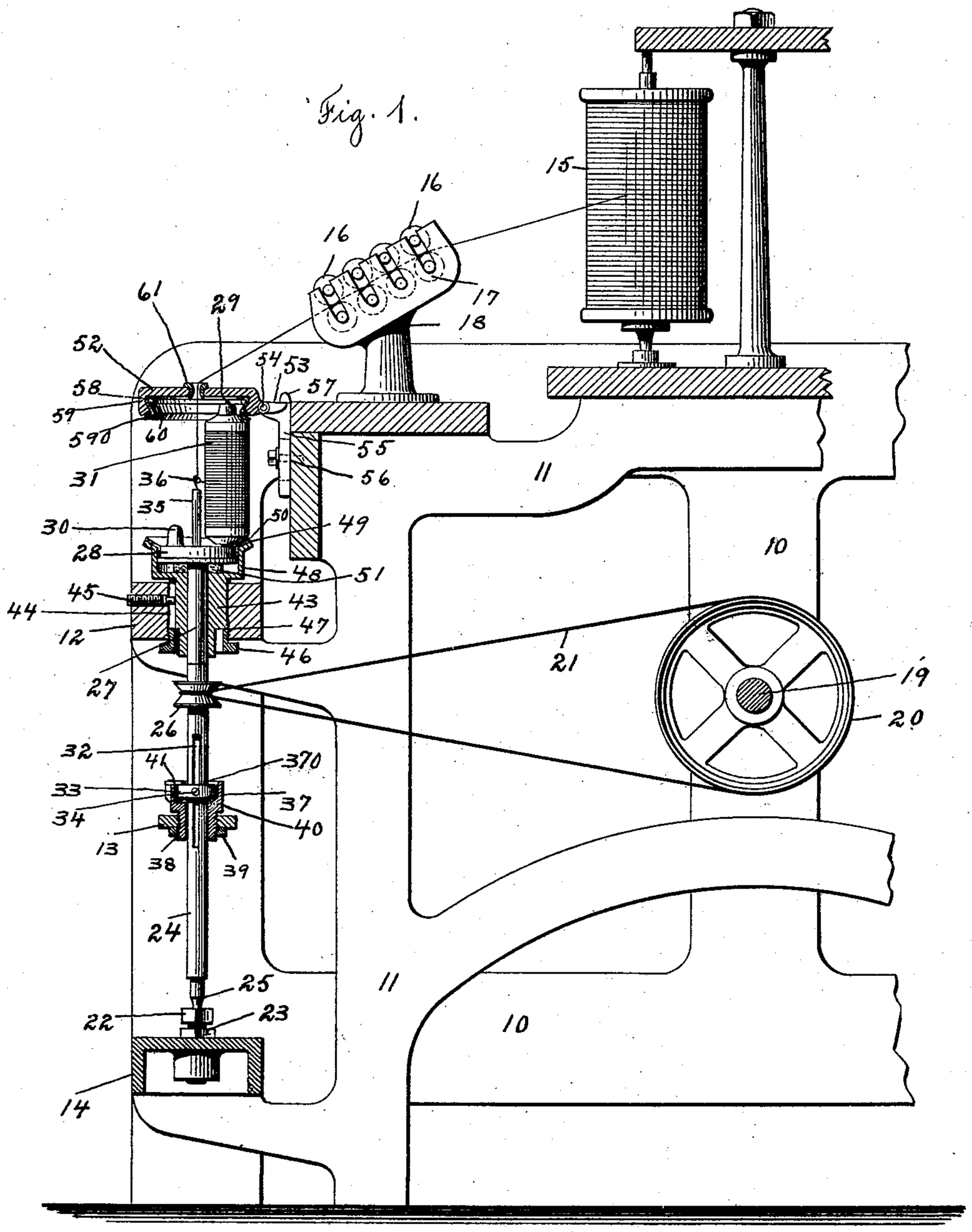
(No Model.) 2 Sheets—Sheet 1.

L. F. WEISS.

APPARATUS FOR SPINNING AND TWISTING.

No. 506,754. Patented Oct. 17, 1893.

Fig. 1.



Witnesses
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(No Model.) 2 Sheets—Sheet 2.

