April 29, 1958 E. A. TERHUNE 2,832,555

COLLAPSIBLE MAST

Filed June 2, 1955 2 Sheets-Sheet 1

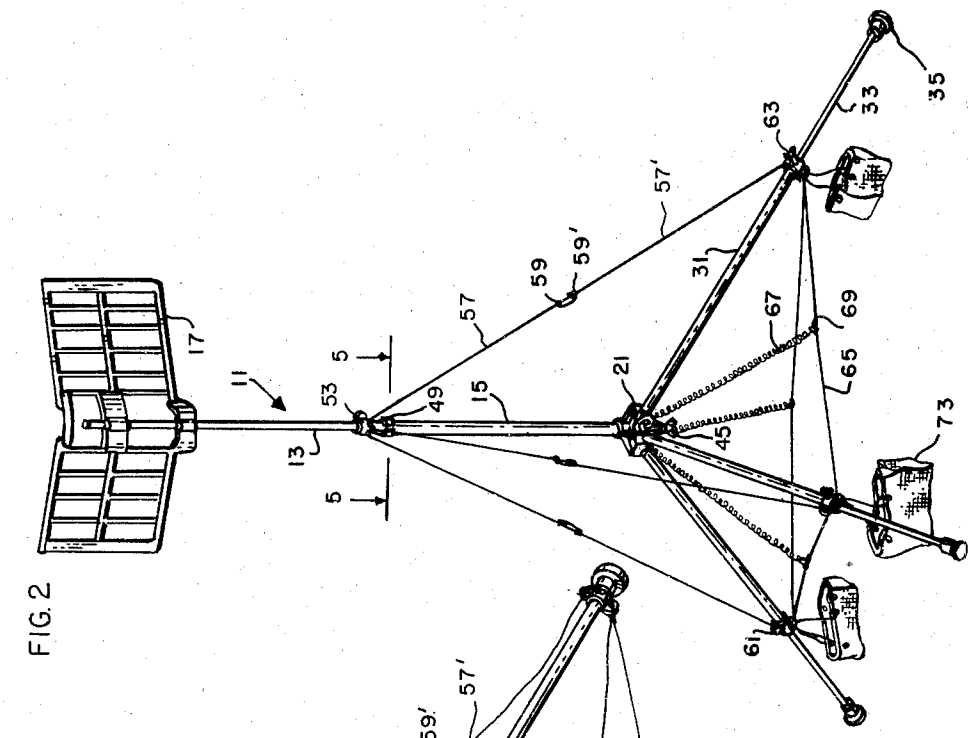


FIG. 2

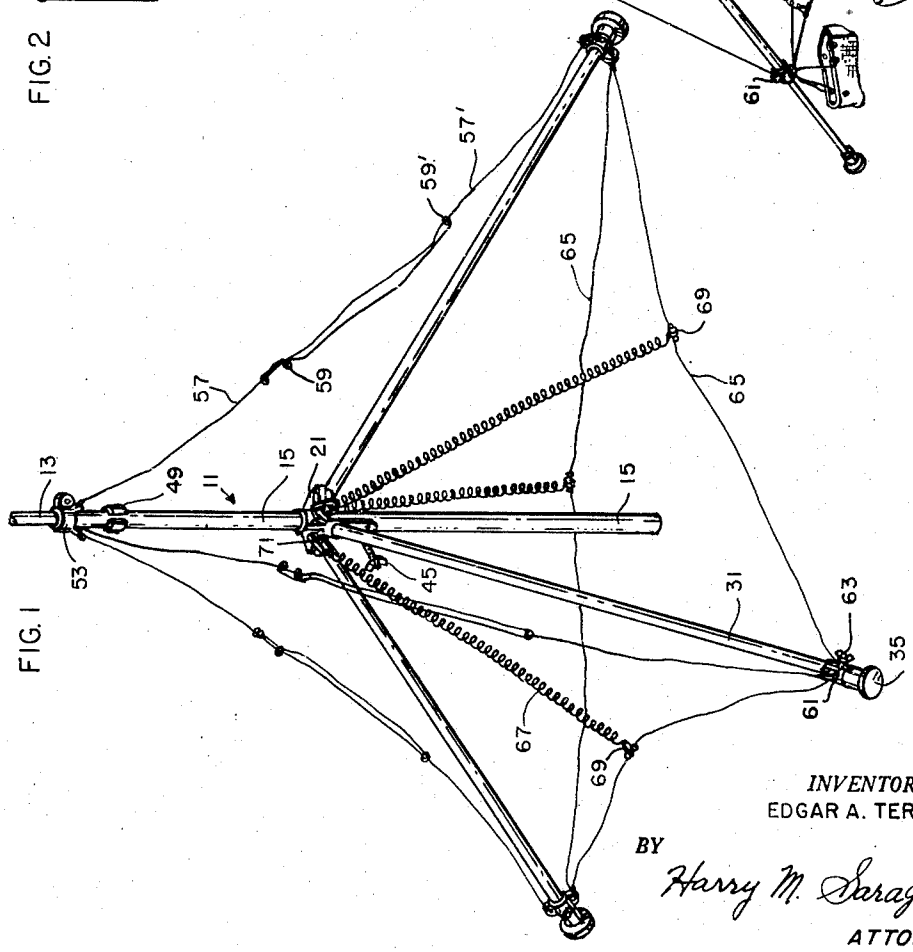


FIG. 1

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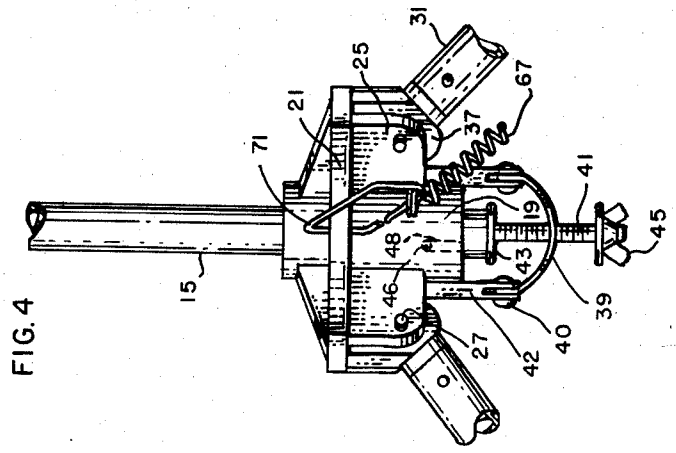


FIG. 4

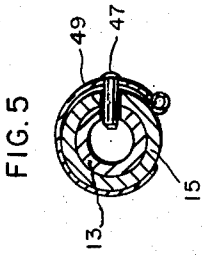


FIG. 5

