Aug. 2, 1938. N. STODDARD 2,125,823

TEXTILE MACHINE

Filed March 23, 1938 2 Sheets-Sheet 1

Fig. 2.

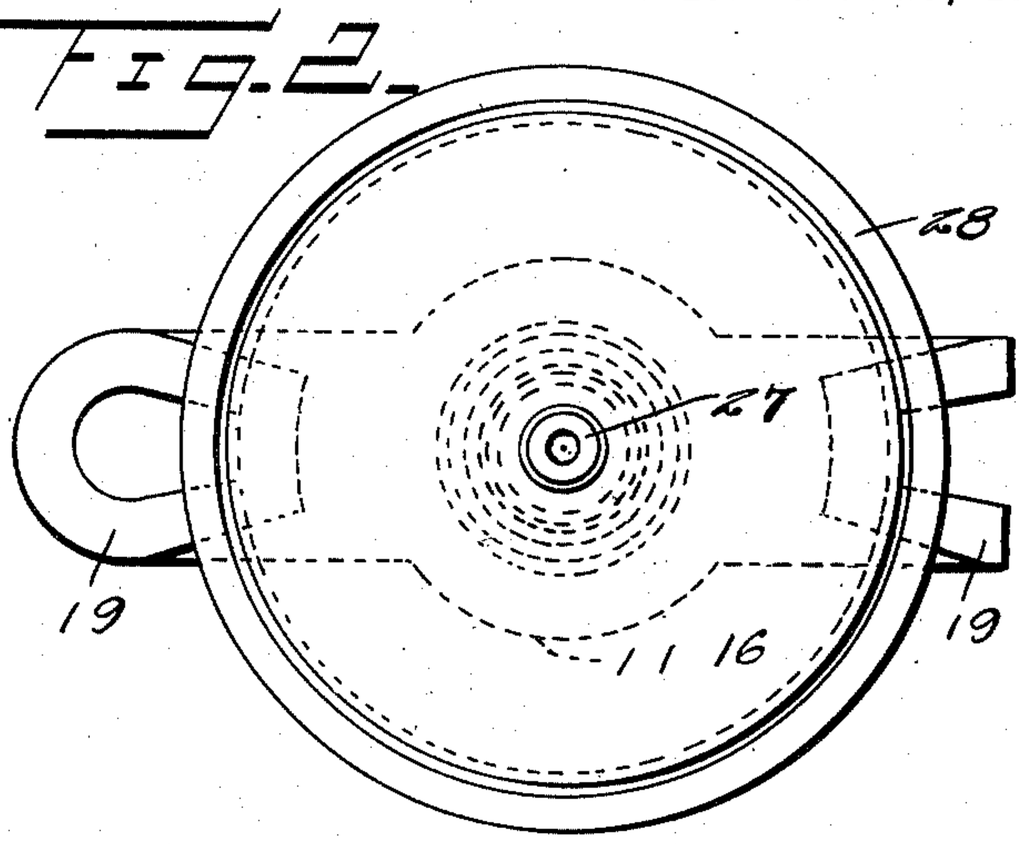


Fig. 1.

