

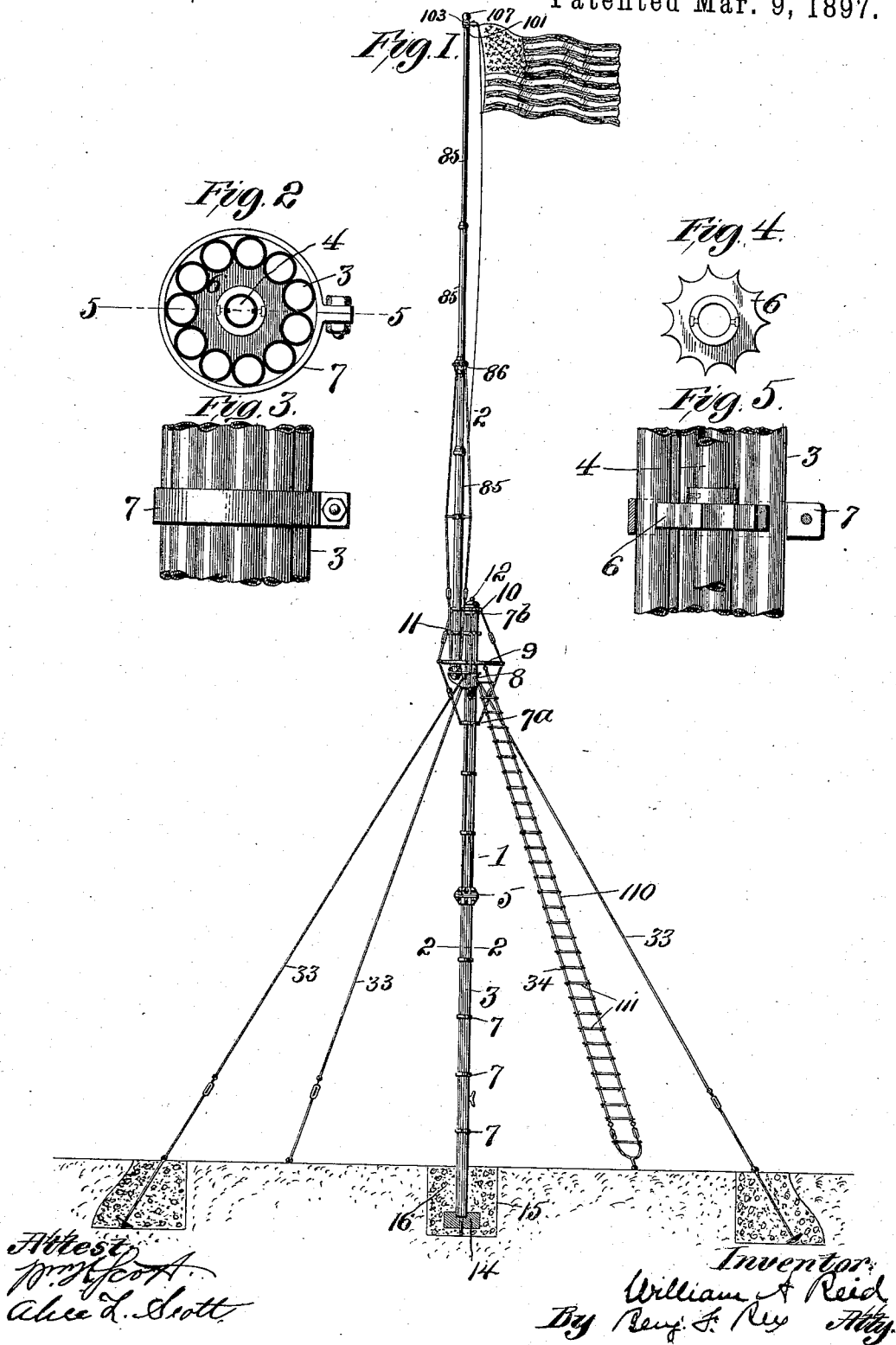
(No Model.)

4 Sheets—Sheet 1.

W. A. REID.
FLAG STAFF OR MAST.

No. 578,524.

Patented Mar. 9, 1897.