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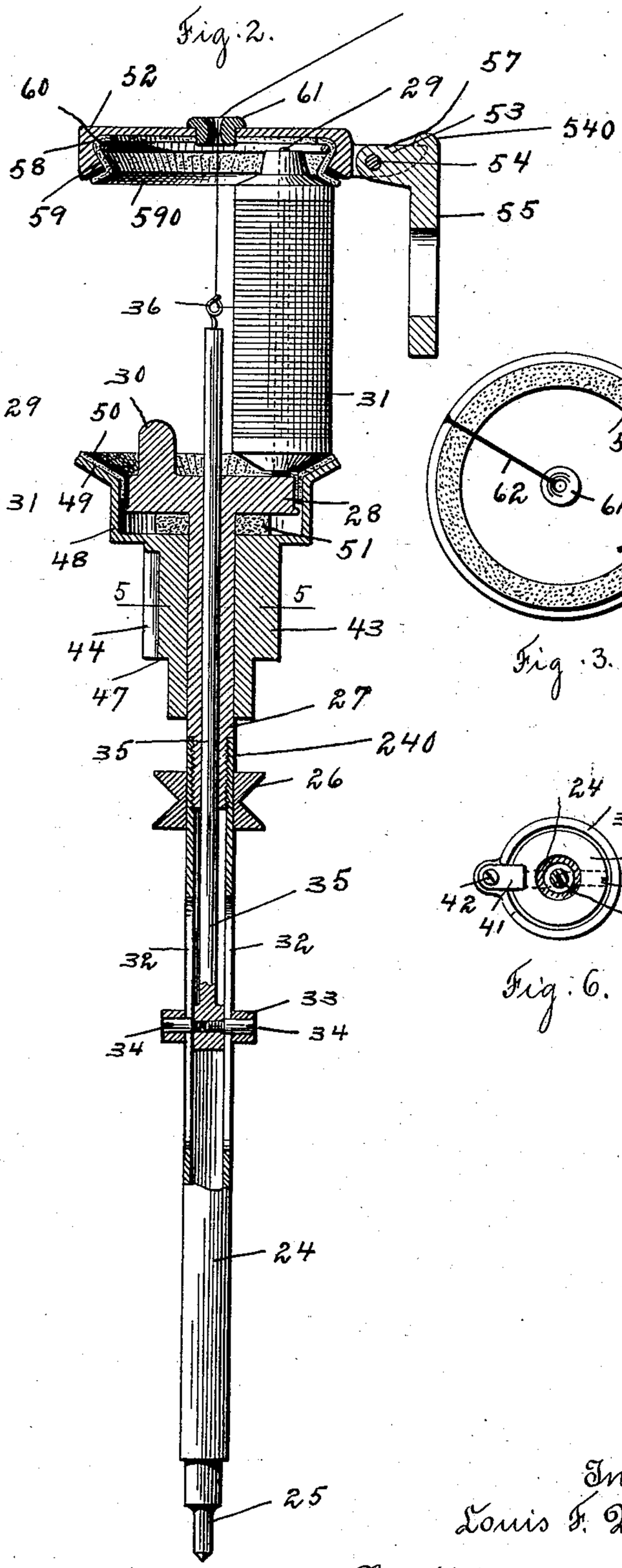
Fig. 2.



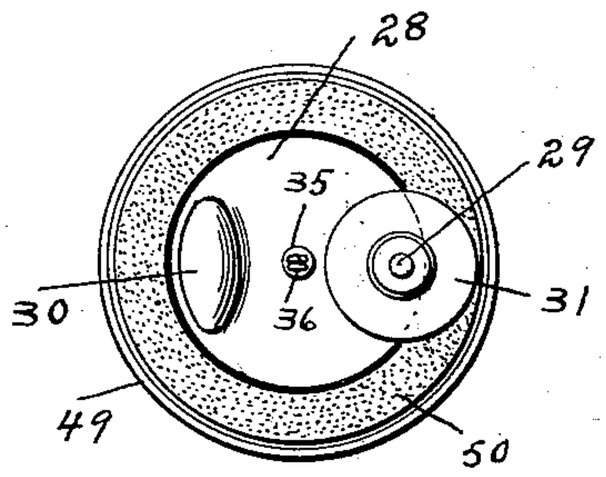


Fig. 4.

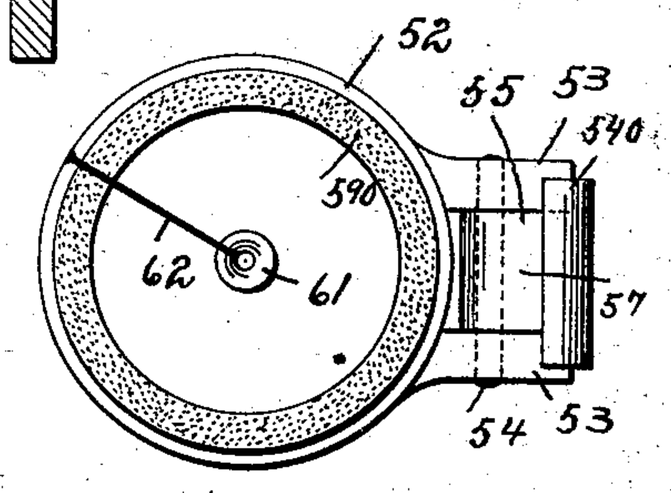


Fig. 3.