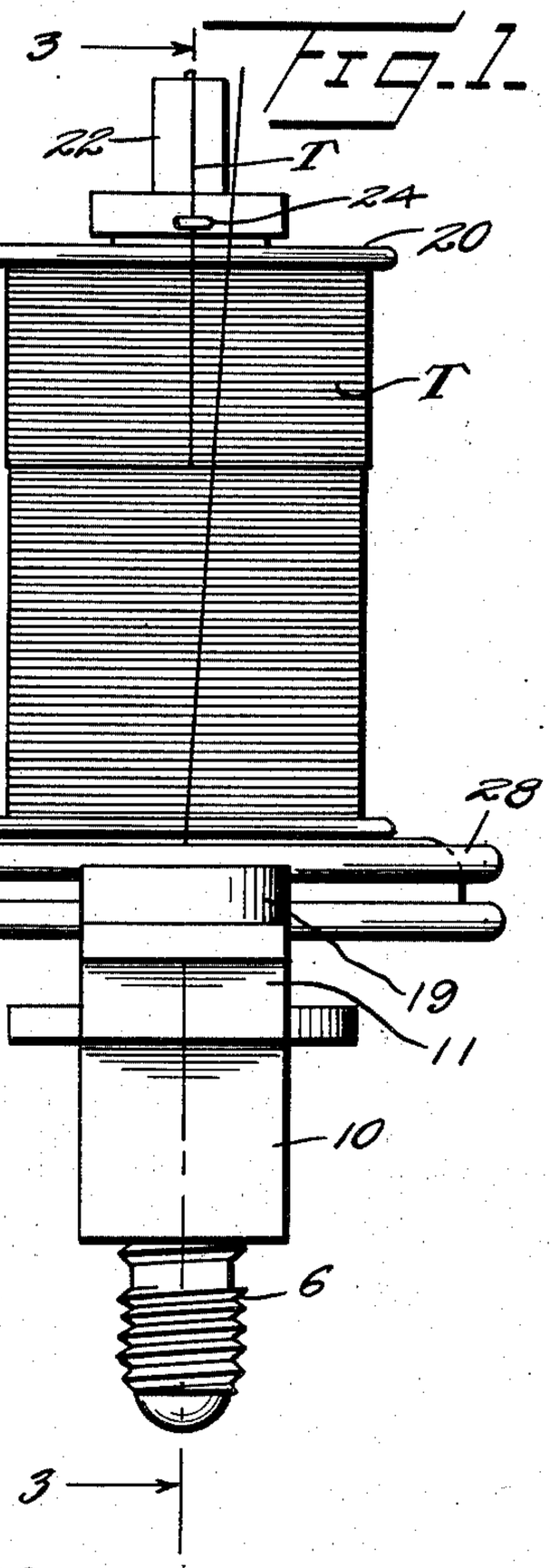
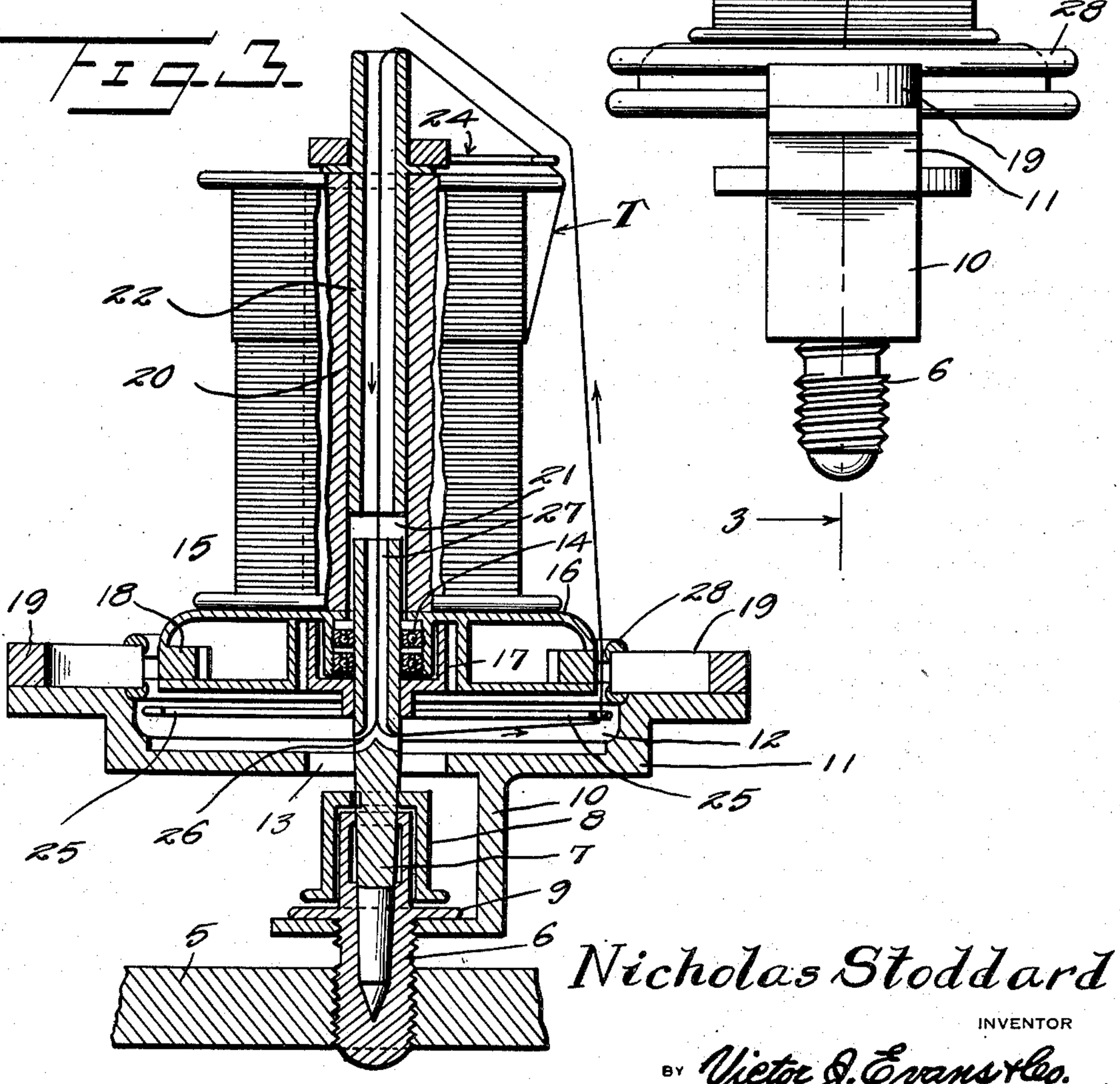