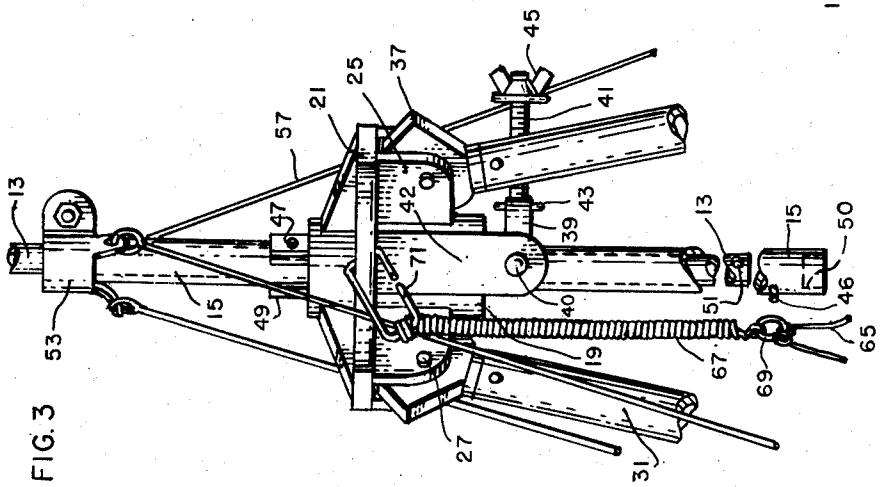


FIG. 3

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COLLAPSIBLE MAST

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Application June 2, 1955, Serial No. 512,912

3 Claims. (Cl. 248—170)

(Granted under Title 35, U. S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment of any royalty thereon.

