

No Model.)

2 Sheets—Sheet 1.

W. P. STIBBS.
STEP LADDER.

No. 491,820.

Patented Feb. 14, 1893.

Fig 1

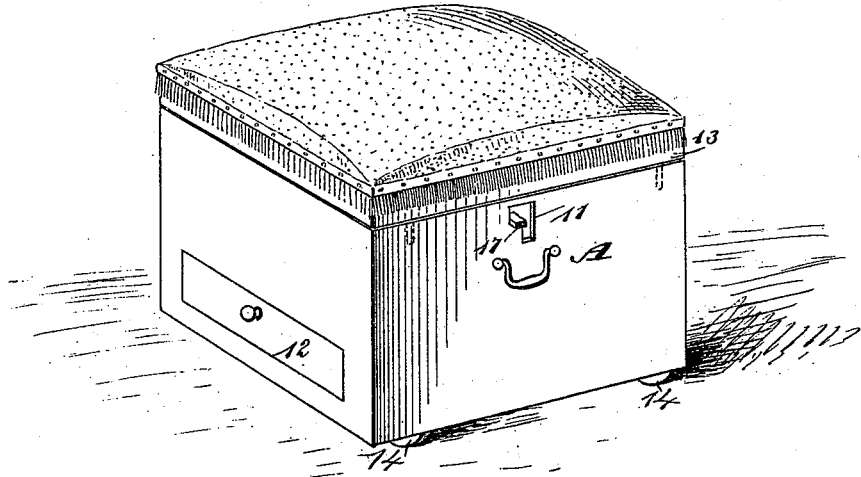


Fig 2

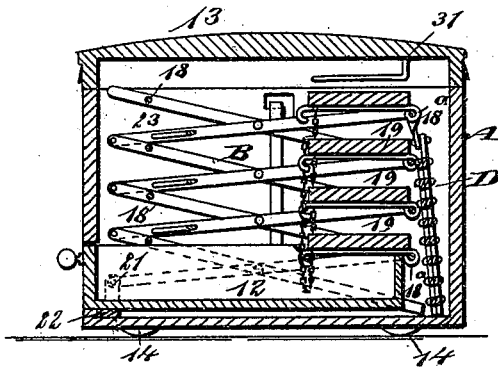
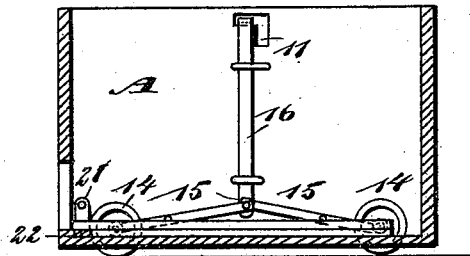


Fig 3.



WITNESSES:

H. Walker
C. Sedgwick

INVENTOR

W. P. Stibbs
BY Munn & Co
ATTORNEYS.

(No Model.)

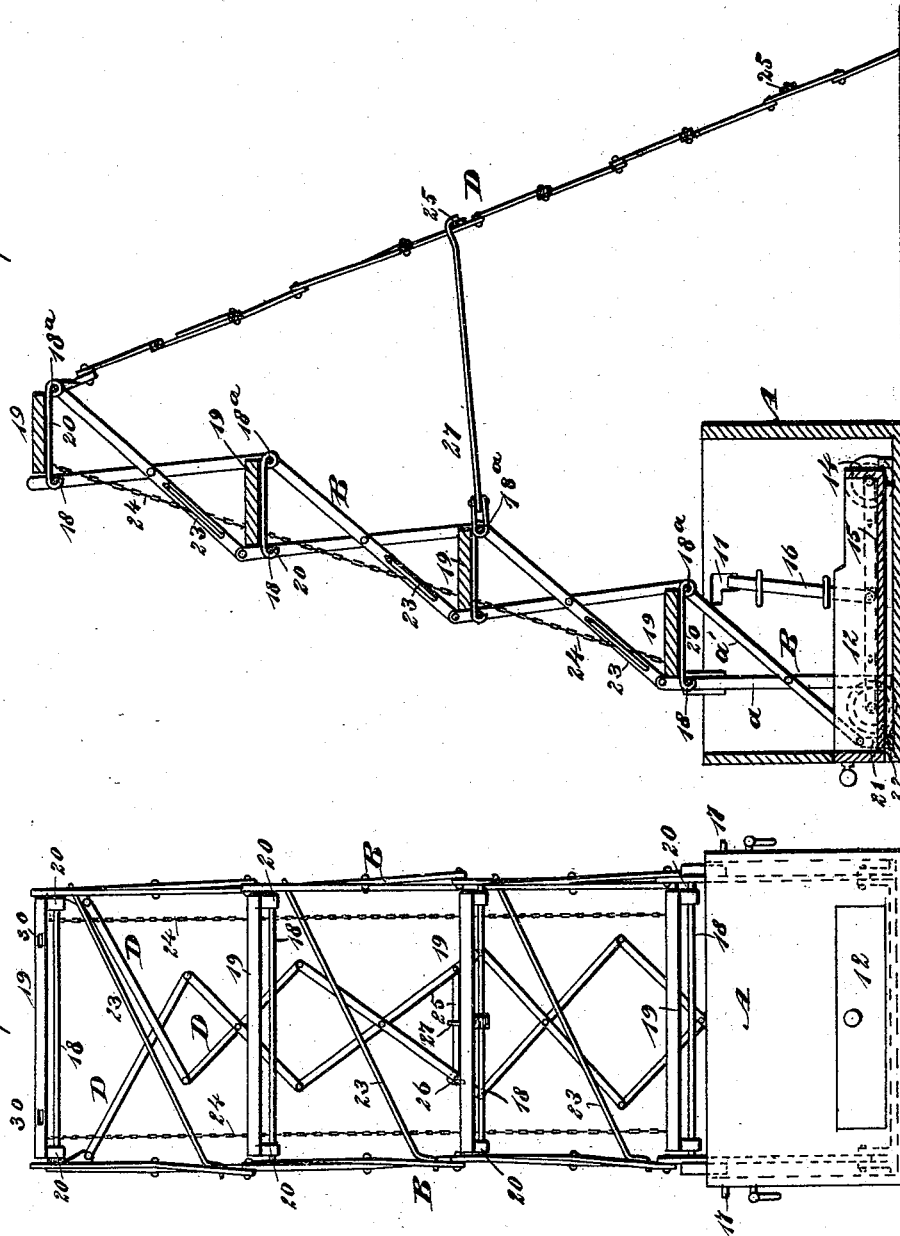
2 Sheets—Sheet 2.

