

P. E. VIERHELLER.
LADDER.
APPLICATION FILED DEC. 8, 1910.

1,024,380.

Patented Apr. 23, 1912.
2 SHEETS—SHEET 1.

Fig. 4.

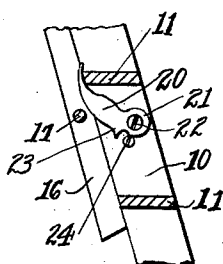
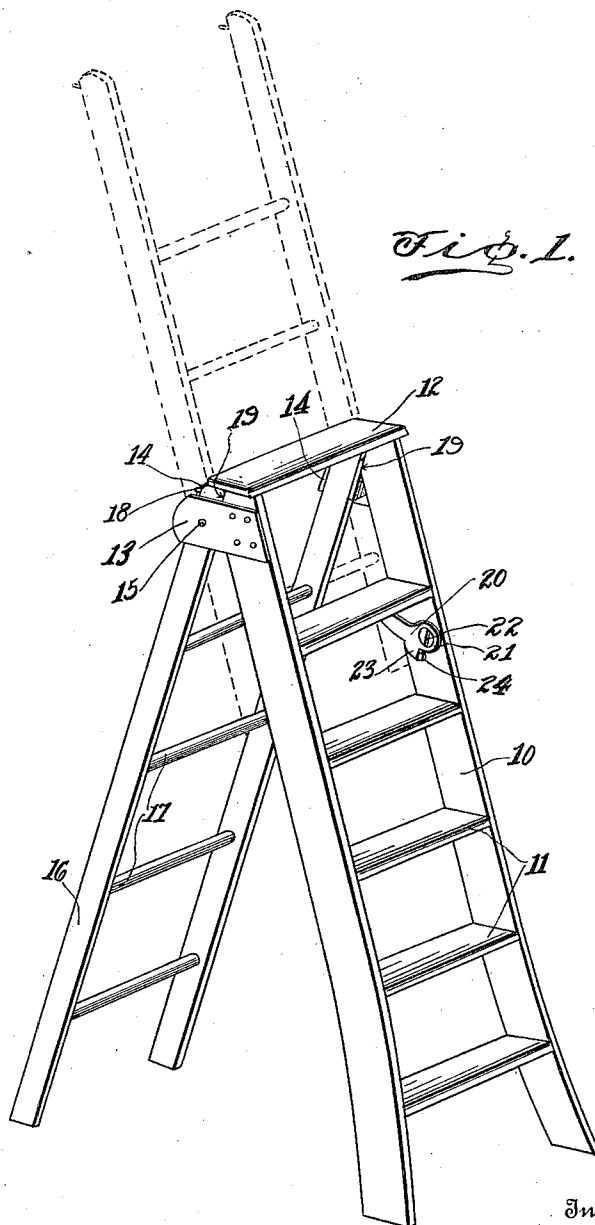


Fig. 1.



Inventor

Witnesses
W. C. Fielding
Francis Boyle

P. E. Vierheller.

By

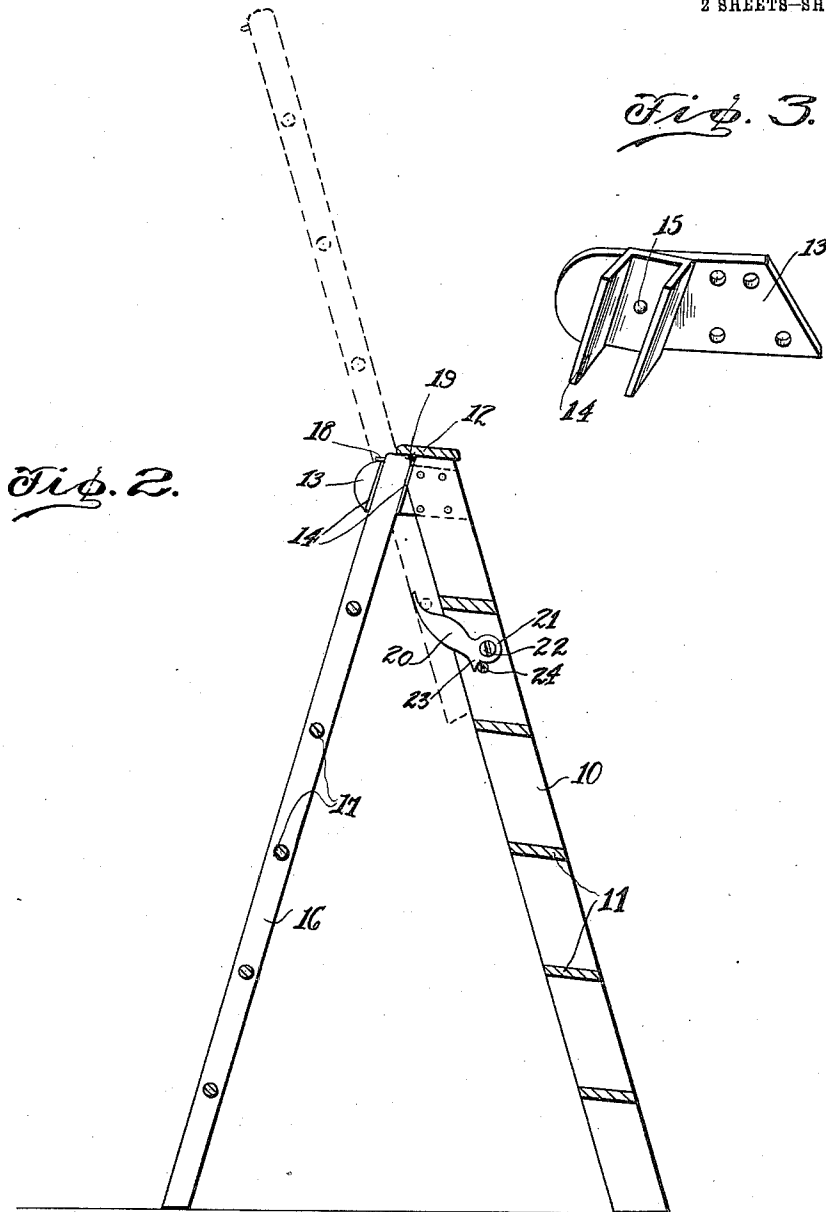
Charles Chandler

Attorneys

P. E. VIERHELLER.
LADDER.
APPLICATION FILED DEC. 8, 1910.

1,024,380.

