No. 661,301. Patented Nov. 6, 1900.

H. G. BEEDE.

TWISTER MACHINE.

(Application filed Apr. 13, 1900.)

(No Model.) 2 Sheets—Sheet 1

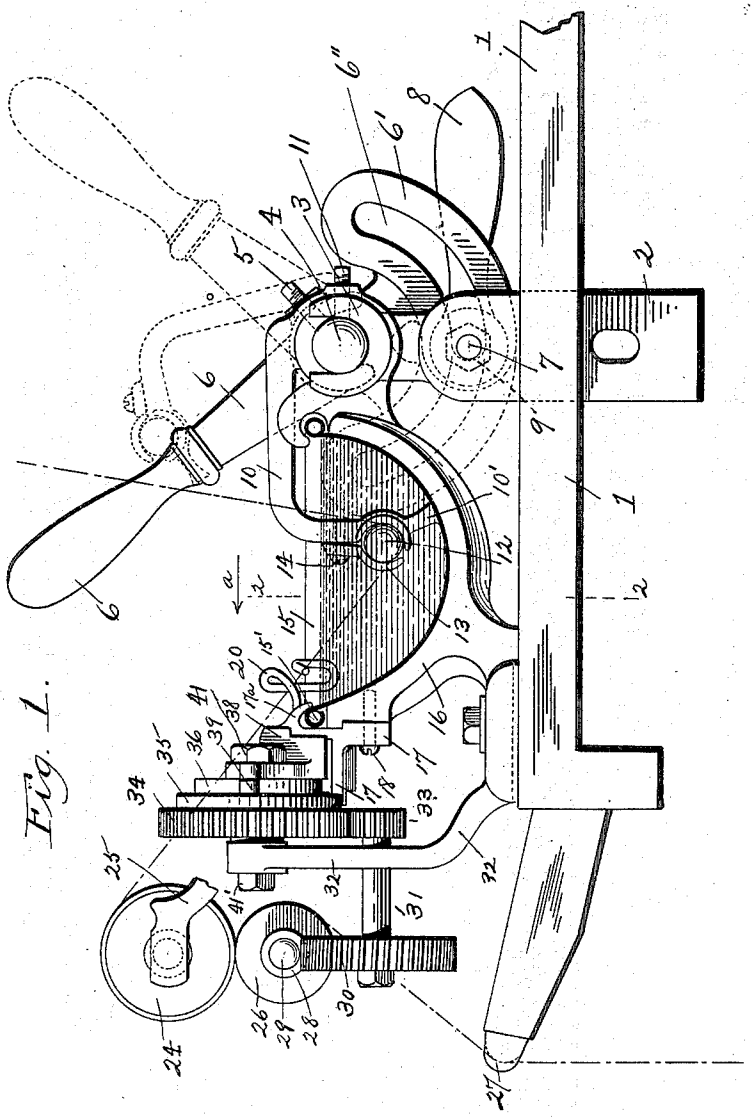

Fig. 1.

Witnesses
C. F. Wesson.
M. Haas.

Inventor.
H. G. Beede.
by J. C. Dewey,
Attorney.

No. 661,301. Patented Nov. 6, 1900.

H. G. BEEDE.

TWISTER MACHINE.

(Application filed Apr. 13, 1900.)

(No Model.) 2 Sheets—Sheet 2.

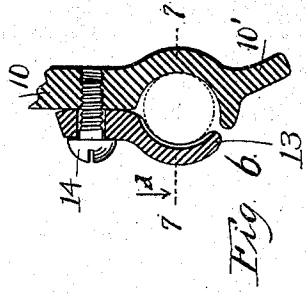

Fig. 6.

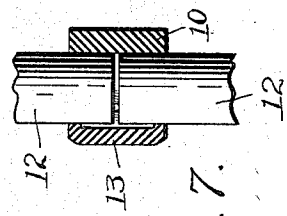

Fig. 7.

