June 29, 1926. 1,590,325

A. SGRITTA

CORD MACHINE

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Fig. 1

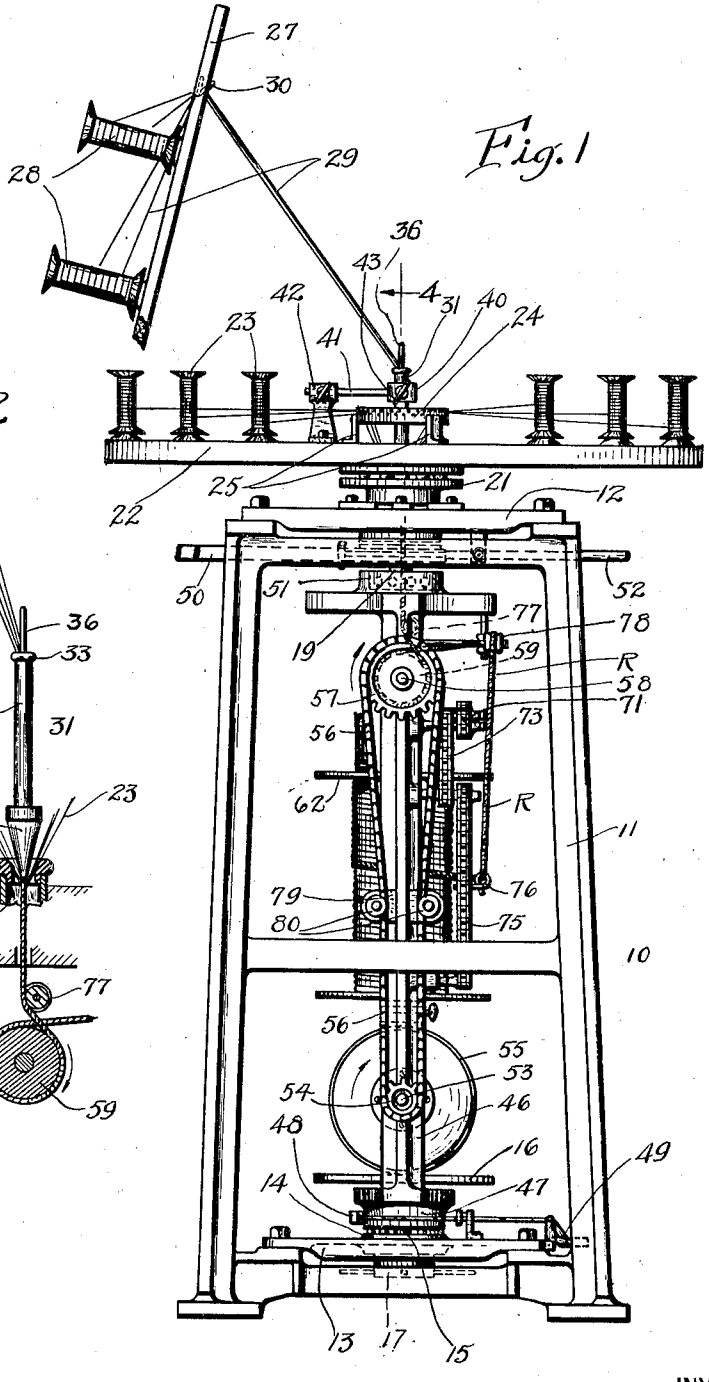


Fig. 2

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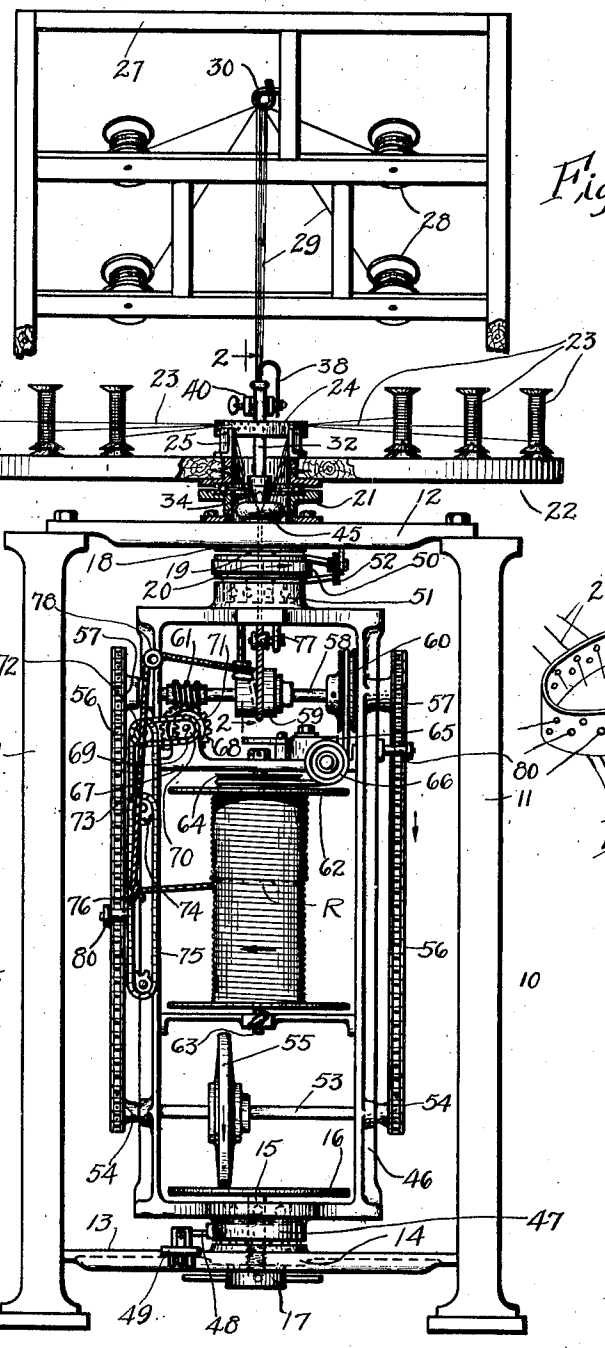
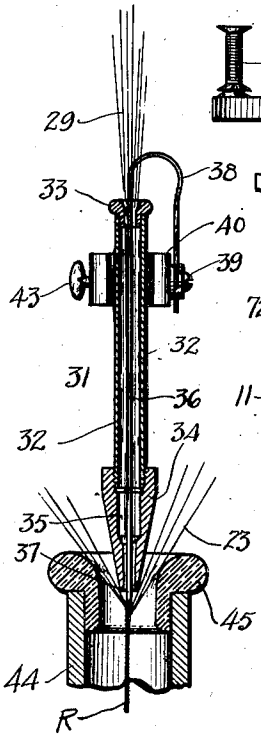


Fig. 3

Fig. 4



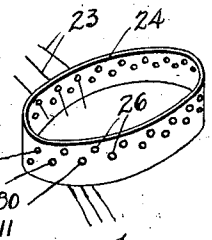


Fig. 5

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UNITED STATES PATENT OFFICE.

ALFONSO SGRITTA, OF BROOKLYN, NEW YORK.

CORD MACHINE.

Application filed July 18, 1925. Serial No. 44,425.

This invention relates to textile machinery and has particular reference to the making of cordage.

Among the objects of the invention is to provide a machine of the most compact and sturdy construction and one that is particularly well adapted for the operation at high speed in the formation of a twisted cord or rope.

Another object of the invention is to provide novel and peculiarly advantageous details of construction for the formation of covered cord and in a most satisfactory and uniform manner.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof, reference is had to the accompanying drawings in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a side elevation showing a preferred embodiment of my new construction.

Fig. 2 is a vertical sectional detail substantially on the line 2—2 of Fig. 3.

Fig. 3 is a front elevation, parts being in section.

Fig. 4 is an enlarged sectional detail on the line 4 of Fig. 1.

Fig. 5 is a detail view of the guiding means for the covering threads.

