(No Model.)

A. L. WASHBURN.

THREAD DOUBLING MACHINE.

No. 271,383. Patented Jan. 30, 1883.

Fig: 1.

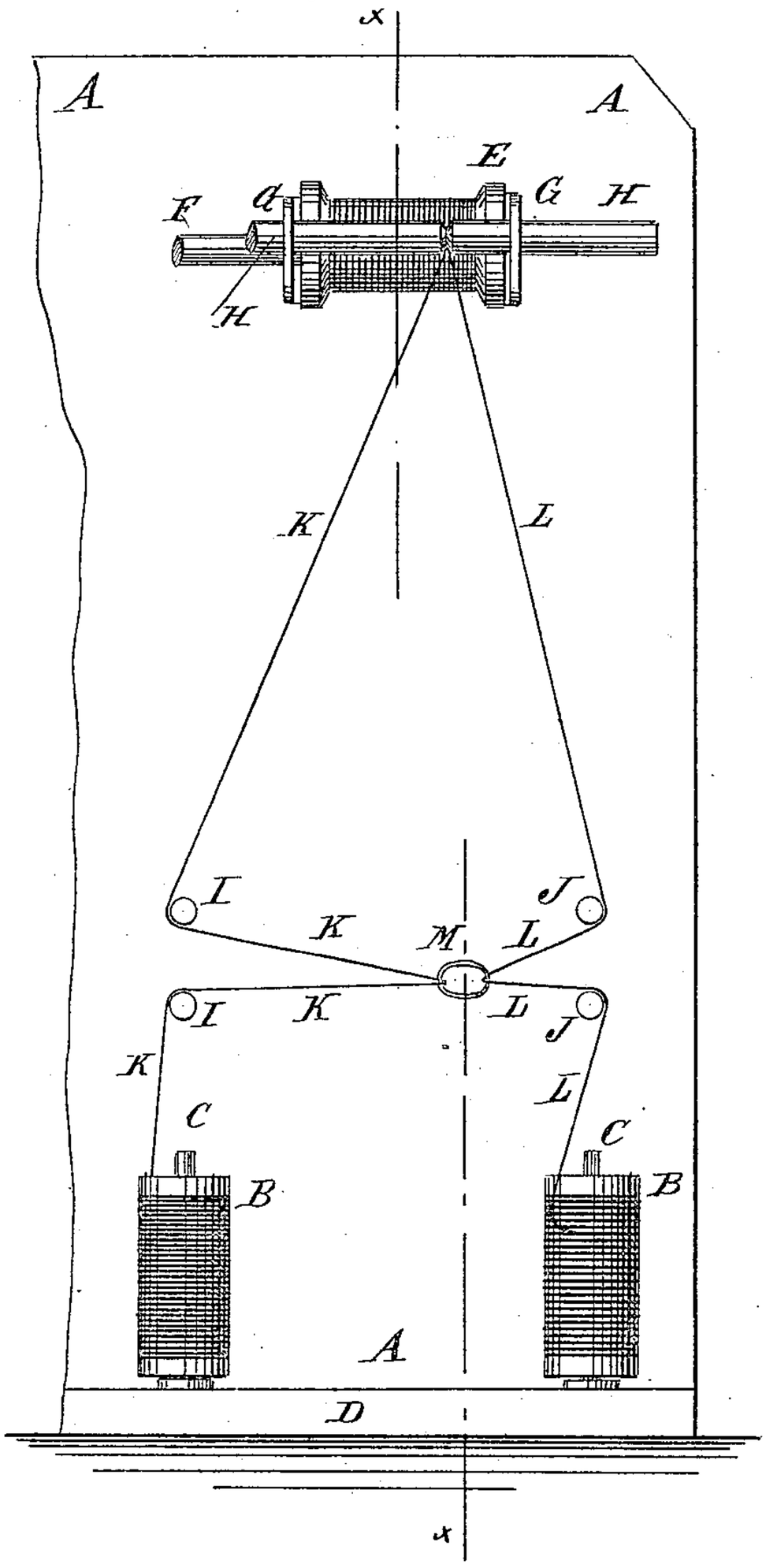
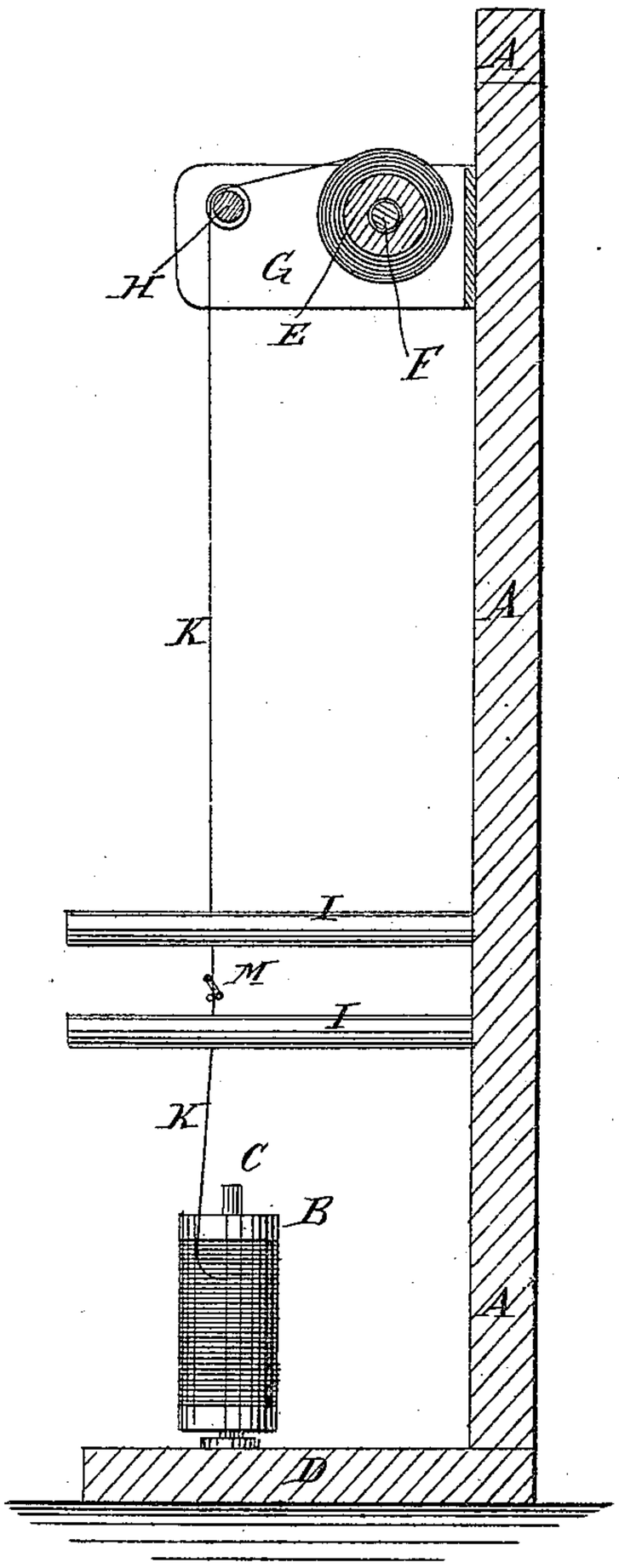


