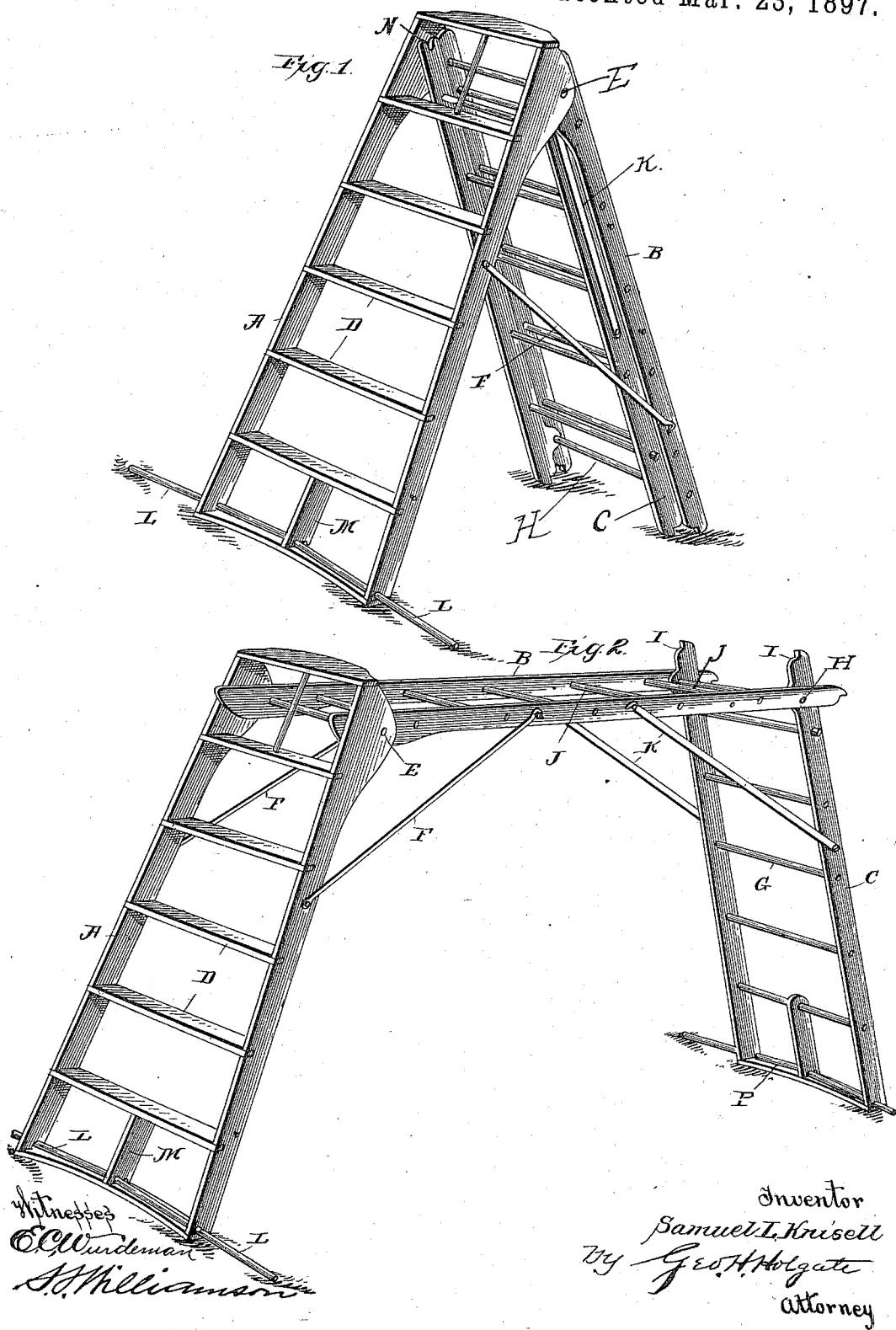


(No Model.)

S. L. KNISELL.
COMBINATION LADDER.

No. 579,437.

Patented Mar. 23, 1897.



UNITED STATES PATENT OFFICE.

SAMUEL L. KNISELL, OF CAMDEN, NEW JERSEY.

COMBINATION-LADDER.

SPECIFICATION forming part of Letters Patent No. 579,437, dated March 23, 1897.

Application filed September 12, 1896. Serial No. 605,569. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. KNISELL, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented a certain new and useful Improvement in Combination - Ladders, of which the following is a specification.

