miller*  
*George Otto*

Inventor:  
*Herman Carl Sponholz*

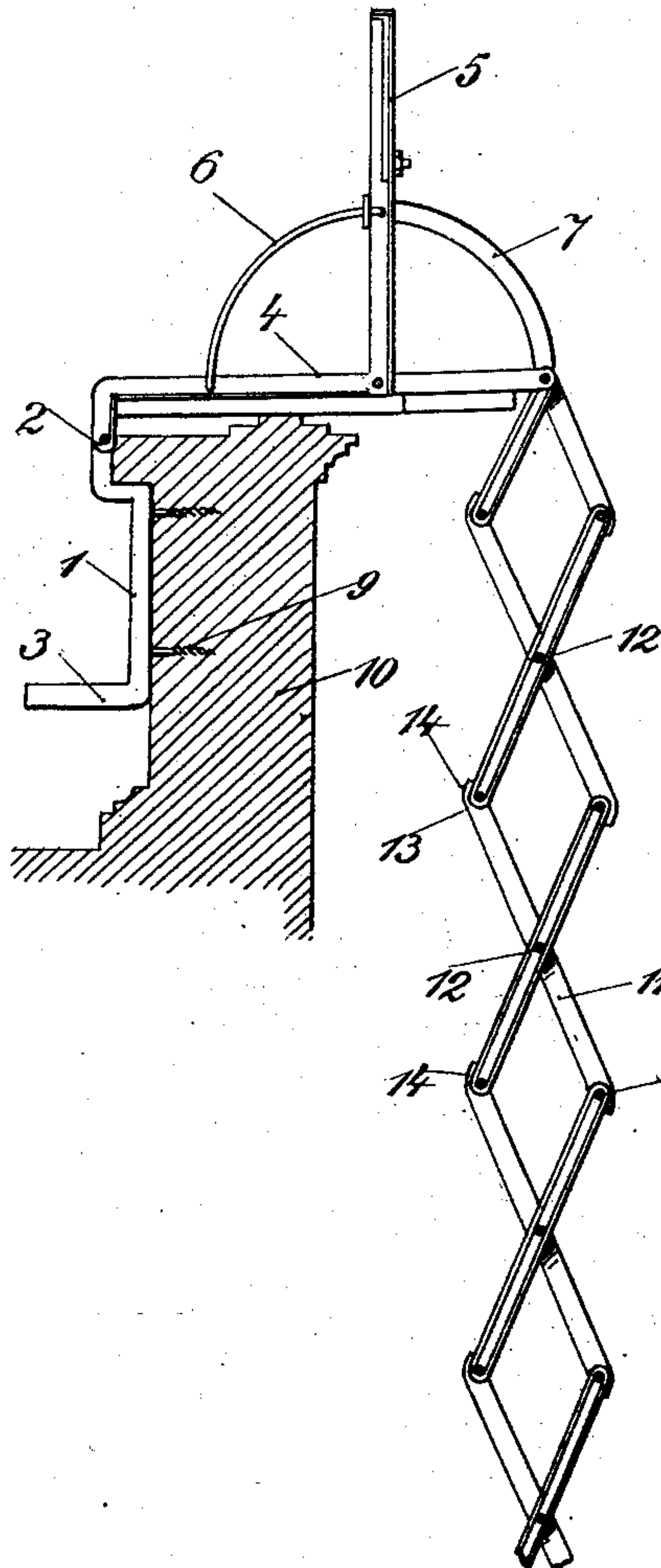
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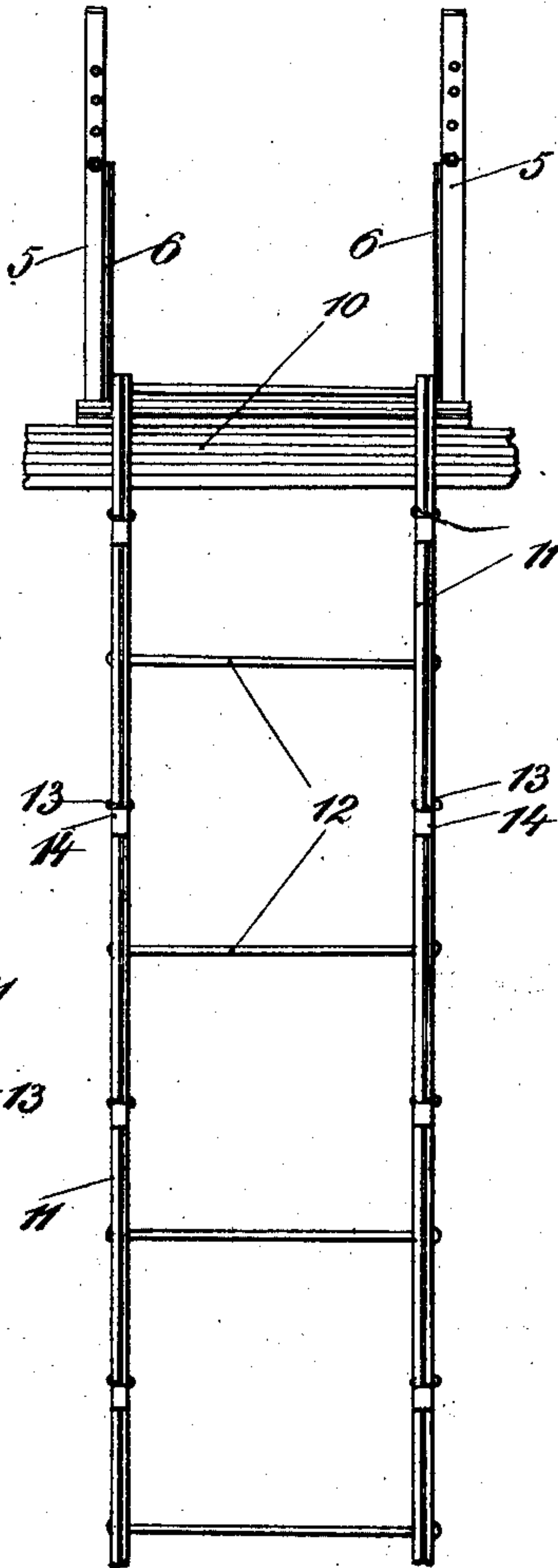
Patented Dec. 15, 1908.