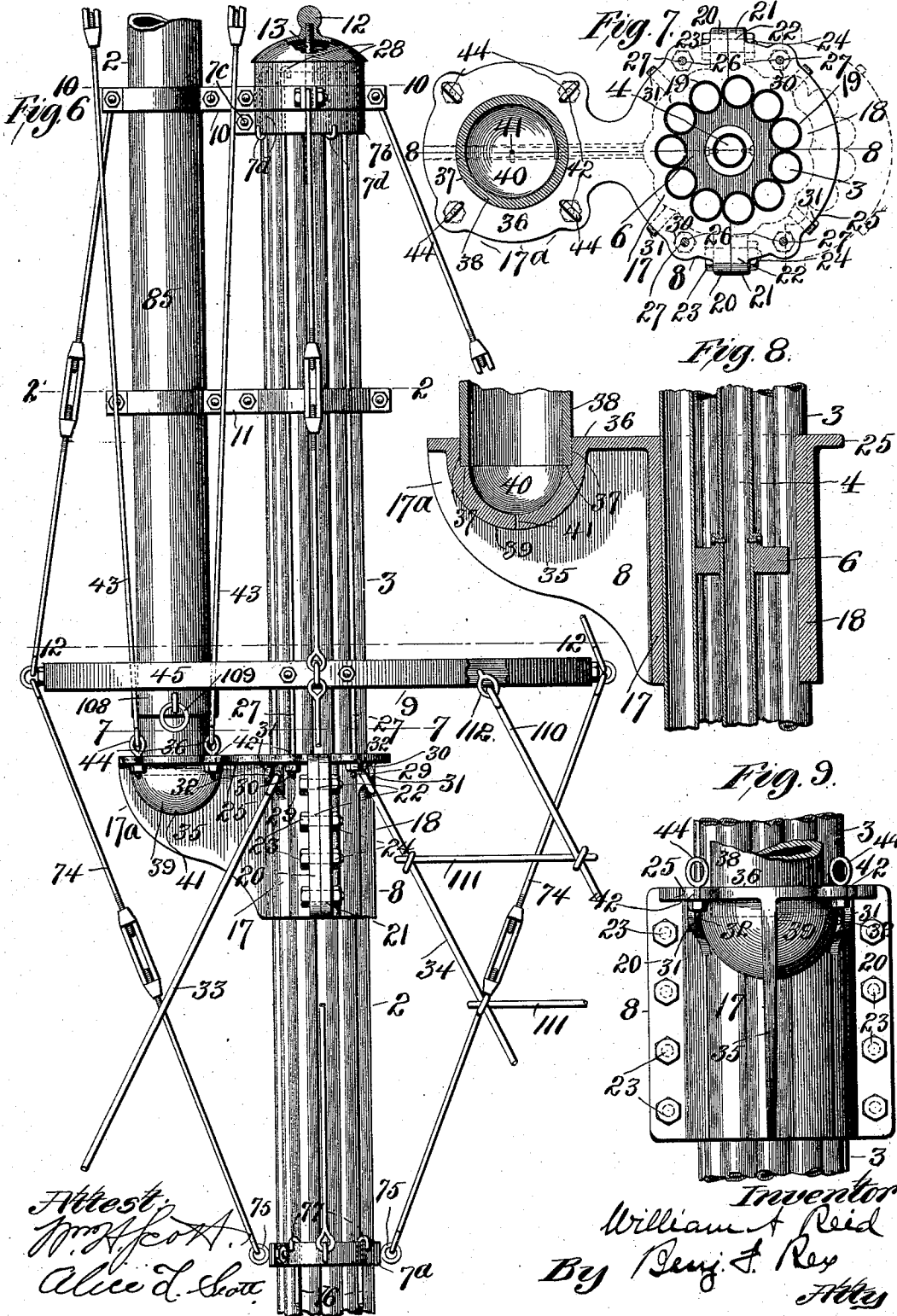
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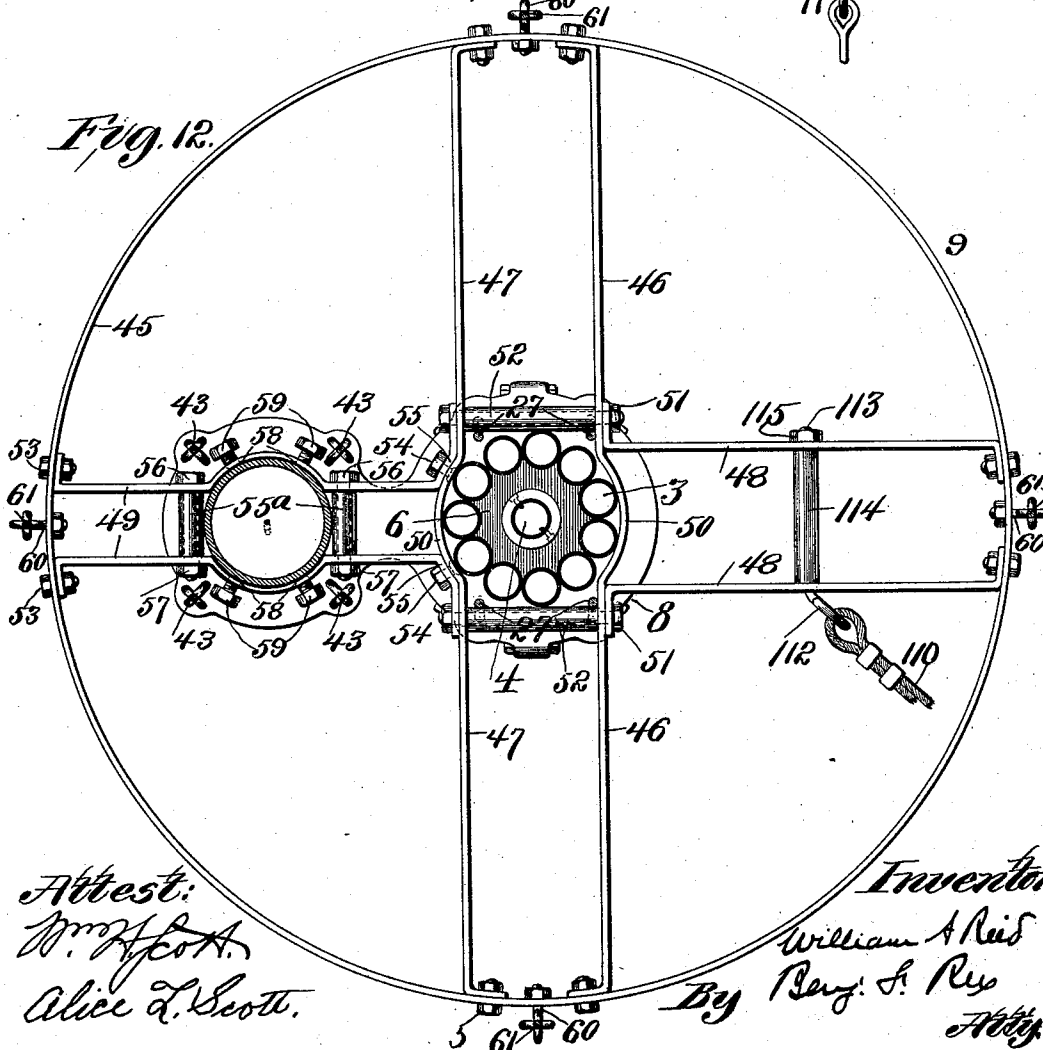
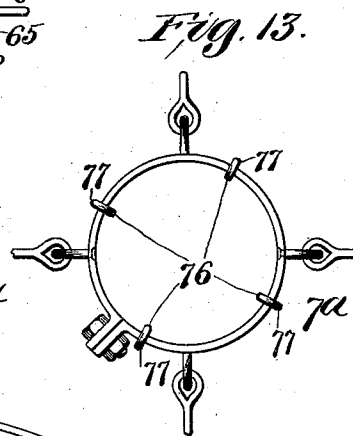
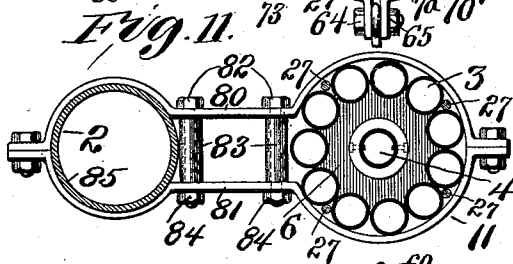
