W. S. SHIELDS.

COMBINED STEP LADDER, STAIR LADDER, AND EXTENSION LADDER.

APPLICATION FILED OCT. 20, 1909.

967,252. Patented Aug. 16, 1910.

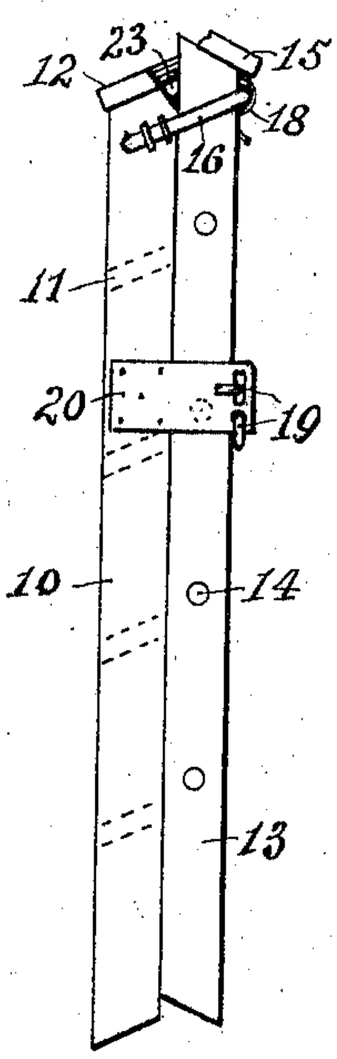


Fig. 1

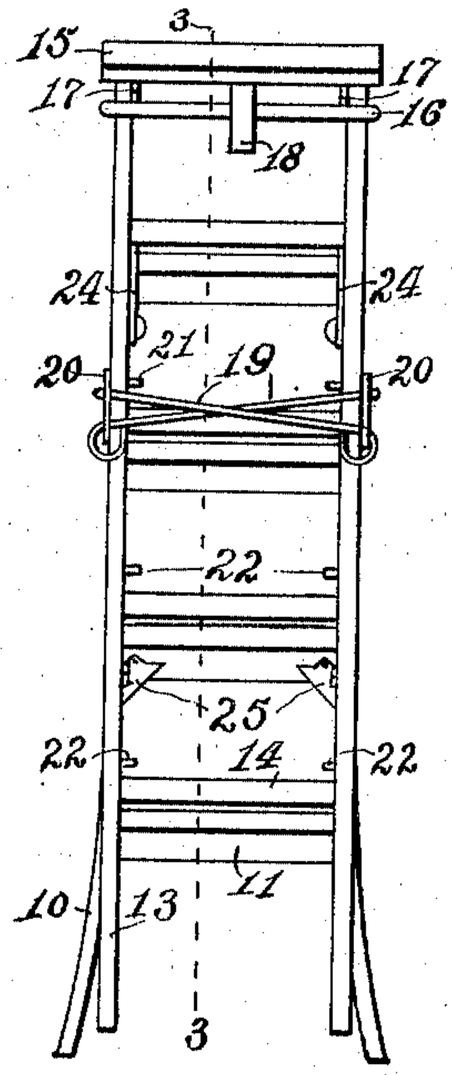


Fig. 2

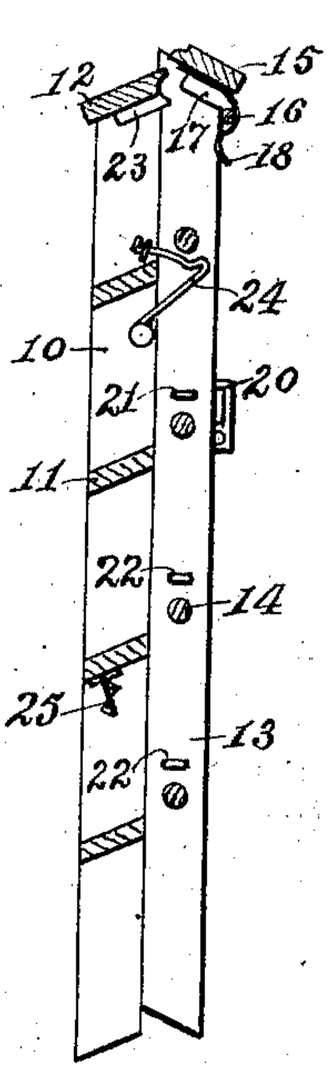


Fig. 3

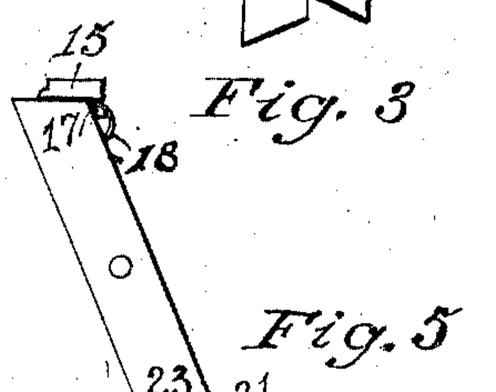


Fig. 5

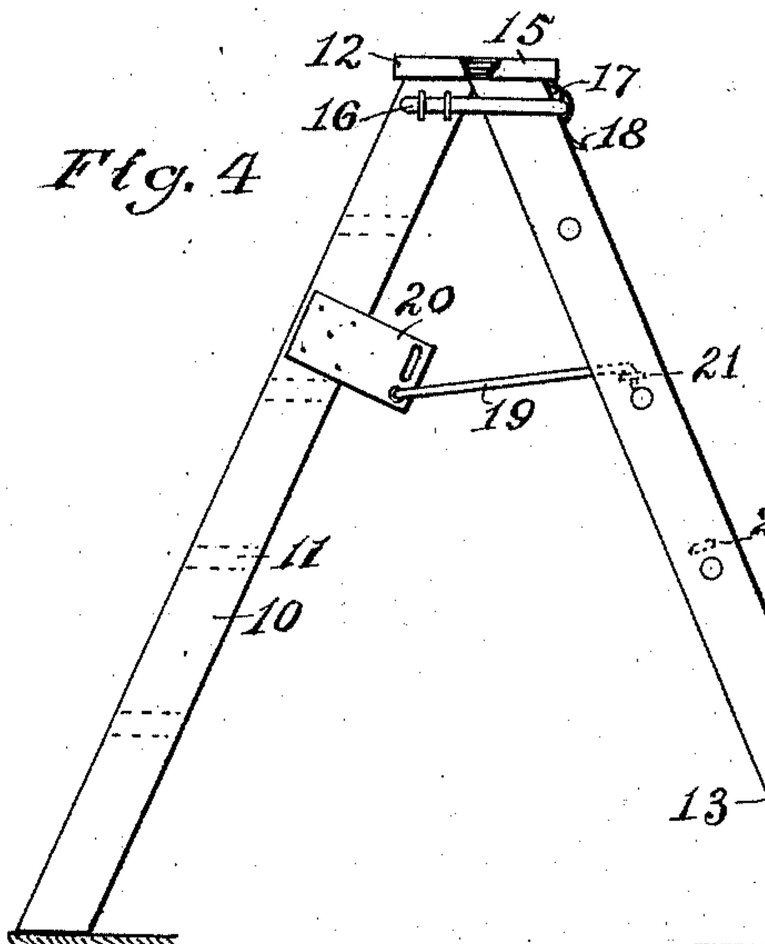


Fig. 4

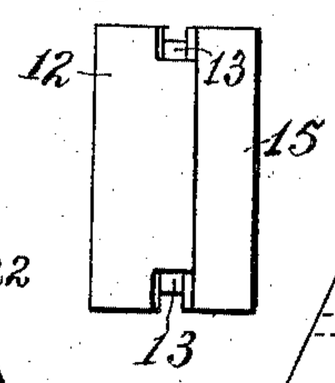
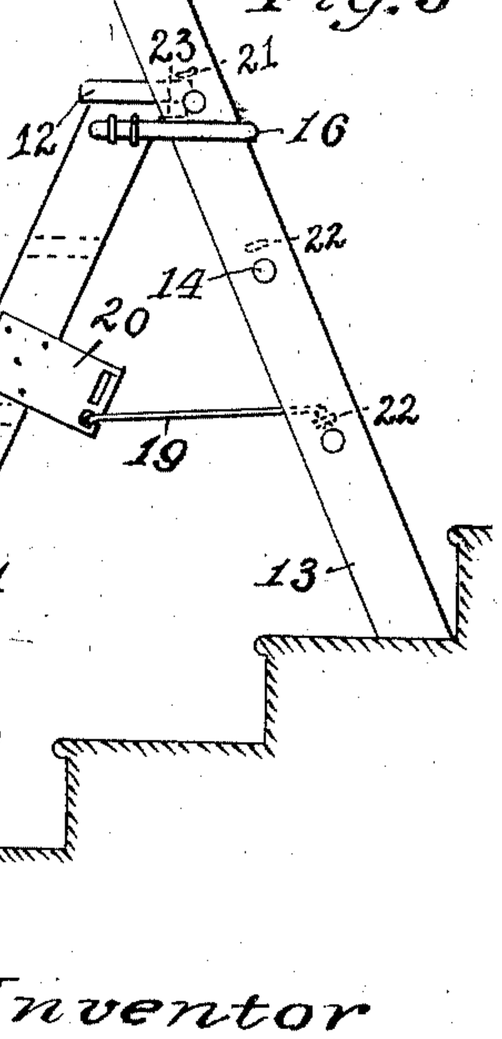


Fig. 6.



Witnesses:

Dorothy Decker.

Mary H. Darg

Inventor

William Scott Shields

By Albert H. Decker

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM SCOTT SHIELDS, OF BEVERLY, NEW JERSEY.

COMBINED STEP-LADDER, STAIR-LADDER, AND EXTENSION-LADDER.

967,252. Specification of Letters Patent. Patented Aug. 16, 1910.

Application filed October 20, 1909. Serial No. 523,564.

