No. 877,867. PATENTED JAN. 28, 1908.

J. R. RUPE & W. F. BALZER.

STEP LADDER.

APPLICATION FILED OCT. 20, 1906.

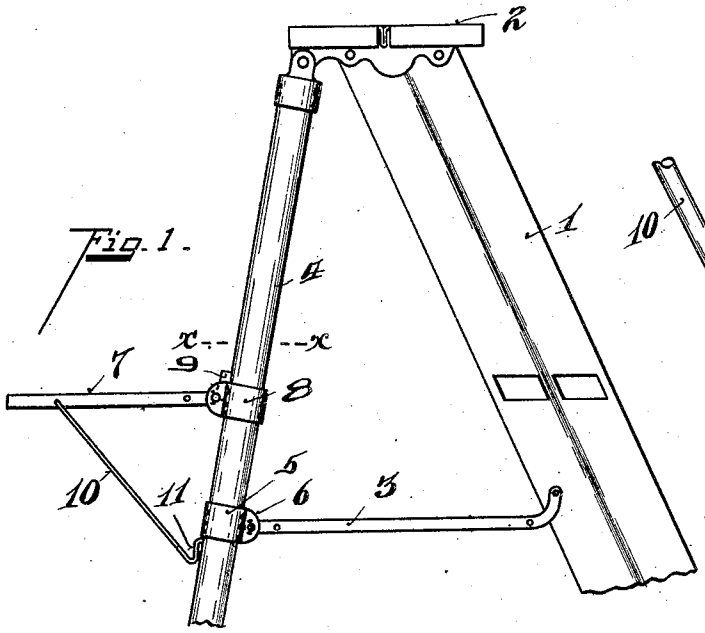


Fig. 1.

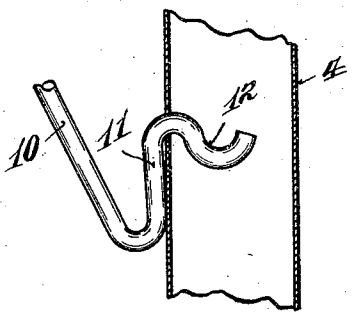


Fig. 4.

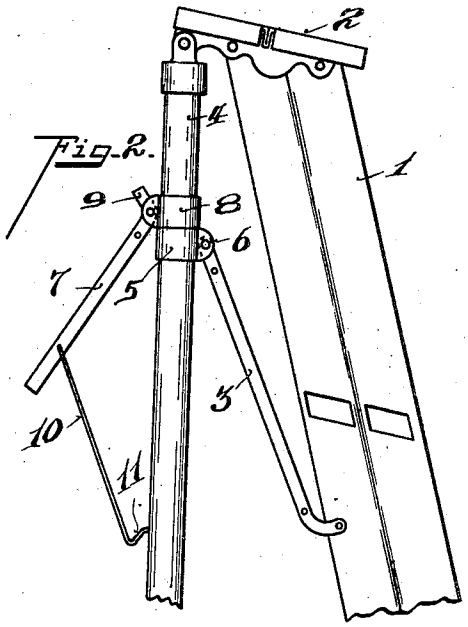


Fig. 2.

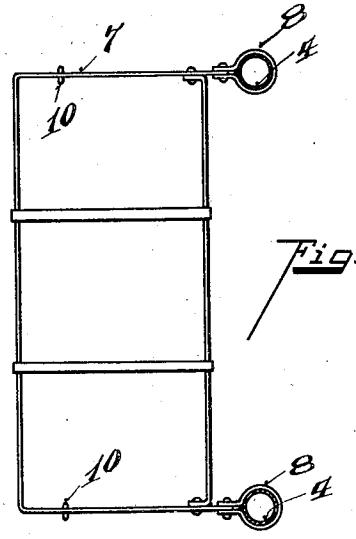


Fig. 5.

Witnesses

Olga B. Kaiser

Louise Beck

Inventors

Judson R. Rupe

William F. Balzer

By Wood & Wood

Attorneys

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JUDSON R. RUPE AND WILLIAM F. BALZER, OF RICHMOND, INDIANA, ASSIGNORS TO CHANDELIER & ART BRASS WORKS, OF RICHMOND, INDIANA, A CORPORATION.

STEP-LADDER.

No. 877,867. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed October 20, 1906. Serial No. 339,889.

To all whom it may concern:

Be it known that we, JUDSON R. RUPE and WILLIAM F. BALZER, citizens of the United States, residing at Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Step-Ladders, of which the following is a specification.

Our invention relates to an improvement in step ladders.

The primary object of our invention is to provide a foldable shelf slidably secured upon the legs of the ladder with pivoted brackets and braces, whereby the same may be rigidly supported in a horizontal position for use, and foldable so as to lie in a vertical position when the ladder is folded.

Another object of our invention is to so combine the shelf supports of the ladder that it will automatically fold with the folding of the legs of the step ladder.