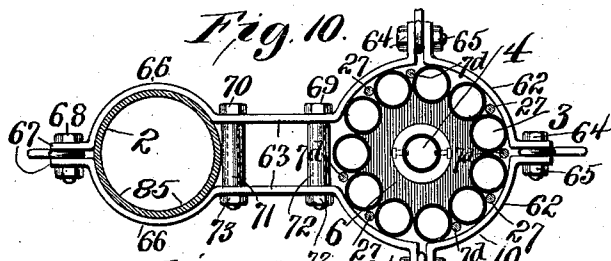
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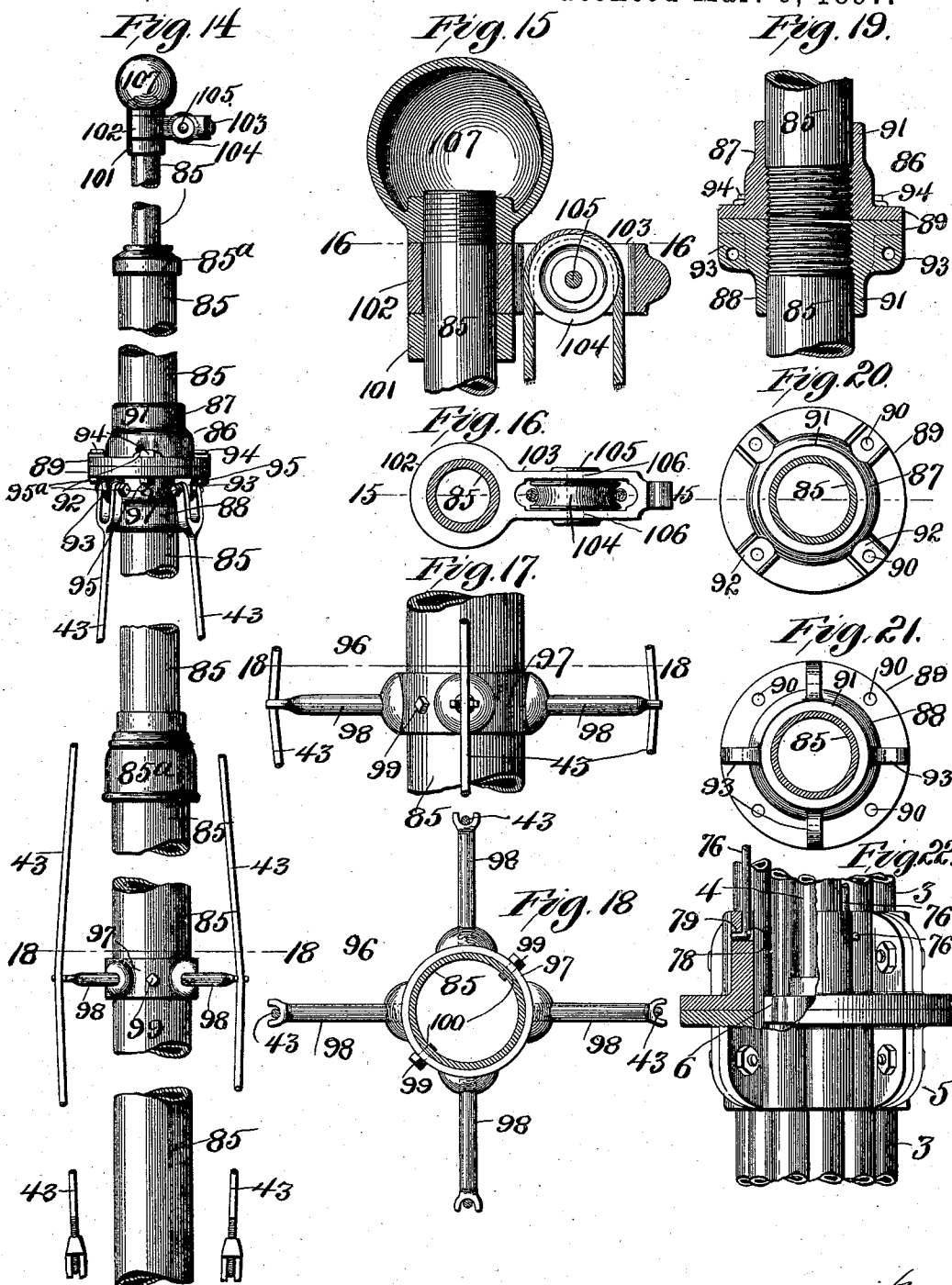
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UNITED STATES PATENT OFFICE.

