R. W. BROCKWAY.

TWISTER.

APPLICATION FILED MAR. 20, 1920.

1,416,941. Patented May 23, 1922.

Fig. 1.

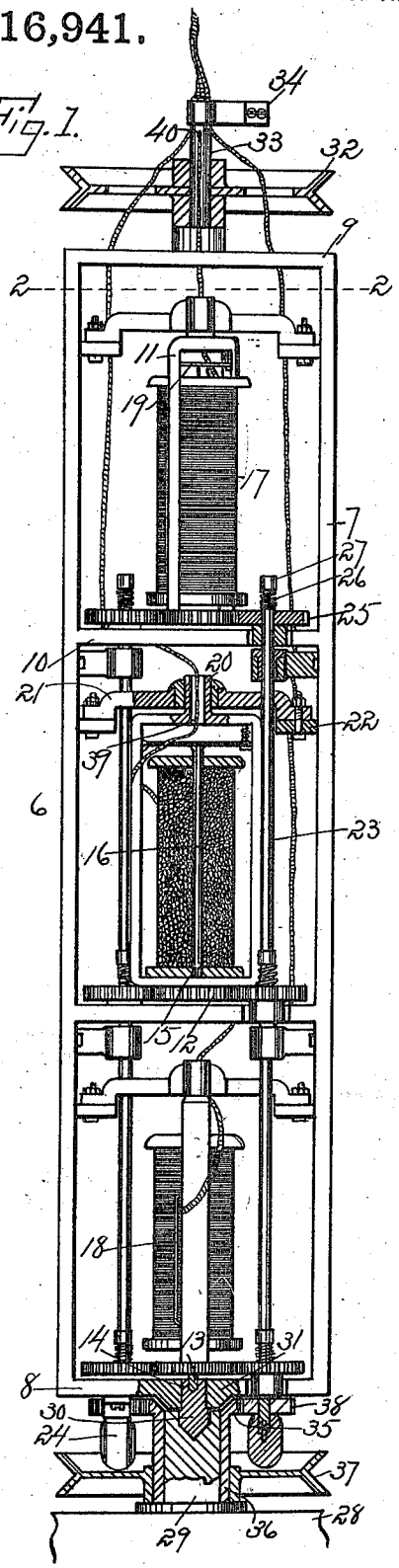


Fig. 2.

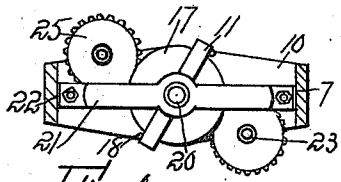


Fig. 4.

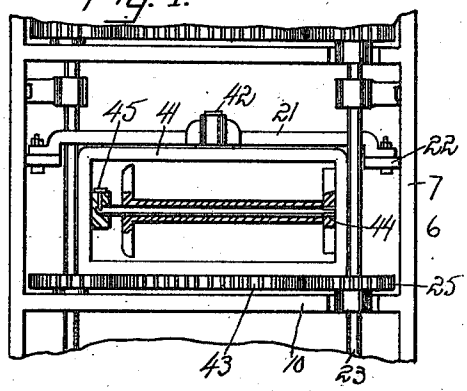
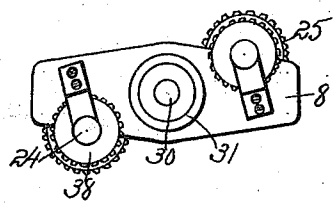


Fig. 3.



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UNITED STATES PATENT OFFICE.

RICHARD W. BROCKWAY, OF MOODUS, CONNECTICUT, ASSIGNOR TO HIMSELF AND FRANCIS J. MECKENSTURM, A PARTNERSHIP DOING BUSINESS UNDER THE NAME OF BROCKWAY & MECKENSTURM MACHINE COMPANY, OF MOODUS, CONNECTICUT.

TWISTER.

