E. Tanner.

Fire Escape.

No. 39,689. Patented Aug. 25, 1863.

Fig. 3.

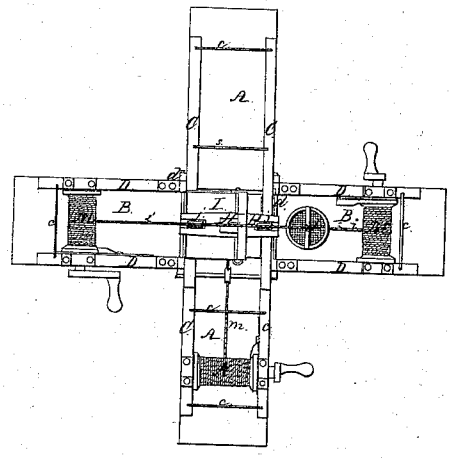


Fig. 1.

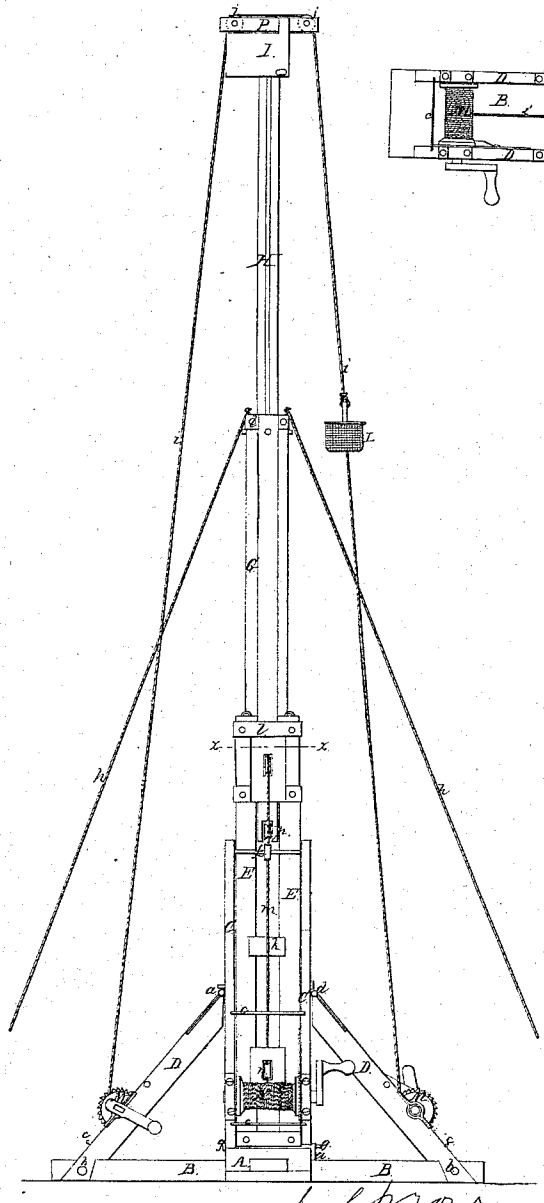
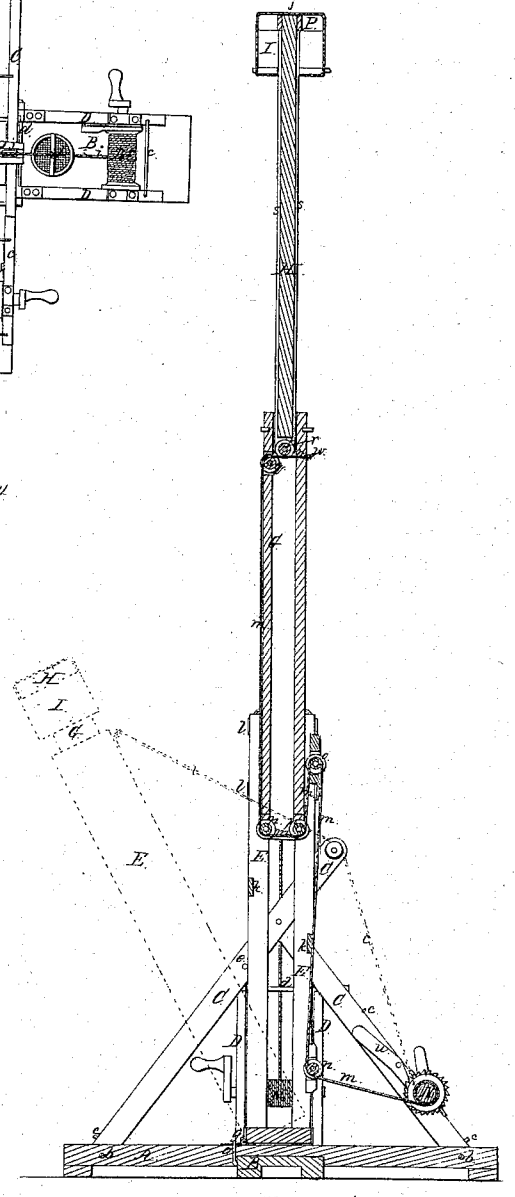


Fig. 4.