WILLIAM A. REID, OF ST. LOUIS, MISSOURI, ASSIGNOR TO THE N. O. NELSON MANUFACTURING COMPANY, OF MISSOURI.

FLAG STAFF OR MAST.

SPECIFICATION forming part of Letters Patent No. 578,524, dated March 9, 1897.

Application filed April 20, 1896. Serial No. 588,284. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. REID, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a new and useful Improvement in Flag Staffs or Masts, of which the following is a specification.

My invention relates to improvements in flag staffs or masts of the variety in which the mainmast supports a topmast; and the chief objects of my improvements are, first, to provide improved means for supporting and holding the mainmast in position; second, to provide means for protecting the tops of the mainmasts; third, to provide an improved topmast; fourth, to provide means for holding and supporting the topmast in place; fifth, to provide means for adjusting the topmast and causing it to assume a vertical position; sixth, to cheapen the construction of such staffs and masts; seventh, to increase their strength, and, eighth, to increase their beauty. I attain these objects by mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a flagstaff embodying my improvements. Fig. 2 is a horizontal cross-section on line 2 2, Fig. 1, on an enlarged scale. Fig. 3 is a detailed view in side elevation. Fig. 4 is a plan view of a detail. Fig. 5 is a detailed view on line 5 5, Fig. 2, showing a core-piece in elevation. Fig. 6 is a detailed view, on an enlarged scale, in side elevation, of the upper portion of the mainmast and the lower portion of the topmast and the preferred means for holding and supporting the topmast in place. Fig. 7 is a horizontal cross-section on line 7 7, Fig. 6. Fig. 8 is a detailed view of a vertical section on line 8 8, Fig. 7. Fig. 9 is a detailed view, in end elevation, of the portions represented in Fig. 8. Fig. 10 is a horizontal cross-section on line 10 10, Fig. 6. Fig. 11 is a horizontal cross-section on line 2 2, Fig. 6. Fig. 12 is a cross-section on line 12 12, Fig. 6. Fig. 13 is a plan view of a detail. Fig. 14 is a detailed view, in side elevation, of the upper portion of the topmast with parts broken out. Fig. 15 is a detailed central vertical section of a portion of the topmast. Fig. 16 is a cross-section on line 16 16, Fig. 15. Fig. 17 is a de-