Referring now more specifically to the drawings I show my construction as comprising a rigid framework 10 of generally rectangular construction and comprising two side members 11 and also having top and bottom plates 12 and 13 secured rigidly in any suitable manner both for supporting and housing the movable parts of the mechanism and also to provide ample clearances for observation and access to the operative mechanism. The lower plate 13 includes a stationary bearing 14 upward through which extends a stationary shaft 15 carrying at its upper end a stationary disk 16, subject, however, to vertical adjustment with the shaft 15 by manipulation of the hand wheel 17 or the like at the bottom.

The upper supporting plate bears a central bearing 18 downward from which projects a tubular shaft 19 and upon which is journaled a loose pulley 20 below the frame plate 12. On its upper surface this plate carries a stationary bearing collar 21.

Supported upon the collar 21 and adapted for rotation or adjustment around the vertical axis thereof is a spool supporting frame 22 having any suitable number of upwardly projecting spindles for spools of threads 23 which are usually of finishing or ornamental character in the making of covered cords or ropes. The central portion of this frame supports a guide member 24 in the form of an annular crown and supported in elevated position by means of legs 25 giving a clear vision not only through but beneath the crown. This crown as shown best in Fig. 5 is provided with numerous holes 26 formed directly therethrough horizontally and preferably in staggered relation or in two series circumferentially. The sik threads from the spools 23 are threaded inward through these holes 26 and are guided thence downward through the open center of the frame and into or through the collar 21 below it.

At any convenient place another spool supporting frame or rack 27 is provided, as at the rear of the main parts of the machine, upon which are journaled a multiplicity of spools 28 from which the main body cords 29 are delivered through a guide 30 near the top of the rack and from which they are directed to the tubular guide shown as a whole at 31 and shown best in Figs. 2 and 4.

The guide just referred to comprises a tube 32 having at its upper end a smooth round surface guide eye 33 made of some suitable wear resisting material such as glass, flint, or porcelain. Secured as by screw threads to the lower end of this tube 32 is a conical member 34 having a bore or passageway 35 in alignment with the bore through the tube but having a restricted bore adjacent to the point or apex of the cone through which the body cords or threads 29 are drawn. 36 indicates a handle, the main portion of which is straight as it projects downward through the tubular members just referred to and terminates in a conical or tapered point 37 which is adapted to project in variable degrees through the restricted apex of the cone 34. The upper end of this handle is bent into a goose neck at 38 and is provided with any suitable loop or analogous means for clamping it in position as by means of a screw 39 co-operating with a bracket 40 supported by a horizontal arm 41 connected to

a standard 42 fixed to the upper side of the frame 22. By vertical adjustment and manipulation of the handle the point thereof may be projected more or less from the cone for the purpose of varying the size or hardness of the cord being formed. While the handle is fixed to and adjustable with respect to the clamp or bracket 40, the tube itself is independently adjustable with respect to the bracket 40 and adapted to be locked in place by means of a thumb screw 43 or its equivalent.

Within the collar 21 is positioned the upper end of a guide tube 44 having its free or receiving end fitted with a wear resisting eye 45 of glass, porcelain, or the like, and over and downward through which the covering threads or cords 23 are guided and within which the cord or rope is twisted.

Mounted vertically within the frame 10 and adapted for rapid rotation around a vertical axis therewithin is a frame or flier 46 whose lower end is located between the fixed disk 16 and the lower frame member 14 already described. The lower end of this frame or flier constitutes at 47 a brake hub with which co-operates a brake shoe or strap 48 having associated therewith a foot piece 49 whereby the application of the operator's foot downward thereto will tighten the brake and control or stop the rotation of the flier. The flier is operated by means of a belt 50 operating over either the loose pulley 20 or the pulley 51 fixed to or constituting a part of the upper end of the flier frame 46. Any suitable belt shifting yoke including a handle 52 may be provided to shift the belt.

