N. S. BOYNTON.

LADDER.

No. 189,690. Patented April 17, 1877.

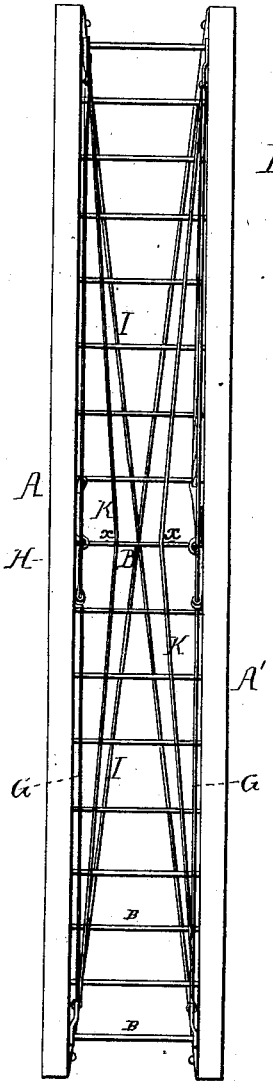

Fig. 1.

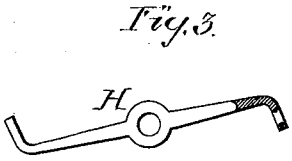

Fig. 3.

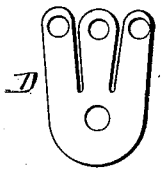

Fig. 4.

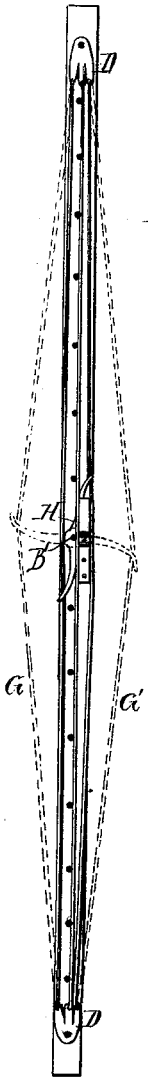

Fig. 2.

Witnesses.
Henry Howson, Jr.
Harry Smith.

Nathan S. Boynton,
by his Attorneys
Howson and Son

UNITED STATES PATENT OFFICE.

NATHAN S. BOYNTON, OF PORT HURON, MICHIGAN, ASSIGNOR TO WILLIAM L. BANCROFT, JAMES GOULDEN, AND NATHAN S. BOYNTON, OF SAME PLACE.

IMPROVEMENT IN LADDERS.

Specification forming part of Letters Patent No. **189,690**, dated April 17, 1877; application filed October 12, 1876.

To all whom it may concern:

Be it known that I, NATHAN S. BOYNTON, of Port Huron, St. Clair county, Michigan, have invented certain Improvements in Ladders, of which the following is a specification:

The object of my invention is to construct a ladder which, although comparatively light, shall be so effectually stayed as to be especially serviceable for the use of firemen, the stays being, at the same time, so connected to the ladder that it can occupy but little space on a ladder-truck.

In the accompanying drawing, Figure 1 is a front view of my improved ladder; Fig. 2, a vertical section of the same; and Figs. 3 and 4, detached views of parts of the ladder.

A and A′ are the opposite poles of the ladder, and are connected together in the usual manner by the rungs B.

On the inside of each pole, and near each end of the same, is a plate, D, the four plates being, by preference, secured to the pole by the end rungs of the ladder, as shown, and each plate having a hole, through which the rung passes into the pole.

The plates at one end of the ladder have eyes or other provisions, through the medium of which the stays illustrated in the drawing and referred to hereafter are attached to the plates, the plates at the opposite end having such means of connection with the stays that the latter can be tightened when necessary.

The two stays G and G′ for imparting longitudinal rigidity to the ladder are made of wire rope, and perform the duty of stays only when the two-armed levers H, hung to the middle rung B′ of the ladder, occupy the position shown in Fig. 3, and by dotted lines in Fig. 2, the arms having eyes, or being forked, for the reception of the wire stays.

When the ladder is not required for service, the levers may be turned on the rung B′ to the position shown by plain lines in Fig. 2, when the stays G G′ will present no obstacle to the placing of a number of the ladders upon each other and in small compass on a truck, or to the sliding of the ladders into the contracted spaces which are allotted to them in the ladder-trucks used by firemen.

Owing to the longitudinal rigidity imparted to the ladder by the stays G G′, it can be raised with much less difficulty than an ordinary ladder, the elasticity of which, owing to the sagging of the outer end when being raised, is a source of great annoyance and much loss of time.

In order to impart lateral steadiness to the ladder, permanent stays K extend from each of the four plates D to the middle rung B′ of the ladder, to which they are connected at the points *x x;* and additional stays I extend from the end of one pole to the opposite end of the other pole, the stays crossing each other, as shown in Fig. 1.

It will be understood that the levers H are provided with suitable spring-catches for holding the same in position when extended, as shown by dotted lines in Fig. 2.

I claim as my invention—

1. A ladder in which movable levers H are combined with stays G G′, substantially in the manner described.

2. The combination of the poles A A′ of the ladder, the end rungs of the same, and plates D, for receiving the ends of stays.

3. The combination of the poles A A′, stays K, and rung B′, to which the said stays are attached.

4. The combination of the opposite poles A and A′ of the ladder with the diagonal wire-rope stays I, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NATHAN S. BOYNTON.

Witnesses:

HENRY HOWSON, Jr.,

HARRY SMITH.