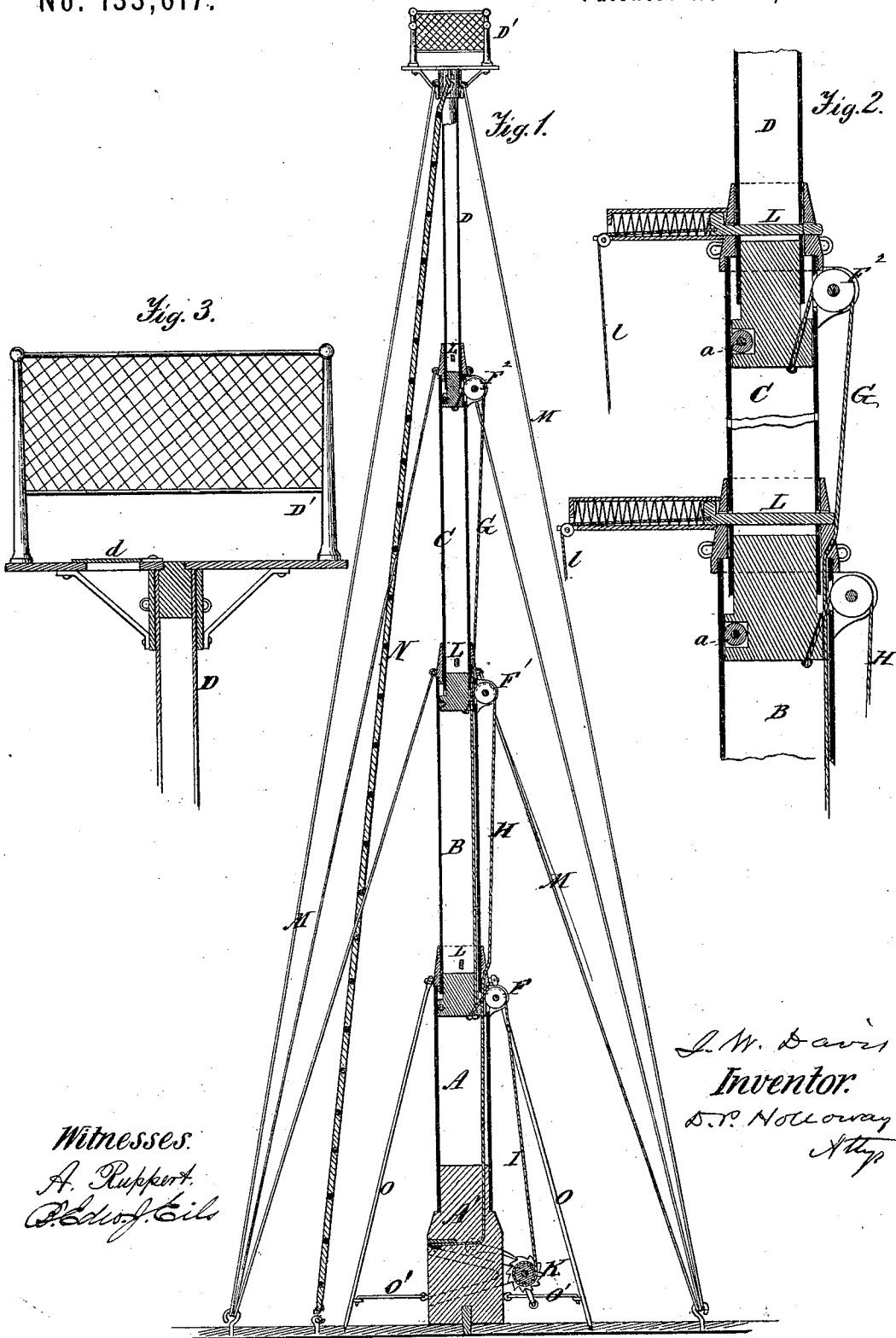


J. W. DAVIS.

Improvement in Elevating-Towers.

No. 133,017.

Patented Nov. 12, 1872.



Witnesses:  
A. Ruppert.  
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# UNITED STATES PATENT OFFICE.

JOHN W. DAVIS, OF WASHINGTON, DISTRICT OF COLUMBIA.

## IMPROVEMENT IN ELEVATING-TOWERS.

Specification forming part of Letters Patent No. 133,017, dated November 12, 1872.

*To all whom it may concern:*

Be it known that I, JOHN W. DAVIS, residing at Washington, in the District of Columbia, have invented certain Improvements in Signal-Towers, of which the following is a specification:

This invention relates to the portable kind of signal towers, composed of a number of sections, which are contracted together during transportation and extended in putting the tower up for use. My improvement consists in the employment, with telescopic tubes, of a peculiar hoisting mechanism and certain details in the construction of the sections.