53 indicates a horizontal shaft journaled within the lower portion of the frame and indicated as having sprocket wheels 54 at both ends outside the frame 46. Fixed adjustably along the shaft 53 is a friction wheel 55 adapted to co-operate with the friction disk 16 when the latter is adjusted upward by manipulation of the screw 17. By adjustment of the wheel 55 along the shaft and from the axis of the flier and disk 16 the rate of rotation of the wheel and its shaft 53 will be increased. A set screw or its equivalent may be employed to fix the wheel at the proper position along the shaft. 56 indicates a pair of sprocket chains operating over larger sprocket wheels 57 fixed to a shaft 58 at the upper end of the flier frame parallel to the shaft 53. Because of the disparity in size of the wheels 54 and 57 the upper shaft is driven at a lower speed than the lower one. Within the frame there are fixed to the shaft 58 three different elements,—first, a friction pulley 59 at the center, secondly a grooved pulley 60 at one end of the shaft, and thirdly, a worm 61 at the other end of the shaft, all three of which will be driven in unison with the shaft.

62 indicates a spool or reel mounted within the flier and preferably mounted for rotation around a vertical axis 63 coinciding with the axis of the flier for the sake of best balance, considering the high speed of rotation, of the flier. To the upper end of the spool 62 is a grooved pulley 64, over which a belt 65 operates from the driving pulley 60, suitably guided by direction pulleys 66 journaled on the frame member 67.

Meshing with the worm 61 is a worm wheel 68 to the axle 69 of which is attached a sprocket wheel 70 driving a sprocket chain 71 over a double sprocket wheel 72. The second sprocket chain 73 drives another double sprocket wheel 74 which in turn operates a chain 75 carrying a guide eye 76, the travel of which guide is substantially equal to the length of the spool or reel 62.

With the machine constructed as above set forth and with the threads 29 and 23 threaded through the several guides as described past a guide roller 77 over the pulley 59 and thence around direction pulleys 78 through the guide eye 76, the threads are attached to the reel 62 preliminary to forming a cable or rope R. The belt 50 is then shifted from the loose pulley 20 to the tight pulley 51 on the flier and with the power in operation the flier will be given a speed of rotation according to the speed of the belt and in a direct manner operating at relatively high speed, for instance 800 R. P. M., around the axis coinciding with the screw 17 and collar 21. The disk 16 being stationary and the wheel 55 rolling thereon and revolving around the axis of the flier and disk, the wheel and its axle 53 will be rotated, the direction of movement of the several parts being indicated by arrows, and the rolling of the shaft 53 and wheels 54 will cause simultaneous movement of the chains 56 and rotation of the shaft 58 in the same direction as the shaft 53. The rotation therefore of the grooved pulley 60 will cause the rotation of the wheel around its axis in a direction contrary to the revolution of the wheel 55. The cord or rope being attached to the reel will accordingly be drawn toward and coiled upon the reel as a result of the rotation of the reel 62. The action of the worm 61 and gearing from it to and including the guide 76 will cause the movement of the guide 76 along with the chain 75 in runs parallel to the axis of the reel. The movement of the guide up and down in this manner is relatively slow because of the well known action of the worm 61 and is timed in such a manner as to approximate the time for the desired twisting action upon the cord or rope. The draft on the cord or rope due to the winding of the reel and the action of the pulley 59 compels the tread of the threads or strands from the several spools 23 and 28. The

twisting of all the strands together takes place somewhere between the cone 34 and the guide roller 77 which is carried by and rotated with the flier.

The flier and all the parts carried thereby are so balanced that there is practically no tendency for it to vibrate while rotating at high speed. Co-operating with each of the chains 56 is a guide 79 having rollers 80 serving to confine both runs of the chain and so prevent them from being thrown outward by centrifugal force. These guides are carried by the vertical parts of the framework. When the reel is filled with cord or rope it is removable by loosening the axis pins from the frame and a new or empty one is put into its place. Even though the flier may be operating at high speed as above set forth, it may be set quickly after shifting the belt, by the application of the foot to the treadle 49, setting the brake 48. The action of the reel and guiding means for the cord is just the same as though the flier were stationary, these parts all being carried in a self contained unit or structure. The provision for the rotation of the frame 22 enables the operator to thread the fibers of silk or the like through the guides either initially or at a subsequent time as in the event of the breakage of a thread. By its rotation he is able to swing any portion of the frame around to wherever he may be standing as at the side or front of the machine. This is an item of considerable importance in practice. The adjustment of the needle 36 up or down with respect to the point where the twisting takes place is for the purpose of varying the hardness or fullness of the cord,—the higher the needle is adjusted the closer or harder will the twisting be done.

