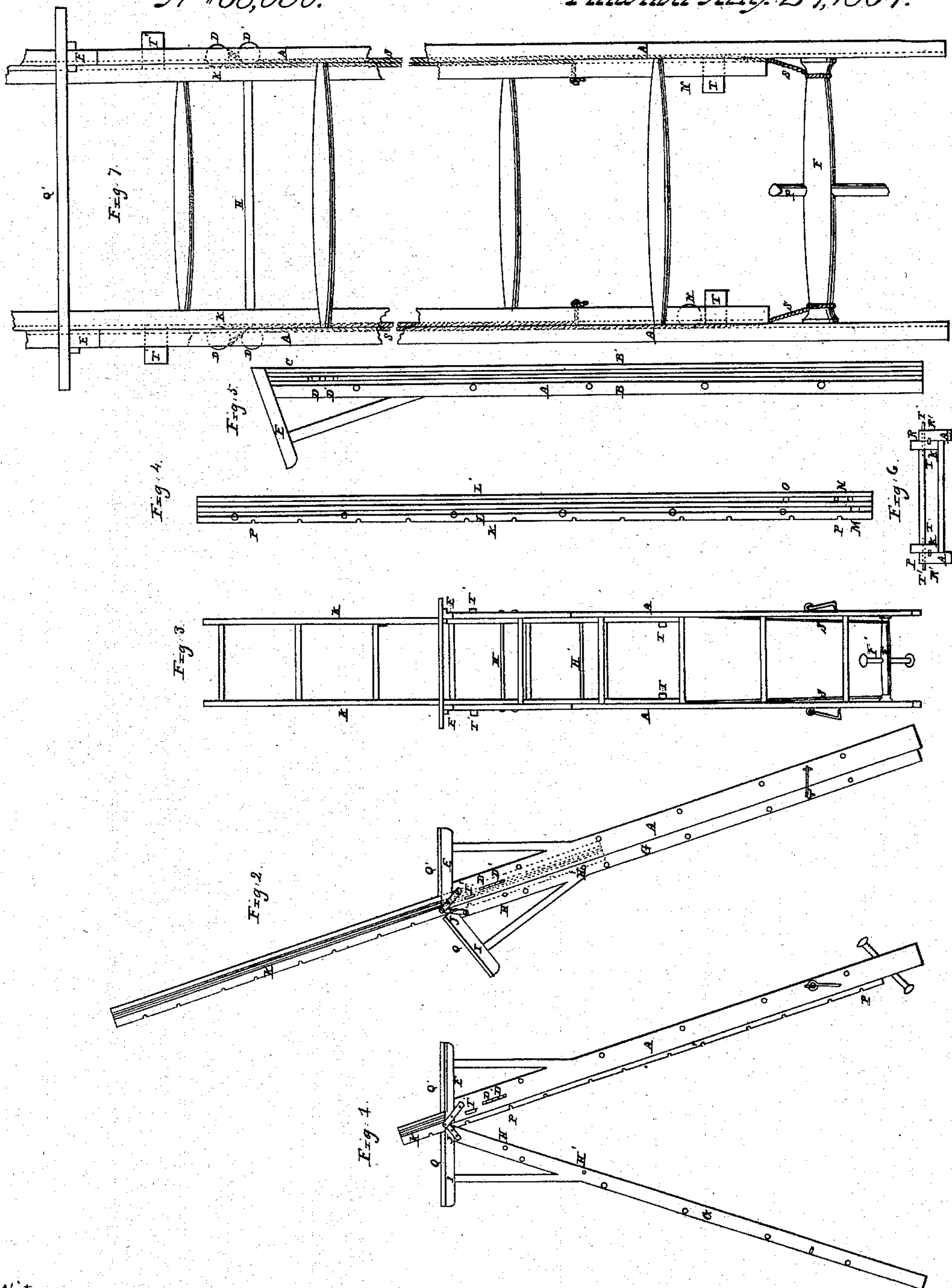


*Ladder.*

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N<sup>o</sup> 68,090.

*Patented Aug. 27, 1867.*



Witnesses

J. F. Single  
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# United States Patent Office.

C. J. KOMAR, OF WILLOUGHBY, OHIO.

*Letters Patent No. 68,090, dated August 27, 1867.*

## IMPROVEMENT IN STEP AND EXTENSION-LADDER.

*The Schedule referred to in these Letters Patent and making part of the same,*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, C. J. KOMAR, of Willoughby, in the county of Lake, and State of Ohio, have invented an improved Step and Extension-Ladder; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of the step-ladder arrangement.

