

(No Model.)

C. S. WING.
STEP LADDER.

No. 438,459.

Patented Oct. 14, 1890.

Fig. 1.

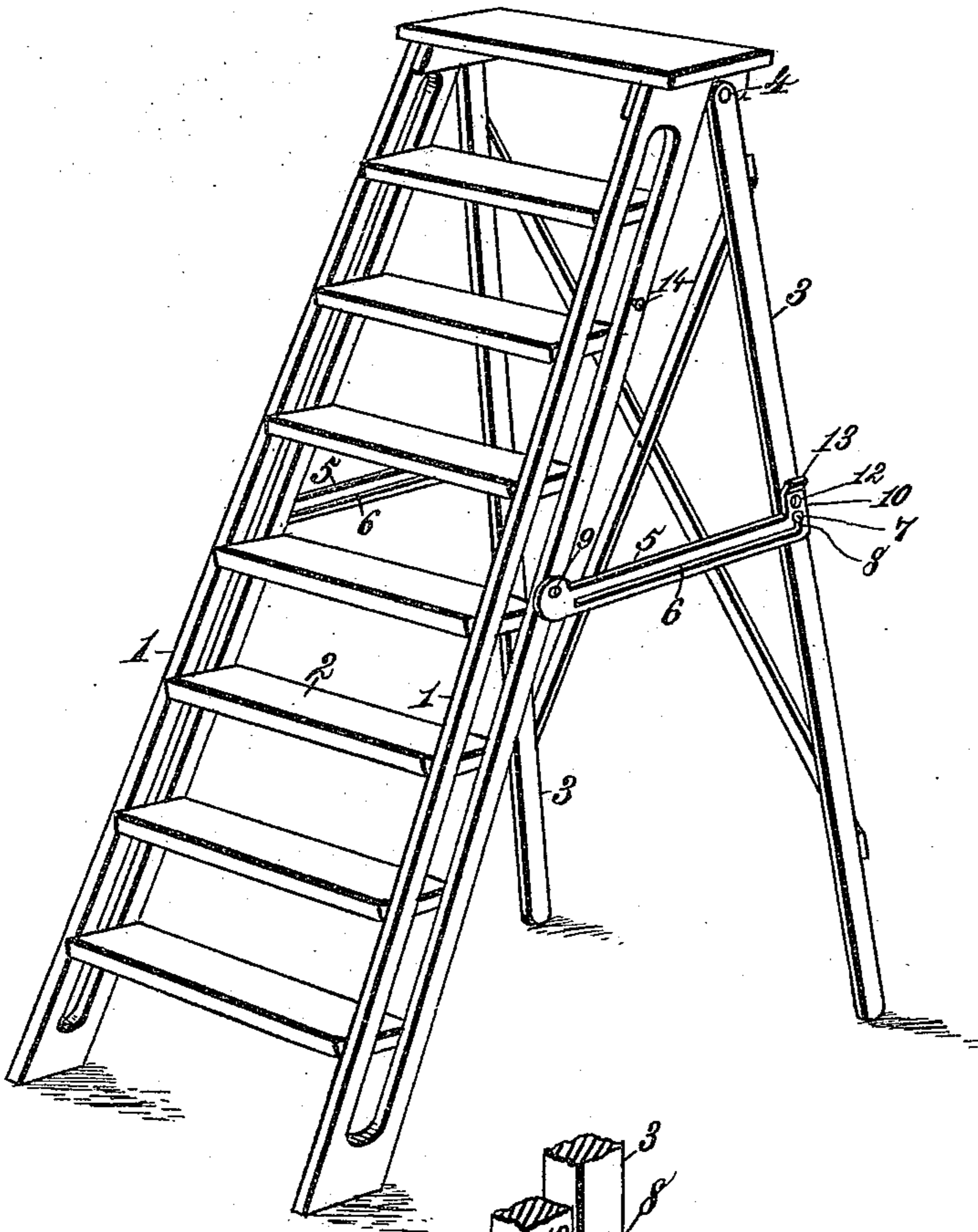
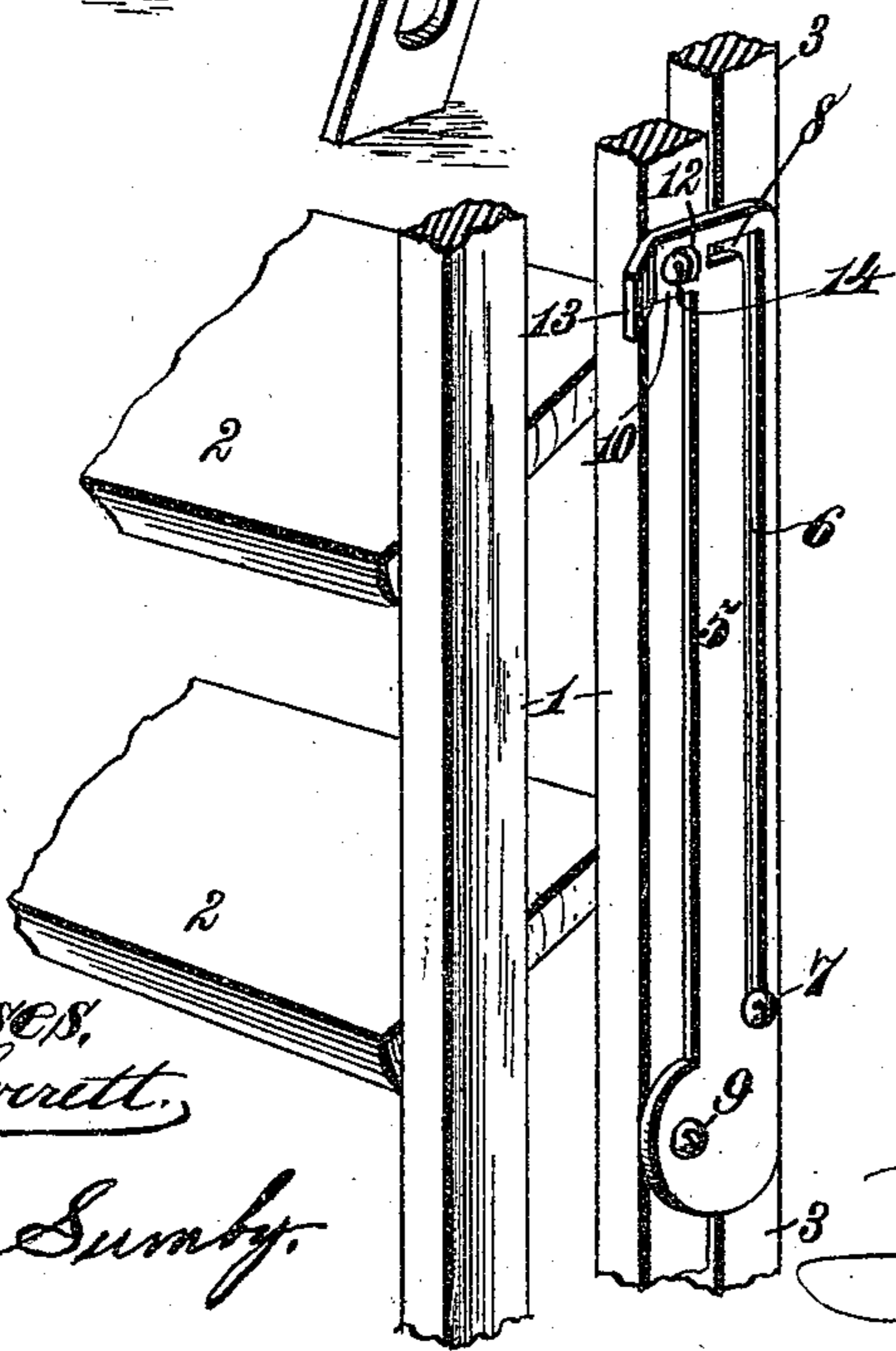