Fig. 3.



Nicholas Stoddard

INVENTOR

BY Victor J. Evans & Co.

ATTORNEYS

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Filed March 23, 1938 2 Sheets-Sheet 2

Fig. 5

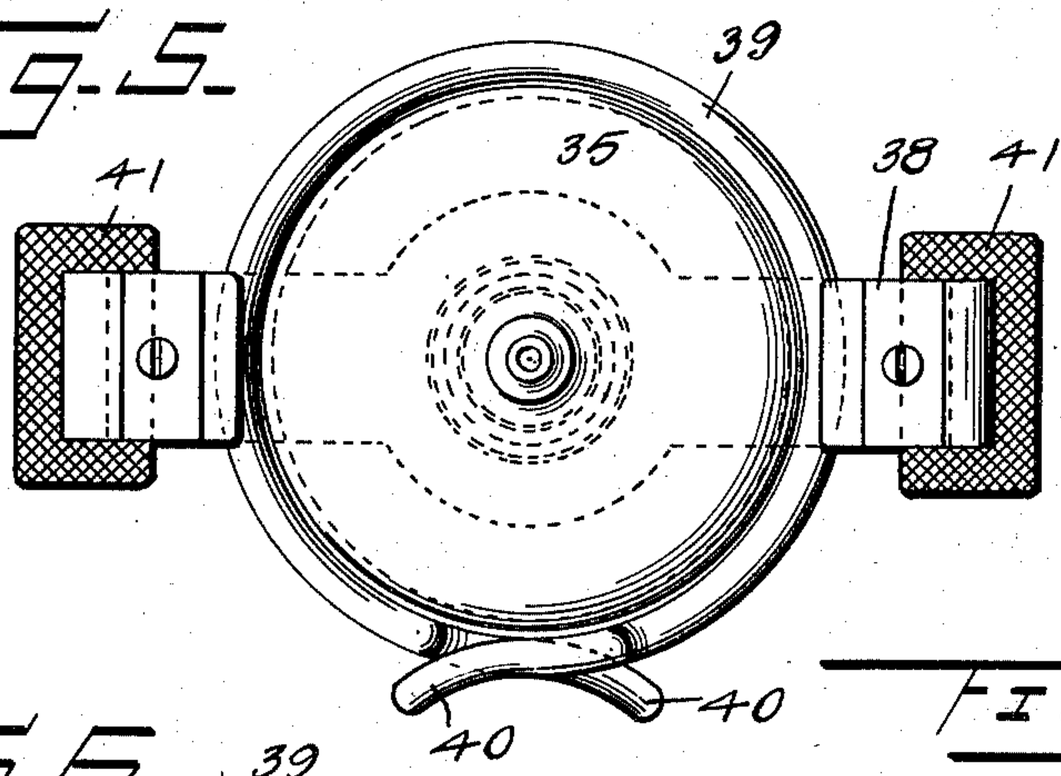


Fig. 4

Fig. 6

