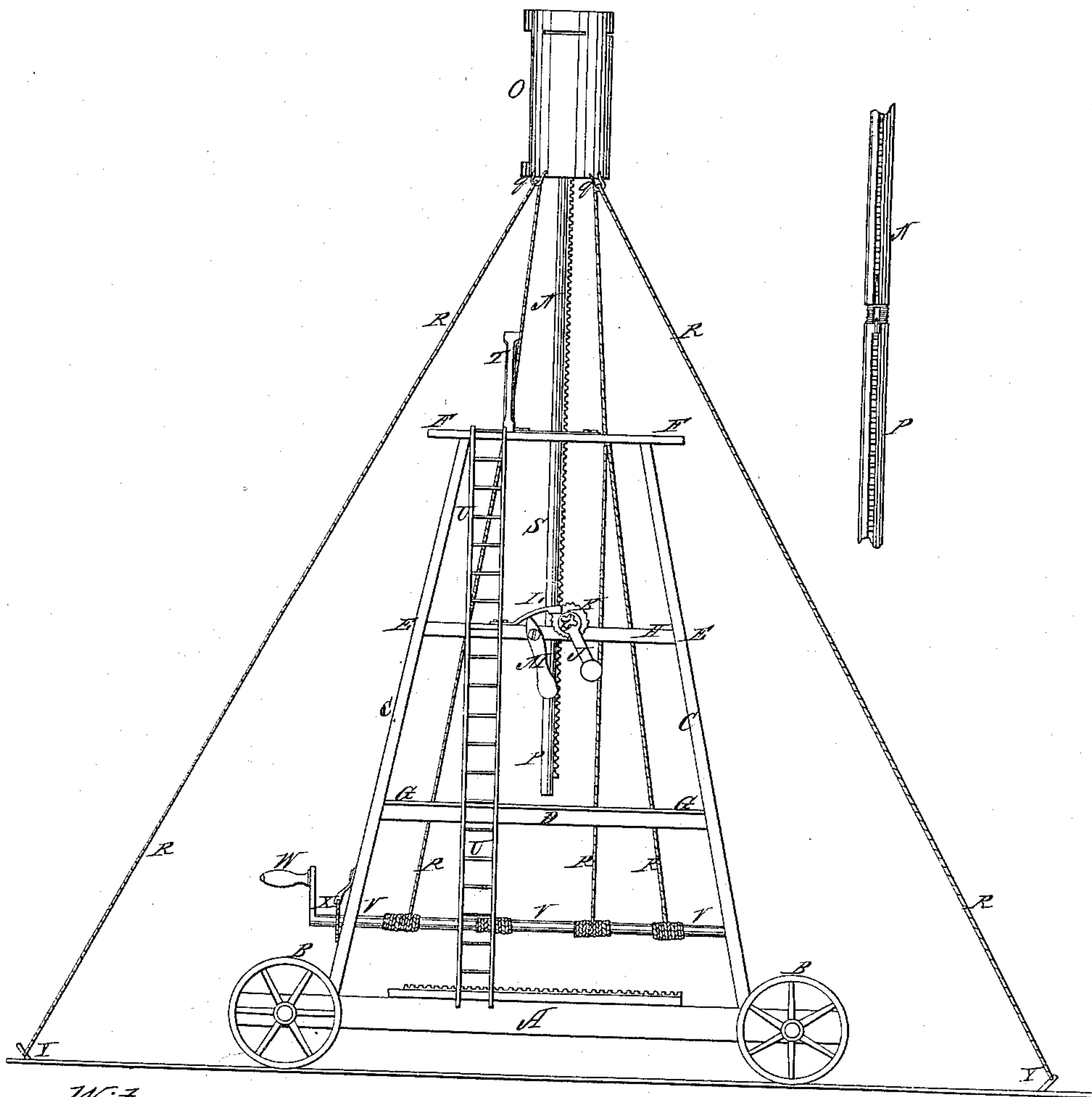


*T. Welham.*

*Fire Escape.*

*Nº 37,207.*

*Patented Dec. 16, 1862.*



*Witnesses:*

*Chas. F. Gansbury  
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# UNITED STATES PATENT OFFICE.

THOMAS WELHAM, OF NEMAHA COUNTY, NEBRASKA TERRITORY.

## IMPROVEMENT IN MILITARY OBSERVATORIES.

Specification forming part of Letters Patent No. 37,207, dated December 16, 1862.

*To all whom it may concern:*

Be it known that I, THOMAS WELHAM, of Nemaha county, in the Territory of Nebraska, have invented a new and useful Portable Military-Observatory; and I do hereby declare the following to be a full and correct description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved apparatus; and Fig. 2, an enlarged view of parts of two of the supporting rods or shaft-pieces, showing the mode of uniting them.

The object of my invention is to provide for the use of armies in the field a portable and convenient apparatus by which an extensive view from a considerable height can at any time be commanded, for whatever purpose such a view may be necessary or desirable. To attain this object, the only appliance now on use is the balloon, which is at once cumbrous, expensive, and uncertain, and extremely liable to injury or destruction.