My invention relates to a new and useful improvement in combination folding ladders, and has for its object to provide a ladder of this description, which may be utilized as an ordinary step-ladder, as a platform-ladder, or as a straightway ladder, by which arrangement it may be put to a variety of uses and yet when not in use may be stored in a small space.

The three forms which I preferably contemplate adapting my ladder to will be hereinafter described in detail, and clearly set forth in the claims, reference being had to the accompanying drawings, forming a part of this specification.

Figure 1 is a perspective of my improved ladder when adjusted for use as a step-ladder, and Fig. 2 a similar view when my improvement is adjusted for use as a platform-ladder.

In carrying out the embodiment of my improvement I have here shown the ladder made in three sections, designated by A, B, and C, the former of which is in the general shape of a step-ladder, the steps D thereof being flat and set at the proper angle for ease of ascension. To this section is pivoted at E the section B, and in practice I prefer to utilize one of the rounds of the middle section for the pivoting of these sections by the extension of said round.

The rounds of the middle section B are similar to the rounds of an ordinary reach-ladder, and this section is so pivoted to the section A as to permit it to come into parallelism with the latter, and may be there held by contact upon one side with the top step of the section A and the proper adjustment of the brace-rods F. The section C, which is constructed similar to the section B and provided with the rounds G, is pivoted at H to the section B, so that it may also be swung parallel with the latter and held in this position by the notched ends I coming in contact with one of the rounds J of the section B and the proper adjustment of the stay-rods K.

When the several sections of the ladder have been thus adjusted, it may be seen that it will serve the purpose of an ordinary extension-ladder, by means of which access may be had to considerable heights with as much safety as though a single-section ladder were used.

When my improvement is to be utilized as a platform-ladder, the two end sections A and C are adjusted at something more than right angles to the central section B and there held by the stay-rods F and K, so that the central sections will serve as a platform upon which any suitable boarding may be laid for convenience to step on. When thus utilized, my improvement will be found very advantageous for papering, painting, or the like, and will obviate the necessity of erecting temporary scaffoldings for these purposes.

By the inturning of the section C to the position shown in Fig. 1 it will be seen that a perfect step-ladder is provided which may be used for all purposes for which such a ladder is adapted, and the sections A and B are there held at the desired angles to each other by the brace-rods F, and when it becomes desirable to store the ladder this is accomplished in a small space by the folding of the sections B and C against the section A in the usual manner of closing a step-ladder. In order to increase the stability of the ladder when used as a platform-ladder or an extension-ladder, the rods L may be arranged to slide outward from the foot of the section A at such an angle as to come in contact with the surfaces upon which said foot rests, thus increasing the bearing of this section to such an extent as to preclude the possibility of the ladder being tipped when in use. A brace M may be utilized for adding rigidity to the section A, and also serves for holding and guiding the rods L.

A similar arrangement P may be provided in connection with the outer end of the section C, thus further increasing the bearing of the ladder when used as a platform.

I have here shown the notches N in the ends of the rails of the section C, so that when desired one or more sections may be used in connection with the ladder, thus permitting its triple extension by the adapting of said notches and corresponding notches in the added sections over the rounds thereof.

Should it be found desirable to lighten my improvement when used as a step-ladder only, the section C may be removed therefrom by disjoining at the pivot-point H, and yet this
5 section may be again quickly added when occasion requires.

In practice my improvement is especially advantageous for household use or upon farms, as it may be quickly converted from
10 one form to another, thereby rendering it unnecessary to provide three forms of ladders for the uses for which my improvement is intended, and in manufacturing the cost of my improvement is but little in excess of the ordinary form of step-ladders.
15

Having thus fully described my invention, what I claim as new and useful is—

1. A ladder consisting of three sections, the two end sections being pivoted to an intermediate section, stay-rods pivoted on the side
20 rails of the end sections adapted to engage pins on the intermediate section, upwardly-curved braces extending across the outer ends of the side rails of the end sections, braces

extending between the first-named braces and
25 the lowermost rounds, rods slidably secured in openings at the lower ends of the last-named braces and the side rails, said rods being adapted to slide laterally to come in contact with the ground, as and for the purpose described.
30

2. In a ladder, an upwardly-curved brace secured across the ends of the side rails, a brace extending from the center of the first-named brace to the lowermost round, rods
35 slidably secured in openings at the lower end of the second brace and the side rails, said rods being adapted to slide laterally to come in contact with the ground, as and for the purpose described.
40

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

SAMUEL L. KNISELL.

Witnesses:

S. S. WILLIAMSON,
SAMUEL L. TAYLOR.