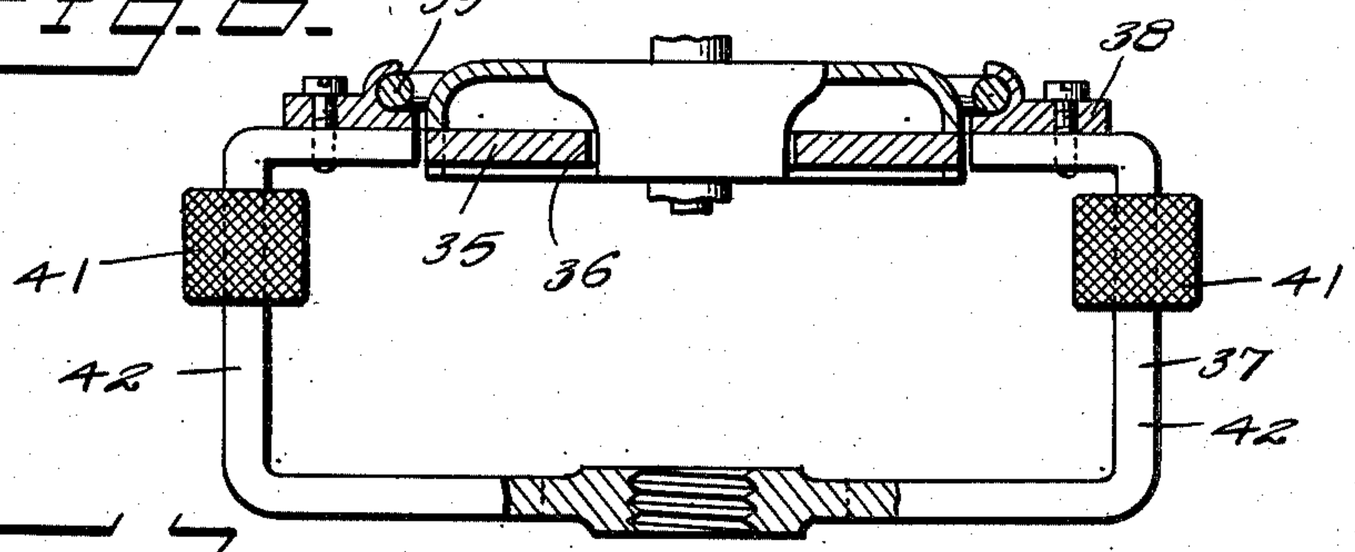


Fig. 8

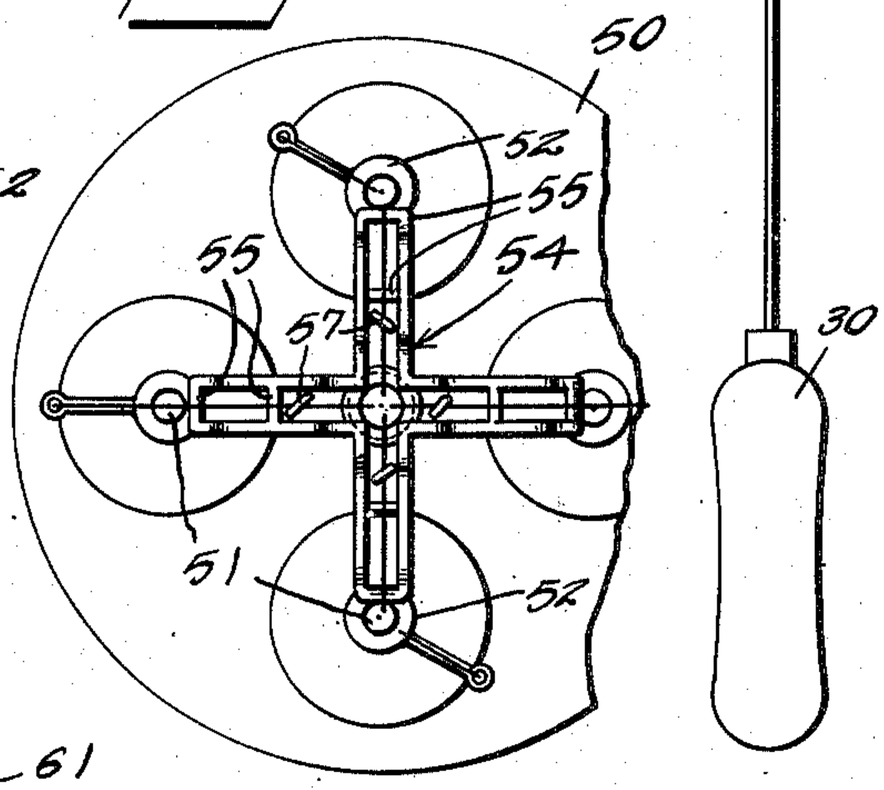
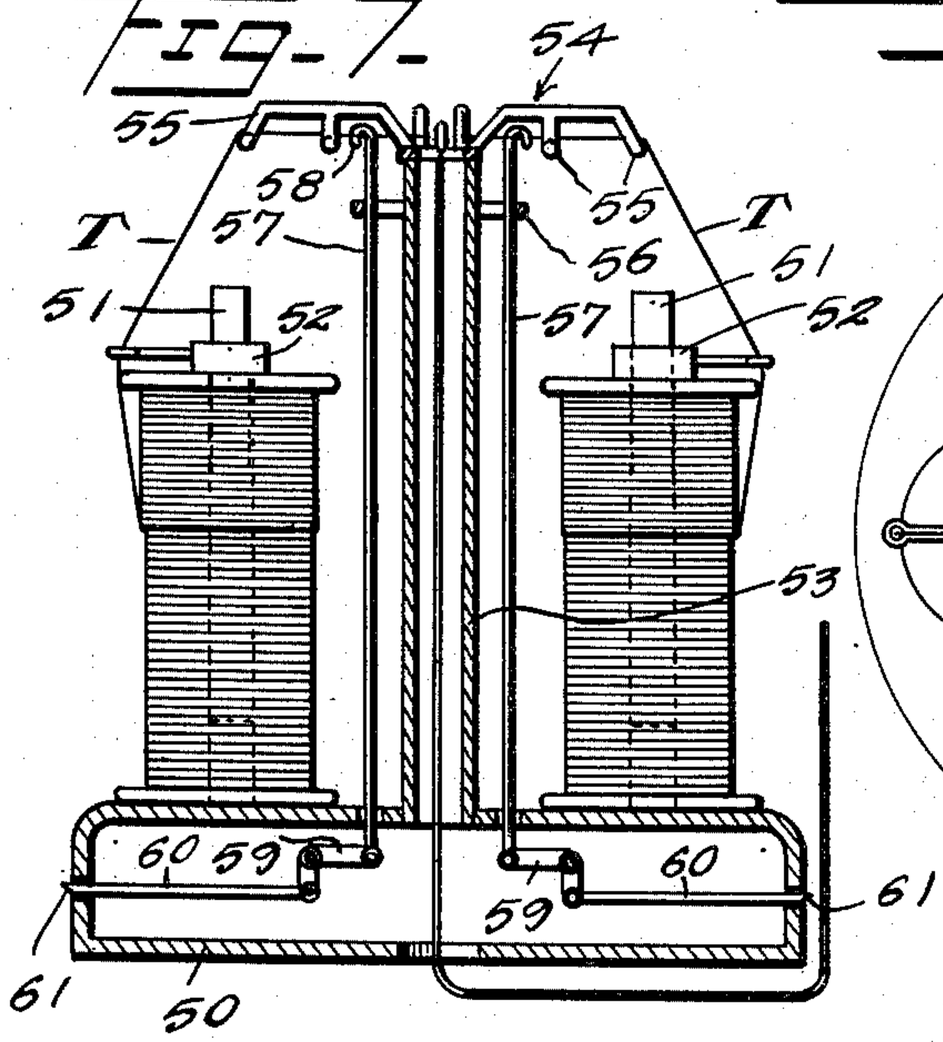