To all whom it may concern:

Be it known that I, WILLIAM SCOTT SHIELDS, a citizen of the United States, residing at Beverly, in the county of Burlington and State of New Jersey, have invented new and useful Improvements in a Combined Step-Ladder, Stair-Ladder, and Extension-Ladder, of which the following is a specification.

This invention relates to improvements in step-ladders, and particularly to a combined step-ladder, stair-ladder and extension ladder.

The objects of the invention are to provide a step-ladder with a ladder extension which shall also serve as the prop for the step portion, and to so combine these parts that they may be easily and readily shifted with respect to each other and that the combining and coöperating parts shall be as few and simple as possible, with due regard to safety of user and expedition in handling.

The invention therefore consists in the structure of parts and their combination for the specified purpose, substantially as hereinafter described and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 represents the combined device in side elevation ready for shipping or stowing away; Fig. 2 shows a rear elevation thereof; Fig. 3 is a vertical transverse section taken in the plane indicated by the line 3—3, Fig. 2; Fig. 4 represents, in side elevation, the device displayed as a step-ladder; Fig. 5 is a side elevation of the device displayed as a stair-ladder; and Fig. 6 shows in plan the platform when the combined parts are displayed as a step-ladder as in Fig. 4.

The step portion of the combination is indicated at 10 with its treads at 11 and platform at 12. The ladder extension is indicated at 13 with its rungs at 14 and its platform at 15.