Fig. 2.



Witnesses;
F. P. Woodruff.

Inventor;
Eli Tanner.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

ELI TANNER, OF BOWMANSVILLE, NEW YORK.

IMPROVEMENT IN PORTABLE OBSERVATORIES AND SIGNAL-TOWERS.

Specification forming part of Letters Patent No. **39,689**, dated August 25, 1863; antedated July 10, 1862.

To all whom it may concern:

Be it known that I, ELI TANNER, of Bowmansville, in the county of Erie and State of New York, have invented a new and Improved Portable Observatory or Signal-Tower; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification—

Figure 1 being a side elevation of my improved observatory or signal-tower, represented complete and nearly extended to its full height; Fig. 2, a central vertical section thereof in a plane at right angles to the view in Fig. 1; Fig. 3, a plan of the same; Fig. 4, a horizontal section in the plane indicated by the line *x x*, Fig. 1.

Like letters designated corresponding parts in all of the figures.

The main parts in the construction of the observatory or signal-tower are the base, the extension-shaft, and the braces. With these all the other parts are connected. These main parts are united together by readily separable joints, so as to enable the whole to be quickly taken apart, and placed together compactly for the purpose of portability and to be as readily united again.

The base consists of two cross-timbers, A B, of suitable dimensions, the one being so let into the other at their crossing, and otherwise so arranged as to keep both held together, and make them rest firmly on the ground. Hooks *a a*, or their equivalents, may be employed to hold them from separating.

The braces consist of two (double or single) pairs or sets, C C and D D, one set on each cross-timber of the base. For the upper cross-timber, A, of the base there are two braces, C C, at each side, each side pair thereof meeting and being united together at their upper ends, and at their lowers ends being attached to the cross timber near the ends thereof. There are also two braces, D D, at each end of the lower cross-timber, B, (though one at each end might serve the purpose,) the upper ends thereof being secured or jointed to the side C braces, C C, of the cross-timber A, respectively, and the lower ends being attached to the cross-timber B near the ends thereof.

In order to readily join these braces to and separate them from the base and each other, they are either let into notches in the edges of the cross-timbers A B, and held there by pins *b b* or binding-hooks *c c*, as shown in the drawings, or they may be hinged to said cross-timbers, or otherwise secured, in an equivalent manner, so as to serve the purpose of portability, and of readily putting up and taking down, while the upper ends of the braces D D are jointed to the braces C C at *d d*, as shown, or in any other equivalent manner. The braces are thus made to readily take off or fold together compactly, and while they firmly sustain the shaft in a vertical position, they are not attached to it at all.

The lower section E of the shaft just fits closely between the side braces, C C, and it is hinged to the cross-timber A of the base only at one corner, as shown at *g*, so that it may be conveniently hoisted from a horizontal to a vertical position, as indicated by the red lines in Fig. 2. This is readily done by attaching a cord, *t*, (as shown by red lines in the same figure,) to its upper end, and extending it over a sheave, *f*, mounted in the projecting upper ends of two of the braces C C, and thence to one of the windlasses N, with which the observatory is provided. When raised to the vertical position, the shaft is held there by a pin, *e*, Fig. 2, passing through the braces C C, or in any equivalent manner. The joint *g* is readily separable, so as to allow the shaft to be entirely removed from the base.

The shaft is composed of any convenient number of sections E G H, one sliding freely but closely into another, as shown. The lower section E is largest, and receives the next section, G, which, in turn, receives the next smaller section, H, and so on, only three being shown in the drawings. The lower and largest section E is composed of four upright pieces of timber or scantling, placed parallel in the four corners of a square, and held at the proper distance apart, so as to receive the next smaller section by cleats or braces *k k*, and bound firmly together by metallic bands *l l*. The next section, G, is also composed of four pieces of scantling; but, instead of being placed in the corners of the square, they are placed in the middle of the sides, so as to leave square notches in the corners to receive the inner corners of the outer section E, as clearly shown in Fig. 4, and thus keep the

sections mutually in place. Two of the pieces of scantling in this section should lap over the other sufficiently to enable all to be joined together. The third section, if made of four timbers, is constructed in the same way as the first, and the fourth like the second, and so on in like manner; but the last and smallest section, H, need be only a single timber, as shown in the drawings, closely fitting into the hollow of the next larger one. All these timbers, as well as those of the base and the braces, may be of pine or other light wood.

