

March 26, 1940.

P. PIRSCH

2,194,870

SCALING LADDER

Filed Oct. 31, 1938

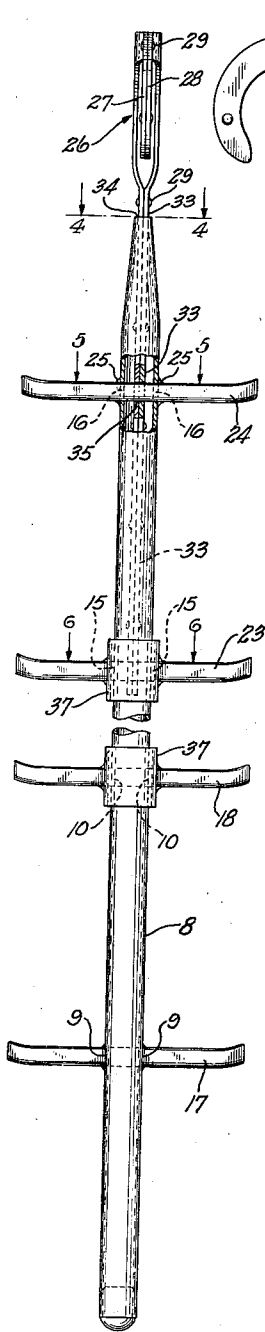
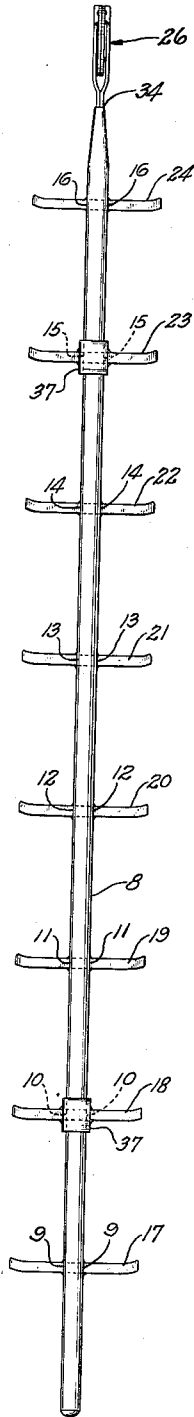


Fig. 2.

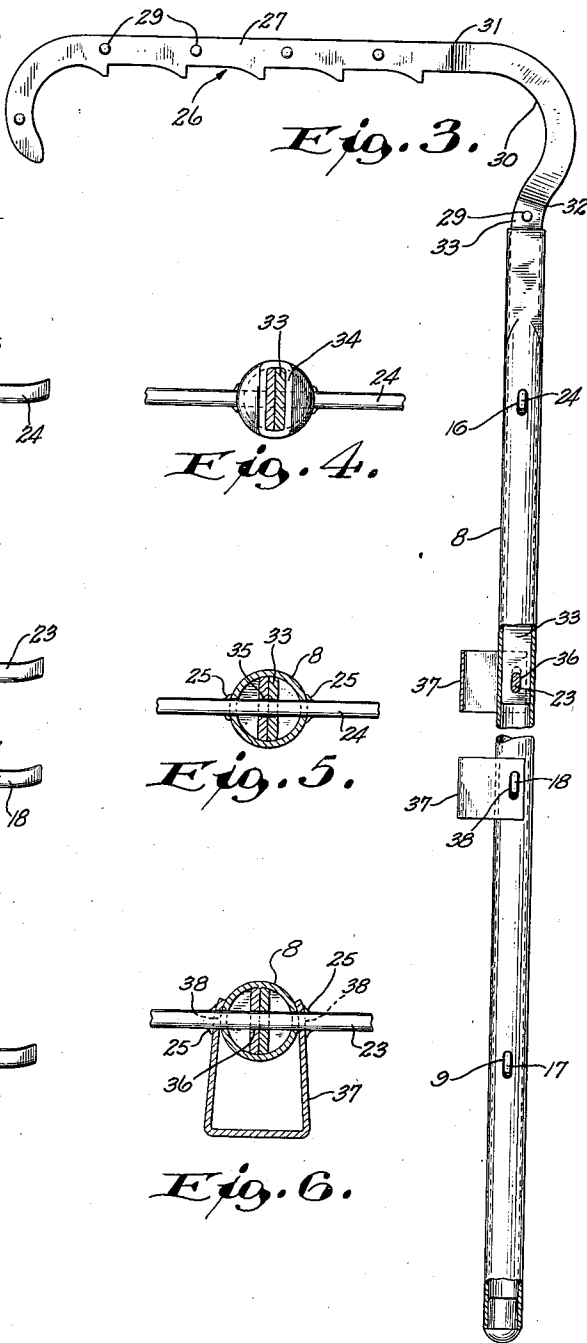


Fig. 3.

