G. L. BROWNELL.

TWISTING MACHINE.

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1,211,670.

Patented Jan. 9, 1917.

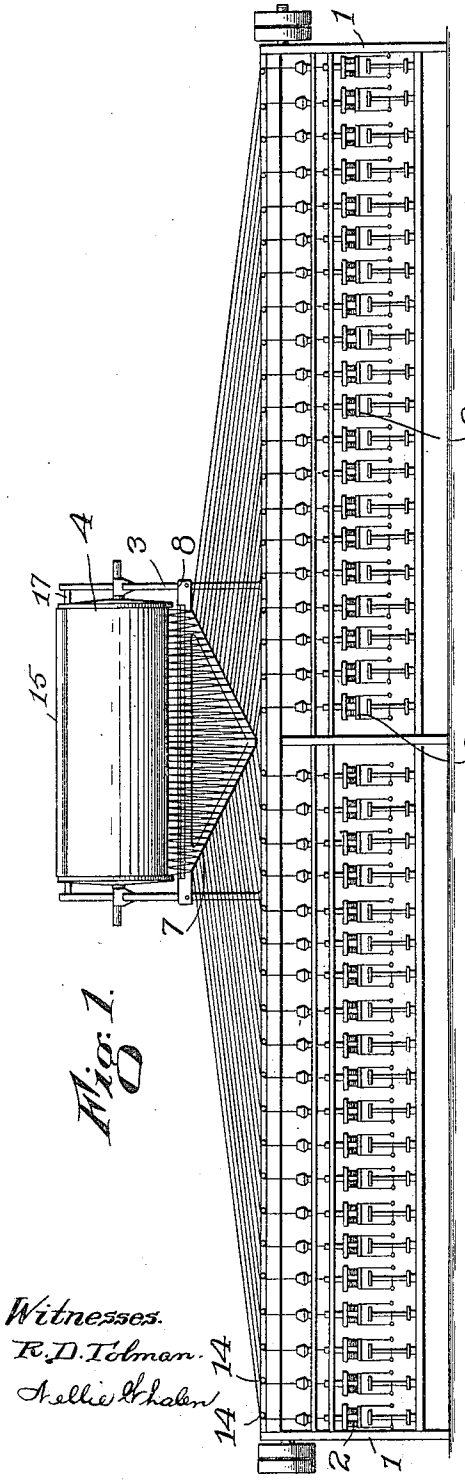


Fig. 1.

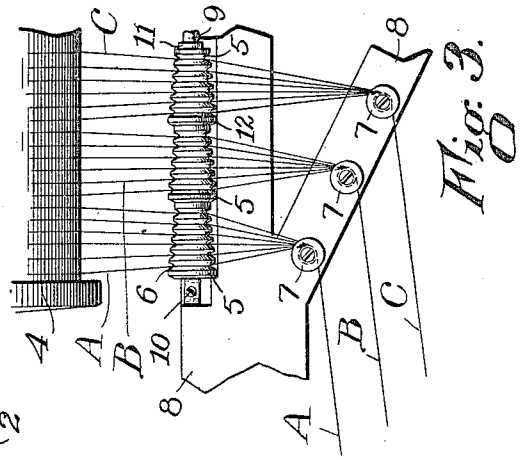


Fig. 3.

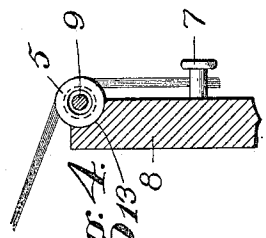


Fig. 4.

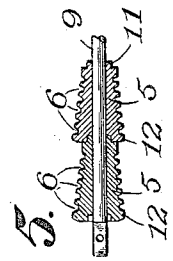


Fig. 5.

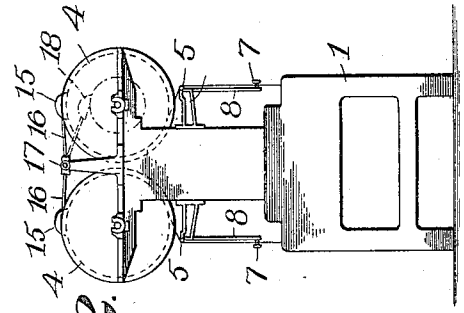


Fig. 2.

Witnesses.

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TWISTING-MACHINE.

1,211,670. Specification of Letters Patent. Patented Jan. 9, 1917.

Application filed June 19, 1914. Serial No. 846,162.

To all whom it may concern:

Be it known that I, GEORGE L. BROWNELL, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Twisting-Machines, of which the following is a specification, accompanied by drawings forming a part of the same.

My present invention relates to a machine for twisting a multiplicity of threads into a single cord, and particularly to that part of the mechanism for delivering the threads to the twisting mechanism; and it has for its objects to preserve the separation of the threads as they are delivered from a beam to the twisting mechanism, and to equalize the tension upon the threads in order to secure greater uniformity in the twisting cord, and to facilitate the detection and mending of broken threads. These objects among others are secured by the mechanism hereinafter described, the novel features being specifically pointed out in the annexed claims.

Referring to the accompanying drawings, Figure 1 represents a front elevation of a twisting machine for laying cord or twine embodying my present invention. Fig. 2 is an end view of the same. Figs. 3 and 4 are enlarged views in detail of a portion of the device for delivering the threads from a beam to the twisting mechanisms. Fig. 5 is an enlarged sectional view of two of the grooved blocks by which the threads are separated.

