Jan. 1, 1924 1,479,262

O. H. STEGEMAN

STEPLADDER

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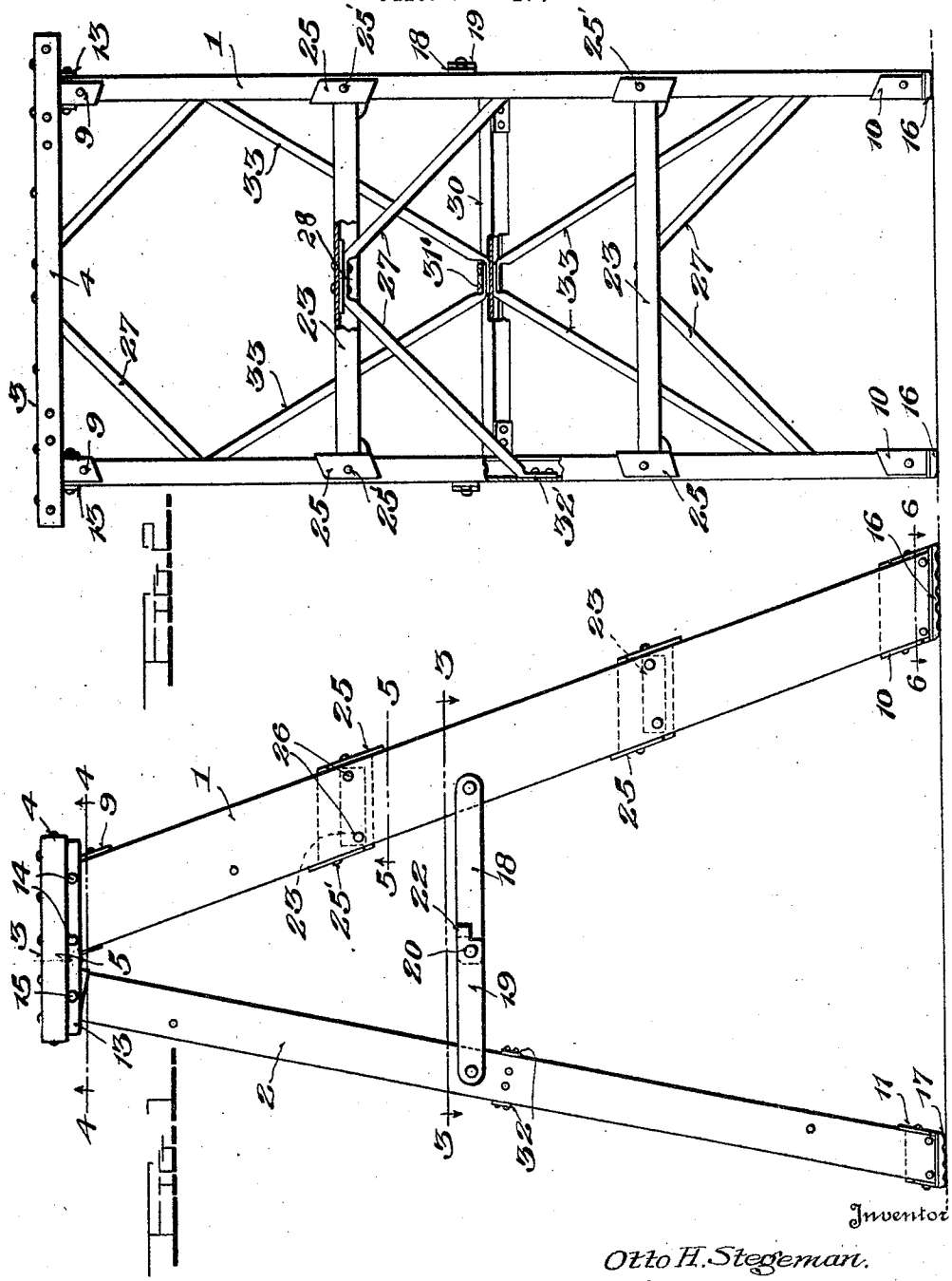

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Fig. 3.

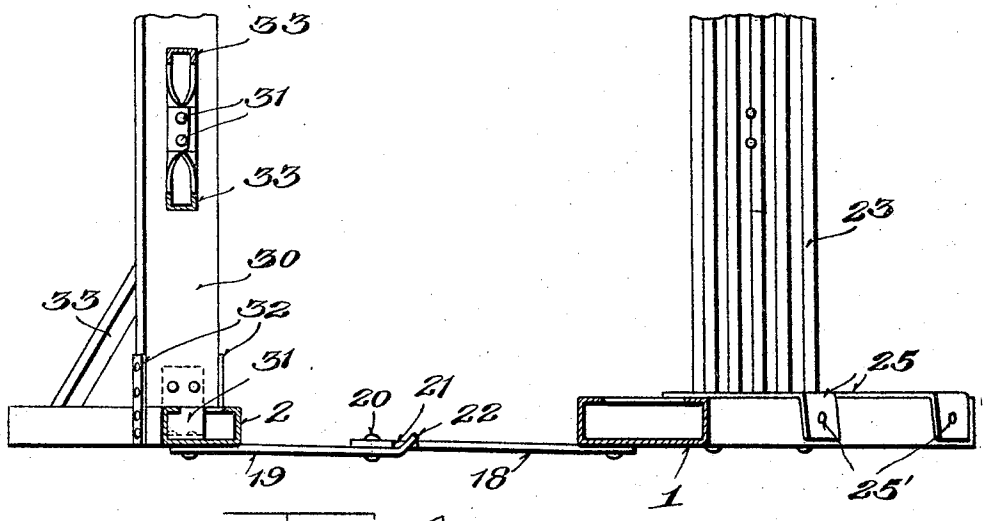


Fig. 4.

