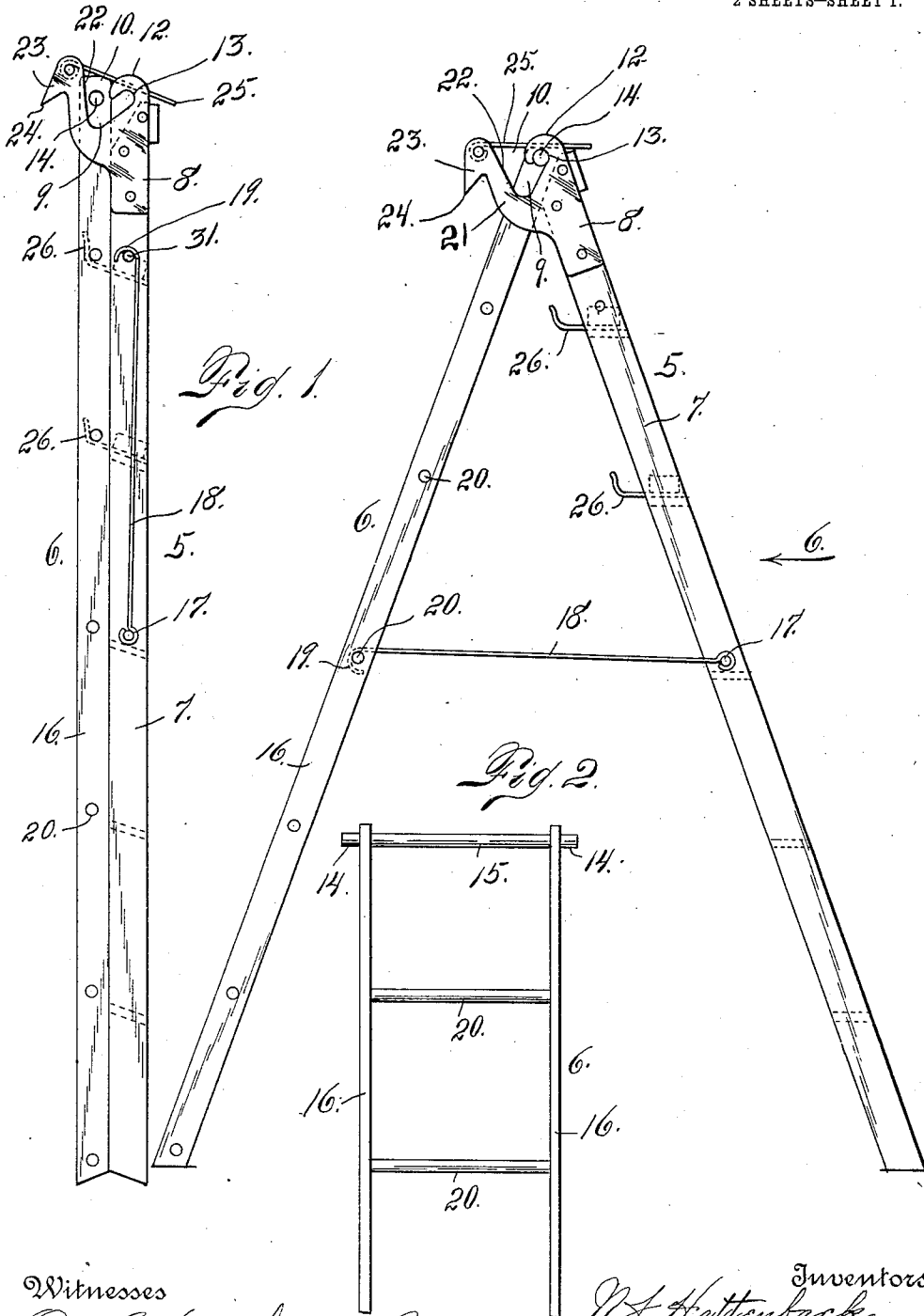


N. J. HATTENBACK & A. H. HANDY.
 COMBINED STEP, EXTENSION, AND HANGING LADDER.
 APPLICATION FILED OCT. 7, 1911.

1,050,273.