In order to extend the inner sections to their full height, I use a peculiar but very simple and effectual device. It consists of a single rope or cord, *m*, of proper size and strength, attached at one end near to the upper end of the last upper and inner section but one G, as at *w*, Fig. 2, thence extending down round a sheave, *r*, in the lower end of the upper section H, thence up over a sheave, *g*, in the upper end of the section G, opposite to the point of attachment *w*, thence down around a sheave or sheaves, *p p*, in the lower end of the same section, G, thence up over a sheave, *o*, in the upper end of the next larger section, E, thence down round a sheave, *n*, in the lower end of the same section, E, (thence continuing thus alternately round sheaves situated successively in the upper and lower end of each additional larger section, if any,) and finally around a windlass, N, mounted on a set of the braces C C, all substantially as shown in Fig. 2. By this simple arrangement of a single rope, *m*, each section is raised, in order, to its full height, and held there by turning the windlass N and holding it wound. Thus the inner or lightest section, H, is first raised and supported by the cord, as shown; then the next section, G, is raised in like manner, the drawings showing it not fully raised, in order to indicate the act of raising more clearly, while the rope at the bottom of the inner section indicates the manner in which the rope sustains the section after it is raised. If it is desired to raise the larger section, G, first, the smaller section, H, is coupled to it by a hasp or otherwise. The windlass N has a pawl, *u*, as usual, to keep the rope from unwinding. The sections are again lowered by lifting away the pawl *u* and gradually turning back the windlass, thus unwinding the rope. When any section, as H, is made of a single piece of timber, a single sheave, *r*, will suffice at the lower end; but when the section is composed of four timbers, as G, two sheaves, *p p*, should be placed in its lower end, as represented in Fig. 2. This method of raising and lowering the sections successively possesses great advantages of simplicity, effectiveness, and security. Grooves *s s* are made in the sections for the rope *m* to run in when necessary.

Guys *h h*, Fig. 1, may be attached to one or more of the sections to steady the shaft when required.

The inner or upper section, H, has a suitable staging or stand, I, attached to its upper end to hold the observers or signal-men. It may be provided with railings around its edges simply, or it may be inclosed by bullet-proof sides, if desirable. The observers may mount the first section, E, into this stand before the inner sections are raised, and then hoisted the remainder of the way with the sections themselves; but frequently it may be desirable to ascend and descend while the observatory remains fully extended, and it may be preferable to hoist the observers at all times by separate or additional means. I provide this in the following manner:

A cross-head, P, is firmly secured upon the upper end of the upper section H, as shown. In the two ends of this cross-head are respectively two sheaves, *j j*, within notches of the said cross-head. Over these sheaves extends a cord or rope, *i*, the two ends of which are respectively wound around windlasses M M, mounted on the braces D D on opposite sides of the shaft, substantially as represented in the drawings. To this cord or rope a basket, L, is secured for holding the persons or articles to be raised and lowered. By turning the windlasses M M simultaneously in one direction the basket is raised, one windlass giving out the rope as fast as the other winds it up, so as to keep the rope taut at all times. By turning the windlasses simultaneously in the opposite direction the basket is lowered.

The great advantage of this arrangement is that the weight draws with the same force on both sides of the shaft, thus preventing any tendency to draw the shaft to one side or to tilt it over.

An observatory or signal-tower thus constructed may readily be made to raise the observer or signal-bearer to a height of one hundred and twenty-five or one hundred and fifty feet, is easily drawn by four horses, all the smaller sections of the shaft being inclosed in the outer section, and the cross-timbers of the base, with their braces and appendages, comprising the only other separate parts to be handled. The whole may be put up and extended in a few minutes after the ground for observation is reached, and as quickly taken down and packed again for transportation. It may be raised in a grove or forest, close to an enemy, without being discovered, and is rapidly moved from place to place.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The method of combining the base, the braces, and the extension-shaft so as to be separate or readily separable, for the purpose of readily putting up and taking down and packing for transportation, substantially as described.

2. The method of arranging and combining the parallel timbers composing the successive sections of the extension-shaft, substantially as herein set forth.

3. The arrangement and combination of the single rope *m* and the sheaves in the upper and lower ends of the section E G H, for the purpose of raising and sustaining said sections in succession, substantially as herein specified.

4. The combination and arrangement of the cross-head P, rope *i*, and windlasses M M, or their equivalents, substantially as and for the purpose herein specified.

ELI TANNER.

Witnesses:
J. S. BROWN,
EDM. F. BROWN.