

No. 701,532.

Patented June 3, 1902.

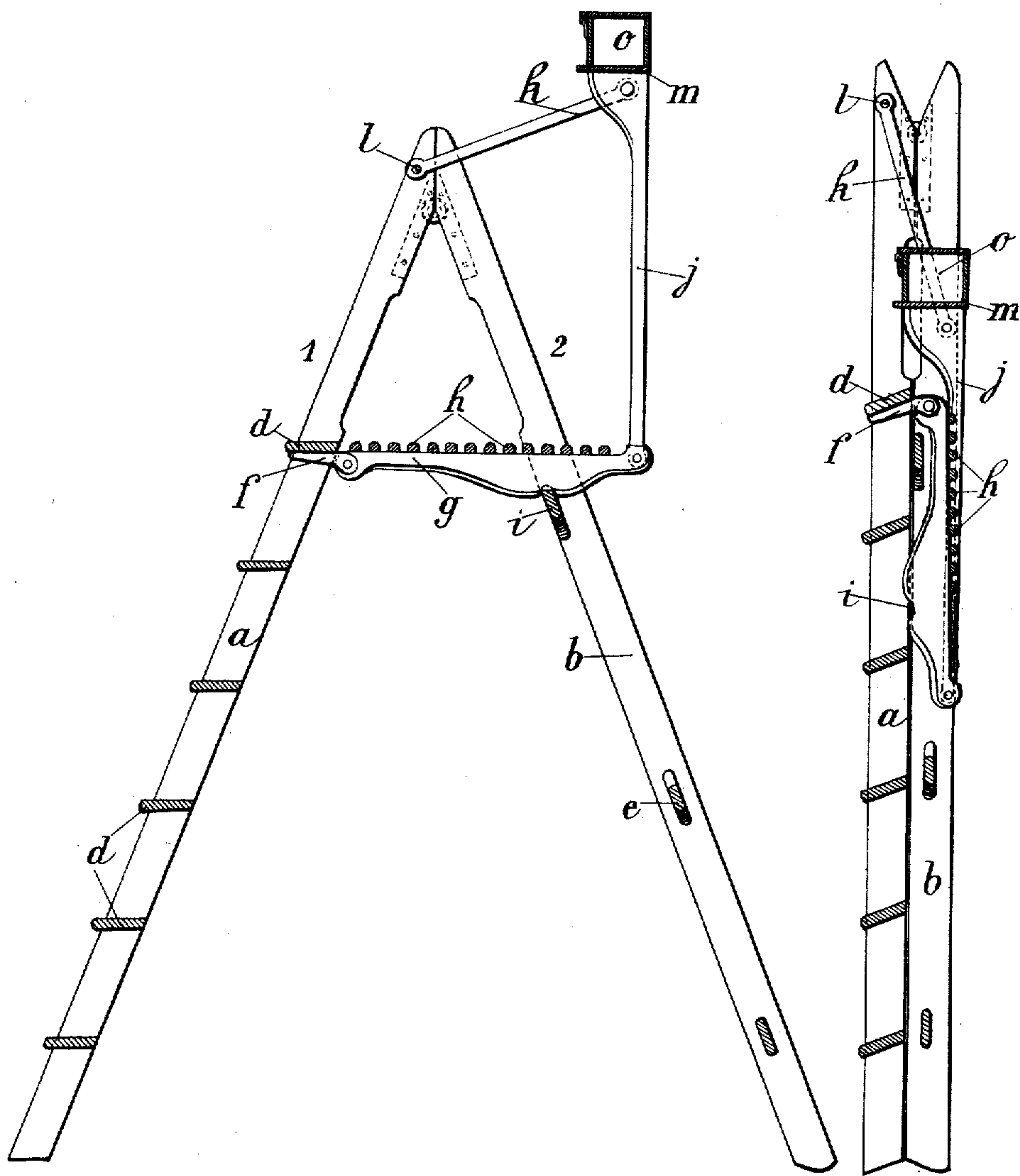
E. BARDIN.
DOUBLE OR STEP LADDER.
(Application filed May 31, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

Fig. 2.



Witnesses
La. Waldom
Com. Judge.