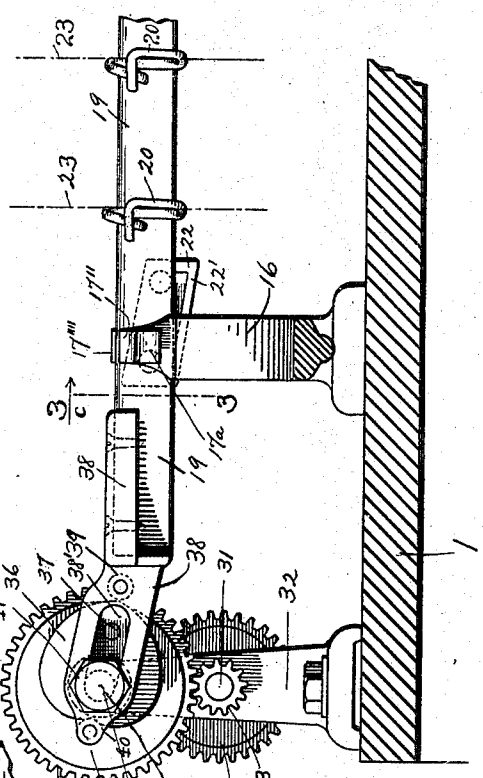

Fig. 2.

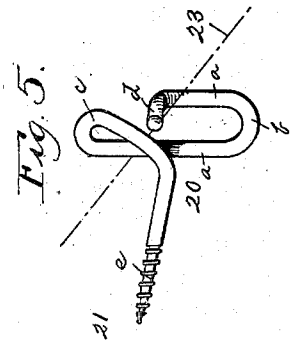

Fig. 5.

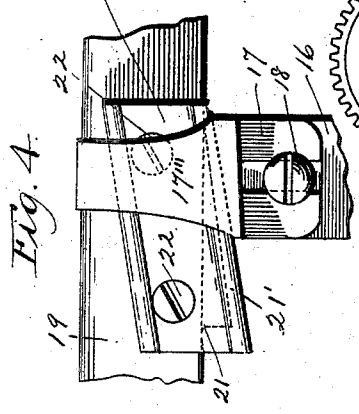

Fig. 4.

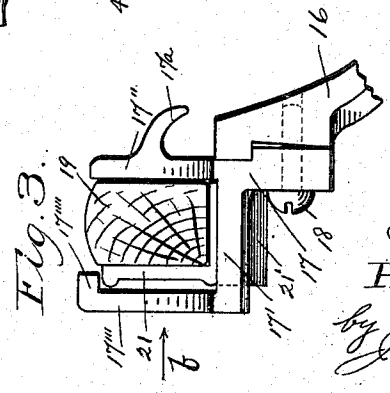

Fig. 3.

Witnesses.
C. F. Wesson.
M. Haas.

Inventor.
H. G. Beede
by J. C. Dewey
Attorney.

UNITED STATES PATENT OFFICE.

HERBERT G. BEEDE, OF PAWTUCKET, RHODE ISLAND.

TWISTER-MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,301, dated November 6, 1900.

Application filed April 13, 1900. Serial No. 12,695. (No model.)

To all whom it may concern:

Be it known that I, HERBERT G. BEEDE, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Twister-Machines, of which the following is a specification.

My invention relates to twisting machinery or what are generally termed "twisters" for twisting thread, and more particularly to "wet twisters" or twisters in which a trough of water is used through which the thread passes before it is wound on the bobbin; and the object of my invention is to improve upon the construction of some of the parts of wet twisters as now ordinarily made.

