(No Model.)

# P. HERDER.

## EXTENSION STEP LADDER.

No. 603,848. Patented May 10, 1898.

Fig. 1.

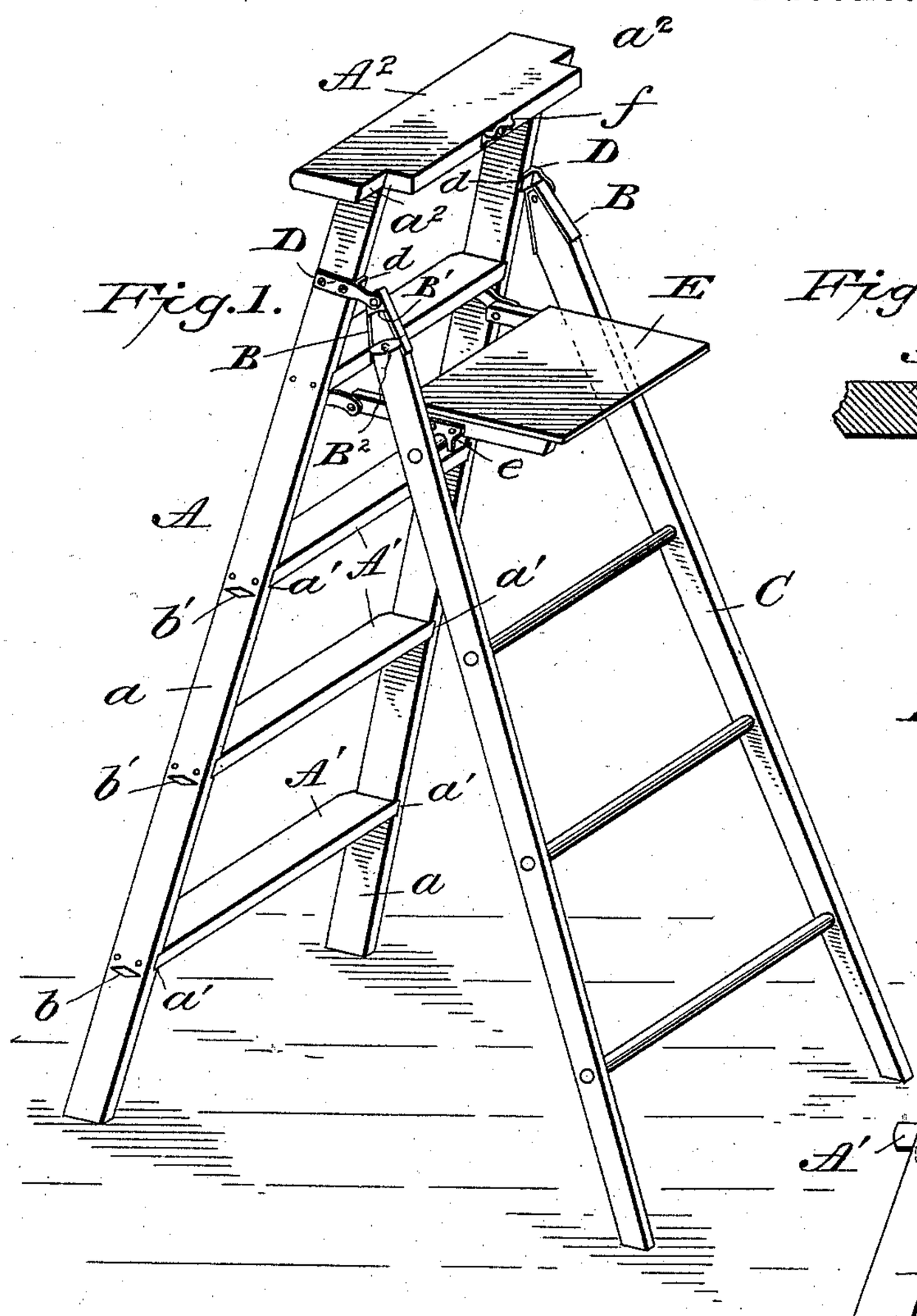



Fig. 4.

