

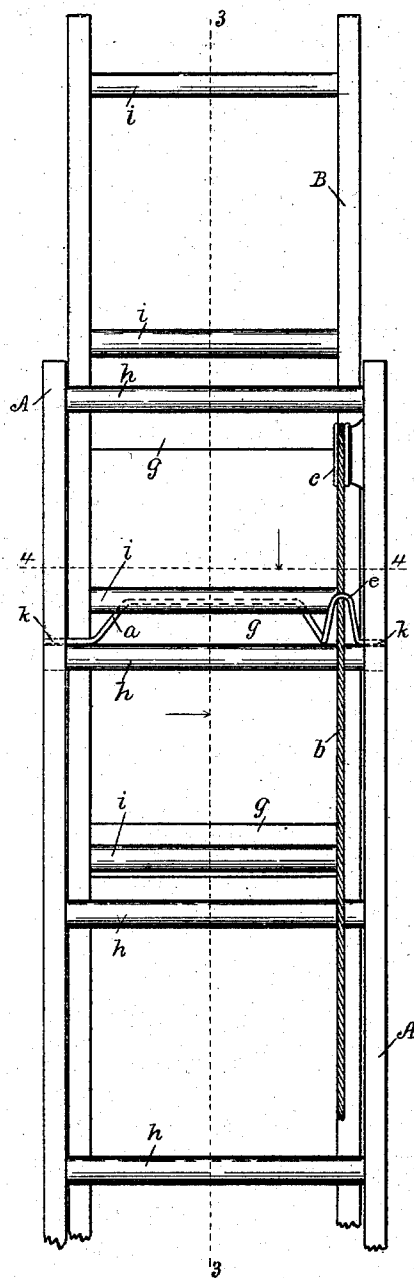
(No Model.)

L. C. TIEFEL.  
EXTENSION LADDER.

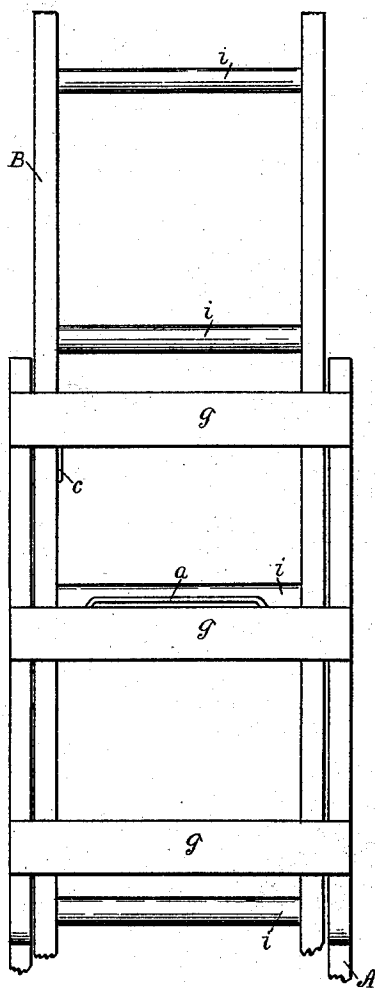
No. 505,072.

Patented Sept. 12, 1893.

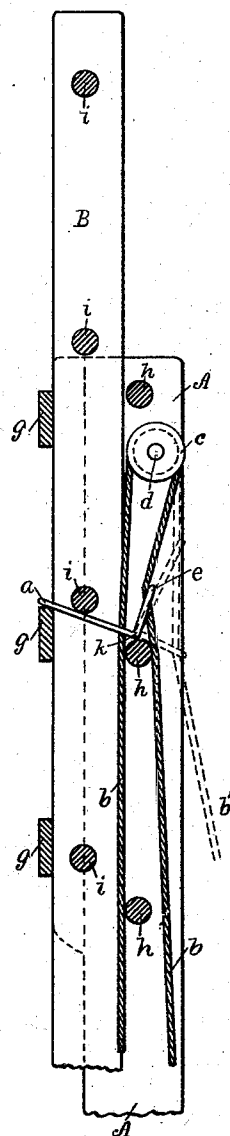
*Fig. 1.*



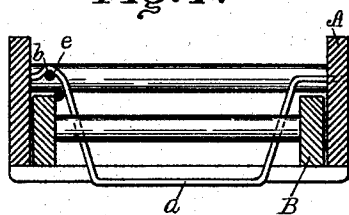
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Attest:

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Inventor:

L. C. Tiefel,  
By G. B. Whitmore,  
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# UNITED STATES PATENT OFFICE.

LEONARD C. TIEFEL, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF  
TO HERBERT R. LEWIS, OF SAME PLACE.

## EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 505,072, dated September 12, 1893.

Application filed May 15, 1893. Serial No. 474,340. (No model.)