Fig. 7



Nicholas Stoddard

INVENTOR

BY Victor J. Evans & Co.

ATTORNEYS

Patented Aug. 2, 1938 2,125,823

UNITED STATES PATENT OFFICE

2,125,823

TEXTILE MACHINE

Nicholas Stoddard, Durham, N. C.

Application March 23, 1938, Serial No. 197,697

2 Claims. (Cl. 117—9.5)

My invention relates to new and useful improvements in textile machines and more particularly to spinning, doubling and twisting machines.

One of the principal objects of my invention is to provide a spinner whereon the cop or package is maintained in a stationary condition and the thread or the like delivered therefrom by the rotation of the spindle, thereby delivering two turns of twist for each rotation of the spindle.

Another object of my invention is to provide a device of the above described character wherein the package or cop is prevented from rotation with the spindle by or through the action of a magnetic force.

A further object of my invention is to provide a device of the above described character wherein the magnetic elements utilized for preventing rotation of the package also serve to counteract or ease the vertical thrust on the spindle by the package, thus minimizing the amount of power required in the operation.

A still further object of my invention is to provide a device of the above described character capable of being secured to spinners, already in use and which is easy in attachment, simple in construction, durable in use, efficient in operation and economical in manufacture.

Other objects and advantages will be apparent from the following description, appended claims and annexed drawings.

Referring to the drawings wherein like reference characters designate like parts throughout the several views:

Fig. 1 is a front elevation of my invention.

Fig. 2 is a top plan view thereof.

Fig. 3 is a sectional view taken on the line 3—3 of Figure 1, the same being illustrated as mounted on a section of a bolster rail.

Fig. 4 is a side elevation of the shuttle hook.

Fig. 5 is a top plan view of a modified form of a magnetic element and corelated parts.

Fig. 6 is a side elevation, partly in section, of the modified form illustrated in Figure 5.

Fig. 7 is a vertical section illustrating a modified form wherein a plurality of packages are employed.

Fig. 8 is a top plan view of the construction illustrated in Figure 7.

In practicing my invention, with reference to the preferred embodiment shown in Figures 1 to 4 inclusive of the drawings, there is illustrated a section of a bolster rail 5 of ordinary construction, the same constituting a part of a textile machine (not shown), for instance a spinning, doubling and twisting machine. Threadedly secured on the rail 5 is a vertically extending spindle bolster 6 through the upper end of which is rotatably mounted the lower end of a spindle 7 having fixed thereon a spindle whirl 8 for receiving the conventional belt whereby the spindle is rotated relative to the bolster and bolster rail.

