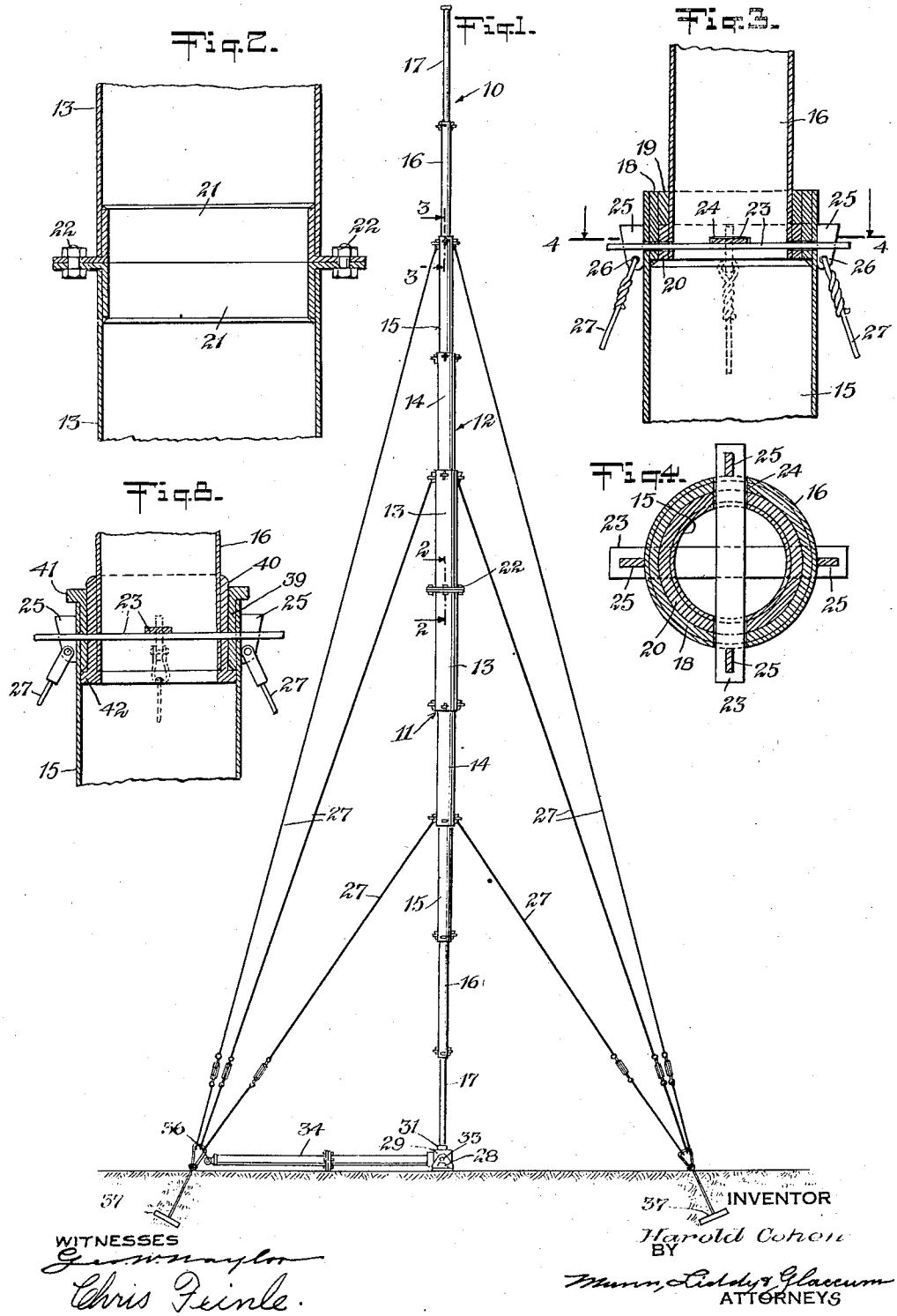
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TOWER OR MAST