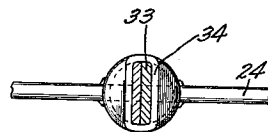


Fig. 4.

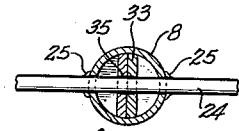


Fig. 5.

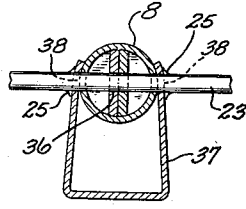


Fig. 6.

Fig. 1.

INVENTOR.
Peter Pirsch
BY *Morrell Lieber* & *Morrell*
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,194,870

SCALING LADDER

Peter Pirsch, Kenosha, Wis., assignor to Peter Pirsch and Sons Co., Kenosha, Wis., a firm composed of said Peter Pirsch, W. R. Pirsch, and Ceila Pirsch Even

Application October 31, 1938, Serial No. 237,993

9 Claims. (Cl. 228—51)

This invention relates to improvements in scaling ladders.

Ladders of the type with which this invention is concerned are commonly used to scale buildings by smashing the hook at the upper end of the ladder through a window above and climbing to said window. While climbing, a second ladder is carried and this ladder is in turn engaged with the window on the next floor. When the fireman has obtained footing on the second ladder, the first is disengaged from the window below and carried upwardly for engagement with a window at a third elevation. Thus with the use of two ladders, an ascent to any desired height can be made. Climbing in this manner is, however, difficult because scaling ladders as now constructed are relatively heavy so that the handling of one ladder while suspended on another is very dangerous.

It is a general object of the present invention to provide an improved scaling ladder which is so constructed that it can be made from light weight tubular material such as aluminum whereby the weight is reduced approximately 50%. Thus the ladders can be handled more efficiently and with much less danger.

A further object of the invention is to provide a scaling ladder which is constructed without welding or bolts, whereby the danger of breakage or loosening of parts during use is minimized.

A still further object of the invention is to provide a scaling ladder which can be manufactured quickly with a minimum of work in assembly, whereby a strong and durable ladder may be provided at low cost.

A more specific object of the invention is to provide a scaling ladder wherein the standard is formed of tubular metal and wherein the rungs extend through openings in said standard, one or more of said rungs also extending through a depending extension of the ladder hook to lock the latter to the standard within the tubular upper end thereof.

A further object of the invention is to provide a ladder of the type described wherein members for maintaining the ladder in spaced position from a wall, are secured to the standard in a simple and effective manner.

A further object of the invention is to provide a scaling ladder wherein the hook member is constructed in a novel manner to provide increased strength at the gooseneck bend.

With the above and other objects in view, the invention consists of the improved scaling lad-

der and all its parts and combinations as set forth in the claims and all equivalents thereof.

In the accompanying drawing in which the same reference numerals designate the same parts in all of the views:

Figure 1 is a front elevational view of the improved ladder;

Figure 2 is a similar view on an enlarged scale, parts being broken away and shown in section to illustrate the improved construction;

Figure 3 is a side view of the structure shown in Figure 2, parts being broken away;

Figure 4 is an enlarged sectional view taken on lines 4—4 of Figure 2;

Figure 5 is an enlarged sectional view taken on line 5—5 of Figure 2; and

Figure 6 is an enlarged sectional view taken on line 6—6 of Figure 2.

Referring more particularly to the drawing, the numeral 8 designates a standard formed of tubular material, preferably heat treated, tempered aluminum. The standard is provided with longitudinally spaced sets of transversely aligned openings 9, 10, 11, 12, 13, 14, 15, and 16 through which steps 17, 18, 19, 20, 21, 22, 23 and 24 extend. These rungs are also preferably formed of heat treated tempered aluminum, and the metal of the rungs adjacent the standard is upset on each side of the standard as at 25 (Figures 2 and 5). Thus the rungs are securely held in position without the use of welding or securing bolts. The width of the step openings is such as to form an exact fit for the thickness of the steps whereby the steps must be pressed through the openings.

A hook member 26 is preferably formed of two strips of metal 27 and 28 which are juxtaposed throughout the major portion of their length and riveted together as at 29. At the gooseneck bend 30, however, the two strips are spread from the point 31 to the point 32 whereby additional strength is provided at this portion of the ladder. The gooseneck bend connects with a depending extension 33, which extension fits snugly into an elongated opening 34 at the upper end of the standard, formed by squeezing said upper end. The depending extension 33 of the hook extends downwardly within the upper end of the standard for a substantial distance, and is provided with openings 35 and 36 which align with the standard openings 24 and 15 respectively. The uppermost rungs 24 and 23 extend not only through the standard, but also through the openings 35 and 36 of the hook extension to firmly

lock the hook to the standard in such a manner that withdrawal is impossible.

