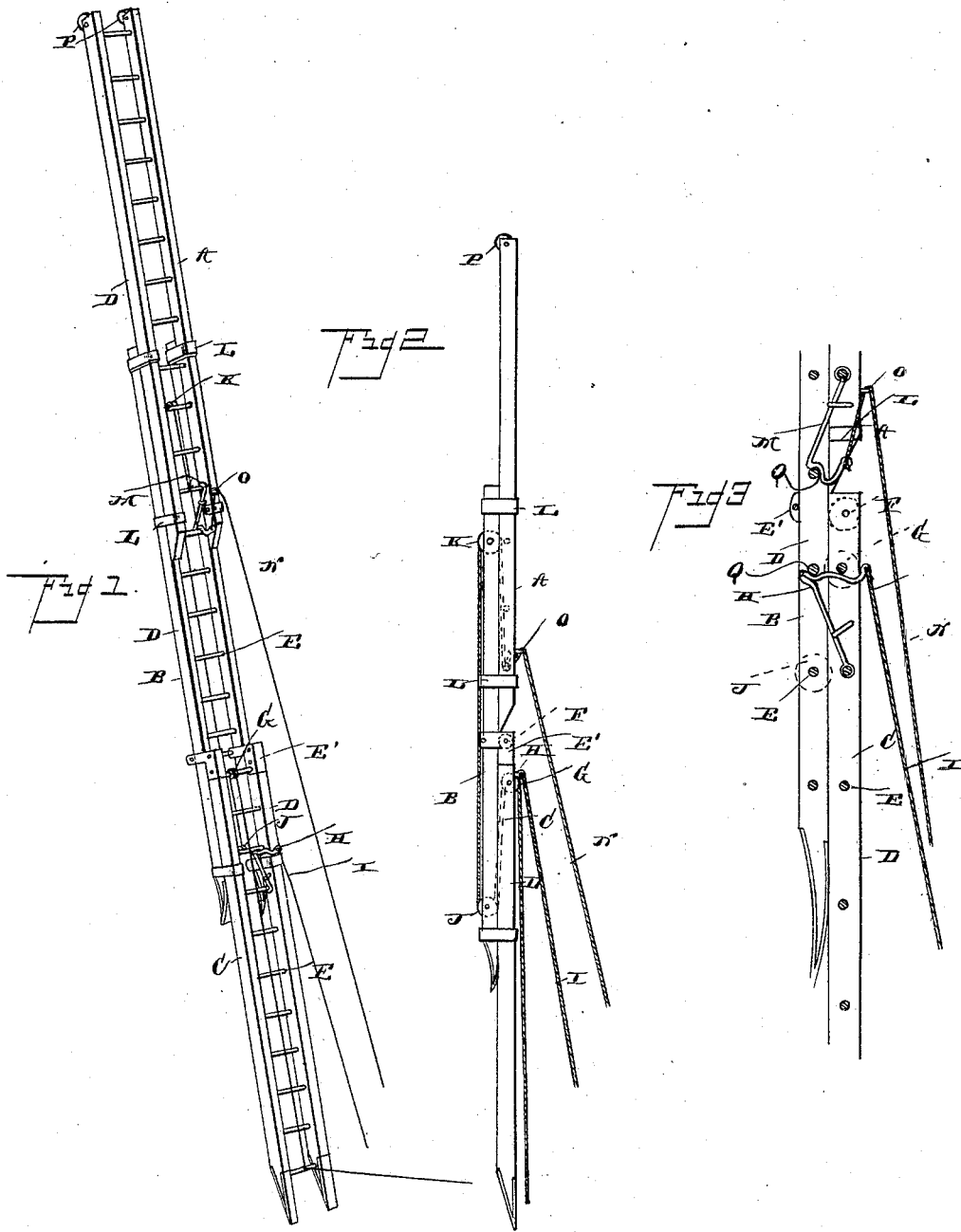


(No Model.)

W. H. MITCHELL.  
EXTENSION LADDER.

No. 418,046.

Patented Dec. 24, 1889.



Witnesses

*John Imrie*  
*R. H. Bishop.*

By his Attorneys,

*C. A. Snow & Co.*

Inventor

*William H. Mitchell.*

# UNITED STATES PATENT OFFICE.

WILLIAM H. MITCHELL, OF BENTONVILLE, ARKANSAS.