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TOWER OR MAST

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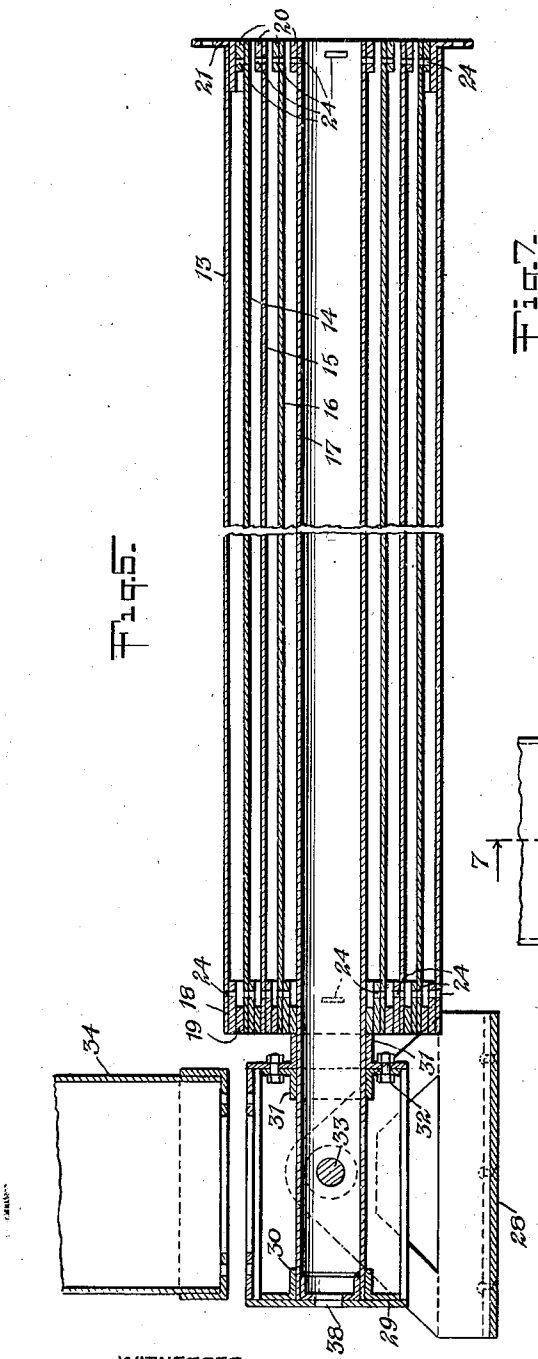


Fig. 5.

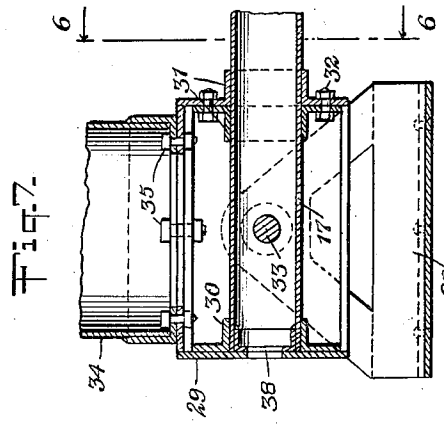


Fig. 7.

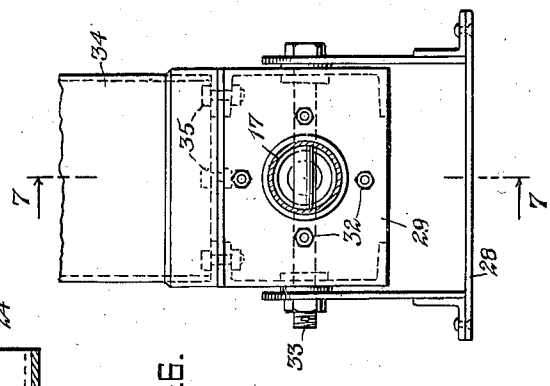


Fig. 6.