In the ordinary construction of wet twisters the traverse-rod carrying the guide-wires through which the threads pass has a reciprocating motion in a horizontal plane to change the position of the thread on the glass rod extending in the trough of water and on the top roll, over which the thread passes, and prevent the wearing of a groove in the same by the friction of the thread. The guide-wires in the traverse-rod through which the threads pass are located at one side of the water-trough and do not extend over it and are of such a shape that they do not remove the water from the thread and cause it to drop off, but allow it to be carried on to the rolls. The position of the guide-wires relatively to the thread which passes through them is such that though there is a reciprocating movement of the wires with the traverse-rod in a horizontal plane there is no vertical movement of the wires, so that the thread must always bear at the same point on the wire, and the constant friction caused by the passage of the thread through the wire will wear a groove therein, so that if larger thread or yarn is to be twisted it will be wedged in the groove and broken off. In my improvements I have my thread-guide wires extend over the water-trough and make them of such a shape (with two vertical portions between which and tangential to which the thread passes) that the wires not only act as a guide for the thread, but also remove the water from the thread and cause it to drop off from the bottom of the wire directly into the trough below. I also provide for a vertical movement of the guide-wires in addition to the ordinary reciprocating movement in a horizontal plane, so that the thread passing through the guide-wire does not always bear at the same point on the wire, but has a considerable bearing-surface, so that it will not wear a groove in the wire by constant friction at one point, as is ordinarily the case, as above stated. In the present instance to give a vertical movement to the guide-wires I provide the traverse-rod, to which the guide-wires are secured, where it is supported by the stands or brackets in which it has a reciprocating motion in the direction of its length with a shoe or bearing which has an inclined surface on its lower part to travel on the inclined surface on the traverse-rod stand, so that as the said traverse-rod is given a reciprocating motion in the direction of its length it will also be raised and lowered according to the incline of the shoe or bearing thereon and with it the series of guide-wires.

I have shown in the drawings only such parts of a wet twister with my improvements applied thereto as will enable those skilled in the art to which my improvements belong to understand the construction and operation thereof.

Referring to the drawings, Figure 1 is an end view of a portion of a wet twister sufficient to illustrate my improvements applied thereto. The end of the water-trough is removed. Fig. 2 is a section at line 2 2, Fig. 1, showing a rear view of the traverse-rod which carries the guide-wires and the mechanism which operates said rod looking in the direction of arrow *a*, Fig. 1. The water-trough is not shown in this figure. Fig. 3 is a cross-section through the traverse-rod on line 3 3, Fig. 2, looking in the direction of arrow *c*, same figure. Fig. 4 is a side view of the traverse-rod stand and traverse-rod and its inclined shoe or bearing looking in the direction of arrow *b*, Fig. 3. Fig. 5 is a side view of a guide-wire detached. Fig. 6 is a sectional view of the end of the glass-rod-supporting finger and clamp shown in Fig. 1; and Fig. 7 is a cross-section through the clamp, showing the ends of two glass rods to

be clamped, taken on line 7 7, Fig. 6, looking in the direction of arrow *d*. Figs. 3 to 7, inclusive, are on an enlarged scale.

In the accompanying drawings, 1 is a portion of the frame of the twister. 2 is a stand having at its upper end a bolt 7, which extends through a slot 6″ in the slotted segment 6′ on the lifter-handle 6, which is secured by a screw 5 on the lifter-rod 4, which rotates in a bearing 3 on the water-trough stand 16. The clamp-handle 8 turns the nut 9 on the bolt 7 to clamp the segment 6′ on the lifter-handle 6 and hold the lifter-handle in position. A finger 10 is secured on the lifter-rod 4 by a screw 11 to move with said lifter-rod as the same is rotated by the handle 6. The finger 10 supports at its outer end the ends of the glass rods 12, secured thereto by the clamp-piece 13 and clamp-screw 14, as shown. A projection 10′ on the finger 10 rests on the bottom of the water-trough 15 to support said finger.