In Figs. 1, 2 and 3, these parts are shown ready for shipping or for putting away after use. A rod is secured at its ends to part 10 and is formed into a loop as at 16 about part 13. It serves as a guide when the latter is used as a ladder extension and as a hinge therefor when said extension is used as the prop for the step-ladder. Beneath the platform 15, are secured stops as 17 which project over the loop 16, and to the platform 15 is attached a spring catch 18 which serves to normally hold the part 13 to said loop in readiness to swing on the loop as a hinge in the normal use of the step-ladder. The spring is readily disengaged from the loop when the ladder is to be extended for general use or for use on stairs. Hook stays as 19 are attached, preferably, to part 10 and by means of plates 20, which project across the side rails of the part 13 and together with said stays form a second guide for the ladder extension. These stays are, preferably, connected by an enlarged eye to the lower angle of the plate 20 and are adapted to pass, by their hooked ends, through slots at the upper angles of said plate. The enlarged eyes permit of this insertion and withdrawal of said hooks from said slots and, when the hooks are in the slots, they turn at right angles thereto and so retain said stays in place as guides, as seen in Figs. 1 and 2. For the sake of clearness in illustration, the hook stays are omitted from Fig. 3.

When the parts 10 and 13 are displayed in step-ladder form, Fig. 4, the hook stays, unshipped from their keepers—plates 20, have their free ends hooked into staples 21 on the side rails of part 13. Other staples as 22 may be located on part 13 to receive said hooks when the said parts are displayed for use on stairs, Fig. 5. In this form, the inner edge of the platform 12 engages a rung 14 and by it the upper end of the step portion is supported. Stops as 23 may be located under said platform to coöperate therewith, and both the platform and said stop may be gouged out to fit said rung, Figs. 3 and 5. The ends of the platform 12 are cut back to permit the inner edge thereof to enter between the side rails of the part 13 and the inner edge of the platform 15 is shaped to fit under that of platform 12 and so assists in forming a stable hinge and continuous platform for the step-ladder, Fig. 4 and 7.

In using the device as a ladder, the extension portion 13 is simply pushed up from the position seen in Figs. 1, 2 and 3, to the desired height, through the guides 16 and 19, the pivoted dogs 24 falling in under the rungs 14 in the usual way as the rungs pass them.

Obviously in using the device as a stair-ladder, the ladder extension, or prop, may be extended a sufficient number of rungs to adapt the device to stairs of any pitch. The stair-ladder lends itself readily to the use

of decorators and others working in a stairway, and the fact that the prop is a ladder makes it especially convenient, since the device may also be mounted from the up or short side.

Suitable angle braces may be added under one or more or all of the steps or treads of the step portion and under the platform as well. The presence of such braces is indicated at 25, Figs. 2 and 3.

The invention claimed is:—

1. In a combination of ladders, a step portion and a ladder extension having a separable hinge connection at their upper ends, lateral guide plates, and hook stays coöperating with said guide plates and both plates and hooks so constructed and connected that they securely brace the parts of the device when displayed as a step-ladder or as a stair-ladder and serve as a guide for the longitudinal adjustment of the extension portion when the device is displayed as an extension ladder.

2. In a combination of ladders, a step portion and a ladder extension, a loop connected to the upper end of the former and embracing the latter, a spring hook attached to the latter and engaging the loop, plates secured to the sides of the step portion and overlapping the side rails of the ladder extension, and hook stays connected to said plates by one end and adapted, each, to engage the opposite plate with its free end.

3. In a combination of ladders, a step portion and a ladder extension having a separable hinge connection at their upper ends, said hinge being formed by projecting the platform of the step portion between the rails of the ladder portion and forming the edge of said platform to fit the edge of the platform on the ladder extension and by a loop attached to the step portion and embracing the ladder extension, a spring catch holding the said parts in readiness for coaction when the device is to be displayed as a step-ladder.

4. In a combination of ladders, a step portion, a ladder extension, means for holding the one in longitudinal adjustment with the other, the step portion having its platform constructed to engage the successive rungs of the ladder extension, and stays for bracing the parts when adjusted.

5. In a combination of ladders, a step portion and a ladder extension having a separable hinge connection at their upper ends, portions of said hinge serving as guides for the adjustment of one part of the device upon the other, the step portion being constructed at its upper end for supporting engagement with the rungs of the ladder extension whereby the device may be used upon flights of stairs of different pitch, and hook stays for bracing the feet of the step portion and said extension.

WILLIAM SCOTT SHIELDS.

Witnesses:
JOSEPH E. HAMMELL,
ELLSWORTH H. VANSCIVER.