*To all whom it may concern:*

Be it known that I, LEONARD C. TIEFEL, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Extension-Ladders, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

My invention is an extension ladder so arranged that a person standing upon the ground is enabled to operate the upper extension part of the ladder and the catch or holder therefor, by means of a cord passing over a pulley held by the lower or main part of the ladder.

The invention is hereinafter fully described and more particularly pointed out in the claims.

Referring to the drawings Figure 1 is a front elevation of parts at the upper end of the ladder. Fig. 2 is a rear elevation of the same. Fig. 3 is a longitudinal section taken on the dotted line 3 3 in Fig. 1 and viewed as indicated by the arrow pointed thereon. Fig. 4 is a transverse section on the dotted line 4 4 in Fig. 1 seen from above.

Referring to the parts shown, A is the lower or main part of the ladder, and B the upper or extension part.

*a* is the catch or holder for the upper part of the ladder, held in bearings in the part A.

*b* is a rope or cord by means of which the upper part of the ladder is raised or lowered and by means of which, also, the catch *a* is operated.

*c* is a pulley turning upon a horizontal stud *d*, at the top of the main part A, over which the cord *b* passes. The cord is secured at its lower end to the lower rung of the part B of the ladder. The catch is formed preferably of a bent iron rod and provided with an extension loop *e*, projecting in front. The sides of the main part, A, of the ladder are slightly widened at their upper ends and provided with rigid cross bars *g g g*. The part B of the ladder is held between the bars *g* and the rungs *h* of the part A, within which bearings it is enabled to slide freely in longitudinal directions. The part B is provided with rungs *i*, similar to those of the part A, and the catch

*a* crosses the plane of the part B in position to pass under a rung *i* to hold the part B in any position of elevation. The bearings, *k*, of the catch *a* are in the sides of the part A of the ladder and immediately above a rung *h*, as shown, said rung forming a part of the bearings of the catch, and when the catch falls backward under a rung *i* to hold the upper part of the ladder, it rests at its outer part, upon a bar *g*. Thus the catch is supported jointly by a rung and a cross bar, both rigid with the main part A of the ladder. From the pulley *c* the rope hangs down in reach of a person at the foot of the ladder, and a downward pull upon the rope tends to slide the part B of the ladder upward in its bearings in A. When the parts are in the positions shown in Fig. 3, say, and it is wished to either raise or lower the part B, the rope is first pulled downward sufficiently to raise the rung *i* clear from and out of the way of the catch *a*. The rope is then carried outward to the position shown by dotted lines at *b'*, which, pressing the loop *e*, turns the catch outward to the position shown in dotted lines. The catch is held by gravity in this position, it being there overbalanced forward of the rung *h*. If, now, the rope be carried back next the rungs *h* (to the position shown by full lines) so as to clear the loop the part B of the ladder may be raised or lowered by the cord at pleasure, the catch being now entirely out of its way. To throw the catch into action again across the plane of the upper ladder B, the rope, while moving upward, is brought forward against the loop as shown at *b'*. The friction of the rope against the inner portion of the loop will carry the latter upward and tip the catch over backward again into the position shown by full lines, in which it rests upon the bar *g*.

It will be understood that the catch is maintained in its two positions by gravity; that is to say, it tips backward by gravity into action, and forward by gravity out of action, as shown respectively in its full line and dotted line positions, its center of gravity in either position, overhanging its bearings. The bearings of the catch in the part A being over and di-

rectly upon the rung *h*, it is prevented by the latter from swinging too far forward on account of the loop or other parts of the catch bearing against the rung. Thus the rung  
5 forms a stop to prevent the catch tipping too far forward, while the bar *g* forms a stop which prevents it tipping too far backward.

What I claim as my invention is—

10 1. An extension ladder having a lower section provided with rungs in its sides substantially midway between the edges, cross bars upon its rear edges, a pulley at its upper end, and an upper sliding section held between  
15 said rungs and cross bars, in combination with a catch for said upper section, held by the lower section, having a main part adapted to extend across the plane of the upper section, and a loop at right-angles with said main part, and a cord upon the pulley secured to

the upper section and passing through said loop, substantially as shown and described. 20

2. An extension ladder having a lower main part provided with rungs and rear cross bars, and an upper sliding part held by said main part, in combination with a catch for said  
25 sliding part having bearings in said main part at the upper side of one of said rungs, said catch being adapted to fall or tip forward or backward from the action of gravity, and stops to control the action of said catch, sub-  
stantially as shown and described. 30

In witness whereof I have hereunto set my hand, this 12th day of May, 1893, in the presence of two subscribing witnesses.

LEONARD C. TIEFEL.

Witnesses

ENOS B. WHITMORE,  
M. L. WINSTON.