Dec. 31, 1946. W. C. SCRIVENER ET AL 2,413,658

BASE CONSTRUCTION FOR A MAST AND DERRICK

Filed Oct. 3, 1944

FIG. 1.

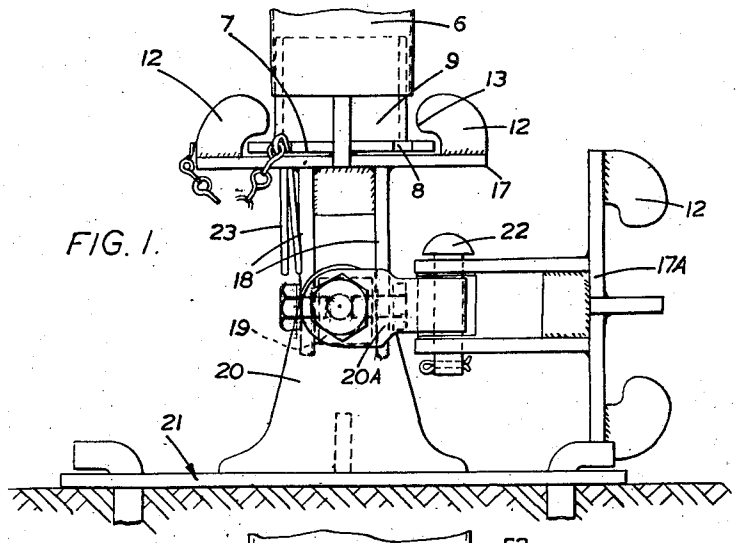
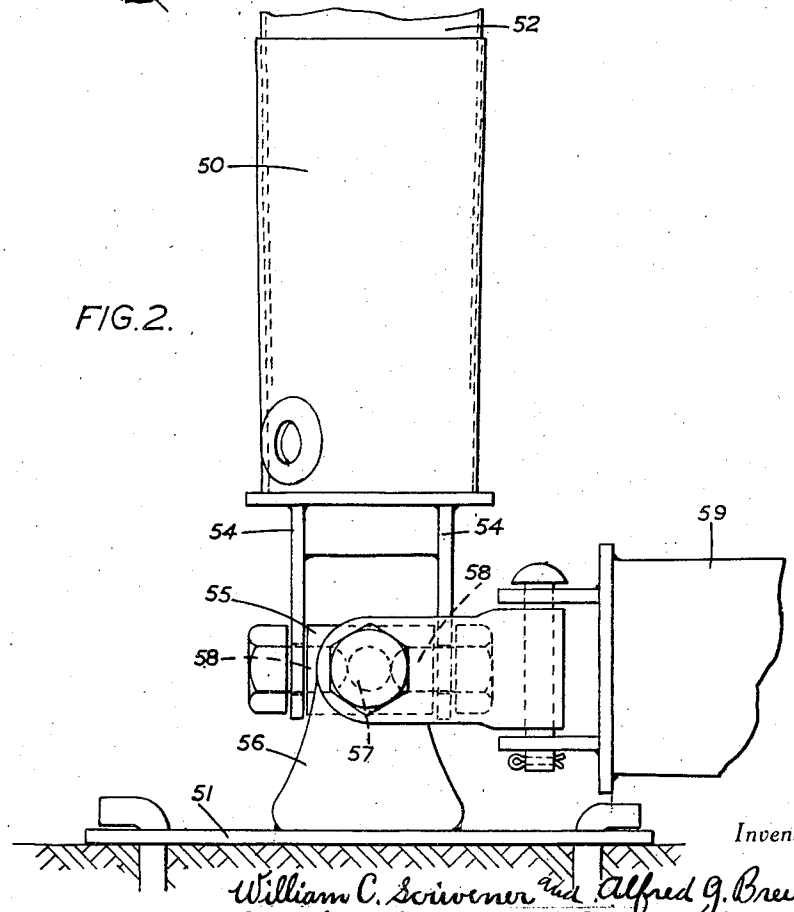


FIG. 2.



Inventors

William C. Scrivener and Alfred G. Brewer

By:- Smith, Michael and Gardiner.

Attorneys

Patented Dec. 31, 1946 2,413,658

UNITED STATES PATENT OFFICE

2,413,658

BASE CONSTRUCTION FOR A MAST AND DERRICK

William Charles Scrivener and Alfred George Brewer, Sutton Coldfield, England

Application October 3, 1944, Serial No. 556,977
In Great Britain June 22, 1942

2 Claims. (Cl. 189—28)

1

The present application is a continuation-in-part of our copending application Ser. No. 483,508 filed April 17, 1943, and entitled Masts, poles and the like.

This invention is for a union for connecting the lowermost member of a mast and the derrick therefor to a base plate and has for its object the provision of a union which is simple in its construction, easy to manipulate and cheap to manufacture.

According to the present invention there is provided a union for connecting both the lowermost member of a mast and a derrick for raising the mast to a base plate which comprises means disposed between the lower ends of the mast and the derrick on the one hand and the base plate on the other, whereby the derrick and the lowermost member of the mast are swung about the same pivotal axis on the base plate when the derrick is operated to raise or lower the mast.

The invention will be hereinafter described with reference to the accompanying drawing, in which:

Figure 1 is a side elevation of a union for connecting the lowermost member of a light mast and the derrick therefor to a base plate; and

Figure 2 is a side elevation of a union for connecting the lowermost member of a medium or heavy type of mast and the derrick therefor to a base plate.