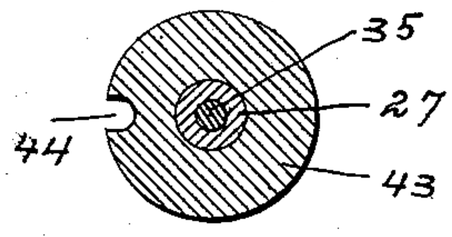


Fig. 5.

Fig. 6.

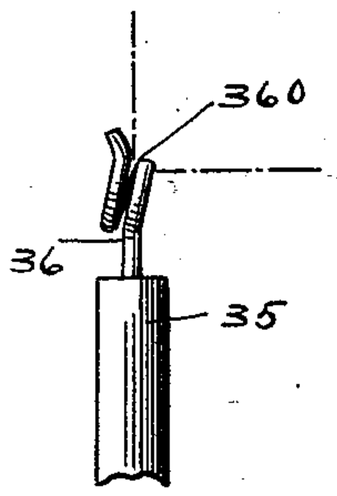


Fig. 7.

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UNITED STATES PATENT OFFICE.

LOUIS F. WEISS, OF WORCESTER, MASSACHUSETTS.

APPARATUS FOR SPINNING OR TWISTING.

SPECIFICATION forming part of Letters Patent No. 506,754, dated October 17, 1893.

Application filed March 2, 1893. Serial No. 464,355. (No model.)

To all whom it may concern:

Be it known that I, LOUIS F. WEISS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Apparatus for Spinning or Twisting, of which the following is a specification.

The aim of this invention is to improve the apparatus for spinning or twisting materials of any kind; and to this end, the invention consists of the apparatus described in this specification, and illustrated in the accompanying two sheets of drawings, in which—

Figure 1 is a section of one-half of the spinning-frame of a spinning or twisting machine with my invention in use. Fig. 2 is an enlarged section of the top of the spindle and its appurtenances. Fig 3 is a bottom plan view of the part I term the cover, or upper friction ring. Fig. 4 is a top plan view of the part I term the spindle-collar, or the lower friction-ring. Fig. 5 is a section of the bolster on line 5—5, of Fig. 2. Fig. 6 is a plan view of the adjustable cup carried by the traverse-rail, and Fig. 7 is a view on an enlarged scale illustrating the construction of the hook or eye; the figures of the second sheet being on an enlarged scale relatively to Sheet 1.

The practical machines for spinning or twisting, which are to-day in use, are generally of the ring or flier pattern. In these devices, the material or materials to be spun or twisted are held at a point, which may be the top rolls or feeding device, or any point in the travel of the material or materials beyond the top rolls or feeding device. This stationary point is usually the crockery bearing to which the material or materials is or are led from the top rolls or feeding device. The spinning or twisting is done substantially between the point at which the material or materials leave the top rolls or feeding device and the spinning or twisting point, which may be considered the usual hook or eye. In these machines, the material or materials in the operation, will describe or generate a conical surface, the apex of the cone being the stationary point, and the base of the cone, the circle described by the spinning point; or, in other words, each section of the material or materials between these points will be moved in a circle. This will cause the material or materials to fly away from the axial line of such cone by the centrifugal action, and this causes the material or materials to spread or throw out during the operation. Further, the ends of the fibers of the material or materials, instead of tending normally to be "licked in," will tend to fly out, due also to the rapid movement through the air. This centrifugal action and the resistance of the air produce a strain on the material or materials, and this strain increases, of course, as the speed of the spindle increases, and as the radius of the movement of the twisting point increases. This strain is the limit of speed at which the spinning or twisting machine, as ordinarily organized to-day can be run. These disadvantages in the art of spinning or twisting, as practiced to-day, arise from the fact that a large portion of the material or materials is moved through the air during the spinning operation, and thereby put under strain, and also from the fact that the spinning or twisting point is generally moved in a circle.

By my device, I lead the material or materials preferably in a straight line from the stationary point to the spinning or twisting point, and revolve the receiving or winding-up bobbin around, and synchronously with the spinning or twisting point, and lead the material or materials outwardly from the spinning or twisting point to the receiving bobbin. This will keep the material or materials, while being spun or twisted, and especially from the stationary point to the spinning point, in a straight line, and hence there will be no centrifugal action or air-resistance on the material or materials, while the same is or are being twisted or spun. Further, it will be seen that only a very slight portion of the material or materials is directed out of this path, or from the spinning or twisting point to the bobbin, and that this is after the material or materials have received all their spinning or twisting. Also it will be seen that the material or materials are led from the spinning or twisting point in a horizontal line commencing at the center of the spindle. This gives absolutely the shortest distance between the spinning or twist-

ing point and the receiving bobbin that can be obtained. In practice, this distance is about one-half the width of the receiving bobbin. This distance will be less than the length of the fibers used to form the material or materials, and hence there will always be a number of complete fibers between the spinning or twisting point and the receiving bobbin. This is important, as it is well known that the fibers of the material or materials to be spun or twisted can be pulled apart much easier than they could be broken.