WITNESSES

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TOWER OR MAST

Harold Cohen, Elizabeth, N. J.

Application March 10, 1943, Serial No. 478,690

1 Claim. (Cl. 189—26)

This invention relates to a field unit which may be used as a tower or mast for various purposes, and serves advantageously for supporting a radio antenna or aerial.

An object of the invention is the provision of a tower or mast which may be transported from place to place, and which may be quickly and easily set up for use.

A further object is the provision of a mast of the indicated character which is serviceable to military forces, such as the Signal Corps and other mobile branches of the army, or land forces which require quick and efficient installations, and the removal of equipment with dispatch when the occasions arise.

A further object is the provision of an extensible and retractable mast of improved construction and operation of parts whereby the aforesaid advantages may be attained.

A further object is the provision of an extensible and retractable mast which is of light weight construction yet strong and rigid when set up for use, but which may be readily collapsed and taken apart in such manner that parts thereof, and accessories may be compactly crated for shipment, and so as to require but comparatively little space when not in use.

Other objects and features of the invention as well as the combination and construction of parts will be apparent from the following description and from the accompanying drawings in which:

Figure 1 is a view in elevation of a field unit embodying the features of the invention.

Figure 2 is a detail section or portions of the mast on the line 2—2 of Figure 1.

Figure 3 is a section of components of the mast together with means for guying the same, the section being taken on the line 3—3 of Figure 1.

Figure 4 is a section on the line 4—4 of Figure 3.

Figure 5 is an enlarged section of the mast showing it collapsed, and also showing the anchoring base, coupler and boom detached, portions of the mast and boom being broken away.

Figure 6 is a section on the line 6—6 of Figure 7 showing the boom attached to the coupler.

Figure 7 is a section on the line 7—7 of Figure 6.

Figure 8 is a section showing a modification of the construction shown in Figure 3.

On reference to Figure 1 it will be apparent there is shown a mast 10 which is made up of a lower half portion 11 and a substantially similar upper half portion 12 which are joined end to end to form a single unitary structure. Each portion 11 and 12 in fact is a unit in itself.

Each portion 11 and 12 is extensible and retractable and accordingly consists of a plurality of relatively movable sections associated with each other. In the present instance each portion of the mast consists of five sections which are designated 13, 14, 15, 16 and 17 respectively. Obviously any other number of sections may be used, either more or less than five. The sections 13—17 consist of suitable pieces of pipe and are equal so far as length is concerned, although the section 17 of the lower half may be somewhat longer than the others. Also the sections, starting with the section 14 are progressively smaller in cross-sectional size or diameter than the section 13. The sections 13—17 are arranged in telescoping relation so that they may be extended or retracted or collapsed in nested relation. Each of the sections, except the section 17 has a ring 18 secured thereto, as by welding, at one end on the inside. To this ring 18 is likewise secured a ring 19 on the inside, and the former is approximately one-half the width of the latter to provide a stop shoulder. Each of the sections, except the section 13, has a ring 20 secured thereto at one end on the outside which serves as a stop to cooperate with the stop 19 of the contiguous section in order to limit the extending movement of the sections.

The portions 11 and 12 are joined end to end and this is accomplished by the use of flanged collars 21 fitted to the sections 13 respectively and welded thereto. The flanges of the collars 21 are bolted by nuts and bolts 22. The upper and lower portions 11 and 12 are thus detachably connected.

The sections 13—17 are held in the extended relation by any suitable means which may be readily detached or released. In the present instance a simple and practical means consists of cross-bars 23 for each pair of sections which extend transversely through the sections and the rings 18 and 20, the same having slot shape holes 24 for that purpose. Each cross-bar 23 projects at opposite sides of the related mast section and has slot-shape holes therein to receive wedge-shape keys 25 respectively. The keys 25 lock the cross-bars 23 in place and are apertured as at 26 for the purpose of accommodating guy lines 27 for guying the mast.