The great Napoleon on some occasions made use of a wooden tower of considerable height, from the top of which he commanded a view of the field of battle and directed its operations; but such a tower could only be removed to a new situation by being taken down and rebuilt, at great expense of time and labor and difficulty of transportation, while my observatory can be as readily transported as a piece of heavy artillery, and is ready for use as soon as it arrives at the spot selected.

The nature of my invention consists in the construction, substantially in the manner hereinafter more particularly described, of a movable signal-tower, observatory, or lookout, by which an observer can be raised, when required, to a very considerable height, so as to be able to secure a survey of an extensive prospect or communicate by signals to a great distance—objects of great value in military operations.

To enable others to make and use my observatory, I will proceed to describe its construction and operation, referring to the drawings by the letters of reference marked thereon.

A marks the lower platform, which is supported on four wheels, which should be so arranged as to be readily removable. From the corners of this platform rise four posts, C, inclined inward, as shown, and braced by cross-

framing at D and E. They are surmounted at top by a circular platform, F, which is perforated in the center for the passage of the upright shaft. The cross-framing D supports a floor, G, on which the operators who raise the shaft stand. This floor has a large opening in the center for the passage of the shaft, and through which the sections of the shaft are passed as they are successively added or taken off. Supported by cross-pieces H is a short shaft, *i*, having cogs, which engage similar cogs on the upright shaft-pieces. On one or both ends of this shaft *i* is a winch, J, for turning it, and a ratchet, K, having a spring-pawl, L, controlled by a lever-eccentric, M.

O marks the observatory or lookout, which is a cylinder of sheet-iron or other suitable material, having an opening in one side for the entrance of the observer, and proper apertures for taking observations in all directions. This observatory is attached, in such a manner as to be readily removable, to the upper end of the upper section, N, of the upright supporting-shaft. It has rings or staples *q* (or pulleys, if preferred) on its lower edge, for the passage of guy-ropes R.

The shaft which supports the observatory is composed of lengths or sections N P, &c., of about ten feet in length, of iron tubing of about two or two and one-half inches diameter, having cogs on one side, as shown; and a threaded socket at one end and a projecting screw at the other. The screw and socket are for the purpose of effecting the secure junction of the sections, and it is obvious that various other modes of doing this might be employed—such, for instance, as a smooth socket and tube with a bayonet-joint. The sections should lap sufficiently to make a perfectly firm union.

Attached to the upper platform, F, and depending from it and projecting some distance above it, is a tube or sleeve, S, which extends down as far as the cross-piece E, and is secured firmly there. This tube is of the proper size to receive the upright shaft, which fits it snugly, but passes freely through it. It has a slit in one side to allow the cogs on the shaft to engage with those of the pinion-shaft *i*. The office of this sleeve is to hold the upright shaft firmly and prevent lateral movement in it.



T marks a stanchion on the upper platform, and U a ladder by which said platform is reached from the ground.

V marks a roller, turned by a winch, W, around which the guy-ropes R are wound. A ratchet and pawl, X, control the motion of this roller in one direction in the usual manner. The guy-ropes R pass upward from the roller V through apertures in floor G and platform E, and are rove through the rings or pulleys *q* on the bottom of the observatory, whence they pass at an angle to the ground, and are securely fastened to stakes Y, as shown. The office of these guys is to secure the observatory laterally from the swaying effect of winds, &c. The guy-ropes are all given off equally from the roller V as the shaft rises, and can all be tightened equally by turning the roller in the opposite direction from that which releases them.

The number of shaft-joints employed is regulated by the height desired to be attained. I believe that an elevation of several hundred feet is safely practicable by this apparatus.

The operation is as follows: The upper joint or section of the shaft surmounted by the observatory O being in place, the guy-ropes are run through the rings *q* and fastened to the stakes Y at proper and equal distances. The observer then takes his position, and, by means of the winch J, the upper shaft-piece, N, is raised until its lower end is high enough to admit of a second length, P, being added from below. This is done by an attendant standing on the lower platform, A, where the unused lengths of shaft are piled, and who attaches each successive section by inserting the screw end into the threaded socket in the lower end of the preceding section. When a new section is thus securely

united, the winch is again operated and the shaft again elevated until its lower end is high enough to receive another length from below, which is added as before, and so on as long as further elevation is required. As the shaft rises, the guy-ropes are equally given off from the roller V, the pawl being thrown out of gear. When the requisite elevation is attained, the guys can be tightened by giving the proper turns to roller V, the ratchet holding all the slack that is wound up. The descent of the observatory is accomplished by reversing these operations.

Various modifications of the apparatus may be made without affecting the principle of my invention. For example, instead of using cogs on the sides of the shaft-sections, I may prefer to perforate them with a series of holes so arranged as to receive the teeth of pinion *i*. The observatory may also be so constructed that it can be rotated on its vertical axis at the will of its occupant.

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

The construction of an observatory, lookout, or signal-station in such a manner that it can be elevated, when desired, to any required and practicable height by the addition of successive lengths or sections to the lower end of its supporting-shaft, substantially in the manner described.

The above specification of my said invention signed and witnessed, at Washington, this 11th day of November, A. D. 1862.

THOS. WELHAM.

Witnesses:

CHAS. F. STANSBURY,  
EDM. F. BROWN.