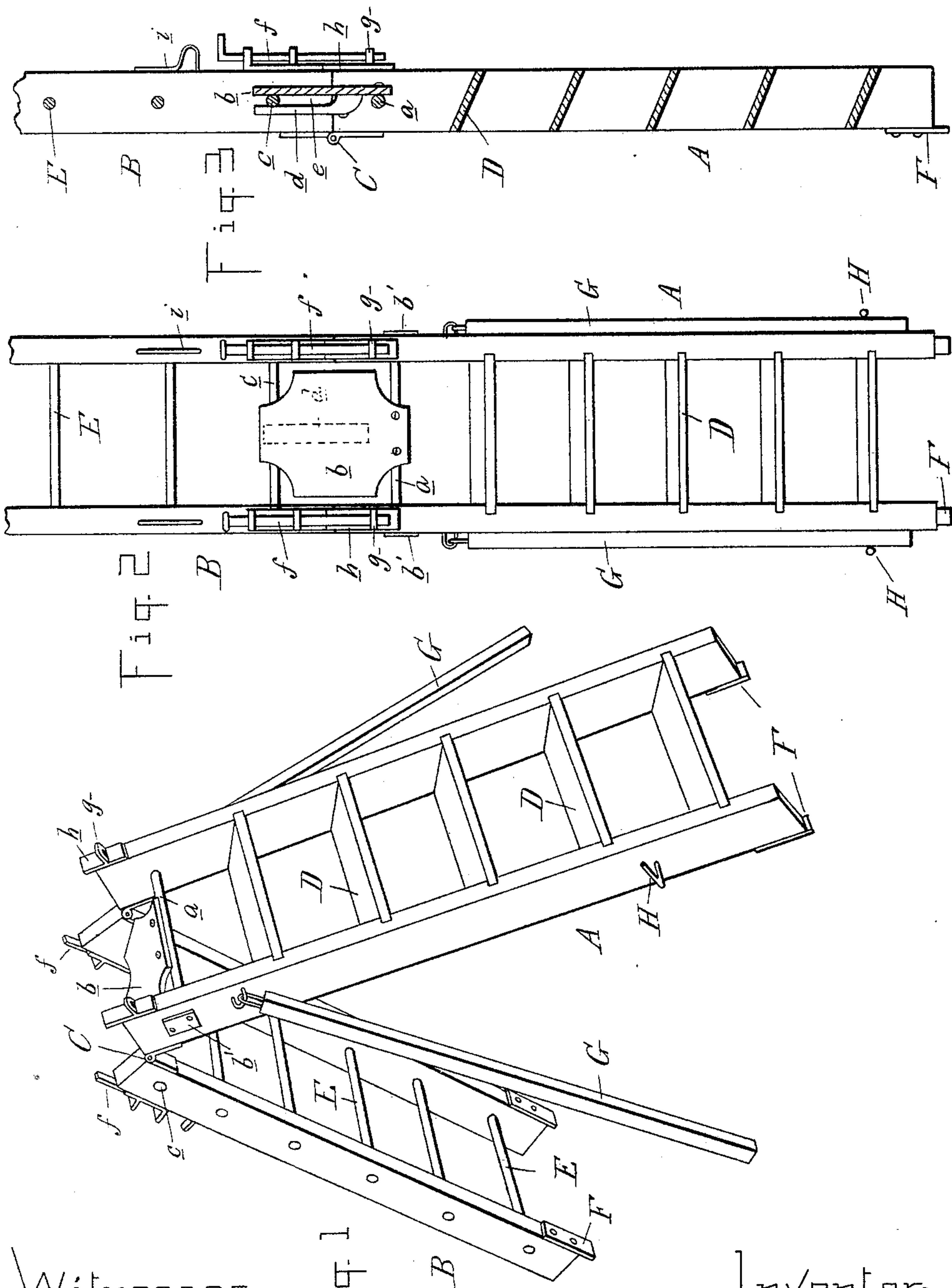


(No. Model.)

W. SOPER.
EXTENSION STEP LADDER.

No. 410,612.

Patented Sept. 10, 1889.



Witnesses:
D. M. Hulbert
J. Paul Mayer

Inventor:
William Soper
By *Mos. S. Sprague & Son*
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM SOPER, OF SIBLEY, MICHIGAN.