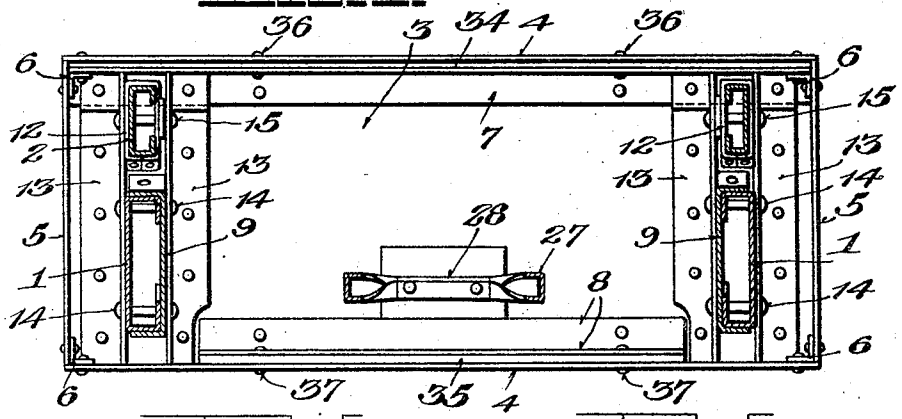


Fig. 5.

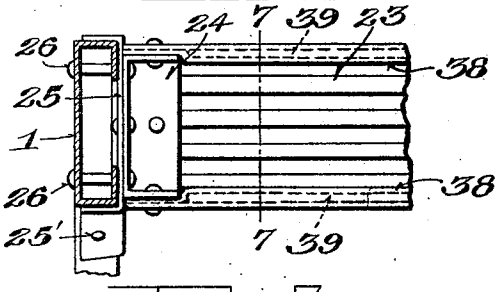


Fig. 6.

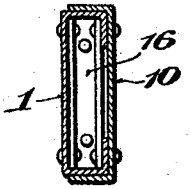
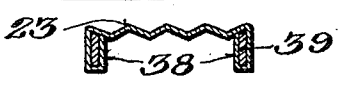


Fig. 7.



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UNITED STATES PATENT OFFICE.

OTTO H. STEGEMAN, OF STRATFORD, CONNECTICUT.

STEPLADDER.

Application filed January 17, 1923. Serial No. 613,150.

To all whom it may concern:

Be it known that I, OTTO H. STEGEMAN, a citizen of the United States, residing at the town of Stratford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Stepladders; and I do 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.

This invention relates to certain new and useful improvements in step ladders and the primary object thereof is to provide a ladder which is of strong construction, while still light in weight, and which also effectually resists collapse of the parts when subjected to pressure.

The invention further aims to provide novel means for connecting the steps to the front legs and for bracing the same, as well as for bracing the rear legs so that the parts will be strong and will resist any collapsing tendency.

Still further, the invention aims to provide novel jointed means for holding the front and rear legs in extended or operative position.

The invention further resides in the details of construction and combination of parts now to be fully described and later claimed and has still further and other objects which will be later set forth and manifested in the course of the following description.

In the drawings: —

Figure 1, is a side elevation of the invention, showing the ladder in operative position;

Figure 2, is a front elevation parts being broken away and shown in section;

Figure 3, is an enlarged section on line 3—3 of Figure 1;

Figure 4, is an enlarged section on line 4—4 of Figure 1;

Figure 5, is an enlarged section on line 5—5 of Figure 1;

Figure 6, is an enlarged section on line 6—6 of Figure 1.

Figure 7, a section on line 7—7 of Figure 5.

The front legs 1 are formed of metal of C-shape in cross section while the rear legs 2 are also formed of metal of corresponding cross-section, but of less width and thickness than that of the front legs.

The top platform 3 as shown in Figure 4, has downwardly flanged sides 4 and ends 5 the corners of which are braced by L-shaped clips 6 that are riveted in position. Angle bars 7 and 8 are riveted to the top 3 and the side flanges 4 thereof so as to strengthen and brace these parts.

The upper and lower ends of the front legs have U-shaped reinforcing members 9 and 10 secured thereto and which extend across the open sides of the legs. Similar U-shaped reinforcing members 11 are secured to the lower ends of the rear legs, while rectangular reinforcing members 12 are secured to the upper ends of the rear legs.