The present invention relates to a portable, self-supporting mast particularly adapted, though not so limited, as a means for supporting an antenna such as used in the operation of radio receivers, transmitters and the like.

In the past, portable knockdown masts have been devised wherein such masts could be assembled and taken apart as desired. Such masts were assembled from a large number of individual components, many of extremely small size, whereby any loss or misplacement of any of the parts would make it impossible to assemble the mast. Furthermore, specific tools were required in order to assemble the mast.

Accordingly an object of the present invention is to provide a lightweight, self-supporting mast that can be quickly erected without the use of any tools.

An important feature of the invention resides in the fact that all the components of the mast are integrally attached and have no loose or unsecured parts.

Another feature of the invention is the provision of telescoping legs, individually adjustable, so as to permit the mast to be readily adapted for use on uneven terrain.

Another feature of the invention resides in the utilization of guy and supporting wires whereby linkage and support are afforded to and between adjacent legs, and not to the center standard as heretofore accomplished in many forms of knockdown self-supporting devices.

Another feature of the invention resides in the novel form of U-shaped saddle or stirrup with an adjusting and clamping screw in its bight portion, so that when the mast is in folded position the saddle extends to one side and the screw clamps the central standard by turning the screw clockwise until its end engages the standard, and when the mast is fully extended the saddle is positioned beneath the end of the central standard and the screw serves to engage the lower end of the central standard to urge it upwardly and help maintain it in position.

The above and other features and objectives of the invention will be more readily apparent as the description of the invention proceeds to be read in view of the accompanying drawing in which:

Figure 1 is a view showing the mast after withdrawal from its packaged condition and immediately prior to full completed assembled state;

Figure 2 is a view showing the mast fully extended in use with an antenna affixed to the central standard;

Figure 3 is a view in perspective of the hub portion prior to the extension of the mast as shown in Figure 1 and showing in greater detail the saddle member affixed to the hub;

Figure 4 is a view in perspective of the hub portion when the mast is fully erected, and showing the saddle member in position supporting the central standard, and

Figure 5 is a cross-sectional view of the locking pin within the hub for locking the central mast in position.

Referring now to the drawings, the mast includes in part a central standard designated generally as **11** and composed of separate telescoping sections **13** and **15**, **15** being the outer portion and **13** being the tubular element of smaller diameter which telescopes into **15**. Shown in Figure 2 is an antenna **17** which can be secured or clamped to the portion **11** in any well known manner. Antenna **17** is typical of any component such as a reflector or antenna that can be attached to the mast as desired. The standard **11** and particularly portion **15** is slidably engageable in a hub designated as **19**, said hub including in part a flanged portion **21** and three pairs of ears **25**, two such pairs being shown in Figure 2, each set comprising adjacent discrete ears and further characterized in that the three pairs are equidistantly spaced about the periphery of the hub **19** and integral therewith. Each pair of ears is provided with a pin **27** upon each of which there is pivoted a leg which serves to support the mast when in erected position as shown in Figure 2. Each of the legs comprises separate telescoping portions **31** and **33**, a boot **35** and a jaw portion **37**, said jaw portion serving as the rotatable member on the pin **27** by means of which the leg is pivotable.