## EXTENSION-LADDER.

SPECIFICATION forming part of Letters Patent No. 418,046, dated December 24, 1889.

Application filed June 15, 1889. Serial No. 314,423. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. MITCHELL, a citizen of the United States, residing at Bentonville, in the county of Benton and State of Arkansas, have invented a new and useful Extension-Ladder, of which the following is a specification.

My invention relates to improvements in extension-ladders; and it consists in certain novel features hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a perspective view of my improved ladder, showing it extended and raised. Fig. 2 is a side view showing it as it appears when not extended, and Fig. 3 is a longitudinal section showing the pawls or stops.

My improved ladder is composed of a series of sections A B C, which are adapted to slide upon each other, so as to be extended, and each section is composed of side bars D D and rounds E, secured between the same. The lower ends of the sections B C are tapered, as shown, so as to provide points which will prevent slipping of the ladder when the upper section only is extended, and the said sections are held together by means of the straps E', secured to the section B and passing over the side bars of the section C, as shown. The upper ends of the side bars of the section C are provided with rollers F, which bear upon the side bars of the section B and thereby reduce the friction and wear between the parts. At its upper end the lower section C is provided with a pulley G, over which the hoisting-rope passes, as shown, and to one of the side bars of the said section I pivot a pawl H, which normally projects inward, so as to engage under one of the rounds of the central section D, to support the said section in its raised position. This pawl is disengaged from the said round by a rope I, secured thereto and extending to the ground. The central section is provided at its ends with the pulleys J K, and the hoisting-rope is secured at one end to the lower rounds of the upper section A, passes therefrom to and over the pulley K at the upper end of the central section, thence downward to and under the pulley J at the lower end of said section, and thence up to and over the pulley G

at the upper end of the lower section, as before stated. The upper section is held to the central section by means of the straps or loops L, secured to one section and passing around the side bars of the other section, as will be readily understood. The upper section is provided with a pawl M, which is adapted to engage over one of the rounds of the central section and thereby support the upper section at the desired height, and this pawl is disengaged by means of a rope N, secured thereto and passing upward a short distance to a guide O, and thence downward to the ground. Each of the sections is provided with rollers, which move over the side bars of the adjacent section, so that the said sections will move upon each other readily, and also to reduce the wear and friction upon the parts, and the upper section is provided at its upper end with rollers P, which move over the wall or the side of the building, so that the ladder can be readily raised.

It will be observed that the pawls are constructed of wire bent to provide a curved shoulder Q, adapted to engage the round of the adjacent ladder-section. This construction provides a very cheap and simple pawl, which will have almost no weight and which will effectually engage the ladder-rounds and prevent movement of the sections.

From the foregoing description it is thought the manner of using my device will be readily understood. The ladder is carried to the desired point and, after being raised, is extended by drawing downward on the hoisting-rope, so as to raise the central and upper sections, as before described. When it is desired to lower the ladder, the pawls are released and the sections will descend of their own weight. When the ladder is lowered, the central section passes under the lower sections and the upper section abuts against the lower section, thereby giving the ladder a very compact form, so that it occupies but very little room. The hoisting-rope is arranged between the planes of the round, so as not to interfere with the movement of the same, and the pawls effectually prevent undue lowering of the sections. Any number of sections can be employed without departing from the principles of the invention.

When it is desired to lengthen the ladder, the additional sections necessary are attached to the lower section, so that it becomes an intermediate section.

5 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A ladder composed of a series of sections sliding one upon each other, the lower  
10 ends of the side bars of the lower sections being tapered, so as to provide points which will prevent slipping of the ladder when section A is raised, and straps secured to one section and embracing the other section, and  
15 the rollers mounted on the side bars of one section and engaging the side bars of the other section, as set forth.

2. The combination of the section C, the section B sliding thereon, the section A slid-

ing on the section B, the pawl pivoted at 20 its upper end to the section A and provided at its lower end with a curved shoulder adapted to engage one of the rounds of the section B, the rope secured to said pawl and extending to the ground, the pawl pivoted at 25 its lower end to the section C and provided in its upper end with a curved shoulder adapted to engage one of the rounds of the section B, and the rope secured to the said pawl and extending to the ground, as set 30 forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM H. MITCHELL.

Witnesses:

I. Z. MITCHELL,

B. F. ALLISON.