EXTENSION STEP-LADDER.

SPECIFICATION forming part of Letters Patent No. 410,612, dated September 10, 1889.

Application filed April 27, 1889. Serial No. 308,827. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM SOPER, a citizen of the United States, residing at Sibley, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Extension Step-Ladders, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to new and useful improvements in extension step-ladders; and the invention consists in the peculiar construction and arrangement of the parts, whereby a strong and substantial step-ladder is constructed which may be readily changed into
15 a rigid extension-ladder, and, further, in the peculiar construction of the top step and the devices for locking the two hinged parts of the ladder together in their extended position, all as more fully hereinafter described and claimed.

20 In the drawings which accompany this specification, Figure 1 is a perspective view of my improved ladder as in use as a step-ladder. Fig. 2 is a plan view of the same as extended, and Fig. 3 is a vertical central section thereof.

25 A and B are the two parts of the step-ladder, hinged together by any suitable hinges C. The part A, I preferably make with steps D and the part B with rounds E. The lower ends of the two parts I preferably provide with the shoes F, with sharp points adapted to catch into the floor or ground and prevent
30 the ladder from slipping or separating.

35 G are side braces pivotally connected at their upper ends with the sides of the ladder, and of suitable length to hold the step-ladder firmly from tipping to the sides when in use. When the ladder is used as an extension-ladder, these braces may be fitted into the hooks H, as shown in Fig. 2.

40 To enable the ladder to be extended, I preferably secure the upper round *a* of section A pivotally in the sides, securing it in position by means of the plates *b'*, secured over the ends. To this round I secure the top step *b* in any suitable manner and forming a sliding connection between this upper
45 step and the top round *c* of the other part of the ladder by means of the brace *d* of such

construction as to form the slot *e*, preferably open-ended between the brace and the upper step.

f are bolts secured to the part B and engaging into the keepers *g*, secured upon the part A. The base *h* of the keepers I preferably extend a little distance beyond the end of the sides of the part A, overlapping upon the other part to strengthen the joint when in
50 the extended position shown in Figs. 2 and 3.

i is a stop to prevent accidental displacement of the bolts *f* when the ladder is used as a step-ladder.

55 The parts being thus constructed and arranged and the ladder being used as a step-ladder, it will stand in the position shown in Fig. 1. The upper step *b* being secured to the round *a* at one end, which latter has a pivotal connection with the sides and a sliding connection at the other end with the round *c* of the other part of the ladder, it is evident that the two parts may be brought
60 into line, as shown in Figs. 2 and 3, to make an extension-ladder, the base *h* of the keeper extending over the joints between the two parts and being locked together by means of the bolts upon either side.

65 In order to give the operator an opportunity for a foothold upon the rounds *a* and *c* when the ladder is used as an extension-ladder, I cut away the step *b* at each corner, as shown, so as to give a hand or foot hold on both sides of the step. This step serves to strengthen the ladder when used as an extension-ladder, as well as serving in the capacity of a broad and convenient step when
70 it is in use as a step-ladder.

75 It is evident that by simply withdrawing the bolts the two parts will again assume an angular position to be used as a step-ladder, the braces G being used to steady it from lateral displacement.

What I claim as my invention is—

1. In a ladder consisting of two parts hinged together, the combination of the sides thereof with a top step having a pivotal connection with one side through the top round on that side and a sliding connection with the top round of the other side, and securing devices—such as the bolts *f*—substantially as described.
80
85
90
95
100

2. In a ladder composed of two parts hinged together, the combination of a round *a*, pivotally held in the top of one part, the plates *b'*, for securing said round *a* in position, the
5 top step *b*, secured at one end to the round *a* and having a sliding connection with the round *c*, and the securing-bolts *f*, substantially as described.

3. In a ladder composed of two parts hinged
10 together, the combination of a round *a*, pivotally held in the top of one part, the plates *b'*, for securing said round *a* in position, the

top step *b*, secured at one end to the round *a* and having a sliding connection with the round *c*, the securing-bolts *f*, the overlapping
15 base *h*, and the stop *i*, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 4th day of March, 1889.

WILLIAM SOPER.

Witnesses:

J. PAUL MAYER,

A. B. EATON.