2 SHEETS—SHEET 2.

*Fig. 4.*



*Fig. 5.*



Witnesses:  
*Adolf Willey*  
*Georg Otto*

Inventor:  
*Norman Carl Sponholz*



# UNITED STATES PATENT OFFICE.

HERMANN CARL SPONHOLZ, OF MOSCOW, RUSSIA.

## FIRE-ESCAPE LADDER.

No. 906,954.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed July 22, 1907. Serial No. 384,917.

*To all whom it may concern:*

Be it known that I, HERMANN CARL SPONHOLZ, a subject of the Emperor of Russia, and resident of 10 Chapiloffskaja, Moscow, Russia, have invented certain new and useful Improvements in Fire-Escape Ladders, of which the following is a specification.

The invention relates to a fire escape in the form of a folding ladder, by means of which houses, flats and factories, theaters etc. may be quickly left in case of fire, attack etc. in fact in all cases when exit by the door is impossible.

When not in use the ladder is folded, and situated inside the house near the window, and for the sake of convenience it may take the form of a small table. When necessary the folded ladder may be taken from one window to another, and placed in position in fasteners provided specially for this purpose. In case of emergency it is only necessary to open the window, lift the folded ladder on to the sill, and push it out when it extends on account of its own weight, and is then ready for use.

In the drawings the ladder is shown in the four positions occupied in bringing the same from the position of rest to the position of use.

Figure 1 shows a side view of the ladder as folded in the position of rest, Fig. 2 shows a side view of the folded ladder lifted on to the window sill, Fig. 3 shows the folded ladder as it appears from the side when pushed out ready for extension, Fig. 4 is a side view of the ladder as extended, and Fig. 5 is a front view of the ladder as extended.

Below the window sill 10 in the inside of the building, the fasteners 1 are fixed to the wall by means of screws 9 or any other suitable means. By means of the rivets 2 the frame 4, which consists of iron or steel bars bent twice at right angles, is attached to the fasteners. This fastening iron is constructed at the bottom as a step 3. The folded ladder is contained in this frame, which may take the form of a small table or window seat and for this purpose is covered over at the top with a sheet 5 of wood, iron, marble or the like.

The two arms of the frame 4 are at each side connected to one another at right angles by the curved rods 6.