In order to anchor the lower end of the mast and also to enable the movement of the mast from a horizontal position to a vertical position and vice versa, there is provided a base 28 and a coupler 29 shown most clearly in Figures 5, 6 and 7. The coupler 29 is a hollow box-like structure and has a hole in the top to receive the

lower end of the section 17 of the lower mast portion, there being a socket 30 on the bottom of the coupler to receive the lower extremity of said section 17.

Flanged collars 31 are bolted, as at 32, to the top of the coupler at the hole therein. The mast section 17 extends through the collar 31 and is welded or otherwise secured thereto. A king-bolt 33 extends through the sides of the base 28, the section 17 and the coupler 29 to provide a pivotal connection of the mast with the base. The mast 10 may therefore be disposed in a horizontal position as shown in Figure 5 or in a vertical position as shown in Figure 1.

In order to serve as a means for effecting the movement of the mast into and out of the vertical and horizontal positions by the application of leverage thereto, there is provided a boom or arm 34 which has one end thereof bolted as at 35 to the coupler 29. The arm 34 thus secured is disposed at an angle to the longitudinal axis of the mast. The arm 34 has an eye 36 on the outer end to receive a power cable for raising and lowering the mast. The arm 34 may be detached.

In accordance with the invention the mast 10 may be extended or retracted while in the horizontal position. In other words, the sections 13—17 may be extended and the cross-bars 23 and keys 25 employed to retain them extended. The guy lines 27 may be connected to certain of the keys. The guy lines 27 at three sides may be anchored. A pulling force is then applied to the arm 34 to raise the extended mast to the vertical position. The remaining guy lines 27 may then be anchored to securely hold the mast upright as shown in Figure 1. The anchors for the guy lines are designated 37. By uprooting the anchors 37 at the arm side of the mast it may be lowered to the horizontal position as will be understood. In this position the keys 25 and cross-bars 23 may be removed and the sections of the mast collapsed in nested relation.

The upper mast portion 12 may be detached from the lower portion 11 by removing the bolts 22, and the arm 34 may also be detached by removing the bolts 35. The parts thus separated may be crated for shipment and so require small space when not in use. The coupler has an opening 38 in the bottom. The anchors 37 may be inserted in the mast sections 17 of the detached portions 11 and 12 prior to crating the parts.

In Figure 8 there is shown a modification of the means for associating a pair of the mast sections and for attaching the guy lines. Instead of the rings 18, 19 and 20 shown in Figure 3 use is made of tubular members 39 and 40 having integral end flanges 41 and 42 respectively. The members 39 and 40 are secured to the sections in any suitable manner, as by welding. The member 39 is arranged on the inside of one section and the member 40 on the outside of the other section. The flange 42 of the member 40 serves as a stop to limit the extending movement of the sections. In other respects the provision and arrangement shown in Figure 8 are similar to that in Figure 3. In cases where greater strength and rigidity is desired or required the construction shown in Figure 8 will be adopted.

On reference to Figure 3 it will be seen that rings 18 and 20 can be welded to the section 15 and the ring 19 welded to the section 16. The bars 23 may extend through the rings 18 and 19 and the mast sections, there being holes provided for that purpose. The keys 25 being employed as shown impinging against the bars 23 and the mast section. In this manner the mast sections may be assembled quickly without the use of bolts and the like.

Units embodying the features of the invention serve adequately for supporting an antenna or aerial, and it is to be understood the invention is not limited to such use.

I claim:

In an extensible and retractable mast consisting of telescopic sections, bars extending through contiguous sections to hold them from moving endwise with respect to each other, and wedge-shape keys extending through said bars and bearing on said sections to hold the bars in place, said keys having provision whereby guy lines or the like may be secured thereto for the mast.

HAROLD COHEN.