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Fig. 5.



WITNESSES:

H. Walker
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INVENTOR

BY *W. P. Stibbs*
Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

WILLIAM P. STIBBS, OF BELLEVILLE, NEW JERSEY.

STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 491,820, dated February 14, 1893.

Application filed April 12, 1892. Serial No. 428,815. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. STIBBS, of Belleville, in the county of Essex and State of New Jersey, have invented a new and improved Step-Ladder, of which the following is a full, clear, and exact description.

My invention relates to an improvement in step ladders, and has for its object to provide a ladder of that character capable of being folded into an exceedingly small space when not in use, and to so construct the ladder that it may be employed in connection with a box provided with a covered top, the ladder when not in use being folded within the box and covered by the top of said box, producing thereby essentially an ottoman or stool.

Another object of the invention is to provide a means whereby the ladder may be expeditiously and conveniently drawn upward from the box, the box constituting its base, and quickly set up for use, and when set up wherein the ladder will be exceedingly strong.

It is a further object of the invention to construct a ladder of the type referred to in a simple and economic manner, and to locate it in the box so that the latter may be provided with a drawer adapted to contain tools useful around a house, and further wherein the box will be provided with casters, and a means for drawing the casters up in the box when the ladder is to be used, so that the box will have a firm bearing upon the floor or other support.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the box or casing, the ladder being folded up therein; Fig. 2 is a central vertical section through the box or casing and the ladder in its folded position; Fig. 3 is a section taken through the box or casing near one side, illustrating the manner in which the casters are manipulated; Fig. 4 is a front elevation of the ladder set up for use; and Fig. 5 is a central vertical sec-

tion through the ladder and the box, both being in the position shown in Fig. 4.

The box or casing A, is preferably made rectangular as illustrated, and is provided on each side near the top with an essentially L-shaped slot 11, and the box is further provided with a drawer 12, located either in the front or in the back and adapted to slide upon the bottom. The box has also a cover 13, adapted to close the same, and the cover may have either a plain or an upholstered top, so that when the cover is upon the box it has the appearance of an ottoman or a stool, and may be used as such.

The box is provided with four casters 14; these casters are each mounted to turn upon the end of a link 15. Two casters are located at each side of the box, and are capable of extending downward below the bottom through openings in the latter. The links of each set of casters are pivotally connected with a draw rod or bar 16, having vertical guided movement upon the inner side faces of the box, and each draw rod is provided with a head 17, which extends horizontally outward through one of the slots 11 above referred to. When the draw rods are pulled up so that their heads will engage with the upper walls of the slots 11, the inner ends of the links 15, will be likewise drawn upward, and the casters will be forced down through the slots in the bottom of the box as the links are pivoted to the sides of the box, as shown in Fig. 3. When, however, the heads of the draw rods are pressed down to the lower walls of the slots 11, the casters 14, are elevated or carried within the box, and the box rests securely upon its bottom.

In construction, the main or body portion of the ladder consists of sides B, which sides are made as lazy-tongs, and the lazy-tongs are connected by transverse rods 18 and 18^a, the rods being located at front and rear of the lazy-tongs; and upon each rear rod 18^a a step 19, is hinged, while each step is provided with a hook 20, extending beyond its front face. These hooks, when the steps are in their horizontal position extend over and engage with the front rods 18 of the lazy-tongs, as shown in Fig. 5, when the lazy-tongs are carried upward to their full extent, as the lower por-

tions of the lazy-tongs are secured within the box A.

The attachment between the lazy-tongs and the box is effected by pivoting one of the lower members *a'* of the tongs to vertical arms 21, formed upon the extremity of a bar 22, which bar is secured in the bottom of the box at the front, the other member *a* of the tongs being free at its lower end.