Figure 1 is a sectional elevation of my improved signal-tower, and Figs. 2 and 3 are detail views on an enlarged scale.

The same letters of reference are employed in all the figures in the designation of identical parts.

The signal-tower illustrated in the drawing is composed of four tubular sections, A B C D, arranged to slide within one another in manner like a telescope. The lowest section A is firmly secured to a post, A', which has a spike in its lower end to enter the ground in erecting the tower; and the uppermost section D carries on its top an observatory, D', for the accommodation of the signal officer. The sections are preferably made of lap-welded tubing, and the bottom end of each is closed by a solid plug, provided upon its periphery with one or more anti-friction rollers, *d*. These plugs are so constructed that their lower ends fill or very nearly fill the section of pipe in which they move, and thus form a complete guide for the lower ends of the sections to which they are attached, and at the same time, in consequence of their acting in conjunction with the conical connecting tubes or ferrules, prevent the sections of the tubes from becoming tipped, or changed from a direct line with each other; and, in addition to the functions above referred to, these plugs form the points to which the ropes or chains are attached, they having an angular aperture formed in them, commencing at their centers at the lower ends, and passing out at the side, as shown in the drawing, as a consequence of which the rope or chain is allowed to move without friction or obstruction within the tubes. The upper ends of all the sections, except the top one, are pro-

vided with conical tubes or ferrules, whereby they are contracted to the diameter of the section which is to slide in it, and the projecting ends of the plugs have shoulders, as clearly shown, to prevent the accidental disconnection of the sections, while the contracted ends of the ferrules form a perfect guide for the protruding portions of such sections without the addition of any ferrule or collar, and thus the weight to be raised is reduced. Each of the sections A, B, and C is provided with a bracket near its upper end for the support of a pulley or sheave, F F<sup>1</sup> F<sup>2</sup>. A rope or chain, G, after having been properly secured to the plug in the lower end of section D, is passed over the pulley F<sup>2</sup> and carried outside of the section C through an aperture in the upper end of section B, down the inside thereof to its plug, where the other end is fastened. Another rope or chain, H, is in like manner secured with one end to the plug in section C and carried over pulley F<sup>1</sup> to be fastened with its other end to the post A'. A third rope or chain, I, is secured to the plug in section B, and after passing over pulley F is connected to the barrel of the windlass K, which may be of any approved construction and secured to the post A' or a suitable base. In consequence of this arrangement of the windlass and ropes and pulleys, all the sliding sections are simultaneously shot up or hoisted by the windlass, and collapse in like manner by their own weight on permitting the rope I to unwind from the windlass-barrel. These actions will be readily understood, and a minute description thereof is, therefore, deemed unnecessary. I prefer to lock the sections together when properly hoisted for security against an accidental and sudden collapse. This I accomplish by means of stout bolts L arranged in laterally-projecting cases upon the upper end of each section, except the top one, and capable of being operated from the ground by cords *l*, as best indicated in Fig. 2; and, to guard against straining the sections by over hoisting, I prefer to use spring-bolts, which will shoot automatically through the holes in the tubes when elevated to the proper point. Each section is, near its top, provided with guys M, which, in setting the tower up for use, are suitably anchored in the ground at their lower ends. In connection with the lowest section A rigid stays O and

braces O' are employed to give steadiness thereto. N refers to a rope-ladder, which is with one end secured to the top of the section D under the observatory, and reaches thence to the ground, where it may be anchored. The bottom of the observatory D' is provided with a trap-door, d, through which a person may ascend from the ladder as well as descend.

This observatory is secured to the upper end of the top section by means of a socket upon its under surface, which passes down over the end of the tube, and thus bears upon its outer surface, while its inner surface is made to bear upon a projection upon the floor of the observatory, thus bearing between the socket and the projection an annular space into which the upper end of the tube enters, which arrangement affords a firm support for said observatory, and, at the same time, furnishes a ready means for removing the same from the tube and for replacing it thereon.

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

1. The plugs to which the lower ends of the

sliding sections are attached, when constructed with an angular groove for the reception of the rope or chain and with anti-friction rollers, substantially as and for the purpose set forth.

2. The conical ferrules for uniting the sections of the tubes, substantially as set forth.

3. In a telescopic tube for elevating a portable signal-tower and other similar purposes, the combination of sliding tubes A, B, and C, having plugs in their lower ends for attaching the ropes, ferrules for connecting the sections to each other, and ropes or chains for elevating the sections, said ropes or chains being secured at their upper ends to the plugs in the lower ends of the sections, and extending to the plug in the second section below or to a plug in section D, substantially as set forth.

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

JOHN W. DAVIS.

Witnesses:

B. EDW. J. EILS,  
A. RUPPERT.