tailed side elevation of a spreader. Fig. 18 is a horizontal section on line 18 18, Fig. 17. Fig. 19 is a detailed view of a vertical central section of means preferably used for detachably coupling sections of the topmast. Fig. 20 is a plan view of the upper member of the coupling shown in Fig. 19. Fig. 21 is an inverted plan view of the lower member of the coupling; and Fig. 22 is an enlarged detailed view, partly in side elevation and partly in vertical section, of a mainmast-coupling with which the crosstree is shown connected.

Similar figures refer to similar parts throughout the several views.

My improved mast or flagstaff is preferably composed of a mainmast 1 and a topmast 2, as shown most clearly in Figs. 1 and 6. The mainmast may be of any suitable form or substance, but is preferably metallic and composed of two or more clusters of pipes 3 and 4. The mainmast shown in the drawings is composed of two such clusters, and they are shown coupled together by means of a coupling 5 of the type described and claimed in Letters Patent of the United States No. 420,023, granted January 21, 1890, to the N. O. Nelson Manufacturing Company, as the assignee of Herman C. Stifel. Said pipes are held in their proper relative positions by means of said coupling 5, core-pieces 6, bands 7, 7^a, and 7^b, the bracket 8, crosstree 9, and braces 10 and 11. Its top is preferably covered by means of a cap 12, from which preferably projects downward a rod 13, which enters and is secured to a central pipe 4 and tends to hold the cap in place.

The lower end of the mainmast is preferably stepped in a block 14, of stone or other strong material, which is preferably placed on a foundation of concrete or other suitable material in the bottom of a pit 15, and when the mainmast has been placed in position and received its final adjustment the pit is filled with concrete 16, Portland cement, or some other suitable substance which will harden around the block 14 and the lower end of the mast and both complete a strong foundation and tend to hold the mast in a vertical position.

What I have termed the "bracket" 8 is preferably clamped to the mainmast 1. It is

preferably composed of two clamping portions 17 and 18, which surround the mast and a supporting-arm 19, attached to or formed integral with the part 17 and projecting out therefrom.

5 The inner sides of the parts 17 and 18 are preferably so formed as to make close contact with the sides of the mainmast, and where the mainmast is formed of clusters of pipes, as shown in the drawings, the inner sides of said parts
10 should preferably contain vertical grooves 19, adapted to fit around and receive the outer sides of the outer pipes, substantially as shown in Fig. 7. This prevents the bracket from turning where the mainmast is formed as
15 shown and enables it to be clamped in place more securely than would otherwise be possible. The clamping part 17 has on each inner edge an outwardly-projecting flange 20, and the clamping part 18 is provided with
20 similar flanges 21 on its inner edges, and these flanges 20 and 21 face each other when the bracket is in place, as shown most clearly in Figs. 6, 7, and 9. Said flanges 20 and 21 are pierced by bolt-holes 22 and the bracket
25 8 is clamped in position by means of bolts 23, passed through these holes, and the nuts 24, screwed onto said bolts. Where the mainmast is formed as shown, a core-piece 6 is preferably arranged within the circle of pipes
30 3 about midway between the ends of the clamping portions 17 and 18, so as to brace the pipes 3 against the inward pressure exerted by the bracket, and in placing the bracket in position in such cases I fit the
35 clamping parts over the pipes 3 either above or below the point at which it is to be finally located and where no core-piece will interfere with springing the pipes slightly, as is necessary in order to get the parts 17 and 18 in
40 place unless they are slipped over the top of the mainmast, which latter course is not so convenient. After getting the pipes 3 of the mainmast into the grooves 19 of the parts 17 and 18 I slip said clamping parts vertically
45 into position, and then by screwing up the nuts 24 I clamp them securely in place. I preferably locate the bracket 8 some distance below the top of the mainmast, so as to leave room for the crosstree and braces hereinafter
50 described.

The top of each of the clamping portions 17 and 18 of the bracket 8 is preferably provided with the outwardly-extending flanges 25, preferably pierced by holes 26, to afford
55 means for attaching to said clamping portions 17 and 18 tie-rods 27, whose upper ends are preferably provided with hooks 28, which are inserted into the open upper ends of the upper cluster of pipes 3 of the mainmast, and
60 whose lower ends 29 are preferably screw-threaded and passed down through the holes 26 of the flanges 25 of the bracket 8, and their withdrawal prevented by means of nuts 30.

