W. L. TOBEY.

ROPE LAYING MACHINE.

APPLICATION FILED OCT. 31, 1910.

1,078,073. Patented Nov. 11, 1913.

Fig. 1.

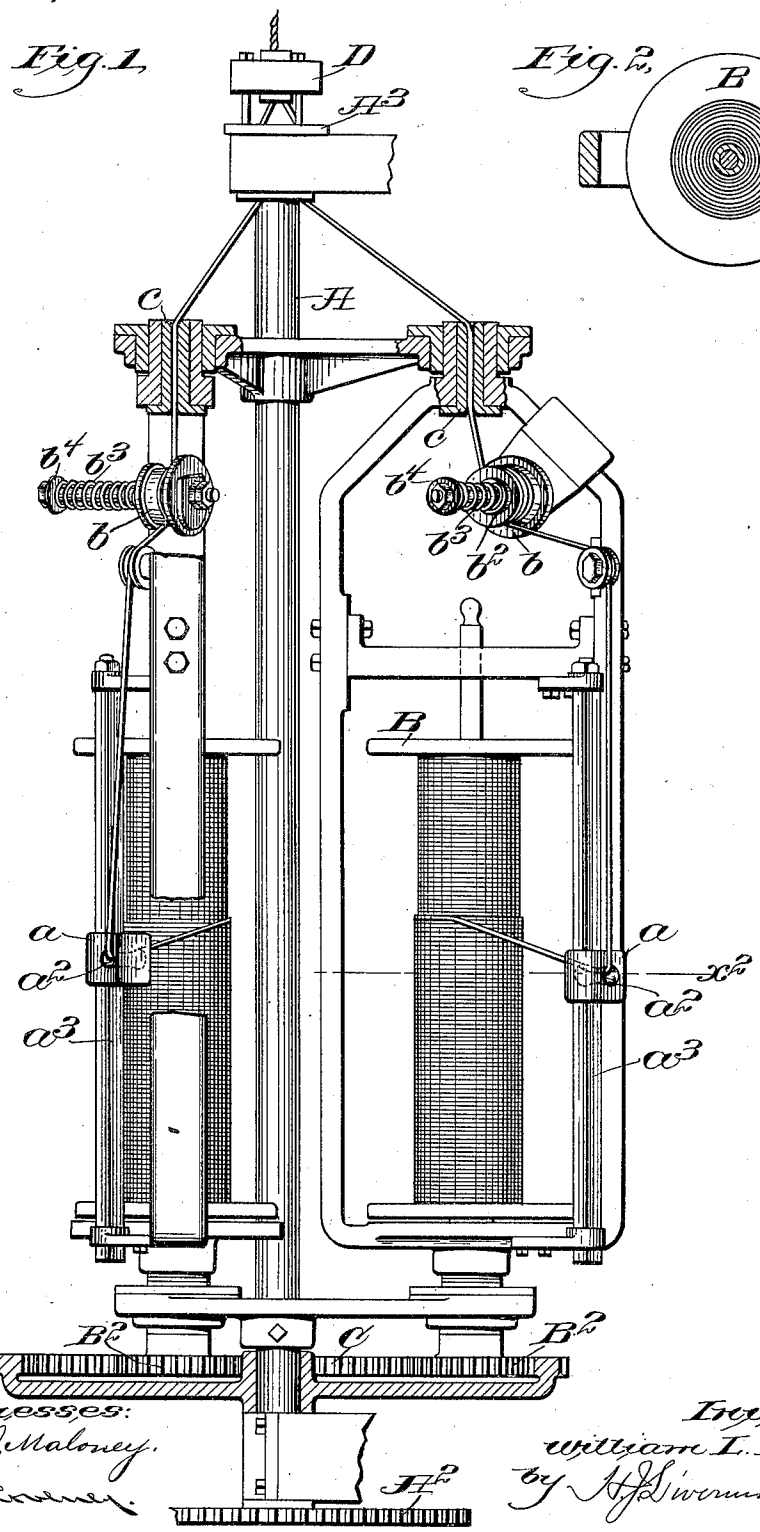


Fig. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM L. TOBEY, OF WINTHROP, MASSACHUSETTS.

ROPE-LAYING MACHINE.

1,078,073. Specification of Letters Patent. Patented Nov. 11, 1913.

Application filed October 31, 1910. Serial No. 589,909.