Pivotally mounted to the lower end of the hub **19** as shown in Figure 4 is a swingable, substantially U-shaped saddle **39** having an opening therethrough through which is threaded a clamping screw **41** provided with a flattened head portion **43** at one end and a wing nut **45** at its other end. The saddle **39** is pivotally mounted on pins **40** located in leg members **42** which extend below the tubular portion of hub **19**. As shown in Figure 4, the flattened head portion **43** of the clamping screw **41** has a diameter slightly larger than that of the mast portion **15** so that when the mast portion is in fully extended position as shown in Figures 2 and 4, the screw serves to thrust the mast upwardly and maintain it in such position by engaging the extreme end of the standard portion **15**, particularly the plug **50** contained within the extreme end of portion **15**. To prevent rotation of the central standard **11** within the hub **19**, the section **15** of the standard is provided with a protruding pin **46** which meshes with and locks in a slot **48** in the hub **19**. The standard portion **15** is further provided with a locking member, as shown in Figure 5, comprising in part a locking pin **47** and a spring **49** which tends to urge the pin **47** inwardly. The inner portion **11** of the standard is provided with a hole or opening **51** at its lower end. It is thus apparent that as the section **11** of the standard is extended upwardly, engagement of the pin **47** within the hole **51** will be effected by the action of spring **49** urging the pin inwardly in engagement with the hole thereby securely locking the upper section **11** to the lower section **15**.

Also secured to the central standard **15** is a collar **53** which has three dependent ear portions within which are openings which serve as one end terminal for guy rods generally designated as **55** and include discrete guy rods **57** and **57'** which are so constructed that the discrete guy rods are slidably engageable with each other through eyelet portions **59** and **59'** which constitute one end of each of the respective guy rods **57** and **57'**. One of the guy rods, that is, **57** terminates at the collar **53**, as indicated above, while the other of said guy rods, that is **57'** terminates in an eyelet forming part of a collar **61** which is secured at the end of the portion **31** of the telescoping leg. It is thus apparent that as the central standard is urged upwardly to its limit of travel the guy rods **57** and **57'** will be drawn taut and after the central standard is permanently secured in position by the saddle **39**, the guy rods will serve as an aid in stabilizing the central standard **15**. The collar **61** is further provided with a wing nut

63 and serves to keep the leg portion 33 in position at any desired extended length. Thus it is readily apparent that any one of the legs can be withdrawn to any desired length depending upon the slope of the terrain where the mast is to be used and securely locked in such position.

Extending between each of the telescoping legs are respective guy wires 65 which are held in tension and taut by springs 67. Each of the springs 67 has as one of its terminals a clasp 69 positioned approximately at the midportion of the wire 65 between adjacent legs, while the other end of the spring terminates in a link 71 which is held within the flanged portion 21 of the hub 19 in holes provided therefor. To afford rigidity to the structure in those instances such as when the mast is erected at times of winds of high velocities, i. e., up to 30 miles per hour there can be secured to the device, at any part of the telescoping legs, sandbags such as shown at 73.

What is claimed is:

1. A collapsible support for an antenna or the like comprising a hub, a telescoping sectional central standard slideably engageable in said hub, a plurality of telescoping sectional legs pivotally mounted on said hub, discrete pairs of telescoping guy wires extensible and secured respectively between said standard and said legs, discrete supporting means extending between adjacent legs and means comprising a substantially U-shaped yoke pivotally mounted on the hub, said yoke including an extensible clamping means for supporting said standard when the support is in fully extended position and confining said standard when the support is in collapsed folded position.

2. A support of the kind set forth in claim 1 wherein said clamping means in said yoke comprises a screw threadable in the bight portion of said yoke.

3. A collapsible support comprising a hub, a telescoping sectional central standard slideably engageable in said hub, a plurality of legs pivotally mounted on said hub, each of said legs comprising a fixed portion and a telescoping portion engageable in said fixed portion, discrete guy wires extending between a fixed location on said standard and a prescribed location on the fixed portion of each of said legs and of such length that when said standard is raised to its maximum height the guy wires will be taut to hold said standard and legs in substantially rigid relationship, discrete supporting means extending between adjacent legs and means comprising a substantially U-shaped yoke pivotally mounted on the hub, said yoke including an extensible clamping means for supporting said standard when the support is in fully extended position and confining said standard when the support is in collapsed folded position.

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