Patented Jan. 14, 1913.

2 SHEETS—SHEET 1.



Witnesses
 Otto E. Hoednick.
 C. H. Rossner.

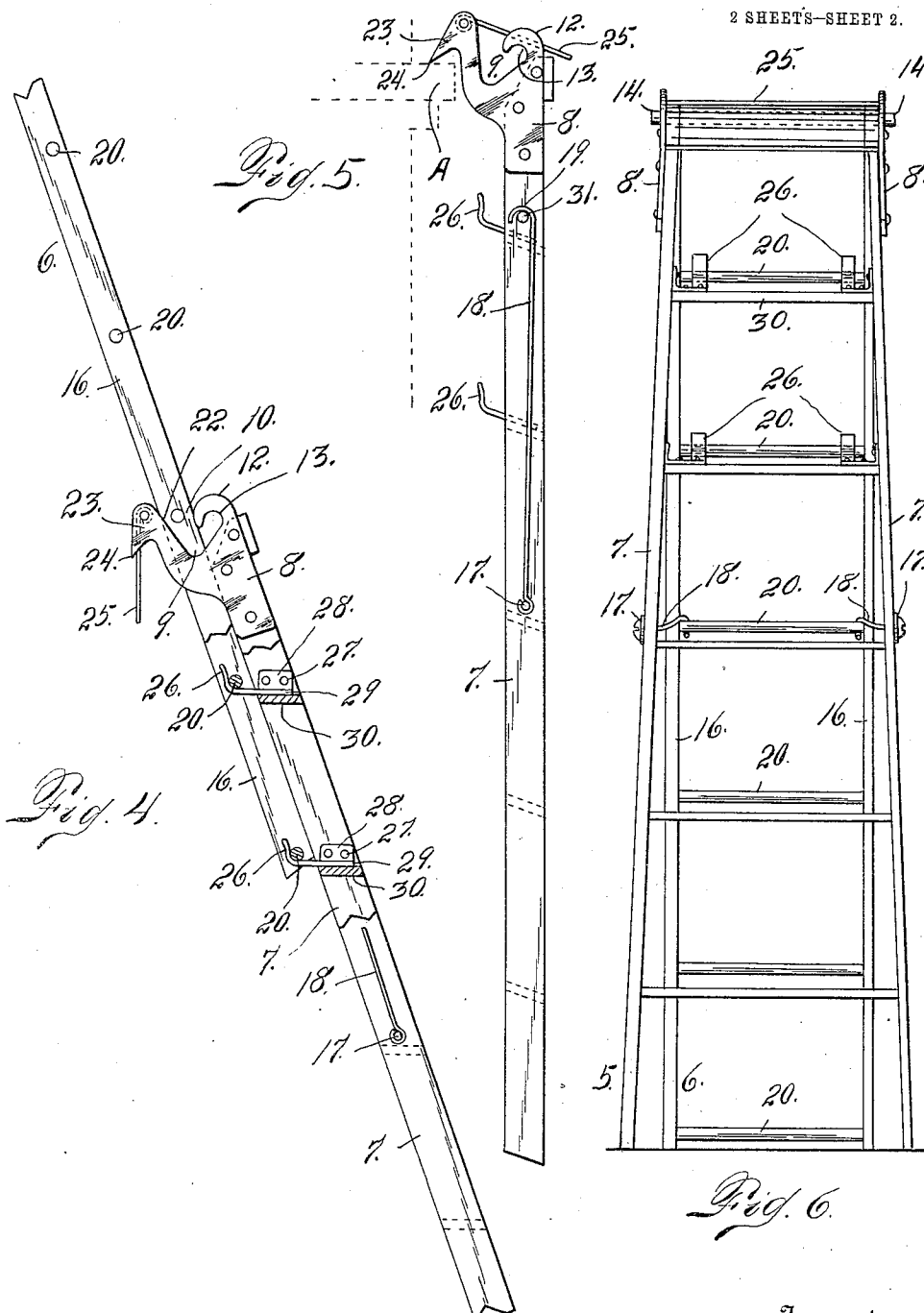
Inventors
 N. J. Hattenback.
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UNITED STATES PATENT OFFICE.