1,416,941. Specification of Letters Patent. Patented May 23, 1922.

Application filed March 20, 1920. Serial No. 367,527.

To all whom it may concern:

Be it known that I, RICHARD W. BROCKWAY, a citizen of the United States residing in Moodus, in the county of Middlesex and State of Connecticut, have invented new and Improved Twisters, of which the following is a specification.

My invention relates to the class of devices employed for twisting a number of threads or strands to form a single thread or strand of a larger size, as is commonly practiced in the art of cordage, and in spinning, weaving and the like, and an object of my invention, among others, is the production of a twister frame or spindle that may be rotated at a high rate of speed, one that will effectively accomplish the work required of it, and one that shall occupy a minimum amount of space.

One form of twisting frame or spindle embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a view in elevation of a twister frame embodying my invention with parts broken away to show construction.

Figure 2 is a view in section on plane denoted by dotted line 2—2 of Figure 1, looking down.

Figure 3 is a bottom view of the frame shown as removed from its bearings.

Figure 4 is a view of a portion of a frame illustrating a different manner of mounting the fliers.

In the accompanying drawings the numeral 6 indicates my improved twisting frame that is substantially rectangular in form when viewed in side elevation and comprises sides 7, a bottom bar 8 a top bar 9, and cross bars 10, all of which are preferably composed of metal formed in a single piece.

Twister heads, or frames, or spindles, as they are frequently called, have, prior to my invention, embodied a structure in which the bobbins or spools have been so arranged upon a rotating frame as to be revolved about the axis of said frame. My improved twister head or frame comprises a structure in which the bobbins or spools are arranged with their axes coincident with the axis of rotation of the frame composed of the sides, top, bottom and cross bars above mentioned, said cross bars 10 being arranged at regular intervals along the frame, as herein shown this frame being arranged to receive three bobbins and therefore having two of said cross bars. Fliers 11 are rotatably mounted on the bottom and cross bars, each flier comprising a rectangularly shaped frame with a flier pinion 12 rigidly secured to its under surface and a bearing stud 13 projecting downwardly from the pinion into a bearing recess in the bar that supports the flier, in the construction herein shown this recess being in a pin driven into the cross or bottom bar. Said pinions may be secured to the fliers in any suitable manner and the studs and their bearings in the cross bars or bottom bar may be of any desired construction to enable the flier to rotate freely on its support. A skewer stud 15 projects upwardly from the bottom of and within each flier frame and skewers 16 are pivotally secured to said studs so that they may be placed in an inclined position to receive the bobbins 17 that are loosely mounted on the skewers to rotate independently thereof. A loop or guide 18 is formed on the outside of each flier to receive the thread from the bobbin thereon.

The bobbins are retained in place by means of latch bars 19, each pivotally attached at one end to a side bar of the flier and having at its center a socket to receive the upper end of the skewer, the end of each latch bar opposite its pivot resting upon a lip projecting from the side of the flier from which lip a pin projects through the latch and a spring presses the latch bar against the lip in a manner common to devices of this kind. A hollow shaft 20 on the upper end of each flier projects into a hole comprising a bearing in a flier supporting bar 21 extending across the twisting frame and secured as by means of screw bolts to supports 22.

Flier rotating shafts 23 are supported in a vertical position by the bottom and cross bars of the frame 6, these shafts being stepped in bearings 24 secured to the under side of the bottom bar 8, said shafts extending through recesses formed in the edges of the cross bars and being supported by

brackets projecting from the sides 7 underneath the cross bars and as shown in Figures 1 and 3 of the drawings. These shafts have flier driving gears 25 secured thereto and in mesh with the pinions 12. In order that all of said driving gears may properly mesh with their respective pinions, and without binding action therebetween, the gears 25 are frictionally secured to their shafts so that under the application of a certain amount of power the shafts may rotate independently of the gears, the frictional connection however being sufficient to drive the fliers under ordinary conditions of use. The connection herein shown for each gear comprises a spring 26 pressing against a gear and retained in place as by means of a collar 27 secured to the shaft in any desired manner.