It will be understood that there is a series of supporting-fingers 10 and a series of glass rods 12, extending in alinement and supported by and clamped in said fingers 10. The two contiguous ends of two glass rods are supported and clamped in one finger, as shown in Fig. 8. The diameter of the glass rods often varies and the two ends to be clamped in one supporting-finger are rarely of the same diameter. I therefore make the recessed part on the end of the finger of greater diameter than the diameter of the ends of the glass rods to be clamped and the recess in the clamp-piece 13 of less diameter than the diameter of the ends of the glass rods to be clamped, and I make the inner surface of the clamp-piece 13, at its attaching end, slightly convexed or curved, so that it may have a tilting motion to adjust itself to any inequality in the diameter of the ends of the two glass rods to be clamped. I provide fins or ridges 13′ on the edges of the clamping-piece 13 to engage and bind the rods near their extreme ends, and not at their extreme ends, to break off the same.

The movement of the lifter-handle 6 from the position shown by full lines, Fig. 1, to the position shown by broken lines lifts the glass rod 12 through the lifter-rod 4 and finger 10, and the turning of the clamp-handle 8 clamps the lifter-handle 6 and holds the rod 12 in its elevated position, as shown by broken lines in Fig. 1. The glass-rod-supporting fingers 10 by means of the extension 10′ are all held in the water-trough 15 in exact alinement to receive the glass rods 12 and are then secured to the lifting-rod 4 by the screws 11. The fingers 10 are then raised by moving the handle 6 into the position shown by broken lines in Fig. 1 in readiness to receive the glass rods 12, which are placed end to end (see Fig. 7) in the recessed portion at the ends of the fingers 10, and then the clamp-pieces 13 put on and secured in place by the screws 14. This construction provides for a quick and easy assembling of the parts.

The water-trough 15 may be of the ordinary shape and construction and supported on a series of stands 16, secured to the frame 1. Only one stand 16 is shown in the drawings. To the front ends of the stands 16 and at the front edge of the trough 15 are secured the traverse-rod stands or brackets 17 by a screw 18 or otherwise. Only one stand 17 is shown in the drawings.

On the rear of the stand 17 is a projection or lip 17ª, under which extends and is held the rod 15′, extending along the front edge of the water-trough. The lip 17ª holds the rod 15′ and the edge of the trough 15 in a fixed position relative to the shank or attaching end of the guide-wire 20, so that in the reciprocating motion of the traverse-rod 19 and the guide-wires 20 thereon there is always a clearance or space between the guide-wires 20 and the edge of the trough 15. The stand 17 has an inclined base 17′ and the parallel vertical walls 17″ and 17‴, between which the traverse-rod 19, carrying a series of guide-wires 20, has a reciprocating movement in the direction of its length.

Secured to the traverse-rod 19 at the point where it extends through and travels in the stand 17 is a shoe or bearing 21, which in this instance is of angle shape, with one side extending upon the front side of the rod 19 and secured thereto by screws 22 and the other side or bottom 21′ extending upon the lower surface of the rod 19 and made inclined, as shown, to travel on the inclined base 17′ of the stand 17, and thus communicate an up-and-down motion to the rod 19 in addition to the regular reciprocating motion. An inwardly-extending lip 17⁗ on the front wall 17‴ of the stand 17 extends over the upper edge of the shoe or bearing 21, as shown in Fig. 3, and acts to hold the traverse-rod 19 in the stands 17. By moving the rod 19 in the direction of its length, so that the upper edge of the shoe 21 will pass beyond the lip 17⁗, the rod 19 may readily be removed from the stands 17.

The guide-wire 20 is screwed into the rear side of the traverse-rod 19 and extends over the water-trough 15, as shown in Fig. 1, and is preferably made in the shape shown with the two vertical portions *a a*, between which the thread passes in a direction tangent thereto, so that the water is removed from the thread and drops off from the bottom loop *b* of the wire directly into the trough 15, over which the wire extends, as shown in Fig. 1, and the eye *c*, back of which the thread extends, and the projecting end *d*, under which the thread is passed and which serves to hold the thread and prevent it from slipping off the wire, and the shank or screw-threaded attaching end *e*. The wire 20 acts not only as a guide-wire, but also as a drip-wire to remove the water from the thread. The thread

23 passes under the glass rod 12 in the water-trough 15, through the guide-wire 20, and over the top roll 24, mounted on a stand 25 in the ordinary way, and over the bottom roll 26 and the guide 27 to the spindles (not shown) in the ordinary way.

