

(No Model.)

J. W. MANSFIELD.

PROCESS OF MANUFACTURING HOLLOW MASTS.

No. 371,204.

Patented Oct. 11, 1887.



Fig. 1.



Fig. 2.

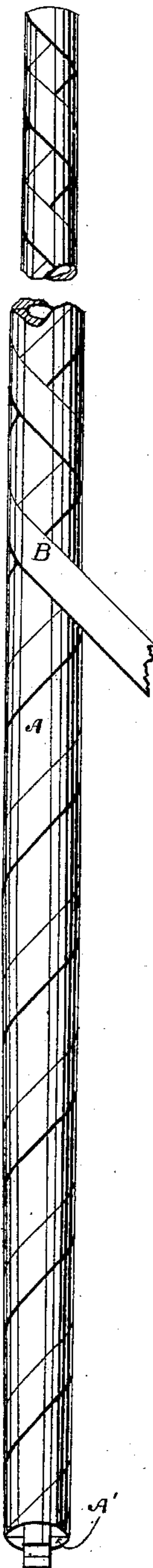


Fig. 3.



Fig. 4.

WITNESSES

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PROCESS OF MANUFACTURING HOLLOW MASTS.

SPECIFICATION forming part of Letters Patent No. 371,204, dated October 11, 1887.

Application filed April 28, 1887. Serial No. 236,387. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. MANSFIELD, a citizen of the United States, residing in Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented a certain new and useful Process for the Manufacture of Hollow Masts, of which the following is a full, clear, and exact specification.

My invention consists of a process for manufacturing hollow masts for vessels, the details of which are hereinafter set forth.

Figure 1 is a representation of one of the shells or pieces of which the mast is built. Fig. 2 shows the half-shells of the mast put together. Fig. 3 shows the method of coating with cloth. Fig. 4 represents the mast with its outer coating of paper.

A A' are the shells or pieces of the mast.

B is the cloth coating.

C is the outer coating of paper.

I preferably make my mast in two similar parts out of two pieces of wood, A A', which are cut the proper length and given the proper outside shape. These pieces are then gouged out to form a shell of any desired thickness, as shown in Fig. 1. The average thickness, however, I preferably make three-quarters of an inch.

The proportions of a mast thirty feet long—such as I use for cat-boats or for sloops—are as follows: the bottom five inches in diameter, middle section six to eight inches in diameter, and the top four inches in diameter. Having thus prepared the half-shells of the mast, I first coat the same, both inside and out, with any suitable material to keep and protect them from the weather, and put the two parts together, as shown in Fig. 2. I next take a piece of cloth or other suitable material, preferably coarse buckram or canvas, of light weight—such as is used by book-binders and is made especially for their business—and cut it into strips, B, of about three inches in width. This cloth is then stretched in a dry condition on any suitable machine, and afterward coated with glue and white lead while in the act of winding it on the mast.

To wind on the cloth, I commence at the bottom of the mast, as shown in Fig. 3, and wind spirally upward toward the top, where I turn and continue the winding to the bottom of the mast. This may be repeated several times,

according to the strength of the mast desired. I commonly make from two to four windings on the ordinary mast. The coating with which the cloth is treated during the operation of winding causes it to adhere firmly and closely to the mast. The spiral produced by the winding of the cloth I seldom make less than forty-five degrees, and I vary the angle in accordance with the amount of strain or twist which is likely to come upon the mast when in use, the general rule being the greater the strain or twist to which it will be subjected the greater should be the angle of the spiral. The cloth so wound upon the mast gives it great strength and firmness and prevents it from breaking under the severe strain to which it is subjected when in use. After the cloth has been wound upon the mast, as described, I lay the mast aside to dry and harden. I then, when it is dry, cover it with paper, C, preferably parchment or a fibrous paper wound over the cloth, not spirally, but straight around the mast in sections of about twenty or twenty-four inches in width, commencing preferably at the center of the mast and working to each end, the paper slightly overlapping at its edges, as represented in Fig. 4. The paper is treated in nearly the same manner as the cloth, with the exception that I first dampen the strip of paper, and afterward dry it between rolls or under a pressure of felt. During the occupation of winding, the paper is treated like the cloth with the same preparation of glue and white lead. After this the mast is put aside to dry, and, lastly, I coat it with a water-proof varnish. When this is dry, the mast is ready for use. I have found in my experience that it is better to form the shell of the hollow mast by gouging it out than by boring. The coating of white lead and glue I preferably make in the proportion of four parts (by weight) of glue to one part of white lead.

A mast made in accordance with my process has among its other qualities that of durability and strength, and is especially adapted to boats where great strength is desirable in the mast.

What I claim is—

1. The herein-described process of making a hollow mast, consisting of first winding the shell of the mast with a spiral coating of cloth, and then winding over the cloth a coating of

paper, and, lastly, coating the whole with water-proof varnish, all substantially as described.

2. The herein-described process of making a hollow mast, consisting of first winding the
5 shell of the mast with a spiral coating of cloth treated with a compound of white lead and glue, and then winding over the cloth a coating of paper treated with a compound of white lead and glue, and, lastly, coating the whole

with water-proof varnish, substantially as described.

In witness whereof I have hereunto set my hand.

JAMES W. MANSFIELD.

Witnesses:

WM. B. H. DOWSE,

ALBERT E. LEACH.