No. 689,786. Patented Dec. 24, 1901.

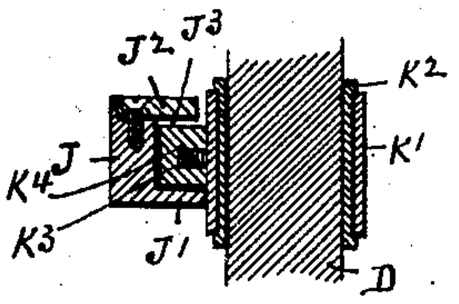
G. L. BROWNELL.

TWISTING MECHANISM.

(Application filed Jan. 24, 1898.)

(No Model.)

Fig 3.



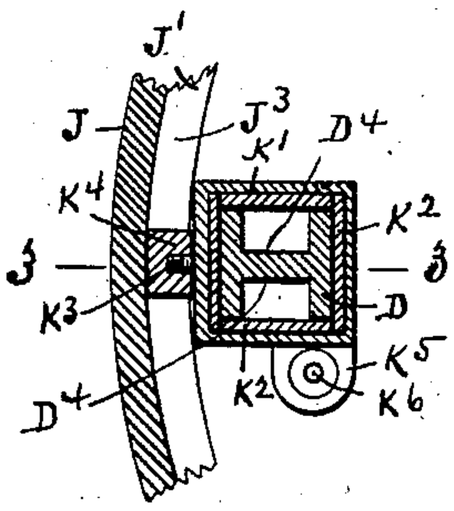
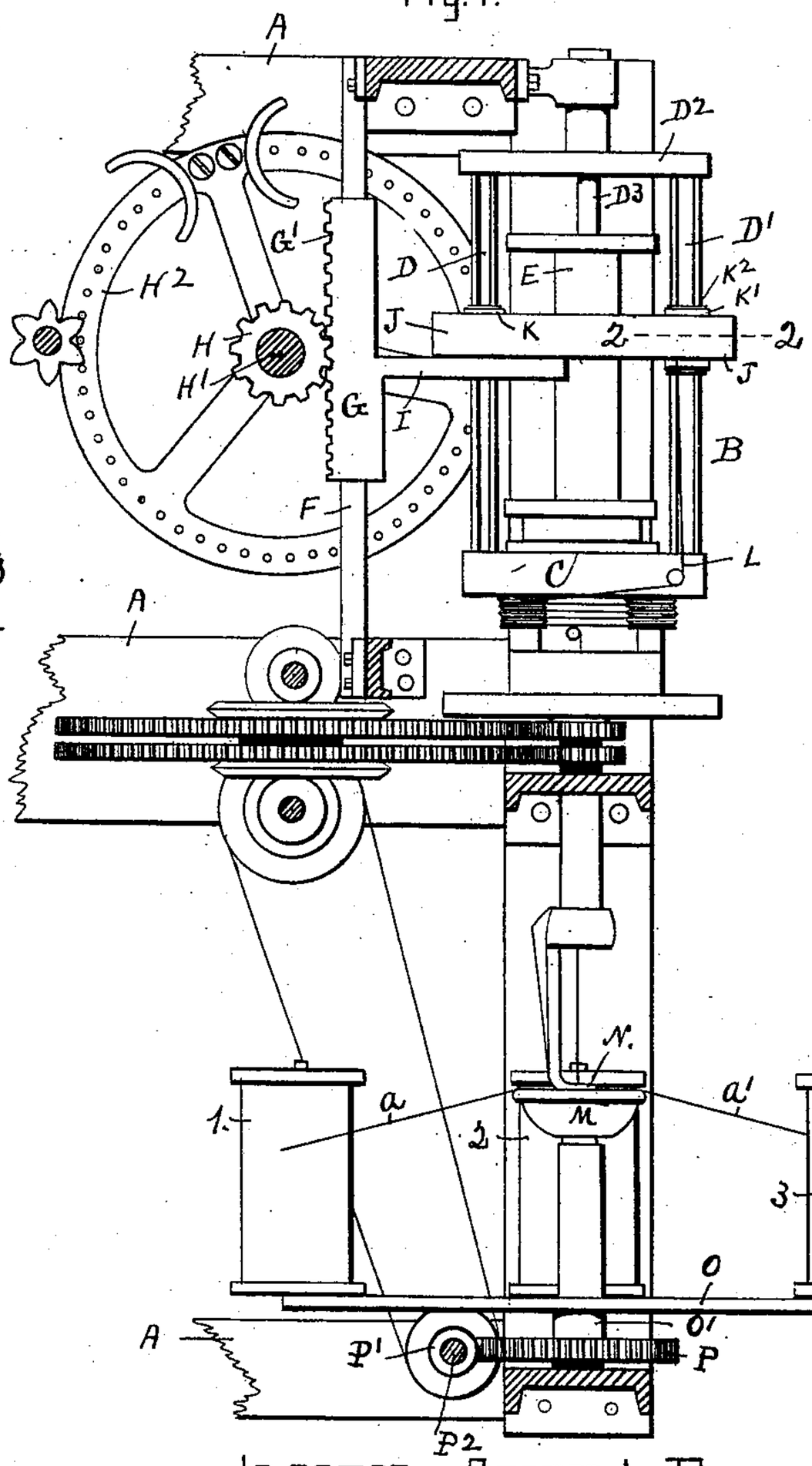