The rods 27 assist the clamping portions of the bracket 8 in preventing the bracket from
65 being pulled or forced downward out of its proper position on the mainmast. As will be

obvious, the particular methods of securing the tie-rods 27 to the mainmast and the bracket 8, respectively, may be varied in many ways
70 without departing from my invention. The methods shown are simple and effective.

Beneath the flanges 25 of the bracket 8 I preferably form on or connect to the clamping portions 17 and 18 a series of lugs 31, preferably four in number. These lugs are each
75 preferably pierced by eyes 32, and respectively have attached thereto guy-ropes 33 and 34, which extend to the ground at an angle and have their lower ends secured in place in
80 any suitable manner. These guy-ropes perform the double function of assisting in preventing any upward movement on the part of the bracket 8 and of holding the mainmast 1
85 vertical.

The supporting-arm 19 of the bracket 8 preferably consists of a rib 35 and a sole 36. The sole 36 is preferably provided with a socket or step 37 for the reception of the lower
90 end 38 of the topmast 2. The step 37 is formed in a part 39, which is preferably rounded on its under side, as shown, and preferably contains beneath the step or socket 37 a cavity
95 40, drained by a passage 41 for the escape of any moisture which might otherwise accumulate in the cavity.

The sole 36 is preferably pierced by bolt-holes 42 to enable vertical braces 43, hereinafter more particularly referred to, to be attached thereto. The means of attachment
100 shown are eyebolts 44, but any other suitable means may be used.

The crosstree 9 preferably surrounds the mainmast 1 above the bracket 8. Its frame preferably consists of a hoop 45, braced transversely by means of braces 46 and 47, 48 48, and 49 49. The braces 46 and 47 preferably
105 extend across the hoop 45 and are preferably bolted at each end to the hoop. They are preferably arranged some distance apart and with sufficient curve or bow at their respective
110 middles 50 to snugly span the mainmast on opposite sides. The two braces 48 preferably extend at right angles from the outer sides of the brace 46, one on each side of the
115 mainmast, to the hoop. Their inner ends are attached to the brace 46 and the outer ends to the inner side of the hoop 45 preferably by bolts.

The bolts 51 51, by means of which their
120 inner ends are fastened in place, preferably respectively pass through sleeves 52, arranged close to the mainmast and by which the braces 46 and 47 are held apart, and said bolts are passed through the brace 47 as well as the
125 brace 46, and they and their respective nuts 51 preferably secure the inner ends of the braces 49 to the brace 47 as well as the braces 49 to the brace 46. The braces 49 extend on the topmast side from the brace 47 at right
130 angles to the inner side of the hoop 45, to which their outer ends are secured, preferably, by bolts 53, and their inner ends are preferably secured in place by the bolts 51 and additional

fastenings 54, substantially as shown. These braces are preferably curved or bowed outward in opposite directions at 58, so as to permit the lower end of the topmast 2 to pass between them and at the same time to enable them to partially span or surround it, but preferably some space should be left between them and said mast. They are preferably braced apart by means of sleeves 55^a, arranged on opposite sides of the topmast and adjacent thereto, and prevented from spreading by bolts 56, passing through side sleeves 55, and nuts 57, screwed onto the ends of said bolts. The curved portion of each of said braces 49 is preferably pierced by screw-threaded holes 58, through which set-screws 59 pass. When the lower end of the topmast is stepped in the bracket 8, it may be adjusted in an exactly vertical position by means of the set-screws 59, whose inner ends rest against it.

Eyebolts 60 are preferably attached to the hoop 45 of the crosstree 9. The weight of the crosstree is preferably supported by four ties 61, one running from each of said eyebolts 60 to a brace 10. This brace preferably consists of four pieces 62 62 and 63 63. The short pieces 62 are bent so as to fit around the mainmast snugly and their ends are turned so as to extend out from the mainmast at an angle, and are pierced by bolt-holes. The longer pieces 63 are bent near their inner ends into oppositely-extending curves, adapting them to fit around the mainmast 1, and their extreme inner ends are bent so as to extend out at an angle and pierced by bolt-holes. These sections of the brace are bolted together and clamped tightly around the mainmast and topmast by means of bolts 64, having nuts 65.

From the mainmast 1 the parts 63 extend outward, first parallel to each other and then curve away from each other at 66, and back toward each other again, so as to span the topmast 2. Their extreme outer ends are bent outward parallel to each other beyond the mast at 67 and are bolted together by a bolt 68. Between the topmast and the mainmast the parts 63 63 are preferably bolted together by bolts 69 and 70, passing through sleeves 71 and 72, which brace the parts 63 apart, and are secured in place by nuts 73.