In order that the lazy-tongs forming each side may be braced and made strong against the pressure of a person ascending or descending or standing upon the steps, brace rods 23, are attached preferably to opposite diagonal members of the sides, as shown in Fig. 4. All of the steps are connected by chains 24, cables, or their equivalents, the said chains or cables being attached one to each end of the upper step and to each intermediate step at the same point and likewise to the lower step; by this means when the upper step is raised each intermediate and the lowest step will be elevated also.

The back support D of the ladder consists also of a series of lazy-tongs, the upper ends of the upper set of lazy-tongs being attached to the rear transverse rod 18^a at the top of the body of the ladder; and the lazy-tongs support D, is maintained in an extended or lengthened position when the ladder is set up by means of hooks 25, attached to one member of a lazy-tongs and engaging with a pin 26 upon the opposing member, as shown in Fig. 4. Any desired number of these hooks may be employed, and the back support is prevented from bulging outward by connecting a lengthy hook 27, with the central rear cross bar 18^a, as shown in Fig. 5, and connecting said hook with a shorter hook 25 upon the lower lazy-tongs support.

In the operation of setting up the ladder, supposing it to be folded within the box, the box cover is removed and the draw bars 16, are lowered to carry the casters 14 from the floor; the top step is then grasped and the ladder is carried upward until the lazy-tongs forming its sides have been extended as far as possible. The steps are then brought to their horizontal position, their hooks 20, engaging with the front cross bars 18. The steps will now be in position for use, and the hooks 20, will prevent the lazy-tongs from dropping, holding them in their elevated position. The next movement is to extend the lazy-tongs support D and carry the said support outward beyond the box, as shown in Fig. 5, the said support being carried outward the required distance to form a proper brace for the ladder. The short hooks 25 of the lazy-tongs support are then brought to a locking position, shown in Fig. 4, and the brace hook 27, is made to connect the ladder proper with the support D, as shown in Fig. 5. The ladder is now in position for use.

To pack the ladder the hooks 25 of the lazy-tongs support are drawn upward, permitting the said support to be contracted in length,

and the brace hook 27, is disconnected from the tongs support and the lower end of the latter is placed in the box so that it engages with the bottom at the back. The next movement is to draw the upper step upward, disengaging it from the top front cross bar 18, and as all the steps are connected by the chains or cables 24, each step will be disengaged from this front cross bar at the same time. The ladder is then suffered to drop down in the box, the steps will fold one over the other, the lazy-tongs at the back will contract and those at the sides likewise, and the ladder will be in the position shown in Fig. 2. The top may then be placed upon the box and the casters may be forced outward by lifting the draw bars 16 upward.

The drawer 12, occupies a central position within the box, and its rear end passes under the lower step when the ladder is folded, as is likewise shown in Fig. 2, and the ladder in no manner interferes with the proper manipulation of the drawer.

It will be observed that this ladder is exceedingly simple, durable and capable of easy manipulation, and that when in its extended position it will be firm and will stand a great weight, while when the ladder is not in use it may be folded compactly and concealed within an ornamental casing which casing may in its turn be utilized as a stool, ottoman, or like piece of furniture; and further that as the box is capable of having a drawer placed therein such tools and implements as are convenient in working around a house may always be at hand.

When the ladder is elevated it may be desirable to provide a platform at the top as a support for a pail, for instance, a hammer, tacks or other articles used around a house in connection with such a ladder. In order to accomplish this result openings 30, are made in the top step of the ladder, and hooks 31 are attached to the undersurface of the cover near one edge, which hooks are adapted to enter the openings 30 in the top step of the ladder when the top of the box is located over the said step, and when the box top is in locking engagement with the upper step of the ladder, the top will extend some distance beyond the rear of the step, forming thereby a platform capable of supporting articles placed upon it.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent,—

1. A step ladder consisting of lazy-tongs sides, front and rear essentially parallel cross bars connecting the side lazy-tongs, steps hinged upon the rear bars, and a locking device carried by the steps and adapted for engagement with the front bars of the tongs, substantially as shown and described.

2. A ladder consisting of lazy-tongs sides, essentially transversely aligning cross bars connecting the side lazy-tongs, steps hinged to the rear cross bars and having locking en-

gagement with the front cross bars, a chain or cable connection between all of the steps, a folding rear support connected with the body of the ladder, and braces and stays for
5 said support, substantially as specified.

3. The combination, with a box, of a ladder consisting of side lazy-tongs pieces secured at their lower ends within the box, front and rear cross bars connecting the lazy-tongs sides,
10 steps hinged to the rear cross bars and having locking engagement with the front cross bars, a rear support pivotally connected with the upper portion of the body of the ladder

and consisting of lazy-tongs, locking devices connected with the rear support of the ladder, and a brace connection between the ladder and its rear support, substantially as shown and described, whereby the body of the ladder and its support may be folded down within the box or be carried outward
20 therefrom, substantially as and for the purpose specified.

WILLIAM P. STIBBS.

Witnesses:

HENRY J. BLY,
JOHN C. SHELTON.