Intermediate of the ends thereof, the bolster 6 is fashioned with a circumferentially extending flange 9. Subjacent said flange, said bolster is threadedly secured to an arm 10 of a magnet support 11 of nonferrous metal. The body of said magnet support is formed with a chamber 12, the bottom of which is centrally apertured as at 13 whereby the spindle including the whirl 8 may be removed therethrough. The upper end of the spindle has secured thereto a ball bearing assembly 14 effecting a bearing connection with a bearing sleeve 15 formed on the lower face of a cylindrical shaped package support 16 whereby to effect a free rotation of the spindle relative to said support. A collar 17 embraces in spaced relation the sleeve 15 and is secured to the spindle 7 subjacent said bearing assembly to form an oil reservoir in which the bearing assembly rotates. A suitable oil or other liquid is provided within said reservoir to form a continuous bath for the relative moving parts.

Interposed between the upper and lower walls of the package support and extending in flush circumferential relation with the outer periphery of said package support is a ring 18 constructed of ferromagnetic metal, the same being spaced from the pole faces of a pair of oppositely disposed permanent magnets 19 secured on the upper face of the magnet support on each side of the package support. Said magnets are arranged in relation to the ring 18 in a manner whereby the magnetic force serves to counteract the vertical thrust on the spindle by urging the ring 18 upwardly to the position illustrated in Figure 3. Mounted on the upper surface of the package support is a package or cop 20 of ordinary construction and formed with a longitudinally extending bore 21. Said bore is of a larger diameter than the outside diameter of the upper end of the spindle 7 extending therein to permit free rotation of the spindle relative to the package and package support. Inserted downwardly into the bore 21 is a hollow thread tube 22, the same being of a sufficient outside diameter to effect a snug fit with the wall of the bore 21 to prevent relative rotation therewith. The upper end of the thread tube extends beyond the top of the

package and is fashioned with a flange 23 engaging said top and forming a bearing surface for a tension flyer 24 freely rotatable on the upper end of the thread tube. The tension flyer is formed with a laterally extending arm terminating at the outer end thereof in an eye which receives therethrough a delivery length of a thread T.

Secured to the lower end of the collar 17 are a pair of oppositely disposed arms 25 constituting the spinning flyer. Said arms are fashioned on the outer ends thereof with eyes to receive the thread T. Subjacent the lower end of the collar 17, the spindle 7 is fashioned with a pair of oppositely disposed ports 26 communicating with a vertically extending thread passage 27.

Upper and lower spinning rings 28 surround the package support and are connected to the upper and lower faces of the magnets 19 respectively. The inner peripheries of the rings 28 extend slightly beyond the pole faces of the magnets to prevent the thread T engaging said pole faces.

As illustrated in Figure 4 a shuttle hook comprising a handle 30 having a flexible elongated tool 31 terminating in a hook section 32 is provided for threading the device as hereinafter set forth.

In operation, with reference to the structure illustrated in Figures 1 to 4 inclusive, a package containing a full supply of thread is positioned upon the package support 16, the upper end of the spindle 7 extending a distance within the bore 21. The lower end of the thread tube 22 is inserted within the bore 21 of the package and the tension flyer 24 positioned about the upper end of the thread tube. In this position of the parts the hook section 32 of the shuttle hook is inserted through one of the thread ports 26, upwardly through the thread passage 27 and through the bore of the thread tube 22. The end of the delivery thread T is passed through the eye in the tension flyer 24 and secured to the hook section 32, and the shuttle hook withdrawn. Upon withdrawal of the shuttle hook, the end of the thread is passed through an eye in one of the arms of the spinning flyer 25 and upwardly between the package support including the ring 18 and the magnet 19 including the spinning rings 28. The end is then drawn upwardly for attachment to another package through appropriate rollers and the like. Upon completion of the threading of the device, as heretofore described, power is supplied through the medium of a belt engaging the spinning whirl 8. Thus the spindle is rotated while the package and package support are maintained in a stationary position due to the coaction of the magnets 19 and the ring 18. Rotation of the spindle causes the spinning flyer to likewise rotate, thereby imparting a double twist to the thread for each revolution of the spindle. As this action takes place, the thread is drawn downwardly through the thread tube causing the tension flyer to rotate about the tube during the unwinding of the thread from the package.

When the thread from a package has become exhausted it is only necessary to remove the thread tube including the tension flyer, empty package and position a filled package with the thread tube and tension flyer connected thereto on the support.