Patented Apr. 23, 1912.
2 SHEETS—SHEET 2.



Witnesses

W. C. Fielding
Francis Boyle

Inventor

P. E. Vierheller.

By *Charles Chandler*

Attorneys

UNITED STATES PATENT OFFICE.

PAUL E. VIERHELLER, OF VICTORIA, TEXAS.

LADDER.

1,024,380.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed December 8, 1910. Serial No. 596,281.

To all whom it may concern:

Be it known that I, PAUL E. VIERHELLER, a citizen of the United States, residing at Victoria, in the county of Victoria, State of Texas, have invented certain new and useful Improvements in Ladders; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to combination step and extension ladders, and has for an object to provide a device of this character in which the prop legs may be slid bodily longitudinally of the main ladder legs to form the extension ladder, a novel gravity pawl automatically locking the prop legs in their extended position.

A further object of the invention is to provide a device of this character in which the prop legs when released from their extended position, will gravitate instantly into operative position as prop legs in forming a step ladder.

With the above objects in view the invention consists essentially in the novel form of joint between the main and prop legs of the ladder, and more generally consists in the novel details of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawing forming part of this specification, Figure 1 is a perspective view of a combination step and extension ladder constructed in accordance with my invention. Fig. 2 is a longitudinal sectional view through the device. Fig. 3 is a detail perspective view of the prop leg hinge device. Fig. 4 is a fragmentary sectional view showing the position of the gravity pawl when the prop legs are being moved to their extended position.

To construct a combination step and extension ladder in accordance with my invention, I form ladder legs 10 and fit the same in the usual manner with a series of steps 11 and a top or cap piece 12. Attached to the legs near the top are two plates 13, each plate being equipped on its inner face with a swivel U-shaped bracket 14 connection between the bracket and plate being made by an ordinary rivet 15 or similar connector. The prop legs 16 are fitted with the usual rungs 17, and these prop legs are slidingly fitted within the brackets 14 and are capable

of being slid longitudinally through these brackets into extended position as shown in dotted lines in Figs. 1 and 2. A stop stud 18 is fixed to the edge of each prop leg, near its top, and the stops engage with the top edges of the bracket legs and limit the gravitating movement of the prop legs when the latter are gravitating into their inclined position in forming a step ladder. It will be noted that when the prop legs are in their inclined position, the upper edges of the legs bear upon beveled surfaces 19 formed upon the prop leg confronting edges of the ladder legs 10 and also bear upon the bottom face of the cap piece 12. By this construction the pivots 15 of the swivel brackets are relieved somewhat of the weight of the ladder proper and also the inclined prop legs are held against collapsing inwardly without the use of the usual cross bars between the prop and ladder legs.

In order to automatically lock the prop legs in their extended position in forming an extension ladder, a gravity pawl 20 is arranged upon the inner face of one of the ladder legs. The gravity pawl is formed from a single blank of material, one end of which is formed with an eye 21 which receives a pivot screw 22, and this end is also provided on one side with a tooth 23 which engages against a stop 24 and limits the gravitating movement of the pawl. The pawl is of sufficient length to extend considerably beyond the prop leg confronting edges of the ladder rails 10, and is designed to be moved in the direction of the ladder steps 11 by the advancing rungs of the prop legs when the latter are being moved to their extended position. When the extending movement of the legs ceases, the pawl immediately gravitates to the position shown in Fig. 2 and engages underneath the overlying prop rung. To release the prop legs from their extended position, it is simply necessary to elevate the legs a trifle until the pawl disengages from the rung of the legs, and then manually hold the pawl released until the legs have gravitated to their operative position as prop legs.

It will be noted that by virtue of the U-shaped swivel brackets the prop legs are guided throughout their extension and gravitating movements. It will further be noted that there is no locking means between the prop legs and swivel brackets so that wear upon these parts from such means as usually

employed, is obviated and thus the long life of the ladder promoted.

What is claimed, is:—

A combination step and extension ladder
5 comprising a pair of ladder sections, one
constituting the main section and the other
the prop and extension section, plates se-
cured to the legs of the main section, channel
brackets swiveled upon the said plates, the
10 legs of the extension and prop section being
slidable in the channel brackets, a plate con-
necting the upper ends of the legs of the
main section and extending beyond the sides
thereof and constituting stops to engage the
15 ends of the prop and extension section when

the same constitutes a prop, thereby limiting
its upward movement when the ladder is in
the form of a step ladder, pawls pivoted to
the main ladder section to engage the rungs
of the other section when the same consti- 20
tutes an extension section, and stops engag-
ing the pawls for limiting their movement
in one direction substantially as and for the
purposes set forth.

In testimony whereof, I affix my signature, 25
in presence of two witnesses.

PAUL E. VIERHELLER.

Witnesses:

WM. F. KOCH,
IRVIN KIBBE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."