The ends of the sections 62 and 63 of the brace 10 are preferably not brought close together by means of the bolts 64 and 68, but are separated by a small space, into which eyes formed on the upper ends of the ties 61 are inserted, and through one of these eyes each of said bolts passes, as shown most clearly in Fig. 10. This is a convenient way to secure the ties 61 to the brace 10, but I do not wish to be understood as confining my claims thereto. The under lower edge of the portion of the brace 10 surrounding the mainmast rests upon a band 7^b, which is preferably exactly like the bands represented in Figs. 2 and 13. This band has its ends bolted together by a bolt 7^c and is in that way clamped tightly in place. To enable it to prevent the

brace 10 from slipping downward, I preferably use a series of S-hooks 7^d, whose upper ends hook into upper ends of pipes 3 and which pass down between the mast and the brace 10 and band 7^b and hook under the band 7^b.

The crosstree is preferably prevented from moving upward by means of ties 74, whose upper ends are preferably fastened in the eyes of the bolts 60 and which extend thence downward and inward to a band 7^a. This band has preferably four eyes 75 riveted thereto, and in these eyes the lower ends of ties 74 are fastened. The band 7 is prevented from rising by means of rods 76, having hooks 77 at their upper ends, and which extend up between the band 7^a and the mainmast and hook over said band. They thence extend downward to the coupling 5, Fig. 22. Their extreme lower ends are preferably bent outward at right angles. They pass down between the coupling and the mainmast through recesses 78 in the coupling a short distance, and the bent portion projects outward through holes 79, preferably substantially horizontal in said coupling.

Between the crosstree 9 and the band 7^b the topmast-brace 11 is preferably located. It is preferably composed of two pieces 80 and 81, bowed or bent near their ends in opposite directions and having their ends bolted together. The bowed portions at their inner ends embrace the mainmast, and the bowed portions at the outer ends embrace the topmast. They are preferably prevented from spreading by bolts 82, passing through them, and sleeves 83, bracing them apart and ranged between the masts. Said bolts are each preferably provided with a nut 84, by which it is held in place.

The topmast 2 is preferably composed of several sections of pipe 85, whose ends are attached together. Preferably the sections decrease in diameter as the top of the mast is approached, and with one exception the joints are preferably formed by welding the ends of the pipes together and covering the joint thus formed by means of metal sleeves thoroughly fitted in place. The joint not thus formed is preferably located about midway between the ends of the topmast and enables the mast to be divided into two pieces for convenience in transportation. It is preferably formed by the use of a tubular coupling 86, composed of two members or parts 87 and 88, provided at their inner ends with annular flanges 89, adapted to rest against each other, and bolt-holes 90, adapted to register with each other and permit the passage of bolts for fastening the parts of the coupling together. Each is screw-threaded internally from its inner end outward for a portion of its length and is provided with a plain extension or flange 91, extending from the screw-threaded part out and adapted to brace the sections of pipe and take the strain off the screw-threaded portion.

The upper member 89 of the coupling is preferably provided with recesses 92, each adapted to receive a bolt-head and prevent its turning. The lower member 88 of the coupling differs from the other in the absence of the recesses 92 and the presence of perforated lugs 93. In using the coupling the upper section of the staff is screwed into the upper member 89 and the lower section into the lower member 88, as shown in Figs. 14 and 19. The flanges 89 of the parts of the coupling are then arranged opposite each other, so that their bolt-holes register, and bolts 94, passed through said bolt-holes, and the parts of the coupling drawn together and securely held in place by nuts 95, screwed onto the ends of the bolts. The vertical ties or braces 43, hereinbefore mentioned as being secured at their lower ends to the sole 36 of the bracket 8, extend up to the coupling 88. Their upper ends are preferably forked and perforated and are secured to said lugs 93 of the coupling by means of bolts 95.

About midway of that portion of the topmast below the coupling 88 I preferably arrange a spreader, consisting of a ring or band 97, surrounding the mast, and four arms 98, extending out radially therefrom, preferably at right angles, and each preferably forked or grooved at its outer end, and over the outer end of each arm passes one of said vertical braces or ties 43, which prevents the lower end of the topmast from rising from its socket or step 37.

The spreader is held in place by means of screws 99, passing through the band 97, and preferably entering holes 100, tapped in the topmast.

Near the top of the topmast it is preferably encircled by a band 101, attached in place by welding or otherwise, and immediately above this band the topmast is preferably encircled, where it is to be used as a flagstaff, by a ring 102, turning loosely upon the mast and supporting an outwardly-extending yoke 103, rigidly attached thereto and carrying a sheave-wheel 104, having an axle 105, turning in bearings 106 in said yoke.

The topmast is surmounted by a cap-piece 107 in the shape of a ball tapped so as to permit of its being screwed onto the top of the topmast, which is screw-threaded to receive it.

The lower end of the topmast is preferably provided with a ring 108, welded thereto, and having one or more rings 109 attached thereto for convenience in hoisting.

