No. 856,683. PATENTED JUNE 11, 1907.

J. R. DAVIS.

EXTENSION LADDER.

APPLICATION FILED OCT. 12, 1906.

Fig. 1.

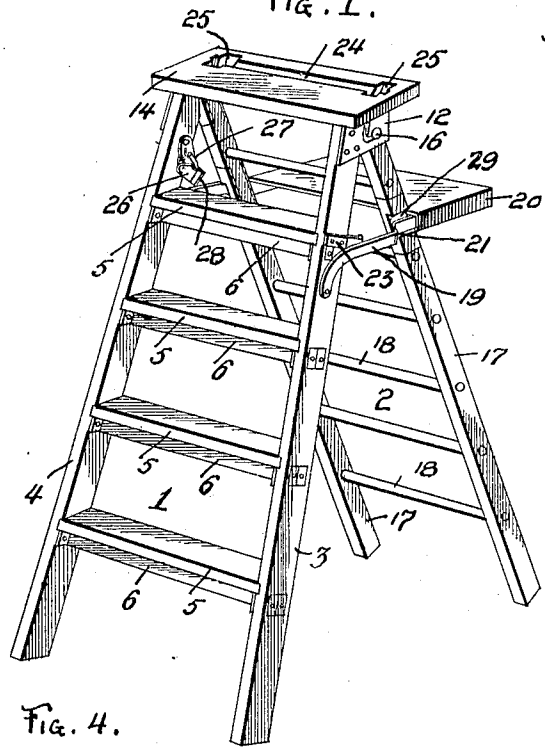


Fig. 2.

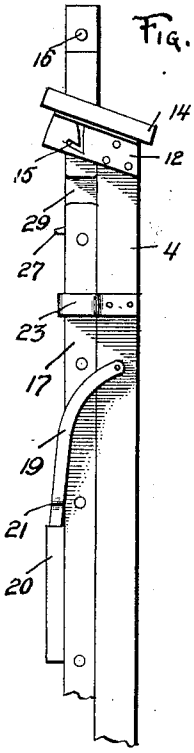


Fig. 3.

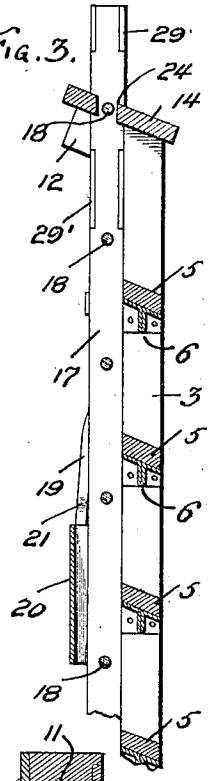


Fig. 4.

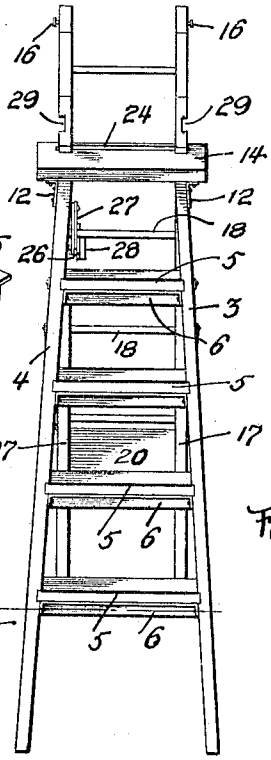


Fig. 5.

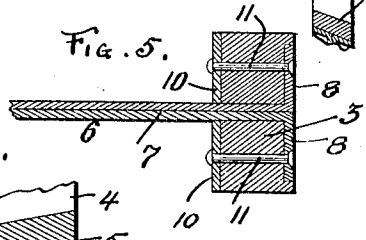


Fig. 6.

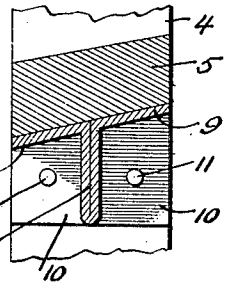


Fig. 9.

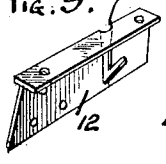


Fig. 8.

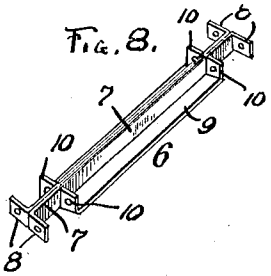
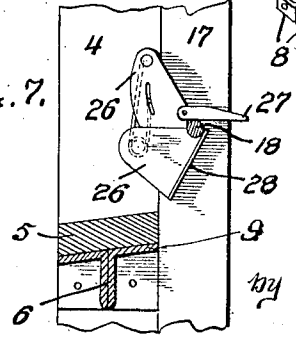


Fig. 7.



Witnesses:
J. E. Miller.
R. N. Butler

Inventor
J. R. Davis,
by W. C. Evert & Co.
Attorneys.

THE NORRIS PETERS CO., WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

JOHN R. DAVIS, OF WAYNESBURG, PENNSYLVANIA.

EXTENSION-LADDER.

No. 856,683. Specification of Letters Patent. Patented June 11, 1907.

Application filed October 12, 1906. Serial No. 338,580.

To all whom it may concern:

Be it known that I, JOHN R. DAVIS, a citizen of the United States of America, residing at Waynesburg, in the county of Greene and State of Pennsylvania, have invented certain new and useful Improvements in Extension Ladders, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain new and useful improvements in step ladders, and the invention has for its object to provide a novel form of extension step ladder, wherein the extension serves as a step ladder support and can be easily and quickly manipulated.

Another object of this invention is to provide a simple, durable and inexpensive step ladder, wherein a novel form of brace is employed for strengthening and bracing the rounds and steps of a ladder.