Referring to the accompanying drawings, 1 denotes the framework of the machine in which the revolving twisting mechanisms 2 are mounted. Supported in an elevated framework 3 is a beam 4 containing a multiplicity of threads, uniform groups of which are conveyed to the individual twisting mechanisms 2 to be twisted into a single cord. In the present instance the threads upon the beam 4 are arranged in groups of six threads each, each group being conveyed to a single twisting mechanism. The multiple threads are originally wound upon the beam 4 side by side and when withdrawn therefrom each group is carried over a conical block provided with peripheral grooves equal to the number of threads in each group.

In Fig. 3 I have represented three groups A, B and C, each consisting of six threads which are carried over a conical block 5 provided with peripheral grooves 6 in which the individual threads are conducted to a pin 7. The grooved blocks 5 and the pin 7 are supported in a triangular framework 8 held in a vertical position and attached to the elevated framework 3. The grooved blocks 5 are strung upon a rod 9 attached at its opposite ends by screws 10 to the framework 8. The smaller ends 11 of the blocks 5 are recessed in the larger ends 12, and the blocks themselves are supported in a curved recess 13 in the framework 8. The pins 7 are so located beneath the delivery side of the grooved blocks 5 that the threads of each group will be brought together and lie side by side as they pass around the pins 7, but separated as they leave the blocks by the grooves 6. The taper of the blocks 5 is sufficient to allow several threads of each group to lie side by side without overlapping as they pass around the pins 7. From the pins 7 the threads pass around pins 14 held in a horizontal row in the framework of the machine, each of said pins 14 being directly over the twisting mechanisms 2. The pins 7 are held in the triangular sides of the framework 8 and are so spaced that the angles formed by the corresponding threads in each group will be equal and also the angles formed by each group of threads as it passes around the pins 14 will be equal, causing a uniform tensile strain to be applied to each group of threads. When the number of threads in each group are changed other blocks are employed having a corresponding number of grooves. The uniform separation of the threads in each group between the beam 4 and the pin 7 enables the attendant to detect at a glance if a thread is missing, and correct the loss before the threads reach the twisting mechanisms. A tension is imparted to the threads by the weighted end 15 of a lever 16 pivoted to the framework at 17. The lever 16 when its end 15 rests upon the threads of a filled beam is substantially horizontal, yielding its maximum weight to resist the rotation of the beam. As the beam is emptied the lever 16 falls, assuming a more and more oblique position, as represented by the broken lines 18, thereby constantly decreasing the effective pressure upon the threads as the diameter of the wound threads decreases, causing a substantially uniform tension to be maintained upon the plurality of threads as the beam is being emptied,

and also a uniform tension of the twisted cord as it is wound upon the winding spools 19 of the twisting mechanisms.

In the accompanying drawings I have shown my invention as applied to a machine for laying cord or twine in which a multiplicity of threads are twisted into a single cord by means of a flier and wound upon a winding spool. This type of twisting machine is well known, but I do not confine my present invention to any specific form of twisting or winding mechanisms.

I claim,

1. In a machine of the class described, a series of rotatable twisting mechanisms, a beam for holding the threads to be twisted arranged on said beam in groups, means for holding the threads of each group in spaced relation to each other as they leave the beam, a pair of pins for changing the direction of each group as it is drawn from the beam, said pins being arranged to maintain each group of threads at uniform angles.

2. In a machine of the class described, a series of twisting mechanisms, a beam for holding the threads to be twisted arranged in groups, a series of grooved and tapered blocks arranged with their axes parallel with the axis of said beam, and a series of pins with their axes at right angles with the axes of said blocks, but at varying distances therefrom over which the groups of threads are conducted to the twisting mechanisms.

3. In a machine of the class described, a twisting mechanism, a beam for holding the threads to be twisted arranged in groups, a tapered block over which the group of threads is drawn, means for holding the threads of the group in spaced relation to each other, and a pin at right angles to the axis of said tapered block by which the direction of the group of threads is changed as it passes to the twisting mechanism.

4. In a machine of the class described, a series of twisting mechanisms, a beam for holding the threads to be twisted arranged in groups, a device for holding the threads of each group in spaced relation to each other, comprising a series of hollow grooved and tapered blocks, with abutting and telescopic ends, and a concentric retaining rod for said blocks.

5. In a machine of the class described, a series of twisting mechanisms, a beam for holding the threads to be twisted, arranged in groups, a series of pins for changing the direction of each group of threads between the beam and the twisting mechanism, said series of pins being arranged in a row obliquely to the axis of said beam, whereby said pins are arranged at varying distances from the axis of the beam.

6. In a machine of the class described, a series of twisting mechanisms, a beam for holding the threads to be twisted arranged in groups, a series of pins for changing the direction of each group as it approaches the twisting mechanisms, a second series of pins between said first series of pins and said beam, and arranged in a row oblique to the axis of the beam, whereby said groups of threads form equal angles as they pass around the pins in each of said series of pins.

7. In a machine of the class described, a series of twisting mechanisms, a beam for holding the threads to be twisted arranged in groups, a framework provided with a semicylindrical recess, a series of grooved blocks detachably held in said recess, end to end, comprising a grooved block for each group of threads.

8. In a machine of the class described, a series of twisting mechanisms, a beam for holding the threads to be twisted arranged in groups, means for changing the direction of each group of threads as they are conducted from the beam to the twisting mechanisms, comprising a tapered block and a cylindrical pin at right angles to said block over which the group of threads are successively passed, whereby a quarter twist is imparted to the group of threads, and means for maintaining the threads of each group in spaced relation to each other as they pass over said tapered block.

9. In a machine of the kind described, a series of twisting mechanisms, a beam for holding a multiplicity of threads to be twisted arranged in groups, a series of blocks, one for each group of threads, having their axes parallel with the axis of said beam, means for spacing the threads of each group as they pass over said blocks, said blocks having their peripheries contacting with the threads tapered, whereby a slight twist is given to each group of threads as they pass over said blocks.

GEORGE L. BROWNELL.

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