Fig. 2.



Witnesses,
Robert Everett,
Dennis Sumbly.

Inventor,
Charles S. Wing,
By *James L. Norris,*
Atty.

UNITED STATES PATENT OFFICE.

CHARLES S. WING, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO
PHILIP S. RIDDELLE, OF WASHINGTON, DISTRICT OF COLUMBIA.

STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 438,459, dated October 14, 1890.

Application filed August 7, 1890. Serial No. 361,273. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. WING, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Step-Ladders, of which the following is a specification.

This invention has for its object to provide a step-ladder with a novel brace-arm and means whereby the ladder and its hinge struts or supports are locked in their opened and closed positions in such manner that when the ladder is opened for use its hinged struts or supports are automatically and firmly and rigidly braced for sustaining the ladder in correct position for use, while when the ladder is closed for packing or storing it away or for its transportation the hinged struts or supports are locked against the side bars of the ladder, and thereby restrained against swinging movements, which render it awkward and difficult to handle a step-ladder of this character.

To accomplish this object my invention consists in the combination, with a step-ladder comprising struts or supports hinged to the side bars of the ladder in the usual manner, of a longitudinally-slotted brace-arm pivoted at one extremity to a side bar of the ladder and having at its opposite extremity a locking recess or orifice to engage a locking stud or pin mounted on the side bar of the ladder to which the brace-arm is pivoted, the construction being such that when the ladder is opened a lug or projection on one of the struts or supports automatically interlocks with a right-angular portion of the slot in the brace-arm, while when the ladder is closed the brace-arm is swung upwardly and the locking recess or orifice in its extremity caused to engage with the locking stud or pin on the side bar of the ladder for the purpose of locking the parts rigidly together in convenient form for transportation or packing or storing the ladder away until required for further use.

In the accompanying drawings, Figure 1 is a perspective view of a step-ladder embodying my invention and showing the parts in position when the ladder is opened for use. Fig. 2 is a detail view in perspective, showing the position of the parts when the ladder is closed.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, where—

The numerals 1 indicate the side bars, and 2 the steps, of an ordinary step-ladder having struts or supports 3 hinged to the upper end of the side bars, as at 4, in the usual manner.

The brace-arm 5 is composed of a rectangular flat plate of metal formed with a longitudinal rectilinear slot 6, engaging a lug or projection 7 on one of the struts or supports 3, such slot 6 terminating at one extremity in a lateral slot 8, so that the slot as a whole is L-shaped or approximately so. The brace-arm is mounted at one end or extremity by a pivot 9 to one of the side bars of the step-ladder, and the opposite end or extremity of such brace-arm is formed with a right-angular extension 10, containing a locking recess or orifice 12 and formed with an inclined or beveled lip or tongue-piece 13, adapted to ride over a locking stud or pin 14, fixed to the side bar of the step-ladder at the proper point between the pivot of the brace-arm and the hinged connection of the struts or supports with the step-ladder. It will be obvious that one of these brace-arms can be applied to each side bar of the step-ladder; but inasmuch as one brace-arm will secure satisfactory results I have illustrated and described the latter construction only.

In practice, as the side bars and the struts or supports are separated to bring them into the position required for the use of the step-ladder, the brace-arm is swung downward by the lug or projection 7 working in the longitudinal slot 6, and when the parts are sufficiently separated the lug or projection engages the lateral slot 8, whereby the brace-arm firmly and rigidly braces the struts or supports in correct position for sustaining the step-ladder in a substantial manner for the purposes required.

When the step-ladder is to be folded or closed, the extremity of the brace-arm is lifted to release the slot 8 from engagement with the lug or projection 7 and place the latter in alignment with the longitudinal slot 6, whereupon the struts or supports can be swung to and against the side bars of the step-ladder,

and in such movements will swing the brace-arm to an approximately perpendicular position and cause the inclined or beveled lip or tongue-piece 13 to ride on the locking stud or pin 14 and engage the latter with the locking recess or orifice 12, thereby firmly locking the ladder in its closed position for packing or storing it away or for its convenient transportation without the swinging movements of the struts or supports common to ordinary step-ladders.

The inclined or beveled lip or tongue 13 also serves as a finger-piece for releasing the brace-arm from its engagement with the locking stud or pin when the ladder is to be opened for use.

By my invention I provide simple, economical, and efficient means whereby the brace-arm not only braces and supports the ladder in its opened position for use, but also locks and firmly and rigidly secures the struts or supports upon the side bars of the ladder for the convenient handling of the ladder, as occasion demands. In these respects my invention is an improvement over a step-ladder having a hinge which comprises as an essential part thereof a pivoted link having a longitudinal slot extended laterally at one end for the purpose of locking and bracing the ladder in its opened position for use.

What I claim is—

1. The combination, with a step-ladder having a locking stud or pin and comprising struts or supports hinged at the upper end and having a lug or projection, of a longitudinally-slotted brace-arm pivoted at one extremity to a side bar of the ladder and having at the opposite extremity a locking recess or orifice to engage the locking stud or pin when the struts or supports are swung against the side bars of the step-ladder, substantially as described.

2. The combination, with a step-ladder having a locking stud or pin and comprising struts or supports hinged at the upper end and having a lug or projection, of a longitudinally-slotted brace-arm pivoted at one extremity to a side bar of the ladder and having at the opposite end a right-angular extension containing a locking recess or orifice and provided with an inclined or beveled lip or tongue-piece for riding over the locking stud or pin to engage the latter with the locking recess or orifice, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES S. WING.

Witnesses:

R. D. HAISLIP,
ALBERT J. ECKERT.