Figure 2, a side elevation of the extension arrangement.

Figure 3, a front elevation of the ladder extended.

Figures 4, and 5, side elevations, on an enlarged scale, of the contact faces of the side rails of the upper and lower sections of the ladder.

Figure 6, plan view of said side rails, and

Figure 7, front elevation, on a still larger scale, of portions of the said upper and lower sections, showing the pulley arrangement for raising or lowering the upper section.

The letters of reference marked thereon indicate the same parts in all the figures.

This improvement relates to a ladder to be employed principally for gathering fruit from trees, and is so constructed and arranged that it can be used as a step-ladder, having a platform on which the operator can stand, and for supporting a basket, or other receptacle for fruit, and is readily convertible into an extension-ladder, when required.

The following description will enable those skilled in the art to understand its construction and operation.

This ladder is composed of two sections, the upper and lower, as seen in fig. 3. A, fig. 1, is one of a pair of side rails of the lower section. On its inside face are cut two longitudinal grooves, B and B', fig. 5, extending the whole length, as seen. On the upper end, in groove B', is a hole, C, and in the other groove, just below it, is an opening in which are placed two pulleys, D and D'. On the top of said rail is a bracketed support, E, for the platform, hereinafter referred to. Both rails are of corresponding construction, and are united in the usual way by rounds; a windlass-shaft, F, fig. 3, having its lever F' placed through its middle, being also inserted when said rails are put together. A pair of long braces, one of which is seen at G, fig. 1, are united by a set of rounds. On the upper portion of said braces, and supported therein, are two iron bars H H', fig. 3, and a bracketed support, I, similar to E, fig. 5, is also provided, as seen. The said braces are attached to the rails A of the lower section, before described, by hinges J, as seen in fig. 1.

The foregoing is a description of the step-ladder feature. I will now explain the construction of the extension arrangement. K, fig. 4, is one of a pair of side rails, provided on its outside face with two longitudinal grooves, L L'. On the lower end of groove L is an opening, M, and a little above it, in the other groove L', is another opening, in which is a pulley, N. Above this is a hole, O, for the pulley-cord, hereinafter mentioned. On the back edge of the said rail K is indented a series of notches, P. The construction of the opposite rail is in all respects similar. Both are united by rounds, as seen in fig. 3. On the bracketed supports I and E are two boards, Q Q'. The former may be secured permanently, the other so as to be removable. The upper or extension section is placed inside the lower section, back of the rounds, and so that the grooves of each section will come opposite, forming two continuous channels, as shown at R R', in plan view, fig. 6. In each of the channels R' is a pulley-cord, S, one end of which comes through hole O of the rail K, and is knotted to prevent drawing through. It (the rope) then passes up the said channel and over pulley D, and descends inside of pulley D' through same groove to the windlass F, to which it is made fast, as represented by the dotted and full lines in fig. 7. To keep the said extension section in place, when raised or lowered, a short tongue, T, passes through the side of rail K into the groove B' of rail A, and so for the opposite side. A second tongue, T', passes in like manner through rail A into the groove L of rail K, and so with the corresponding rail of the said upper section. The pulleys N N on the lower parts of rails K K serve as guides for the cords, and as friction-rollers in the ascent and descent of the said upper section.

The operation is as follows: When the ladder is required for use as a step-ladder the upper section is to be kept lowered, and the back structure swung out, as seen in fig. 1, so that the two boards Q and Q' of the platform are level. When the ladder is to be extended the upper section is elevated to the required height by means of the windlass, the back structure is then closed against the lower section, so as that the iron bars H H' shall

catch into two of the series of notches P of the extension, and all are secured by the catches provided for the purpose, as seen in fig. 2. It is obvious that by unhooking the said parts the notches P will be released from the said bars II H', so that the upper section can be lowered by reversing the motion of the windlass.

It will be seen that the pairs of bracketed supports I E are independent of each other, so that when the back structure is closed, as stated, the board Q' is in position for use.

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

1. The side rails A of the lower section, provided with longitudinal grooves B B', pulleys D D', opening C, and tongue T', and the side rails K of the upper section, provided with longitudinal grooves L L', roller N, opening M, tongue T, and hole O, all arranged and operating in combination with the cord S and windlass F, in the manner and for the purpose specified.

2. The bars H H', located and secured in the braces G, in combination with the notches P of the side rails K, operating as and for the purpose set forth

C. J. KOMAR.

Witnesses:

J. F. SINGLE,

M. S. HARVEY.