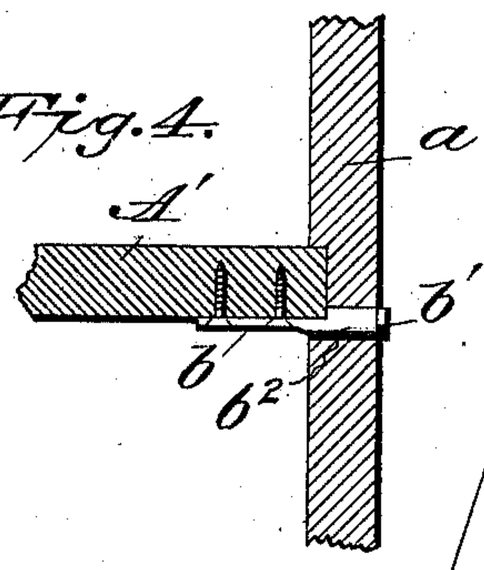



Fig. 2.




Fig. 3.

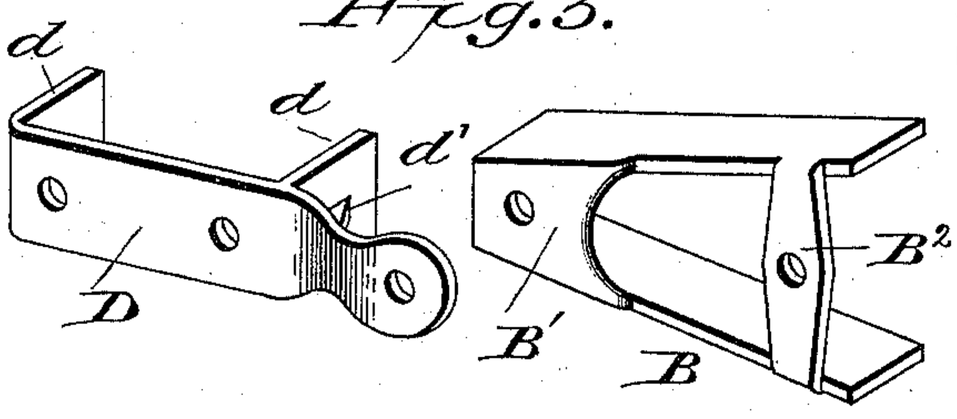
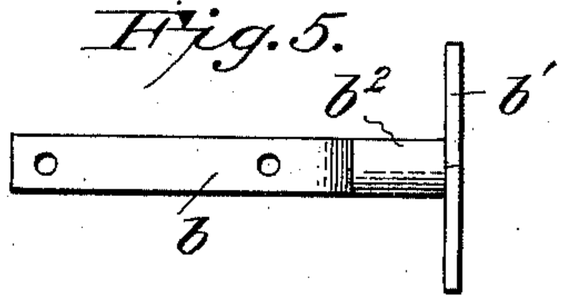



Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## EXTENSION STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 603,848, dated May 10, 1898.

Application filed September 20, 1897. Serial No. 652,398. (No model.)

*To all whom it may concern:*

Be it known that I, PHILIP HERDER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Step-Ladders; and I do hereby 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 marks of reference thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in step-ladders; and it consists in the construction and combination of the parts embodied therein, as will be hereinafter set forth and specifically claimed.

The object of my invention is to provide a step-ladder of improved construction to which a support having rungs is pivotally attached, so that it may be positioned on a line with the main section of the ladder to provide an extension, which support when extended is braced by engaging with the platform of the main section, one of the rungs of the supporting-section engaging with the upper side of the platform, while the side pieces of said support engages with shoulders on said platform, so that the parts will be held in alinement.

In the accompanying drawings, which illustrate my invention, Figure 1 is a perspective view showing the step-ladder in position for ordinary use. Fig. 2 is a side elevation showing the parts arranged for use as an extension-ladder. Fig. 3 is a detail perspective view showing the castings through which pass connecting-bolts for securing the sections of the ladder to each other. Fig. 4 is a sectional view through one of the steps and side pieces, showing fixture for holding the side pieces against spreading. Fig. 5 is a detail view of the fixture shown in Fig. 4.