By my improved device, a length always shorter that the length of the fibers, is moved out of the axial line, and hence, the fibers will not tend to be pulled apart.

By my device, the material or materials is or are only directed out of the axial line, after the spinning or twisting operation has been performed, and then on the line of a radius, which is the line of strain.

By my improved device I have found that the speed of the spinning or twisting, as carried out thereby, is limited only to the speed at which the parts can be run, and is not limited by any strain put on the material or materials.

As before stated, the stationary point, to which I have referred, may be considered the usual guiding mouth of the ordinary piece of porcelain or crockery, and the spinning or twisting point may be considered as the eye or hook, or any equivalent therefor.

The spinning or twisting of the material or materials takes place always between the stationary point and the point at which the material or materials leave the top rolls or feeding device, but, as in the old machines, the material or materials between the stationary point and the point at which the same leave the top rolls is in one line, there will be no centrifugal action between these points, either in the old methods or in my improvement.

In some machines the material or materials is or are led directly from the feeding device to the spinning or twisting point. In this instance the point at which the material or materials leaves or leave the feeding device may be considered the stationary point, as I use that term.

In the old machines for flier or ring spinning, the bobbin is given a drag, and does not turn quite as fast as the spindle itself. This difference tends to take some of the twist out, which is given to the material or materials, between the stationary point and the spinning point.

In the carrying out of my invention, I move the receiving bobbin around the spinning or twisting point, and in unison therewith, thus keeping all the twist put in between the stationary point and the spinning or twisting point intact. Also, at the same time, I give the receiving bobbin a sufficient rotation on its own axis, to wind. Thus, in the winding operation, instead of taking out the twist, I keep all the twist that is put in between the spinning or twisting point and the stationary point. This is an important point in actual practice over the ordinary methods, as I do not lose the number of turns necessary to wind the spun or twisted material or materials on the bobbin.

I have shown in the drawings one-half of the usual double spinning frame, it being understood, of course, that my machine can be made double or single, as desired.

Referring now to the drawings, and in detail, 10 represents the usual outside framing of the spinning or twisting machine, and 11 represents the usual framing in which the spinning or twisting parts of the machine are mounted. Between the frames 11 may be mounted, in the usual manner, the bolster rail 12, the traverse-rail 13, and the step-rail 14. The traverse-rail 13 is supposed to be moved up and down, as the machine operates, in any of the usual manners, as by the usual heart-shaped cams, which mechanism is not necessary here to show or describe, the same being so well understood in spinning or twisting machinery, and as my invention calls for no departure from the same.

In the drawings, I have shown only one spindle, it being understood that my invention, of course, is applicable to an organized spinning or twisting machine.

15 represents the usual spool, from which the material to be spun, can be drawn, and, of course, two or more spools may be mounted in the usual manner, so that a number of threads can be drawn in for a twisting or spinning operation.

16 and 17 represent the usual set of top-rolls which may be mounted in the usual roll-frame 18, and between these rolls, the material or materials are drawn, in the usual manner, the rolls being driven in the usual manner so as to unwind the material or materials from the spool or spools.

19 represents the usual driven shaft, which is driven at a high rate of speed to impart motion to the various spindles; and on this shaft 19 may be mounted the usual drum 20, and from this drum 20, the usual quarter-turned belts 21 may be led to the whirls or pulleys 26 of the spindles.

In the step-rail 14 may be mounted any of the usual or approved form of steps, as the screw 22, which may be tapped into the rail 14, and which may have a nut 23, whereby the step can be adjusted.

The spindle which I use is peculiarly made, and is designated by the numeral 24 on the drawings. This spindle 24 may have the usual bearing or point 25, which fits into the step 22. The spindle 24 is made hollow at its upper portion and the upper end is internally screw-threaded, as at 240, and screwed therein is the reduced externally screw-threaded end of the spindle extension 27, which spindle extension 27 carries a part which I call the spindle collar 28. In this spindle-collar 28 is mounted an upright shaft 29, which I call the

receiving bobbin-spindle; and it will be noticed that this bobbin-spindle 29 is mounted eccentrically to the center of the spindle 24, and that the distance between the center of the spindle 24 and the bobbin-spindle 29, is enough to allow the bobbin 31 to move freely around the hook or eye, as hereinafter described. This shaft 29 constitutes the receiving bobbin support, and, of course, any other equivalent device could be used therefor. The spindle-collar 28 may have a counter-weight 30 placed on the same, as shown, so that this counter-weight will tend to counter-act the weight of the bobbin spindle 29 and of the bobbin 31. The spindle proper is slotted below the whirl 26, as at 32, and fitting on the spindle is the collar 33, which collar 33 has pins or screws 34, which extend in through the slots 32, as shown.