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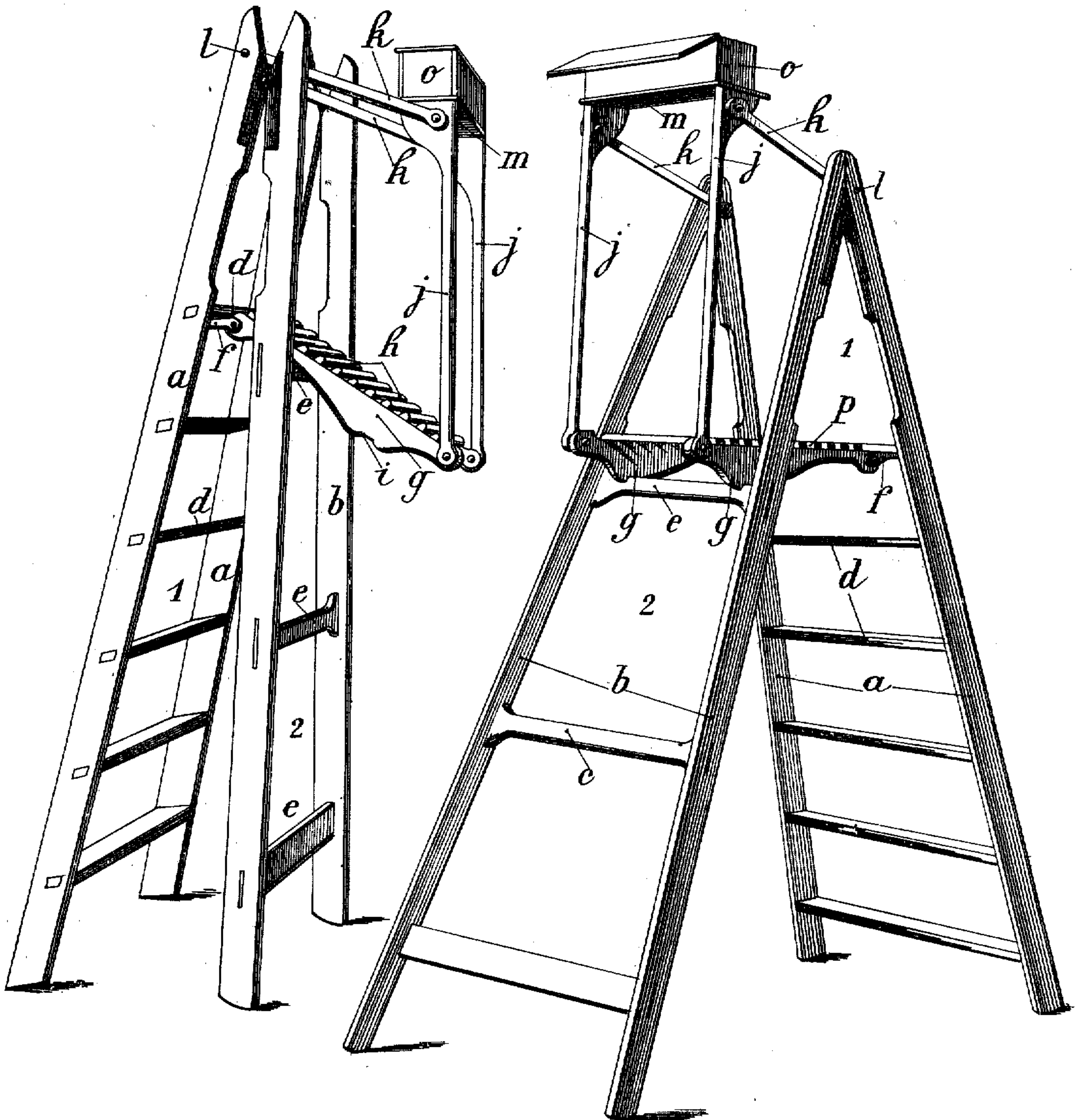
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2 Sheets—Sheet 2.

Fig. 3.

Fig. 4.



Witnesses
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Carr. Judge

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UNITED STATES PATENT OFFICE.

EMILE BARDIN, OF NANGIS, FRANCE.

DOUBLE OR STEP LADDER.

SPECIFICATION forming part of Letters Patent No. 701,532, dated June 3, 1902.

Application filed May 31, 1901. Serial No. 62,663. (No model.)

To all whom it may concern:

Be it known that I, EMILE BARDIN, manufacturer, residing at Avenue Gambetta, Nangis, Seine-et-Marne, in the Republic of France, have invented certain new and useful Improvements in Double or Step Ladders, of which the following is a full, clear, and exact specification.

This invention has for its object an improved system of step-ladder characterized by a platform being pivoted on one of the two legs of the ladder and adapted to fold down automatically when the legs are closed together and to lie in the space between the sides of the second leg and above one rung of the ladder. The said platform may be connected by means of uprights, themselves pivoted to arms pivoted to the same leg of the ladder, and the whole forms thus a ladder with a platform provided with a safety-rail serving as support for a tool-box, while the whole (platform, guard-rail, tool-chest, and pivoted legs) unfolds automatically when the two legs of the ladder are separated and folds down also automatically in the interior of one of the legs when they are approached in order to shut up the ladder.

A form of practically carrying out my invention is shown in detail in the accompanying drawings, in which—

Figure 1 is a longitudinal section of the double ladder completely open; Fig. 2, a longitudinal section of the double ladder closed; Fig. 3, a view in perspective of the ladder partly open, and Fig. 4 a view in perspective of the ladder fully opened.