The features of our invention will be more fully set forth in the description of the accompanying drawings, showing the preferred form of construction, in which:—

Figure 1 is a side elevation of the step ladder containing our improvement in position for use. Fig. 2 is a similar elevation showing the ladder in a partly folded position. Fig. 3 is a detail sectional view of one of the shelf braces and its connection to the leg of the ladder. Fig. 4 is a section on line *x*, *x*, Fig. 1.

In the accompanying drawing 1 represents one of the stiles.

2 represents the top shelf.

3 represents the foldable locking brace for holding the ladder in position for use.

4 represents the legs of the ladder hinged to the top step. They are shown as cylindrical, which is the preferred form of construction.

5 represents eyes slidably mounted on the legs, provided with ears 6, to which the arms of the lock brace are pivoted. Said brace is likewise pivoted to the stile of the ladder so that it may be folded upwardly, the eyes sliding upward on the legs, so that the legs may be brought inwardly and lie closely against the stiles.

7 represents a shelf supported upon the legs in the following manner. 8 represents eyes slidably mounted upon the leg above the brace eyes, to which eyes the arms of the shelf are pivoted. The said arms are likewise turned up at their terminal ends forming an angle arm 9, which when the shelf is in horizontal position rests against the legs of the ladder and holds the shelf firmly in the horizontal position. 10 represents brace arms pivotally connected at one end with the shelf and loosely hinged at their inner end to the legs of the ladder. In the preferred form of construction said brace arms are provided with a knee 11 formed preferably by a V-shaped bend of the metal arms, the knee resting against the legs when the shelf is extended in a horizontal position, thereby forming a firm support for the shelf in its horizontal position.

The shelf may be folded when the ladder is in the extended position shown in Fig. 1, from a horizontal to a vertical position by sliding the eyes 8 upwardly on the leg, which will cause the arms on the shelf and the braces to move inwardly, as indicated in Fig. 2, where the shelf is shown partially closed.

The object in placing the eyes 8 above the eyes 5 of the brace supports 4 is to so combine the two that when the legs of the ladder are folded inwardly against the stile by folding the lock brace 3, this action will automatically raise the eyes 8, sliding them upwardly on the leg and folding the shelf inwardly against them.

When the ladder is extended as shown in Fig. 1 the shelf is brought into the horizontal position by the sliding of the eyes 8 down, raising the shelf into the horizontal position and bringing the brace arms in position to lock the shelf in its extended position.

While the cylindrical form of legs and eyes is the preferred form of construction, the same results may be obtained by other forms.

By bending the brace arm 10 at its end extending it within the legs beyond the knee as shown at 12, Fig. 4, a lock is formed preventing the arm from becoming detached at the same time being a convenient form for loosely hinging the brace to the legs.

Having described our invention, we claim:—

1. A foldable shelf for step-ladders, comprising a shelf pivotally and slidably connected with the legs of the ladder, braces pivotally connected to said shelf at one end, the opposite ends terminating in looped knees and looped ends forming brace abutments

and pivotal connections with the legs of the ladder, substantially as described.

2. A shelf for step-ladders, comprising a sleeve bracket loosely connected with the legs of the ladder, a shelf pivotally connected with said sleeve bracket, braces pivotally connected to said shelf at one end, the opposite ends terminating in looped knees and looped ends forming brace abutments and pivotal connections with the legs of the ladder, substantially as described.

3. In combination with the legs of a step ladder, slidable supports mounted upon the legs of the ladder, a shelf pivoted to said slidable supports braces pivoted to the shelf and loosely pivoted to the legs of the ladder, said braces provided with a knee bend forming a foot for said braces, substantially as described.

4. A step-ladder having stiles provided with legs pivotally connected thereto, locking braces pivotally connected to said stiles and slidably and pivotally connected to said legs, in combination with a shelf pivotally and slidably connected with said legs above the lock braces whereby said lock braces will move said shelf upwardly to a folded position when the ladder is folded, substantially as described.

5. In combination with the legs of a step ladder, a shelf pivoted to slidable supports mounted upon the legs of the ladder, braces pivoted to the arms of the shelf and loosely pivoted to the legs thereof, and provided with a knee bend forming a foot for said brace, and means for maintaining said pivotal engagement with the legs, substantially as described.

6. A step-ladder having stiles provided with legs pivotally connected thereto, locking braces pivotally connected to said stiles and slidably and pivotally connected to said legs, in combination with a shelf pivotally and slidably connected with said legs above the lock braces whereby said lock braces will move said shelf upwardly to a folded position when the ladder is folded, braces pivotally connected to said shelf at one end, the opposite ends terminating in looped knee and looped ends forming brace abutments and pivotal connection with the legs of the ladder, substantially as described.

7. A foldable shelf for step-ladders, comprising a shelf the rear portion thereof being pivotally and slidably connected to the legs of the ladder, braces pivotally connected to said shelf and legs of the ladder, whereby to fold the same the rear portion of the shelf is moved upwardly upon the legs of the ladder, substantially as described.

In testimony whereof, I have hereunto set my hand.

JUDSON R. RUPE.
WILLIAM F. BALZER.

Witnesses:
MARION K. PIPER,
RAY KARR SHIVELEY.