In the modified form illustrated in Figures 5 and 6, the ferromagnetic ring 35 extends across the bottom of the package support and is centrally apertured as at 36 for receiving therethrough the spindle and collar illustrated in Figure 3. In this instance, the support 37 has secured to the upper face thereof a ring holder 38 for maintaining a spinning ring 39 in position about the package support, said ring having offset ends 40 whereby the thread may be inserted between said ends within the support 37. Electro-magnets 41 are attached to the vertically extending sections 42 of the support 37, and through the medium of the ring 39 form a magnet circuit entirely surrounding the ring 35 thus increasing the area of the magnetic field.

In the modified form illustrated in Figures 7 and 8, the package support 50 is mounted over the spindle in the same manner as the form illustrated in Figures 5 and 6 and a plurality of packages are positioned on said support and held thereon by means of vertically extending shafts 51, each having rotatably mounted tension flyers 52. The lower end of a thread tube 53 is secured to the package support 50 and the upper end has secured thereon a thread cradle 54 having a plurality of outwardly extending arms, one for each package. The arms are fashioned with thread supports 55 over which the threads T are trained and extend downwardly through the thread tube 53. Said threads extend through the spindle in the same manner as in the instance of Figure 3 and are trained upwardly about the outer periphery of the package support. Laterally extending from the upper section of the thread tube are a plurality of drop wire supports 56 for guiding and supporting a plurality of drop wires 57, each of said wires are fashioned at the upper end thereof with a hook section 58 for engagement over a thread T and the lower end pivotally connected to one end of a bell crank lever 59 pivotally mounted within the support 50. The other end of the bell crank lever is pivotally connected to an arm 60 having an outer end extending within an aperture in the side of the support 50. The outer ends of the arm 60 are each fashioned with cutting edges 61 and are maintained, during the normal operation of the device, in retracted position relative to the outer periphery of the support 50. From the foregoing it will be apparent that as the thread is drawn downwardly through the thread tube 53 each of the tension flyers 52 will be rotated due to the unwinding of the thread about the package in the same manner as in the instance of the single package illustrated in the preferred embodiment. During the operation should one of the threads T break, the respective drop wire supports suspended thereon will of a consequence drop downwardly and actuate the bell crank lever 59. This actuation of the bell crank lever 59 serves to project the respective arm 60 into the path of the threads adjacent the side of the package support and sever the same. This severance of the thread serves to operate a stop mechanism on the machine for preventing further rotation of the spindle until such time as the device is rethreaded for operation.

What I claim is:

1. A device of the character described, comprising, a spindle bolster, a spindle rotatably mounted in said bolster, a package support mounted for relative movement on said spindle and having a circumferentially extending slot, a package mounted on said support, a ring of ferromagnetic material extending within said slot, a magnet support mounted on said bolster, a flyer mounted above said package and movable rela-

tive thereto, a flyer mounted on said spindle subjacent said package support and movable therewith, and magnetic means on said magnet support and having pole faces directed towards said ring and coacting with said ring to prevent rotation of said package support relative to said pulley whereby thread from said package is delivered by means of said flyers while said package is maintained stationary relative to said spindle by said magnetic means.

2. A device of the character described, comprising, a spindle bolster, a spindle rotatably mounted in said bolster, a package support mounted for relative movement on said spindle and having a circumferentially extending slot, a package mounted on said support, a ring of ferromagnetic material extending within said slot, a magnet support mounted on said bolster, a flyer mounted above said package and movable relative thereto, a flyer mounted on said spindle subjacent said package support and movable therewith, a pair of oppositely disposed magnets secured on said magnet support and having pole faces directed towards said ring and coacting with said ring to prevent rotation of said package support relative to said spindle whereby thread from said package is delivered by means of said flyers while said package is maintained stationary relative to said spindle by said magnetic means, and a spinning ring spaced from said package support and connecting said magnets together in a manner to prevent engagement of said thread with said pole faces.

NICHOLAS STODDARD.