The spindle 24, the spindle extension 27 and the spindle collar 28 are bored or made hollow in the center, as shown, and fitting in the hole thus formed, is a part which I term the hook-spindle 35, which carries at the end thereof, the hook or eye 36. This hook or eye 36 is slightly off-set on one side as at 360, as shown in Fig. 7, so that the thread can be led to the eye or hook in an exact axial line with the hook-spindle 35. The screws or pins 34, which pass through the collar 33, and the spindle slots 32, are rigidly and securely fastened into the hook-spindle 35, whereby the hook-spindle and hook, and the collar 33 will turn synchronously with the spindle 24. Mounted in the traverse-rail 13 is a cup 37, which is cut away as at 370 to allow the collar 33 to fit loosely into the same; and the lower part of this cup 37 is threaded as at 38, and fits into the traverse rail 13, and a check-nut 39 may be threaded on the lower end of the cup 37, as shown. Mounted in the cut-away portion 370 of the cup 37, is a packing 40 against which the collar 33 rests. The top of the cup 37 is cut away, as shown to allow a clip 41 to fit into the same, and over the collar 33; and this clip may be secured to the cup 37 by means of a screw as 42. By this means, it will be seen that the hook-spindle 31 is connected to the traverse rail 13, so that as the traverse rail 13 is automatically raised and lowered, as before described, the hook-spindle 35 will, also, be raised and lowered, the collar 33 revolving in the cup 37 and on the packing 40; and it will be seen that the hook-spindle can be adjusted relatively to the traverse-rail 13 by revolving or turning the cup 37, and that the cup 37 can be secured in its adjusted position by means of the nut 39. The bolster-rail is nicely bored out in line with the step and traverse rail, to accommodate the bolster 43. This bolster 43 has a vertical groove 44 cut in the lower part of the same, and fitting into this vertical groove 44 is the end of the screw 45, which is tapped into the bolster-rail, as shown. The lower part of the hole in the bolster-rail is screw-threaded, and tapped into this screw-threaded portion is the nut 46, which bears on a shoulder 47 of the bolster. It will be seen that the bolster is kept from turning by means of the screw 45, but that the same is vertically movable, and that the same can be adjusted vertically by means of the nut 46, for a purpose hereinafter described. The spindle extension 27 is nicely fitted or journaled in the bolster 43, as shown.

The upper part of the bolster 43 is formed into a cup, as at 48, as shown, and the top edge of this cup is made flaring as at 49, and fitting into this flaring portion is a piece of cloth or tape or other suitable material 50, which is nicely fitted into the same, and which thereby forms a tapered annular cup or friction-ring. The spindle-collar 28 does not touch the cloth bearing on the cup, which is used for a friction bearing for the lower end of the bobbin.

Arranged under the spindle-collar 28 and in the bottom of the cup 48 is a packing 51, which supports the collar 28, as shown. Arranged above the bobbin and hook is a part which I term a cover as 52. This cover 52 has extended ears as 53 through which a pin 54 passes, the pin 54, also, passing into the ear 57 of the adjustable piece 55, which has a slot, as shown, through which slot, a screw 56 passes, and is tapped into the frame 11. By this means the cover or cap 52 and the piece 55 can be adjusted relatively to the bobbin. It will be seen that the piece 55 has a projection 540 against which the ears 53 of the cover 52 bear, and limit the downward movement of the cover. The cover 52 is under-cut as at 58, as shown, and is outwardly tapered; and fitting into this under-cut portion is a piece of cloth or other suitable material 59, which is outwardly turned or bent as at 590, to form a tapered or annular edge opposite to the cloth 50, and this piece of cloth thus forms the upper friction ring. It will be seen that this annular edge extends slightly down below the edge of the cup 52, whereby the shoulder 590 will, to some degree, yield. This piece of cloth or bearing 59 is held in place in the cover 52 by means of a circular piece of wire 60, which may be snapped or sprung into place in the under cut portion of the cover 52, as shown. It will be seen that the diameter of the upper and lower friction rings is greater than the diameter of the bobbin, whereby the shoulders of the bobbin, mathematically speaking, will only touch the cloth bearings or the friction rings at a single point or line, whereby the drag will be very delicate and nice.

