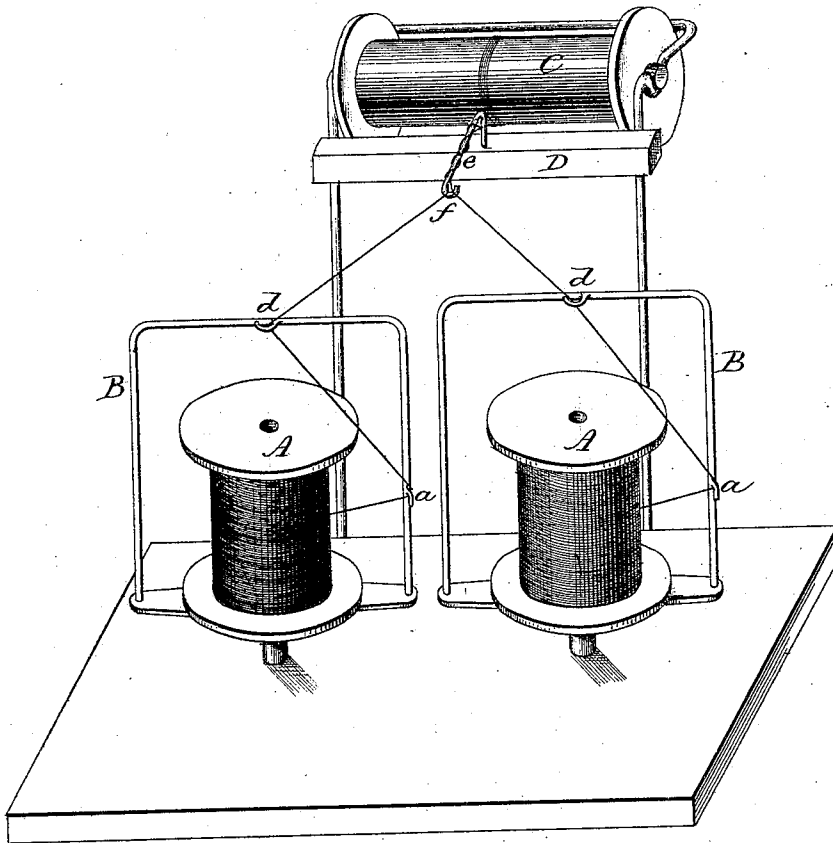


L. E. LEIGH.  
DOUBLING-MACHINE.

No. 171,943.

Patented Jan. 11, 1876.



Witnesses.

*A. Chumway*  
*Clara Broughton.*

*Lewis E. Leigh*  
*Attorney*  
*By Atty.*  
*Wm. E. Le.*

# UNITED STATES PATENT OFFICE.

LEWIS E. LEIGH, OF PORTLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO  
RICHARD S. CLARK, OF MOUNT CARMEL, CONNECTICUT.

## IMPROVEMENT IN DOUBLING-MACHINES.

Specification forming part of Letters Patent No. **171,943**, dated January 11, 1876; application filed  
October 6, 1875.

### *To all whom it may concern:*

Be it known that I, LEWIS E. LEIGH, of Portland, in the county of Middlesex and State of Connecticut, have invented a new Improvement in Doubling-Machine; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent a perspective view.

This invention relates to an improvement in machines for doubling thread. In the usual method of bringing several threads together it is difficult to draw them all upon the spool under the same tension, because each thread is provided with an independent device to give it the required tension.

The object of this invention is to lead the threads over a tension common to all, whereby the stretching of all the threads must be the same; and it consists in arranging between the receiving-spool and the fliers a wire formed with an eye, through which the threads are carried and wound around the wire, thence to the spool, the winding upon the wire giving the necessary tension.

In the illustration, two spools, A A, carry the threads, which are to be doubled. Around these stationary spools the fliers B revolve in the usual manner. The thread is run from the spools through an eye, *a*, on one of the side bars of the flier, thence through an eye, *d*, at the center above, in the usual manner.

C is the receiving-spool; D, the stretcher-bar. To this bar a wire, *e*, is attached, extending toward the spools in nearly the line of the natural draft of the thread therefrom. The lower end of this wire is formed into an eye or hook, F, through which the threads are carried, then wound around the wire *e*, thence led to the spool C. This winding of the threads around the wire *e* produces the tension, and may be adjusted by winding to a greater or less extent, accordingly as more or less tension is required. As the entire tension is made upon the threads on the wire, and they are all brought to that wire, it follows that the tension becomes common to all, and the stretching will consequently be equal, so that when the thus doubled threads are twisted, the strain upon the twisted cord will come alike upon all the threads of which the cord is composed, and the breaking strain of the twisted cord correspondingly greater than it is when the tension upon the threads in doubling is different one from the other.

### I claim—

The combination, in a doubling machine, of the stationary spools A, the fliers B, constructed with a central eye, *d*, the tension-wire *e*, constructed with an eye, through which the several threads pass, and coiled around the said tension-wire, thence running to the roll, substantially as described.

LEWIS E. LEIGH.

### Witnesses:

W. E. STANNARD,  
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