With these and other objects in view, which will more readily appear as the invention is better understood, the same consists in the novel construction, combination and arrangement of parts to be hereinafter more fully described and then specifically pointed out in the appended claims.

Referring to the drawing forming part of this specification, like numerals of reference designate corresponding parts throughout the several views, in which:—

Figure 1 is a perspective view of the ladder, Fig. 2 is an elevation of a portion of the ladder, Fig. 3 is a vertical sectional view of the same, Fig. 4 is a front elevation of the ladder as extended, Fig. 5 is a horizontal sectional view of one of the side rails of the ladder, Fig. 6 is a cross sectional view of one of the rounds or steps, Fig. 7 is a vertical sectional view of a portion of a ladder illustrating the manner of supporting the extension, Fig. 8 is a perspective view of an inverted brace of my improved ladder, and Fig. 9 is a perspective view of an angle plate used in connection with the ladder.

To put my invention into practice, I construct my improved ladder of two frames 1 and 2, the frame 2 serving functionally as a step ladder support and as an extension to said ladder.

The frame 1 comprises two rails 3 and 4, said rails being connected by a plurality of steps or rounds 5, each of which is supported by transverse braces 6. The braces are formed from a piece of metal bent to form a web 7 which passes through the rails 3 and is bent to form end flanges 8. The web portion also carries flanges 9 adapted to lie flush with the underneath side of each step or round, the ends of the flanges 9 being bent downwardly against the rails 3 and 4, as at 10 and secured to said rails and the flanges 8 by rivets or screw bolts 11 that pass through said rails.

The upper ends of the rails 3 and 4 are provided with angle plates 12 adapted to support a top step or platform 14. The angle plates 12 are provided with bayonet-shaped slots 15 adapted to receive pins 16, carried by the side rails 17 of the frame 2. The side rails 17 are connected together by a plurality of steps or rounds 18.

Pivotally connected to the side rails 3 and 4 of the frame 1 are arms 19, said arms supporting a platform 20, and bent to form shoulders 21. The rails 17 of the frame 2 are provided with recesses 22 adapted to receive said arms adjacent to the shoulders 21, when the platform 20 is in a horizontal or useful position.

The outer sides of the rails 3 and 4 contiguous to their upper ends are provided with rearwardly extending guides 23 adapted to lie in the recesses 22, when the frame 2 is parallel with or folded against the frame 1. The guides 23 engage the rails 17, when the ladder is extended.

The top step or platform 14 is formed with a longitudinally disposed slot 24 and transverse slots 25, the slots 25 alining with the folded rails 17, whereby the frame 2 can be moved upwardly through the step or platform 14, to form an extension of the frame 1. To retain the frame 2 in an extended or elevated position, I provide the rail 4 of the frame 1 with a spring held arm 26, carrying a pivoted tooth 27. The arm 26 normally lies in the path of travel of the frame 2, the beveled edge 28 of said arm causing the arm to recede when impigned by one of the rounds or steps 18 of the frame 2. After the frame 2 has been elevated the desired height, one of the rounds or steps 18 is adapted to rest upon the arm 26 the tooth 27 of said arm lying upon the round. The tooth 27 serves a novel function. By gravity it normally lies adajcent to the beveled edge 28 of the arm 26, consequently when the supporting round of the elevated frame 2 is raised out of engagement with the arm 26, the tooth 27 drops upon the arm, and when the frame 2 is lowered, each round will strike the tooth and

cause the arm to recede. This movement of the arm is incurred by the tooth 27 projecting beyond the arm, when in its normal position.

By providing the angle plates 12 with bayonet slots 15, I am enabled to swing the upper end of the frame 2 out of alinement with the slots 25, when the frame 2 is lowered, whereby the upper end of said frame can be used to support the plate 14 and frame 1, by bearing against the under-neath side of the plate 14. Metallic screws or plates 29′ can be used to protect the ends or wearing surfaces of the frames 1 and 2.

Such changes in the size, proportion and minor details of construction as are permissible by the appended claims, may be resorted to without departing from the spirit and scope of the invention.

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

1. In a ladder, a main frame provided with steps and having a top step or platform provided with a longitudinal slot and with registering transverse slots, plates secured to the side rails of said main frame at the upper end thereof and provided with angle slots, an extension frame comprising side rails connected together by steps, headed pins carried by said side rails at the upper ends thereof to engage in the angle slots of said plates carried by the main frame, arms pivoted to the main frame and provided with shoulders to engage the side rails of the extension frame, a platform carried by said arms, and a spring-held arm carried by one of the side rails of the main frame for engagement with one of the steps of the extension frame to hold the latter in extended position with relation to the main frame.

2. In a step ladder, a frame comprising side rails and steps connecting said side rails, and brace members for said steps each formed from a sheet of metal blank bent to form a web, the ends of which extend through the side rails and are flanged to engage the side rails, the said web having horizontal flanges engaging the step having angularly extending ends engaging the inner faces of the side rails.

3. In a step ladder, a main frame and an extension frame, the latter acting as a brace for the main frame and as an extension therefor, angle plates carried by the side rails of the main frame at their upper end and provided with bayonet slots, a top step or platform for said main frame provided with a longitudinal slot and with registering transverse slots, the latter also registering with the bayonet slots in said plates, headed pins carried by the extension slots, arms pivoted to the main frame having shoulders for engagement with the extension frame, a platform carried by said arms, and a pivoted spring-held arm carried by one of the side rails of the main frame for engagement with one of the steps of the extension frame to hold the latter in extended position with relation to the main frame.

In testimony whereof I affix my signature in the presence of two witnesses.

JOHN R. DAVIS.

Witnesses:

ABNER HOGE,

JOS. R. COTTERREL.