A refers to the main section of the ladder, the sides *a a* thereof having grooves or recesses *a'*, in which are seated the ends of the steps A'. To the upper ends of the side pieces is secured a platform $A^2$, and said platform has a rearwardly-extended portion formed by cutting away the corners, so as to form shoulders $a^2$. It will be noted that the extended portion of the platform projects considerably over the rear edges of the side pieces of the ladder A; also, that the steps are of greater width than the side pieces and project beyond the front edges thereof. The steps which enter the recesses in the side pieces are secured thereto by nails or screws, which are further assisted by fixtures *b*, consisting of bars having formed integral therewith a head or cross piece *b'*, adjacent to which the tang $b^2$ of the fixture is rounded and provided with a shoulder, said tang being flattened beyond said shoulder and provided with apertures through which pass screws, as shown in Fig. 4. In order to attach the fixture, it is only necessary to bore through the side pieces, the tang of the fixture being passed through the opening, so that the shoulder will abut against the step and the flat portion of the tang lie against the under side of the step.

The supporting and extensible section C of the ladder is made up of side pieces and rungs connected in the usual manner, and the upper ends of the side pieces are beveled to receive a casting B, which has an end piece B', with an aperture therethrough, and a lower brace-bar $B^2$, both being formed integral with the flange, which embraces the upper ends and sides of the side pieces of the ladder-section C. The upper ends of the side pieces of the ladder-section C have openings on a line with the opening in the casting B, through which passes a pivot-bolt, the head thereof bearing against the inner sides of the side pieces, while the nut bears upon a fixture or casting attached to the ladder-section A. At a point about midway between the platform and upper step of the ladder A is attached a casting D, having inwardly-projecting members *d d*, one of the members having a brace-flange *d'* for reinforcing the member which extends beyond the same and has an eye or aperture, through which the connecting-bolt passes. The fixture or casting D is attached to the side pieces by wood-screws, and the flanges serve as braces, so that it is not dependent upon the screws for attachment as against the strain to which said fixture is subjected.

E refers to a shelf which is pivotally connected to projecting plates carried by the side pieces of the ladder A, and said shelf

has fixtures *e*, with depending portions which engage with the uppermost rung of the ladder-section C to hold the same in position for ordinary use, as shown in Fig. 1 of the drawings. When the shelf is folded to a position as shown in Fig. 2 of the drawings, it will be held in said position by reason of the turn-button *f* engaging with the shelf.

When it is desired to use the section C of the ladder as an extension for the main section A, it is turned on its pivots to the position shown in Fig. 2 of the drawings, and when in such position the upper rung will lie over the extension of the platform, and the side pieces of said ladder-sections C will engage with the shoulders, said shoulders by reason of such engagement holding the sections secure against movement. A downward movement of the ladder when weight is placed thereon is prevented by reason of the upper rung contacting with the platform, which relieves the castings from undue strain. When the ladder is extended, the turn-button *f* not only engages with the shelf, but also with the rung.

I am aware that prior to my invention it has been proposed to pivotally connect two ladder-sections and provide them with a shelf, one of the sections being adapted to be turned upon its pivot, so as to be brought on a line with the section below, and I do not therefore claim such construction broadly; but

What I claim as new, and desire to secure by Letters Patent, is—

1. In an extension step-ladder, the combination with a section A having a platform which extends beyond and over the side pieces of the ladder, said platform being cut away to provide shoulders, a ladder-section C pivotally attached to the section A, a shelf pivotally attached to the section A and provided with lugs for engagement with the upper rung of the section C, and a turn-button on said platform which is adapted to engage with the shelf and with the upper rung of said section, substantially as shown and for the purpose set forth.

2. In an extension step-ladder, the combination with the section A fixtures attached thereto the same having projecting portions which engage with the edges of the side pieces and rearwardly-extending portions with apertures, of the prop-section the side bars, and with fixtures which embrace the ends thereof, and bolts for holding the fixtures in pivotal engagement, substantially as shown.

3. In an extension step-ladder, the combination with the step and prop sections, of fixtures carried by said sections, one of the fixtures having members *d d* which lie over the edges of the step-section and an apertured member which projects rearward therefrom, the fixture on the other section each having a flange which lies over the upper end thereof, said fixture having cross-bars; together with the connecting-bolts, substantially as shown and for the purpose set forth.

4. The combination in a step-ladder having a step-section and a prop-section connected to each other at a point midway between the upper step of the step-section and the platform thereof, a shelf pivoted to the ladder-section and provided with fixtures for engagement with the upper rung of the prop-section, said upper rung being so positioned that when the prop-section is turned upon its pivots upward, said rung will lie over the platform and a turn-button carried by the platform, substantially as shown and for the purpose set forth.

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