Only one friction ring need be used to turn the receiving bobbin on its axis to wind. The machine shown can be arranged to use only the upper or only the lower friction ring if desired. By lowering the bolster the lower friction ring can be rendered inoperative. By raising the piece 55 the upper friction ring can be rendered inoperative. Thus either friction ring can be used at pleasure.

Thus it is within the scope of my invention to use a single device for turning the receiving bobbin and the same can be arranged either above or below the bobbin or in any position as desired. But in most cases, where high speed is desired, it is desirable to have both friction rings, as the same will, also, act to steady or guide the bobbin, and to prevent any undue outward throw of the same from the centrifugal action.

Mounted or arranged in the center of the cover 52 is the usual porcelain or crockery bearing 61, which is arranged so as to be exactly in the axis of the spindle or hook spindle 35, and a slot as 62 is cut through the cover 52, and through the crockery piece 61, as shown, so that the material or materials can be easily inserted.

With my machine, thus organized, the operation is as follows:—The receiving bobbin is mounted so as to be perfectly free to turn on the bobbin spindle 29, and the under shoulder of the bobbin is set to bear on the lower cloth bearing 50, and the top of the bobbin is arranged to bear on the upper bearing 590. This will give the receiving bobbin the desired drag, as hereinafter described. The thread is lead from the spool through the usual top rolls, down through the crockery piece 61, in through the hook 36, and then to the receiving bobbin. Now, the machine is started, and driven in the usual manner. This will cause the material or materials to be slowly unwound from the spool or spools and paid out to the hook 36. As the machine is operated, the hook 36 will be rotated at a high rate of speed, and the bobbin spindle will be moved on a circle about the hook, synchronously with the revolution of the hook and a twist will be put into the material or materials at every revolution of the spindle.

It will be seen that the twist is substantially put into the material or materials between the top rolls and the hook 36, and it will be seen that this portion of the material or materials, which is being twisted, is not moved or rotated about a circle, but is kept in a line, whereby the twisting or spinning is imparted to the material or materials without moving the same out of line. Thus, the twist is given without any of the disadvantages incident to the old methods. As the receiving bobbin revolves around its circle or orbit, the shoulders of the same, bearing on the cloth bearings, will tend to give the bobbin an independent movement of rotation upon the receiving bobbin spindle. This tendency will be regulated by the pressure which the bobbin exerts on its cloth bearings, and, of course, will vary as the speed varies. This will tend to wind or draw the material or materials through the hook 36 from the top rolls, and will give the material or materials their desired drag, whereby, after the spinning or twisting has been completed, the material or materials will be wound upon the receiving bobbin. It will be seen that only a very small portion of the material or materials is moved out of line; that is, the portion between the hook 36 and the bobbin, and it will also be seen, that this portion is only thrown out of line after substantially all the twisting or spinning operation has been completed.

When it is desired to remove the bobbin, all that is necessary is to throw the cover 52 up, when the bobbin can be taken off of its spindle, and removed from the machine, and another one substituted.

When it is desired to adjust the pressure that the cloth bearings exert upon the shoulders of the bobbin, the same can be nicely done by adjusting the cover 52 up or down by the means before described, and again, when it is desired to adjust the lower cloth bearing or friction ring, the same can be done by adjusting the nut 46, which will move the cup 51 up or down, as desired, and after this adjustment has been given, the step may be adjusted, if desired, so as to accommodate the adjustment which has been given to the spindle. The hook can be adjusted relatively to the traverse-rail by means of the cup 37 and the nut 39, as before described.

When it is desired to remove the entire spindle from the framing, the same can be very nicely done by turning the clip 41 so as to release the collar 33, and loosening the screw 45 when the entire spindle and bolster can be drawn out through the bolster-frame and the traverse-rail.

It is understood, of course, that the machine herein described may be varied and modified, and that my invention may be applied to substantially any spinning spindle that exists to-day. It is also understood that my invention can be applied to any kind of spinning or twisting where any number of strands are used, or to any kind of spinning or twisting, where only a single strand is used.

I have used the terms receiving bobbin and receiving bobbin support broadly and mean to include thereby any receiving device or its support to which the material or materials can be directed from the spinning or twisting point and received therefrom. A reel would be such a device.

The mounting and arrangement of the bobbin and its support can of course be altered without departing from my invention.

While it is preferred to lead the material or materials directly in a horizontal line from the spinning or twisting point, it is obvious of course that this line need not be horizontal and that the material or materials may be led in an inclined or tortuous line from the spinning or twisting point provided the receiving device or bobbin and its support is arranged to revolve around the line or orbit of the spinning or twisting point which in the machine shown is the axial line of the spindle, this being what I term "with and around the spinning or twisting point."