The ladder itself is fixed to the axle 4<sup>1</sup> carried by the two arms 7<sup>1</sup>, the latter are turnably attached to the axle 4<sup>2</sup> which is mounted

in the frame 4. To the arms 7<sup>1</sup> there are connected the curved braces 7 which are by means of lateral projections slidably connected to the curved rods 6 and which support the ladder when in use.

The ladder itself consists of the links 11, and the rungs 12. At each side of the ladder there are two lines of links 11, which are of lattice form and connected in the middle where they cross one another by means of the rungs 12. The links should be made of light material such as thin iron strips of U-shaped cross section. At the ends they are bolted together by means of the rivets 13. In order that the two pairs of links when the ladder is extended may not fall together, stops 14 are provided, which keep the links apart. To the underside of the top-plate 5 of the frame 4 there is hinged or pivoted a bar 5, the free end of which is hook-shaped and engages the last rung 12 when the ladder is in the folded position, thus holding the folded links together.

The operation of the fire escape ladder takes place as follows: The window is opened and the folded ladder with its frame as in Fig. 1 is taken and turned round the pivots 2 through an angle of 180° so as to bring it on to the window sill 10 as in Fig. 2, whereby the bar 8 turns down by its own weight and its hook is disengaged. The folded links are then pushed out and turned round the pivots 4<sup>2</sup> so as to bring the device into the position shown in Fig. 3. The folded ladder is now tipped over, whereby it turns round the axle 4<sup>1</sup> and the links extend and form the ladder ready for use as in Figs. 4 and 5.

The whole operation can be accomplished in about five seconds. After use the ladder may be raised by means of a rope from above. If the ladder is a long one the raising of the same can be accomplished with the aid of a pulley block.

The advantages of the fire escape ladder above described are that it is rapid and easy in manipulation and reliable and cheap in construction.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a fire escape ladder the combination of support fasteners fixed on the inside of the wall, a frame pivotally connected to the said support fasteners and adapted to be swung over so as to project over a window sill, a second frame turnably arranged in



the first said frame and adapted to be swung out of the latter and means for limiting the movement of the said second frame, an extensible ladder connected to the said second

5 frame and folded in the first said frame, and means for holding the said ladder in the folded position, substantially as set forth.

2. In a fire escape ladder the combination of support fasteners fixed on the inside of the wall, an L-shaped frame pivotally connected to said support fasteners and adapted to be swung over so as to project over a window-sill, a curved stay across the lateral angles of said frame, arms pivotally connected to said frame, curved braces slidably connected to the said curved stays and supporting the said arms, a folding ladder adapted to hang from said arms and to be folded into said frame, and means for holding the ladder in the folded position, substantially as set forth.

3. In a fire escape ladder the combination of support fasteners fixed on the inside of the wall below the window sill, a step at the bottom of said support fasteners, an L-shaped frame pivotally connected to said support fasteners and adapted to be swung over so as to project over the window-sill, a top-plate on the said frame, curved stays across the lateral angles of said frame, arms pivotally connected to said frame, curved braces having their one ends slidably connected to the said curved stays and their other ends fixed to the said arms, a folding ladder consisting of two chains of links connected to the said arms and adapted to be folded into said frame, and rungs pivotally connected to said chains of links, and a hook turnably

fixed to the underside of said top-plate and adapted to engage the outermost of the said rungs when the said ladder is in the folded position, substantially as set forth. 40

4. In a fire escape ladder the combination of support fasteners fixed on the inside of the wall below the window sill, a step at the bottom of said support fasteners, an L-shaped frame pivotally connected to said support fasteners and adapted to be swung over so as to project over the window sill, a top-plate on the said frame, curved stays across the lateral angles of said frame, arms pivotally connected to said frame, curved braces having their one ends slidably connected to the said curved stays and their other ends fixed to the said arms, a folding ladder consisting of two chains of links connected to the said arms and adapted to be folded into said frame, each chain consisting of pairs of links crossing one another near the center, rungs passing through the points where said links cross one another, stops on said links adapted to keep each chain of links in open lattice work form when the ladder is unfolded, and a hook turnably fixed to the underside of said top-plate and adapted to engage the outermost of the said rungs when the said ladder is in the folded position, substantially as set forth. 50 55 60 65

In testimony whereof I have hereunto signed my name this third day of July 1907, in the presence of two subscribing witnesses. 70

HERMANN CARL SPONHOLZ.

Witnesses:

GUSTAVE E. HARTWIG,  
MICHAEL SMCHAMSZKY.