The frame 6 is mounted to rotate preferably with its axis vertically disposed and a number of these twister frames may be supported on a rail 28, in a manner that will be readily understood by those skilled in the art. In mounting my improved frame I employ a flanged step 29 that may be secured to the rail in any suitable way, this step having a short stub shaft 30 projecting from the bottom of and rigidly secured to the bottom bar 8 of the frame, in the structure herein shown this shaft comprising a stud driven into a hub 31 on the bottom of the frame and having the recess 14 in its upper end to receive the bearing stud from the pinion of the lowermost flier in the frame, and in a manner as hereinbefore described with respect to the other fliers.

A twisting frame driving pulley 32 is secured to a twister frame supporting shaft 33 projecting from the upper end of the twister frame into a bearing in a bracket 34 supported in any suitable manner common to twisting frame apparatus.

The shafts 23 are rotated by means of pinions 38 on the lower ends thereof meshing with a driving gear 35 secured to a sleeve 36 rotatably mounted on the step 29 and having a flier driving pulley 37 secured thereto, each of the pulleys 32 and 37 being designed to receive belts for driving them. The gear 35 is in mesh with flier driving pinions 38 secured to each of the shafts 23, from which construction it will be noted that the twister frame is driven by one driving means and the fliers are rotated independently of such frame by another driving means.

The thread passes from each of the bobbins or spools under a loop or guide 18 and through an opening 39 in a hollow shaft 20 and from thence through a hole in the top bar or a cross bar next above it, the threads from the several bobbins being passed through holes diagonally arranged in said bars, and each of the threads passing through an opening in the web of the pulley 32, and from thence into an eye 40 in the side of the supporting shaft 33, and out at the end of said shaft from which point it will pass around a tension roller and from said roller to a reel in a manner that will be readily understood, and for this reason said roller and reel are not shown in the drawings herein.

In a slightly different arrangement of the device illustrated in Figure 4 the twister frame will be constructed as above described and the flier rotating shafts will be mounted and driven as hereinbefore set forth. The fliers 41, however, will be mounted so that the axes of the bobbins will extend transversely to the axis of rotation of the fliers. In this construction the support for the hollow shaft 42 for the upper part of the flier, will project from what was a side part in the construction hereinbefore described, and the flier pinion 43 will be secured to the other side part. In this arrangement the support 44 on the flier frame will have a recess for the free end of the skewer for the bobbin, and a spring pressed pin with a knob 45 on its end will enter the recess in a manner to hold the free end of the skewer in place in said recess.

I claim:—

1. A rotatably mounted twister frame, a plurality of bobbins mounted for twisting rotation on said frame, shafts rotatably mounted on said frame on opposite sides thereof, means comprising a frictional driving connection between said shafts and each of said bobbins, and means for driving said shafts.

2. A rotatably mounted twister frame, a plurality of bobbins mounted for twisting rotation on said frame, shafts on opposite sides of said bobbins, a plurality of members each frictionally secured to each shaft and in driving connection with said bobbins, and means for driving said shafts.

3. A rotatably mounted twister frame, a bobbin mounted for twisting rotative movement on said frame, said axis of rotation of said bobbin being in line with the axis of rotation of said frame, a shaft rotatably mounted in said frame on each side of said bobbin, toothed driving members rotatably mounted on said shafts and frictionally connected therewith, and a toothed connection between said members and said bobbins.

4. A twister frame rotatably mounted with its axis vertical, a bobbin mounted for twisting rotation on said frame and with its axis in line with the axis of said frame whereby the bobbin rests upon its end on said frame to provide frictional resistance to its rotation, means for rotating said bobbin, and means independent of the pull of the thread for rotating said frame.

RICHARD W. BROCKWAY.