Pairs of spaced angle plates 13 are secured to the under face of top 3 and transversely thereof, and receive the upper ends of the front legs therebetween and to which they are riveted as indicated at 14, and also receive the upper ends of the rear legs and to which they are pivoted by pins 15. Rubber feet 16 and 17 are secured to the lower ends of the respective front and rear legs 1 and 2.

For the purpose of holding the front and rear legs in spread or operative position links 18 and 19 are pivoted at their outer ends to the front and rear legs and are pivoted together at 20 adjacent their inner ends. Member 18 has an upwardly facing notch 21 adjacent its inner end to receive a finger 22 which is formed by reducing the inner end of the link 19 and curving same to one side so as to be received in slot 21. Finger 22 thus limits the downward movements of the links and retains same in true horizontal alinement as depicted in Figure 1 of the drawings.

The steps 23 are each formed of longitudinally corrugated channel bars to not only strengthen same but to also afford roughened treads. Angle plates 24 are riveted to the ends of the steps and in turn are connected to U-shaped members 25 that are riveted at 25′ to the front legs, by means of bolts 26, the latter extending through the front legs, through the inturned flanges thereof, through the members 25 and through the angle plates 24. In this manner all of the parts are rigidly secured together and held firmly in position.

The top 3 and each of the steps is held by substantially V-shaped braces 27, the braces being formed of channel form and

having folded flattened central parts 28 and folded flattened ends 32′, the flattened centers and ends being each riveted within the interiors of the top and steps and also within the front legs.

The rear legs have a cross-brace 30 of C-cross-section between its ends and which is secured by angle clips 31 and connecting straps 32 to the rear legs 2. Inclined braces 33 having folded flattened inner ends are riveted to opposite sides of cross brace 30 by rivets 31′ the latter common to each inner end of the four braces 33, the inner ends of the latter being superimposed upon each other, while the outer ends of the braces 33 are also flattened and riveted within the rear legs 2. In this manner the rear legs are braced in a strong and simple manner, since the rivets 31 serve to connect all of the four braces to the brace 30. Each brace by virtue of its folded and flattened portions is materially strengthened and affords an effective riveting part of triple thickness of the metal.

Between the downwardly flanged sides 4 of the platform 3 and the angle bars 7 and 8 are strips 34 and 35 preferably of steel, these strips being firmly clamped between said sides and bars by the rivets 36 and 37. These steel strips not only strengthen the structure but, by their resiliency, prevent permanent bends or distortions in the aluminum.

The steps 23 have downwardly turned edges 38 which are bent and folded so as to encase steel strips 39, which latter have the same function as the strips 34 and 35.

What is claimed is:—

1. In a step ladder, legs of C-cross-section, U-shaped reinforcing members secured to the legs and extending across the open sides thereof, longitudinally corrugated steps of U-cross-section, angle clips secured to the interiors of the steps at the ends thereof and abutting said members, and means to secure the clips to the members.

2. In a step ladder, legs of C-cross-section, U-shaped reinforcing members secured to the legs and extending across the open sides thereof, longitudinally corrugated steps of U-cross-section, angle clips secured to the interiors of the steps at the ends thereof and abutting said members, and fastenings extending through the legs, through the inturned side edges thereof, through the members and through the clips to secure all of the parts together.

3. In a step ladder, legs of C-cross-section, U-shaped reinforcing members secured to the legs and extending across the open sides thereof, longitudinally corrugated steps of U-cross-section, angle clips secured to the interiors of the steps at the ends thereof and abutting said members, means to secure the clips to the members, and braces of channel form having folded flattened central parts and folded flattened ends secured within the steps and legs respectively.

4. In combination with the front legs and steps of a stepladder, rear legs of channel form, a cross brace of channel form secured to the rear legs, pairs of channel braces on opposite sides of the cross-brace having folded flattened ends the outer ends of the braces being secured to and within the legs and the inner ends thereof being arranged in superimposed order and in alinement on opposite sides of the cross brace, and fastenings passed through all of the inner ends of the braces and through the cross-brace.

5. In combination with the front legs and steps of a stepladder, rear legs, a cross brace connecting the rear legs, upper and lower braces of channel form having folded flat ends the outer of which ends are secured to the legs and the inner of which ends are arranged in superimposed order and in alinement on opposite sides of the cross-brace, and means passed through all of the inner brace ends and through the cross brace to secure the parts together.

6. In a step ladder, a top having downwardly flanged sides and ends, angle bars bracing the sides, channelled front and rear legs, reinforcing members connected to the legs at the tops thereof and extending across the open sides thereof, transverse angle-plates secured to the top and receiving the upper ends of the legs therebetween, and means to connect the legs and members to the angle plates.

7. In a step ladder, a top having downwardly flanged sides and ends, angle bars bracing the sides, channelled front and rear legs, reinforcing members connected to the legs at the tops thereof and extending across the open sides thereof, transverse angle-plates secured to the top and receiving the upper ends of the legs therebetween, means to connect the legs and members to the angle-plates, and a channel brace having folded flattened ends secured within the front legs and having a folded flattened central part secured to the under face of the top.

In testimony whereof I affix my signature hereto.

OTTO H. STEGEMAN.