One of the guy-ropes 34 is useful for forming part of a ladder as well as for supporting the mainmast in position. From the guy-rope 34 another rope 110 branches off a short distance above the ground and extends up parallel with the rope 34 from the point where the lowermost of the ladder-rungs 111 is inserted, and is attached at its upper end to the eye 112 of the bolt 113, passing through the crosstree-braces 48 48, and a sleeve 114, extending across between said braces and said

bolt, being secured in place by means of a nut 115.

The construction shown in the drawings is the one preferred, and has accordingly been described in detail; but I do not wish to be understood as confining my claims to the precise forms of mechanism shown and described, as they may be greatly varied by the substitution of equivalents without departing from the substance of my invention.

I claim—

1. The combination in a mast or flagstaff of a mainmast; a bracket secured to and upheld by the mainmast; a topmast whose lower end rests upon the bracket, and which is sustained by such bracket; and vertical braces secured to the topmast at their upper ends, and to the bracket at their lower ends, and holding the topmast down and securing it to the bracket.

2. The combination of a mainmast; a bracket secured thereto and supported thereby; and having a step for a topmast; a topmast resting in the step in the bracket; and a brace secured to the mainmast and embracing the topmast, provided with inwardly-projecting set-screws, whose inner ends rest against the sides of the topmast, and enable it to be adjusted and caused to assume a vertical position.

3. The combination in a staff or mast, of a mainmast; a topmast-bracket encircling the mainmast; vertical braces running up from the bracket and securing it to the mainmast, and preventing its moving downward; mainmast-guys secured at their upper ends to the bracket and preventing its moving upward; a topmast resting on the bracket, and means securing it to the mainmast.

4. The combination of a mainmast; a bracket; means clamping the bracket around the mainmast; braces running up from the bracket and securing it to the mainmast; guys running from the bracket to the ground, and both holding the mainmast vertical and preventing the bracket from rising; a topmast resting on the bracket, and means securing the topmast to the mainmast.

5. The combination of a mainmast; a bracket; a step in the bracket for a topmast; a cavity in the bracket below the step; a drainage-passage leading out from the cavity for the escape of water; and a topmast resting in the step substantially as described.

6. The combination of a mainmast, formed of one or more clusters of pipes, arranged with one in the center of each cluster, and the others in a circle around it; a core-piece surrounding the central pipe and secured thereto, and bracing the outer pipes against inward pressure; a bracket 8, having clamping parts 17, and 18; having grooves 19, for the reception of the outer sides of the outer pipes; and flanges 20, and 21, pierced by bolt-holes; bolts passing through said bolt-holes securing said flanges together and clamping the parts 17 and 18, around the mast and said core-

piece being located within the portion of the mast, surrounded by said clamping parts; an arm 17^a, extending out from the part 17; and a topmast supported by said arm, substantially as described.

7. The combination of a mainmast composed of one or more clusters of pipes secured together; a bracket secured to the mainmast; a topmast resting on the bracket, composed of sections of pipe, having their ends secured together; a screw-sleeve coupling, connecting two of said sections; a spreader, secured to said topmast between said coupling and the lower end of the topmast; and braces passing over said spreader, and having their lower ends secured to said bracket, and their upper ends secured to said coupling, substantially as described.

8. The combination of a mainmast; a bracket clamped to said mainmast, and having a step therein for a topmast; a topmast whose lower end rests in said step; a crosstree above said brackets surrounding the mainmast; and consisting of a hoop and braces, two of which braces span the topmast; set-screws projecting inward through said braces, and resting against the topmast, and by means of which the topmast is adjusted; and braces extending up and down from the crosstree, and having their ends secured to parts connected to the mainmast, substantially as described.

9. The combination of a mainmast; a

bracket clamped to said mast, and having a step for a topmast; a topmast resting in said step; braces secured to the bracket and running thence upward and being secured to the topmast; a crosstree above the bracket; means connected with the crosstree, for adjusting the topmast in a vertical position; above the crosstree a brace 11, connecting the mainmast and topmast, and bracing the topmast in position, above the brace 11, a brace 10, clamped to the mainmast and upheld by S-rods, securing the mainmast and the topmast together, and bracing the topmast in position; braces running from the crosstree to the brace 10; a band around the mainmast, below the crosstree; a coupling below the band; means connecting the band and the coupling; and braces running from the band to the crosstree, substantially as described.

10. The combination of a mainmast; a topmast, and a bracket secured to the mainmast, and supporting the weight of the topmast, and having a supporting-arm 19 consisting of a rib 35, a sole 36, provided with the topmast-step 37; a part 39, rounded on its under side, and containing beneath the step 37, a cavity 40, drained by a passage 41, substantially as described.

WILLIAM A. REID.

Witnesses:

BENJ. F. REX,
CHARLIE THAW.