Any desired means for drawing the mate-

rial or materials away from the spinning point may be used; the particular means shown and described is the ring or rings against which the bobbin bears so as to be revolved on its own axis to wind. It is preferred to cause the receiving device or bobbin to move to accomplish this result, although of course this term is to be construed broadly so far as the scope of my invention is concerned.

As before stated, I have found out in practical experiments, that the speed of my improved device is limited only to the speed at which the parts can be run, as there is no centrifugal action or pull on the material or materials, during the spinning or twisting operation.

It will be seen that the essence of my invention lies in the fact that the receiving bobbin support revolves around, and with the spinning or twisting point, and, so far as this idea is concerned, it is not absolutely necessary that the spinning or twisting point should turn axially, but that is the preferred way.

I have found, also, in the course of my experiments, that material or materials spun or twisted by my improved device are very superior, as all the ends or strands are "licked in," which I attribute to the fact that there is not much tendency for the same to fly out from the axial line.

The method described in this application is not claimed in this case, as the same is claimed in a divisional application of this case, filed June 14, 1893, Serial No. 477,569.

The details of the parts herein shown and described may be greatly varied by a skilled mechanic without departing from the scope of my invention, as expressed in the claims.

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

1. The combination in a spinning or twisting machine of the spinning or twisting point, a receiving bobbin support mounted to turn with, and around the spinning or twisting point, and means for drawing the material or materials away from the spinning or twisting point, substantially as described.

2. The combination in a spinning or twisting machine, of the spinning or twisting point, a receiving device or bobbin support mounted eccentrically to the spinning or twisting point means to turn said bobbin support with and around the spinning or twisting point and means for drawing the material or materials away from the spinning or twisting point, substantially as described.

3. The combination in a spinning or twisting machine of a hook or eye, means for rotating the same, a receiving bobbin support mounted eccentrically to the hook or eye, and to turn with and around the hook or eye, whereby the material or materials can be led outwardly from the hook or eye to the receiving bobbin, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

4. The combination in a spinning or twisting machine of a rotating spindle, a receiving bobbin support mounted eccentrically to and carried by said spindle, a hook or eye mounted with said spindle, and rotating therewith, means for raising and lowering said hook, the material or materials being led outwardly from the hook or eye, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

5. The combination in a spinning or twisting machine of the revolving spindle, a receiving bobbin mounted eccentrically to and carried by said spindle, a twisting or spinning hook or eye mounted with said spindle, and revolving therewith, the material or materials being led outwardly from the hook or eye to the bobbin, and means for giving the receiving bobbin an independent rotation on its own axis for winding, substantially as described.

6. The combination in a spinning or twisting machine of the hollow revolving spindle, the hook spindle fitting into said spindle, and turning therewith, but capable of an axial movement independent of said spindle, a hook or eye carried at the end of said hook spindle, a bobbin mounted eccentrically to and carried by said spindle, and adapted to turn therewith, the material or materials being led outwardly from the hook or eye to the receiving bobbin, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

7. The combination in a spinning or twisting machine of the revolving spindle, a receiving bobbin mounted eccentrically on said spindle, a hook spindle fitting into said main spindle, and turning therewith, said hook spindle being capable of an independent axial movement relatively to the main spindle, the material or materials being led outwardly from the hook spindle to the receiving bobbin, and means for giving the receiving bobbin an independent rotation on its own axis, whereby the drag is obtained, substantially as described.

8. The combination in a spinning or twisting machine of the revolving spindle, the hook or eye mounted axially therewith, the receiving bobbin mounted eccentrically to and carried by said spindle, the material or materials being led outwardly from the hook or eye to the receiving bobbin, and a friction ring against which the receiving bobbin bears whereby as the same is revolved by the spindle, the same will have an independent movement of rotation on its own axis, substantially as described.

9. The combination in a spinning or twisting machine of the revolving spindle, the hook or eye mounted axially therewith, the receiving bobbin mounted eccentrically to and carried by said spindle, the material or materials

being led outwardly from the hook or eye to the receiving bobbin, and two friction rings against which the two shoulders of the bobbin press, whereby the receiving bobbin is given an independent movement of rotation on its own axis, substantially as described.