NATHAN J. HATTENBACK AND ARTHUR H. HANDY, OF DENVER, COLORADO; SAID
HANDY ASSIGNOR TO SAID HATTENBACK.

COMBINED STEP, EXTENSION, AND HANGING LADDER.

1,050,273.

Specification of Letters Patent.

Patented Jan. 14, 1913.

Application filed October 7, 1911. Serial No. 653,394.

To all whom it may concern:

Be it known that we, NATHAN J. HATTENBACK and ARTHUR H. HANDY, citizens of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Combined Step, Extension, and Hanging Ladders; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in ladders, generally speaking, but more specifically considered, our improvement embodies a construction which is adapted for use, either as a ladder consisting of a single member, or a step-ladder composed of two members arranged to brace each other, but detachably connected at the top, the two members being equipped, whereby, when detached, they are extensible to form a ladder of greater height than the step-ladder. Furthermore, one member of the structure, when detached from the other member, is equipped at the top with a hook-shaped bracket adapted to be connected with a window-sill, or other structure, whereby the ladder member may be suspended, making it practicable to use the same as a fire-escape. Assuming that the ladder has a length equal to one story of a building, a person may escape from the building one story at a time. After having descended the length of the ladder to the window next below, he may detach the ladder from the window-sill above, attach it to the sill of the lower window of another story, and so on until he reaches the ground.

Having briefly outlined our improved construction, we will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof. In this drawing:

Figure 1 is a side elevation of our im-

proved construction, the step-ladder form of construction being shown in collapsed form. Fig. 2 is a side elevation, illustrating the step-ladder construction arranged for use, the two members being adjusted to brace each other, assuming the general form of a step-ladder. Fig. 3 is a fragmentary detail view of one of the ladder members when detached from the other and used as an ordinary leaning ladder. Fig. 4 is a side elevation, partly in section, showing our improved construction as an extension ladder, two members being detached at the top and one of the members projected above the other. Fig. 5 is a side elevation, showing one of the ladder members employed as a hanging or suspension ladder. Fig. 6 is an elevation of the construction adjusted for use as a step-ladder, the same as in Fig. 2. This view, however, is taken at right angles to the view in Fig. 2, looking in the direction indicated by arrow 6, Fig. 2.

The same reference characters indicate the same parts in all the views.

Let the numerals 5 and 6, respectively, designate the two members of our improved ladder construction. The member 5 consists of two bars 7, each of which is equipped at the top by metal brackets 8, each bracket having a recess 9 open at the top, as shown at 10, the rear upper part of the plate being curved forwardly and downwardly, as shown at 12, to form a recess or socket 13 adapted to receive the protruding extremity 14 of the top rung 15 of the ladder member 6.

By virtue of this construction, the bars 16 of the ladder member 6 are arranged to pass between the two bracket plates 8 of the bars 7, composing the member 5. In connecting the two ladder members, the rung 15 of the member 6 is first passed between the plates 8, where they protrude from the bars 7, until the protruding extremities 14 of the rung 15 occupy a position above the openings 10 of the recesses 9. The protruding extremities 14 are then moved downwardly into the recesses 9 and upwardly into the sockets 13 in which the parts 14 are adapted to turn whereby the two ladder members

may be separated at the bottom to form a step-ladder. In order to limit the movement of the ladder members or prevent them from spreading apart too far, to the bars 7 of the member 5 are pivotally connected, as shown at 17, rods 18, whose opposite extremities are hook-shaped, as shown at 19, to connect with one of the rungs 20 of the ladder member 6 below the top rung 15. By the proper adjustment of the rods 18, the two ladder members may be allowed to swing away from each other to a greater or lesser extent, as may be desired.