In the various figures, 1 indicates the whole right-hand leg of the ladder, this leg or branch constituting the ladder proper crossed by rungs or steps, by means of which access is obtained to the platform. 2 is the left-hand leg, forming the counter ladder or support. Each of these two legs is, as in the case of ordinary ladders, formed of two uprights *a a* and *b b*, respectively. A hinge *c* connects each of these uprights *a* with the corresponding upright *b*. The ladder proper, 1, comprises a series of steps or rungs *d*, which vary in number according to the height. These rungs are fixed to the uprights *a*. The uprights *b* of the counter-leg are connected by cross-pieces *e*. The platform *p* is hinged to the uppermost

step by means of links or bolts *f*, fixed under the said step. This platform, which is of suitable form and dimensions, may be composed of two bars *g*, pivoted to the links *f* and held together by laths *h*, forming the flooring of the platform. The links *f* form on the rear edge of the step *d* a projection sufficient to allow of the platform, which is suspended by the hinges of the bars *g*, from lodging in the counter ladder or legs 2 when the ladder is closed, where it lies over the upper cross-bar *e*. This latter is arranged opposite the upper step *d*, but at a lower level, so as to serve as a support for the platform during the opening out of the ladder and also to serve as a support and as a fixing-bar when the ladder is completely opened. For this object the bars *g* have a lower profile or contour, such as to allow of their easily sliding on the upper cross-bar *e*. They are further provided toward the front with a notch *i*, forming a sufficient stop-catch, but still slight enough to allow of the cross-bars *e* escaping therefrom when the two legs 1 and 2 are approached to one another in order to close the ladder. At the front end of each of the bars *g* of the platform an upright *j* is pivoted by one of its ends. The opposite end of each of these uprights is in turn pivoted to an arm or rod *k*, which connects it with a pivot *l*, mounted at the summit of the upright *a* of the ladder proper.

The two pivoted uprights *j* are connected and supported by a board or cross-piece *m*, which is capable of serving as a fixing-support or as the bottom of a tool-box *o*.

The lengths of the uprights and of the arms *k* are suitably calculated in order that when the ladder is opened and the platform is by that action itself automatically brought into a horizontal position the two uprights *j* may assume a vertical position.

In addition the total length of the arms or rods *k* and the uprights *j* is such that when folded down the whole of the arms or rods and uprights, together with the platform proper, will lodge in the interior of the counter leg or ladder. A simple examination of the figures allows the working and the advantages of a double ladder thus constructed to be easily understood.

Let us suppose the ladder to be closed. By

separating the two legs 1 and 2 the upper cross-piece *e* is pushed, which raises the platform, the cross-piece sliding under the lower edge of the bars *g* until it engages in the notches *i*. Then the ladder is completely open, and the two legs 1 and 2, engaged in addition, bear against one another at the top of their uprights *a* and *b*. In this movement the uprights *j*, connected by the cross-piece *m*, have assumed a vertical position and form both a guard-rail and a support for the tool-box *o*, the lid of which may be operated by any ordinary means. In order to again close the ladder, it suffices without touching the platform to bring the two legs 1 and 2 together—that is to say, the ladder proper and the counter-ladder. The upper cross-bar *e* escapes from the notches *i*, and the platform pivoting downward is lowered by its own weight until it lodges in the counter-ladder.

Such a double ladder may be used for many purposes. It may be employed by electricians' workmen and for cleaning and painting houses and rooms, for garden-work, and the like.

It is evident that the details of the invention—such as the nature of the material of the uprights and steps or rungs, the size of section of the latter, their number, and the like—may be varied without in any way altering the principle of the invention. Further, in the case of very high and heavy ladders, the platforms of which are then of cor-

responding weight and dimensions, the raising of the platform for opening the ladder may be facilitated by suitable additional mechanical means—such as pulleys, cords, or even by springs arranged under the platform.

It will be seen that the arms *g* have cam-shaped lower edges. As shown in Fig. 2, when the ladder is folded the narrow portions of the arms allow the shelf to fold closely within the frame without interference with the cross-rod.

I declare that what I claim is—

A step-ladder comprising the limbs *a*, *b*, pivoted together, a platform *h* pivoted at one of its ends to one of the limbs, a support *e* on the other limb upon which the platform rests at or near its free end, said support when the ladder is folded moving toward the pivoted end of the platform to allow the said platform to fall at its free end, a tool-box, arms *j* connecting the free end of the platform with the tool-box and arms *k* connecting the tool-box with the ladder at or near its upper end, the said arms and tool-box moving downwardly when the platform falls at its free end upon the folding of the step-ladder, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

EMILE BARDIN.

Witnesses:

LOUIS GARDET,
EDWARD P. MACLEAN.