A reciprocating motion is communicated to the traverse-rod 19 by a worm 28, fast on the bottom-roll shaft 29, meshing with a gear 30, fast on a shaft 31, which has its bearings in the stand 32, bolted to the frame. On the opposite end of the shaft 31 is a pinion 33, which meshes with and drives a gear 34 on a bolt 41 in the stand 32. The gear 34 has a plate 35 and a cam 36 secured thereon by a pin 37. (See Fig. 2.) Secured to the end of the traverse-rod 19 is a slotted piece or casting 38, having the inclined slot 38′ therein and the friction-rolls 39 and 40 thereon, which travel on the periphery of the cam 36. The bolt 41 extends through the slot 38′, and the head 41′ holds the slotted casting 38 on the bolt 41. There is a nut 41″ on the other end of bolt 41. It will be seen that the rotation of the cam 36, driven by the system of gears, will communicate a reciprocating motion to the traverse-rod 19, carrying the guide-wires 20, and cause the thread 23, held by the guide-wires, to move back and forth on the glass rod 12 and on the top roll 24 in the direction of their length, so as not to wear a groove therein, and at the same time the inclined shoes or bearings 21 on the rod 19 will cause said traverse-rod 19 and the guide-wires 20 to have an up-and-down motion, so that the thread 23, passing through the guide-wires 20, will not bear at the same place on the guide-wires, and consequently will not make a groove in the wires.

The advantages of my improvements will be readily appreciated by those skilled in the art.

I provide a combined guide and drip wire which extends over the trough, so that the drip from the thread will drop into the trough, and I provide for a vertical movement of the guide-wires attached to the traverse-rod, as well as a horizontal movement, and thus prevent the thread from wearing a groove at one point in the guide-wires.

It will be understood that the details of construction of my improvements may be varied, if desired.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a twister, a traverse rod or bar and thread-guides thereon, said rod or bar having a reciprocating motion in the direction of its length, and also an up-and-down motion, and means for imparting the reciprocating motion, and the up-and-down motion, substantially as shown and described.

2. In a twister-machine, a traverse rod or bar, and wire thread-guides thereon, said rod or bar having a motion in a vertical plane, to change the position of the guide-wires, relative to the thread passing through said wires, and means for imparting said motion, substantially as shown and described.

3. In a twister-machine, a traverse rod or bar, having a shoe or bearing with an inclined lower surface to travel in the traverse-rod stand, and said traverse-rod stand, substantially as shown and described.

4. In a twister-machine, a traverse rod or bar, having a shoe or bearing with an inclined lower surface to travel in the traverse-rod stand, and said traverse-rod stand, and a lip or projection on the stand, to extend over the upper edge of said shoe or bearing, and hold the traverse-rod in place, substantially as shown and described.

5. In a twister-machine, the combination with the lifter-rod, of a rod-supporting finger fast thereon, and having a recess for the rod, and a detachable clamp-piece having a rounded or curved bearing-surface, under the attaching-screw, and said attaching-screw and a recess for the rod, of less diameter than the recess in the finger, and means for attaching the clamp-piece to the finger, substantially as shown and described.

6. In a twister-machine, the combination with the lifter-rod, of a rod-supporting finger fast thereon and having a recess for the rod, and a detachable clamp-piece having a rounded or curved bearing-surface, under the attaching-screw, and said attaching-screw and a recess for the rod, of less diameter than the recess in the finger, and fins or ridges on the edges of the clamp-piece, and means for attaching it to the finger, substantially as shown and described.

7. In a twister-machine, the combination with the traverse-rod stand, having a holding lip or projection on the rear side thereof, of the water-trough, and a rod extending along the edge thereof, and within said lip or projection, to be held thereby, substantially as shown and described.

HERBERT G. BEEDE.

Witnesses:
J. C. DEWEY,
MINNA HAAS.