10. The combination in a spinning or twisting machine of the revolving spindle, the hook spindle mounted so as to turn therewith, and capable of an independent axial movement relatively to the main spindle, of the traverse rail connected to raise and lower said hook spindle, a receiving bobbin support mounted eccentrically to said hook spindle, and to turn with the main spindle, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

11. The combination in a spinning or twisting machine of the main spindle, the hook-spindle mounted so as to turn therewith, and so as to be capable of an axial movement relatively to said main spindle, the receiving bobbin support mounted to be turned with and around the main spindle, said support being set eccentrically thereto, of the traverse rail connected to the hook spindle, and means for adjusting the relation between the traverse rail and the hook-spindle, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

12. The combination in a spinning or twisting machine of the hollow main spindle, the hook spindle fitted therein, and adapted to turn with the main spindle, the traverse rail connected to raise and lower the hook spindle, the receiving bobbin spindle mounted eccentrically to and carried by the main spindle, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

13. The combination in a spinning or twisting machine of the hollow spindle 24, the hook spindle 35 fitted within the main spindle, a sliding collar as 33 fitted on the outside of the main spindle, and connected to the hook spindle, the traverse rail to which the collar 33 is connected, the receiving bobbin spindle or support carried by the main spindle, and mounted eccentrically thereon, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

14. The combination in a spinning or twisting machine of the hollow spindle, the hook spindle fitted therein, the main spindle being slotted, a collar fitted on the main spindle, and having a pin or screw extending through said slot to engage the hook spindle, the traverse rail 13, and the cup 37 carried by the traverse-rail, into which said sliding collar fits, said cup 37 being adjustable in the traverse-rail, substantially as described.

15. The combination in a spinning or twisting machine of the hollow main spindle, the hook spindle fitted therein, the sliding collar 33 mounted on the main spindle and connected to the hook spindle, the traverse rail carrying the cup 37, into which said collar fits, and the removable clip 41 holding said collar in the cup 37, substantially as described.

16. The combination in a spinning or twisting machine of the main spindle, the hook-spindle carried axially therewith, and the receiving bobbin spindle carried by the main spindle eccentrically to the hook spindle, of the cover 52 constituting a friction ring for the bobbin, said cover being hinged so that the same can be lifted up, and the receiving bobbin removed from the bobbin spindle, substantially as described.

17. The combination in a spinning or twisting machine of the concentrically mounted main spindle and hook spindle, the receiving bobbin spindle or support mounted eccentrically to the main spindle and hook spindle and carried by the former, these three parts turning synchronously, and the bolster carrying a bearing or friction ring for the bobbin, substantially as described.

18. The combination in a spinning or twisting machine of the main spindle and hook spindle mounted concentrically, the receiving bobbin spindle or support mounted eccentrically to the main spindle and hook spindle and carried by the former, these three parts turning synchronously, and the adjustable bolster having a friction-ring as 50, against which the receiving bobbin may rest, substantially as described.

19. The combination in a spinning or twisting machine of the concentrically mounted spindle, and hook spindle, and the receiving bobbin spindle or support mounted eccentrically to the hook spindle and main spindle and carried by the latter, these three parts turning in unison, the bolster rail 12 having the bolster 43 fitted therein and vertically movable therein, and the nut 46 tapped into the bolster-rail, and bearing against the bolster, said bolster carrying a bearing which forms a friction-ring, against which the receiving bobbin may rest, substantially as described.

20. The combination in a spinning or twisting machine of the spinning or twisting point, the receiving bobbin support mounted eccentrically to, and to turn with the spinning or twisting point, and the vertically adjustable cap or cover 52 carrying a friction-ring against which the receiving bobbin may bear, substantially as described.

21. The combination in a spinning or twisting machine of the spinning or twisting point, the receiving bobbin spindle or support mounted eccentrically to, and to turn with and around the spinning or twisting point and the hinged cover 52, carrying a guide-mouth as 61, substantially as described.

22. The combination in a spinning or twisting machine of the spinning or twisting point, a receiving bobbin spindle or support mounted eccentrically to, and to turn with and

around the spinning or twisting point, and the hinged cover 52 having a bearing 59 inserted therein, and carrying the guide mouth 61, substantially as described.

23. The combination in a spinning or twisting machine of the spinning or twisting point, the receiving bobbin spindle or support mounted eccentrically to, and to turn with, and around the spinning or twisting point, the cover 52 under-cut as at 58, and a cloth bearing as 59, mounted in this under-cut portion, and suitably held in place, said cloth being bent back as at 590, to form a yielding friction ring against which the receiving bobbin may bear, substantially as described.

24. The combination in a spinning or twisting machine of the main spindle carrying the spinning or twisting point, the receiving bobbin spindle or support mounted eccentrically to, and carried by the main spindle, a counter-weight also carried by the main spindle for the purpose of counterbalancing the weight of the receiving-bobbin spindle or the receiving bobbin, and means for drawing the material or materials away from the spinning or twisting point substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

LOUIS F. WEISS.

Witnesses:
LOUIS W. SOUTHGATE,
MARY MCCARTHY.