The bracket plates 8 are each provided with a projection 21, whose rear edge 22 bounds the recess 9 in front, the outer extremity of the part 21 being formed into a hook 23, having a relatively sharp point 24 adapted to indent a wooden member A, as a window-sill, or other suitable structure adapted to form a support for the ladder member 5, when used as a suspension or hanging ladder, as illustrated in Fig. 5. Even though the window-sill, or other ledge to which it is desired to attach the ladder member, is made of stone, the hooks 23 will nevertheless form a proper support for the member and permit its use in making a descent from a building on the outside, one story at a time, as heretofore explained.

To the parts 21 of the bracket plates 8, just above the points 24 of the hooks, a plate 25 is pivoted, the said plate being adapted to assume an approximately horizontal position on top of the step-ladder,—see Fig. 2,—thus forming a support, whereby a person may stand securely on top of the structure, when in step-ladder form, or this plate may be used to support a receptacle of any kind, as a paint-bucket, when the ladder is made use of by a person while painting. This feature will be found convenient for many reasons, which it will not be necessary to further explain in detail.

The bars 7 of the member 5 of the ladder are equipped with forwardly-protruding hooks 26 attached to the upper portions of the bars 7 and adapted to receive any two rungs 20 of the member 6, whereby the ladder may be extended above the member 5, forming an extension ladder, as illustrated in Fig. 4. In this event, the platform plate 25 is swung to the depending position, since its use is not required, and it cannot maintain the position illustrated in Fig. 2 because of the projecting position of the member 6.

The hooks 26 of the member 5 are secured to the bars 7 of the said member by means of fastening devices 27 passed through ears 28 formed on the rear extremities of the hooks, the said hooks having parts 29 resting upon the slats 30 of

the member 5, the said slats constituting the steps of this member and corresponding with the rungs 20 of the other member. When the ladder structure is not in use, the two members may be collapsed or caused to assume a position of small compass, whereby they are brought close together and held in such relation by the engagement of the two rungs 20 of the member 6 with the hooks 26 of the member 7. In this event, the rods 18 are extended above their pivotal extremities, and their hooks are connected with pins 31 applied to the outer surfaces of the bars 7. These pins may be in the form of screws inserted in the bars, or they may be of any other suitable construction. Screws or other headed devices will be preferable, since they will prevent the hooks from slipping off the pins by a lateral thrust.

From the foregoing description, the use of our improved ladder will be readily understood and need not be further explained in detail. If it is desired to use the member 6 as an ordinary leaning ladder, it may be detached from the member 5, as will be readily understood.

Having thus described our invention, what we claim is:—

1. A ladder construction composed of two detachable members, one member having bracket plates at the top recessed to receive from above projections with which the other ladder member is equipped, the brackets of the first member having retaining sockets opening downwardly into the rear of the said recesses, for the purpose set forth.

2. A ladder composed of two members pivotally connected at the top to permit them to swing toward and away from each other, one of the members having forwardly-projecting arms, and a plate pivotally connected with the said arms, the part of the plate in the rear of the pivot resting upon a top rung with which the other ladder member is provided.

3. A ladder construction composed of two members, one of the members having bracket plates secured to its upper extremity and projecting forwardly therefrom, the said plates having recesses open at the top, hooks on the rear portions of the said plates and extending over said recesses to constitute retaining sockets adapted to receive projections with which the upper part of the other ladder member is equipped, the forward openings of the said recesses being constructed to allow the said projections to pass into and out of the recesses, as circumstances may require.

4. A ladder construction composed of two members pivotally connected at the top, one of the ladder members being composed of

separated bars, whose upper extremities are
equipped with forwardly-projecting arms,
a plate pivotally connected with said arms
and adapted to swing rearwardly, one of the
5 ladder members being equipped with a sup-
port for the said plate, substantially as de-
scribed.

In testimony whereof we affix our signa-
tures in presence of two witnesses.

NATHAN J. HATTENBACK.

ARTHUR H. HANDY.

Witnesses:

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ALBERT O'BRIEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents
Washington, D. C."