To all whom it may concern:

Be it known that I, WILLIAM L. TOBEY, a citizen of the United States, residing in Winthrop, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Rope-Laying Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a rope laying machine, and is embodied in a machine having an improved tension device whereby the tension on the strands is maintained substantially constant throughout the entire unwinding of the bobbins on the flier. The machine to which the invention relates is of that type in which the strands are already twisted before being placed on the bobbins, the function of the machine being merely to lay and finish the rope. It has been the usual practice, in machines of this type, to supply the necessary tension on the strands by means of brakes applied to the bobbins themselves, the result being that the tension will vary with the variation and diameter of the bobbins as the strands unwind. In the machine embodying the present invention, the main flier is provided with tension devices located between the bobbins and the layer head, there being interposed between the tension device and the bobbin, a strand leader acted upon by a yielding force, as that of gravity, the force acting on the leader being merely sufficient to pull the strand from the bobbin under an even tension.

In the construction shown, the main flier is provided with vertical bobbin-fliers adapted to be rotated through gears in the usual way as they revolve with the main flier, and the strand leaders consist of weighted strand guides adapted to travel up and down vertical guide members as the strand leaves the bobbin, which is free to rotate on the bobbin spindle, as the strand is pulled off.

Figure 1 is an elevation of the flier and laying head of a machine embodying the invention, parts being shown in section; and Fig. 2 is a horizontal section, on the line x^2 of Fig. 1.

In the construction shown, the main flier consists of the usual rotating spiders carried by a vertical shaft A which is adapted to be rotated as by a gear A^2, the said flier having bobbin-fliers for three rotatable bobbins B, each bobbin-flier being provided with a gear B^2 meshing with an internal gear C located below the main flier. The rotating shaft A is provided at the top with the layer head A^3 through which the several strands are carried to the rope guide D at the top of the machine in the usual way.

In accordance with the invention, the machine is provided with a strand leader a, for each bobbin, the said leaders being arranged to bear against the strand as the latter passes off the bobbin, so as to guide the strand as it comes off the successive layers and to maintain a substantially even tension thereon.

In the construction shown, the bobbins stand vertically in the bobbin fliers, and the strand leaders a consist of slides provided with eyes a^2 for the strands, said slides having sufficient weight to maintain the desired tension, and being arranged to travel on vertical guides a^3 mounted on the fliers parallel to the bobbins. If the strand comes away too rapidly from the bobbin, the leader will move in a direction to cause a more direct pull of the thread toward one end of the bobbin, thus increasing the bearing friction and retarding the bobbin correspondingly.

It is obviously not essential that the bobbins and fliers should be vertically disposed, but such an arrangement is entirely practicable and admits of utilizing gravity as the yielding force acting on the strand leaders.

Between the leader and the layer head is interposed a tension device b, consisting of a sheave or capstan capable of rotation, and being frictionally acted upon by a brake b^2, the strand being wound one or more times around the said sheave, and then carried through a guide c to the layer head A^3. The brake b^2 is preferably spring actuated and is shown as provided with a spring b^3 located between the brake and an adjustable head b^4, whereby the tension of the spring can be varied.

By this construction, it is obvious that the tension on the strands will remain the same, regardless of the diameter of the bobbin which varies with the removal of the strand therefrom, the guiding and even tension of the strand, as it leaves the bobbin, being taken care of by the leader a, while

the unvariable tension of the strand at the layer head is maintained by the adjustable tension device *b*.

What I claim is:

1. In a rope-laying machine, the combination of a layer-head; a flier; rotatable bobbin-holders carried by said flier; freely rotatable bobbins in said bobbin-holders; a strand leader carried by each bobbin-holder, said leader being longitudinally movable on a guide parallel to the axis of the bobbin; a strand-guide at the top of each bobbin-holder through which the strand passes to the layer-head; and a tension device located between said strand-holder and said strand-guide.

2. In a rope-laying machine, the combination of a layer-head; a flier; rotatable bobbin-holders carried by said flier; freely rotatable bobbins in said bobbin-holders; a strand leader carried by each bobbin-holder, said leader being longitudinally movable on a guide parallel to the axis of the bobbin; a strand-guide at the top of each bobbin-holder through which the strand passes to the layer-head; a tension sheave located between said strand-leader and said strand-guide; and an adjustable brake coöperating with said sheave to regulate the tension.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM L. TOBEY.

Witnesses:
JAS. J. MALONEY,
M. E. COVENEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."