At one or more points on the standard there are brackets 37 for the purpose of maintaining the ladder in spaced position from a wall during use. These brackets are preferably formed of U-shaped metal and embrace the sides of the standard as shown in Figure 6. The embracing ends of the brackets are provided with openings 38 whereby rungs such as the rungs 18 and 23 may extend through the openings in the brackets to lock the brackets onto the standard.

Heretofore ladders of this type have been constructed of wood and iron, utilizing ordinary means for connecting the parts together. These ladders were dangerous to use because the strain of carrying one heavy ladder while suspended on another, made handling difficult for the fireman. The present ladder is constructed mainly of aluminum with a minimum of parts, and the weight is approximately 50% of the weight of a scaling ladder of the same length constructed with present methods. Furthermore the improved method of connecting the hook to the standard and of connecting the steps to the standard without the use of welding or bolts insures against breakage or loosening of parts during use. The ladder is furthermore constructed of relatively few parts which can be quickly assembled in an inexpensive manner.

The hook member 26 and extension 33 can of course be made of a single heavy strip, instead of two riveted together strips, with no spread at 30. In this case the entire ladder structure will be rivetless.

Although only one form of the invention has been shown and described, it is obvious that various changes and modifications may be made without departing from the spirit of the invention, and all of such changes are contemplated which may come within the scope of the claims.

I claim:

1. A scaling ladder comprising a standard having a tubular upper end, a hook having a connecting extension depending therefrom and inserted in said tubular upper end of the standard, and a plurality of steps secured to said standard, at least one of said steps extending through the tubular upper end of the standard and through the hook extension therein to secure the latter position.

2. A scaling ladder comprising a standard having a tubular upper end, a hook having a connecting extension depending therefrom and inserted in said tubular upper end of the standard, and a plurality of steps secured to said standard, at least two of said steps extending through the tubular upper end of the standard and through the hook extension therein to secure the latter in position.

3. A scaling ladder comprising a standard having a tubular upper end provided with transversely alined openings, a hook having a connecting extension depending therefrom and inserted in said tubular upper end of the standard, said extension being provided with a transverse opening, in alinement with the openings of the standard, and a plurality of steps secured to said standard, at least one of said steps extending through the tubular upper end of the stand-

ard and through the hook extension therein to secure the latter in position.

4. A scaling ladder comprising a standard having a tubular upper end provided with longitudinally spaced sets of transversely alined openings, a hook having a connecting extension depending therefrom and inserted in said tubular upper end of the standard, said extension being provided with longitudinally spaced transverse openings in alinement with the sets of openings in the standard, and a plurality of steps secured to said standard, at least two of said steps extending through alined openings of the standard and hook extension to secure the latter in position.

5. A scaling ladder comprising a standard having steps, and a hook having a depending portion connected to the upper end of said standard, there being a curved bend between said depending portion and hook, said hook and depending portion being formed of two strips of metal which are spread at the curved bend and which are in direct contact throughout the rest of their length and both above and below the curved bend, and means extending through the contacting portions of the strips to secure the same together and provide double thickness at said portions.

6. A scaling ladder comprising a tubular metal standard having longitudinally spaced sets of transversely alined openings, a hook connected to the upper end of said standard, step members inserted through said transversely alined openings in the standard, and a bracket for spacing the ladder from a wall, having parts provided with openings embracing a part of the standard, with the openings in the bracket alinement with openings in the standard, one of the step members extending through said openings in the bracket.

7. A scaling ladder comprising a standard having a tubular upper end, the tip of which is shaped to provide an elongated upper end slot, a hook member having a depending extension which is of substantially the same cross sectional shape as the shape of said slot extending into said slot, means for preventing withdrawal of said hook extension from said slot, and a plurality of steps secured to said standard.

8. A scaling ladder comprising a standard having a tubular upper end, the tip of which is shaped to provide an elongated upper end slot, a hook member having a depending extension which is of substantially the same cross sectional shape as the shape of said slot extending into said slot, and a plurality of steps secured to said standard, at least one of said steps extending through the upper end of the standard and through the hook extension therein to secure the latter against withdrawal.

9. A scaling ladder comprising a standard, having an upper end formed with a vertical recess communicating with said end, a hook having a connecting extension depending therefrom and inserted in said vertical recess of the standard, and a plurality of steps secured to said standard, at least one of said steps extending through the recessed upper end of the standard and through the hook extension therein to secure the latter in position.

PETER PIRSCH.

CERTIFICATE OF CORRECTION.

Patent No. 2,194,870.

March 26, 1940.

PETER PIRSCH.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, first column, line 23, for the word "an" read --as--; and second column, line 25, for "22 23 and" read --22, 23, and--; page 2, first column, line 51, claim 1, before "position" insert --in--; line 67, claim 3, strike out the comma after "opening"; and second column, line 37, claim 6, after the word "bracket" insert --in--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 14th day of May, A. D. 1940.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.