Fig 2.

Fig. 1.



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UNITED STATES PATENT OFFICE.

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TWISTING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 689,786, dated December 24, 1901.

Application filed January 24, 1898. Serial No. 667,693. (No model.)

To all whom it may concern:

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

Figure 1 represents a side elevation of a twisting mechanism embodying my invention. Fig. 2 is a sectional view of a portion of the same shown on line 2 2, Fig. 1; and Fig. 3 is a sectional view of that portion of the mechanism shown in Fig. 2 with the section taken on line 3 3, Fig. 2.

Similar letters refer to similar parts in the different figures.

My invention relates to a mechanism for twisting twine or cord; and it has for its objects to provide an improved traversing mechanism by which the twine or cord is laid evenly upon the winding-spool, and also to provide means whereby the individual strands are moved along upon the edge of a water-cup; and it consists in the construction and arrangement of parts as hereinafter described, and set forth in the annexed claim.

Referring to the drawings, A denotes a portion of the framework of a twisting-machine, which is shown in sectional view in order to disclose the operative parts of the machine, which are of a well-known form of construction, comprising a rotating flier-frame B, consisting of a disk C, upright flier-arms D D′, connected at the top by a cross-bar D^2 and carried by a revolving spindle D^3.

E denotes the winding-spool upon which the twisted cord is wound and held concentrically within the flier-arm.

Attached to the framework of the machine is an upright bar F, forming a way for a vertically-sliding rack G, provided with teeth G′, which are engaged by a pinion H, attached to a shaft H′, which is rotated a single revolution in opposite directions by means of a mangle-wheel H^2 and the usual connecting mechanism, causing a reciprocating motion to be given to the sliding rack G on the bar F. The rack G is provided with a bracket I, to which is attached a ring J, held concentrically with the rotating flier-frame B. The ring J is provided at its lower edge with an interior flange J′ and at its upper edge with a removable flange J^2, the two flanges J′ and J^2 inclosing a groove J^3 upon the inner side of the ring. The upright flier-arms D and D′ carry sleeves K K′, preferably formed of aluminium in order to reduce their weight to a minimum and lined or bushed with sheets K^2 of vulcanized fiber to reduce the friction upon the flier-arms. Upon the side of the sleeves K K′ next the ring J is a screw-threaded stud K^3, preferably integral with the sleeve, upon which is screwed a rectangular block of vulcanized fiber K^4, adapted to slide in the groove J^3 of the ring J, and upon one of the adjacent sides of the sleeves are lugs K^5, having eyes K^6, through one of which the twisted cord L, Fig. 1, is conducted to the winding-spool. As the flier-arms D D′ are rotated the sleeves K K′ are carried around the winding-spool, and the cord, passing through the eye K^6 of one of the sleeves K K′, becomes wound thereon and is evenly traversed or laid upon the winding-spool by the rising-and-falling motion of the ring J, which slides the sleeves K K′ up and down upon the flier-arms D D′. The sleeves K K′ are duplicates and are carried upon each of the flier-arms D D′ in order to balance the flier-frame, and the lugs K^5 are traversed the distance between the heads of the winding-spool by the rising-and-falling motion of the ring J, actuated by the mangle-wheel H^2 and connected operating mechanism.