Fig: 2.



WITNESSES:

Chas. Nida.

C. Sedgwick

Fig: 3.

INVENTOR:

A. L. Washburn

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ALBERT L. WASHBURN, OF HARTFORD, ASSIGNOR OF ONE-HALF TO NATHANIEL S. PERKINS, OF NEW LONDON, CONNECTICUT.

THREAD-DOUBLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 271,383, dated January 30, 1883.

Application filed March 3, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALBERT L. WASHBURN, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Thread-Doubling Machines; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to machines for doubling thread; and has for its object to produce a thread of evenly-laid strands, so that the same may be smoother and not liable to kink; and I accomplish this end by means of a simple device for regulating and equalizing the tension of the different strands while doubling the thread, as shown in the accompanying drawings, in which—

Figure 1 is a front elevation; Fig. 2, a section on line *x* of Fig. 1, part in elevation, of my invention, showing some contiguous parts in one form of thread-doubler. Fig. 3 is a perspective view of a link, the application of which is the main feature of my invention.

A represents the body of the machine.

D is a bar or shelf of the frame, in which spindles C are fixed to support the bobbins B, from which the strands K L are drawn and wound up together by the bobbin E on the spindle or arbor F, which is caused to revolve in its bearings G by suitable machinery.

H is a traverse-bar provided with a groove to receive and unite the strands and to guide them to be wound on the bobbin E as one thread.

As my invention is applicable to any one of the many forms of thread-doubling machines in use, only so much of the contiguous parts of a machine will be referred to as is necessary to explain its operation. Even the bobbin E, or any other winding device, is not necessary, for a person might take hold of the strands K L at the groove in rod H and draw them hand-over-hand through my ring M and accomplish the purpose.

I I and J J are pairs of guides, over the lower two and under the upper two of which the strands K L are respectively drawn.

M is a ring suspended upon the strands K L and free to move in the direction of the most strain. This ring introduces a novel feature in the art of thread-doubling. It operates on the principle of the parallelogram of forces. When but two strands pass through it it will be suspended in a line between them, and at equal distances from the guides I J when the tension of the strands is equal; but when one strand draws harder than the other the ring M will be drawn to that side of center. When three or more strands are united at once the position of the ring will be at a mean point between the guides, at a distance from each in inverse ratio to the tension of the respective strands. By this means the strands approach the ring at various degrees of tension and leave it all at the same tension, all traveling at the same speed, being wound at the same time upon the same bobbin E. By this method two strands of different sizes—as one strand made up of two smaller strands and the other strand of one small one—may be doubled to an even thread of equal tension in both strands. When more than two strands are to be joined, each will have its own guides corresponding to I J, the spindles C standing at equal distances apart in a circle, and the guides I J, over said spindles in a vertical plane, tangent to said circle, the loop M being in their common vertical axis when at rest.

Any usual winding device, E H, may be used—such, for instance, as that shown in Patent No. 50,575—also any usual device for supporting the bobbins which carry the strands to be doubled; but

What I claim, and desire to secure by Letters Patent, is—

In a machine for doubling thread, the combination of two or more pairs of guides, I I and J J, and a tension-ring, M, substantially as described.

ALBERT L. WASHBURN.

Witnesses:
ABIEL CONVERSE,
C. W. BUTLER.