I claim:

1. In a cordage machine, guide means for the several strands comprising a tubular member having a vitreous guide eye at the entrance end, means to regulate the size of the cord made thereover and therethrough, and means to support the guiding member in position.

2. Guiding means as set forth in claim 1 in which the means for regulating the size of the cord comprises a needle adjustable lengthwise of the tubular member and through the vitreous guide eye.

3. Guiding means for a cordage machine comprising a tubular member having at its delivery end a conical point having a bore through which certain threads pass, means to guide covering threads along the outside of the guide, and a member adjustable lengthwise of the tubular member and projectable into and through the bore of the delivery end for varying the character of the cord.

4. Mechanism as set forth in claim 3 in which the member adjustable lengthwise of the tubular member is a needle extending through the tubular member and having a curved outer end and means to hold the curved outer end in various adjusted positions.

5. Guiding means for a cord machine comprising a tubular member, an adjustable needle extending through the same for varying the character of the cord, said needle having a goose neck at its upper end, and a combined clamp device for holding the tubular member in various positions and for clamping the goose neck in various positions relatively to the tubular member and independently of the adjustment of the tubular member.

6. In a cordage machine, a frame for supporting a plurality of spools, means to support the frame for rotation around a central axis for easy access to the several spools, guiding means for the threads from the spools carried by the frame and serving to deliver the threads along and in the vicinity of said axis, and means for twisting the threads along said axis, the twisting means comprising a flier rotatable around an axis coinciding with the axis aforesaid, and means carried by the flier for drawing the cord and winding it upon a reel therein coincident with the twisting action.

7. In a cordage machine, a frame for supporting a plurality of spools, means to support the frame for rotation around a central axis for easy access to the several spools, guiding means for the threads from the spools carried by the frame and serving to deliver the threads along and in the vicinity of said axis, and means for twisting the threads along said axis, the twisting means comprising a flier rotatable around an axis coinciding with the axis aforesaid, and means carried by the flier for drawing the cord and winding it upon a reel therein coincident with the twisting action, the machine comprising a stationary frame having a stationary annular throat constituted by a collar surrounding the axis of the frame and upon which the frame is supported in normal stationary position but adjustable by rotation thereon, and the guiding means for the threads including a fixed guide having a vitreous round edged entrance end within which the twisting takes place.

8. In a cordage machine, guide means comprising a guide member within and through which threads pass, means to guide covering threads along the outside of the guide, and a member adjustable and projectable through the guide means for varying the character of the cord.

9. In a cordage machine, guide means for a plurality of threads that engage each other to form a cord, and a member projecting into proximity to the point at which the

threads engage each other and centrally between the threads to determine the hardness of the cord formed.

10. In a cordage machine, guide means for a plurality of threads that engage each other to form a cord, and an adjustable member having a tapered point projectable into proximity to the point at which the threads engage each other and centrally between the threads to vary the hardness of the cord formed.

11. A device as set forth in claim 8 wherein said guide means comprises a conical end member along the surface of which the covering threads are guided.

12. In a cordage machine, a frame for supporting a plurality of spools, means to support the frame for rotation for easy access to the several spools, guiding means for the threads from the spools arranged in spaced relation to said spools, and means for twisting the threads, said guiding means being adapted to pass said threads to said guiding means irrespective of the rotational position of the spool support.

13. In a cordage machine, guide means for a plurality of threads that engage each other to form a cord, and adjustable means acting upon the threads at their point of engagement with each other to vary the tightness with which said threads engage and consequently the character of the cord formed, said means comprising a member for varying the spaced relation of said threads directly at said point.

In testimony whereof I affix my signature.

ALFONSO SGRITTA.