In the traversing mechanism above described the rotating parts driven by the flier-arms D D′ consist only of the light aluminium sleeves with their bushing of vulcanized fiber, so that but little momentum is added to the flier-arms, and the contact between the stationary ring and revolving parts of the mechanism is limited to the contact of the flanges J′ J^2 with the upper and lower sides of the small rectangular block K^4 of vulcanized fiber, thereby decreasing the friction between the moving and stationary parts.

The flier-arms D and D′ are preferably rectangular in cross-section and are grooved on opposite sides, as at D^4, in order to reduce the weight of the arms. The sleeves K K′ are preferably longer than the width of the ring J to provide a bearing upon the flier-

arms long enough to prevent the binding of the sleeves on the arms as the sleeves are moved up and down upon the arms by the rising-and-falling motion of the ring J, and the block K^4 is also preferably rectangular to furnish a bearing-surface against the flanges J′ and J^2 and prevent the block from unscrewing upon the screw-threaded studs K^3. The upper flange J′ of the ring J is removable in order to permit the blocks K^4 to become released from the groove J^3 and allow the blocks K^4 to be replaced when worn.

I am aware that a traverse mechanism comprising a rotating ring carrying cord-guides and driven by the flier-arms in a guideway having a rising-and-falling motion is not new, and I do not herein claim such.

My improved traverse mechanism enables me to attain a very high speed of the flier-arms with a slight friction of the moving parts and with a very slight increase in momentum. By increasing the length of the sleeves upon the flier-arms I counteract the drag or twisting effect of the cord or twine upon the guides and transfer any increase in pressure from the ring J and blocks K^4 to the sleeves and the flier-arms or from rapidly-moving surfaces to slowly-moving surfaces, and thereby prevent an undue increase in friction.

In machines of this class it is frequently necessary to revolve the flier-frame at a very high speed, and it is desirable to reduce both the friction and the momentum of the moving parts, and I therefore carry the cord-guides upon sleeves which are carried by the flier-arms which are parallel with their axes of rotation and serve as guideways for the sleeves, thereby securing a long bearing upon the flier-arms to resist the twisting strain of the cord upon the guides and reduce the weight of the moving parts to a minimum and also decrease the bearing-surfaces which are in rapid motion.

The twisted cord L is composed of individual strands taken from the spools 1, 2, and 3, two of these strands being shown at *a a′*.

The individual strands are carried over the upper edge of a cup M, filled with water, and each strand is depressed beneath the surface of the water held in the cup M by being carried beneath the foot N, in order to wet the strands as they pass to the twisting and winding mechanism. Each of the strand-spools 1, 2, and 3 is supported upon a rotating table O, provided with a hub O′, to which is attached a worm-gear P, engaged by an actuating-worm P′ on a rotating shaft P^2 in order to cause the strands as they are conducted from the strand-spools 1, 2, and 3 to be moved along the edge of the stationary water-cup M and prevent grooves from being worn in the edge of the cup.

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

In a twisting mechanism, the combination of a flier-arm parallel with its axis of rotation and polygonal in cross-section, means for rotating said flier-arm, a sleeve capable of longitudinal movement thereon and fitting said flier-arm, whereby it is held from rotation relatively to said arm, a cord-guide projecting from one side of said sleeve, a block attached to the outer side of said sleeve, a ring provided with a groove receiving said block and means for imparting a traversing movement to said ring parallel with the axis of rotation of said flier-arm, substantially as described.

Dated this 17th day of January, 1898.

GEORGE L. BROWNELL.

Witnesses:

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