Referring to the drawing, there are illustrated two methods of carrying the invention into effect, wherein a portion of the lowermost member of a mast or the like is shown without any guys or like supports attached thereto but it will be appreciated that such guys are necessary when the member is in an upright position and are attached at points along the lengths of the sections of a mast so as to hold the sections of the mast in the upright position.

The union illustrated in Figure 1 comprises a plate 17 having a series of upstanding lugs 12 which are arranged in planes perpendicular to the plane of the plate 17. The lugs 12 are spaced around the plate 17 at distances corresponding to the distances between slots 8 formed in a flange 7 of a spigot 9 which extends into the lowermost member 6 of the mast. The distances of the slots 8 from the axis of the said member correspond to the distances of the lugs 12 from the said axis and the lugs 12 on the plate 17 are so shaped that they are provided with portions 13 which overhang the plate in a direction towards the axis thereof and also the flange 7 in a manner hereinafter described.

In the construction illustrated in Figure 1, the

2

plate 17 is mounted upon two upwardly extending arms 18 pivotally mounted upon a block 19 which is pivotally mounted in a bracket 20 carried by a base plate 21. The block 19 is so mounted as to be rotatable about an axis at right angles to the axis about which the arms 18 pivot relatively to the block 19.

Connected to the block 19 is a yoke 20A which is arranged to swing about the axis of the block 19. The yoke 20A carries a second plate 17A pivotally connected to the yoke 20A by a swivel pin 22 whose axis is directed at right angles to the axis about which the yoke swivels about the block 19. The second plate 17A is also provided with outwardly extending lugs 12 and is arranged to receive the flanged end of a member similar to the lowermost member 6 of the mast. The said member is arranged to act as a derrick in the erection and lowering of the mast.

The lowermost member 6 of the mast and the member which operates as a derrick are connected to their respective plates 17 and 17A in a similar manner, the connection corresponding to the ordinary movement of a bayonet joint. Thus for example both the member and the derrick are connected to a base plate by a longitudinal movement of the member 6 or the derrick until the lugs 12 extend through the slots 8 in the flanges 7 whereupon the member or the derrick is given a part rotational movement about its axis so as to bring the flange 7 beneath the overharging portions 13 of the lugs 12. A split pin 23 is then inserted through a slot 8 into a hole in the plate 17 or 17A as the case may be so as to lock the member 6 or derrick to the plate 17 or 17A.

The connection between the lowermost member of a mast and the derrick therefor to a base plate which has been described with reference to Figure 1 is suitable for connecting a light mast and its derrick to a base but where medium and heavy masts are employed and the members are in consequence made of a heavier construction, it is found desirable to substitute for the union hereinbefore referred to a union which is preferably constructed so as to ensure that the compression loading is applied concentrically to the ends of the members.

One form of such a union is illustrated in Figure 2 and comprises a socket 50 arranged to receive the lowermost member 52 of a mast. The base plate 51 is provided with a pair of upwardly extending brackets 56 arranged to receive between their free ends a block 55 which is carried by pivots 57 rotatably mounted in the brackets

56 so as to permit the block to swivel about an axis at right angles to the planes of the brackets 56. Arranged to extend from the socket 50 is a pair of brackets 54 similar to the brackets 56 but disposed in planes at right angles to the direction of the planes of the brackets 56 and provided at their free ends with bearings arranged to receive pivots 58 which extend into the block 55 so as to enable the lowermost member 52 to swivel about the same.

By means of a union constructed in the above manner, it will be oberved that the end of the lowermost member 52 is connected to the base plate in a manner which permits of a limited free movement in all directions of the said member relatively to the base plate and yet the pivots are such as to prevent any substantial longitudinal movement of the lowermost member and the base plate relatively to one another.

The union illustrated in Figure 2 may be connected to a derrick in a manner corresponding to that indicated in Figure 1 or in place of the plate 17A there may be employed a socket 59 corresponding to the socket 50 illustrated in Figure 2 which is arranged to swing about the same axis as the pivots 57 so that as the mast is being raised and lowered so the derrick is lowered and raised about the same axis.

It will be appreciated that in view of the fact that the derrick can swivel about two axes at right angles to one another the derrick may be laid, before the mast is raised, along the ground, so as to extend in a direction at right angles to the lowermost member of the mast. Such an arrangement facilitates the connection of forward guy ropes of a mast to the free end of the derrick.

What we claim as our invention and desire to secure by Letters Patent of the United States is:

1. A union for connecting both the lowermost member of a mast and the lowermost member of a derrick employed for raising said mast for pivotal movement of said mast and derrick about a common pivotal axis and for pivotal movement of said derrick about an axis at right angles to said common pivotal axis, said union comprising a base plate, means disposed between said lowermost members and said base plate and constituting the common pivotal axis for said mast and derrick, and means disposed between said common pivotal axis and said lowermost member of said derrick and constituting the pivotal axis for said derrick, said last mentioned pivotal axis being disposed at right angles to said common pivotal axis.

2. A union for connecting both the lowermost member of a mast and the lowermost member of a derrick employed for raising said mast for pivotal movement of said mast and derrick about a common pivotal axis and for pivotal movement of said mast and derrick about separate axes disposed at right angles to said common axis, said union comprising a base plate, means disposed between said lowermost members and said base plate and constituting the common axis for said mast and derrick, means disposed between said common pivotal axis and said lowermost member of said mast and constituting the pivotal axis for said mast, said last mentioned pivotal axis being disposed at right angles to said common pivotal axis, and means disposed between said common pivotal axis and said lowermost member of said derrick and constituting the pivotal axis for said derrick, said last mentioned pivotal axis being disposed at right angles to said common pivotal axis.

WILLIAM CHARLES SCRIVENER.
ALFRED GEORGE BREWER.