

No. 742,370.

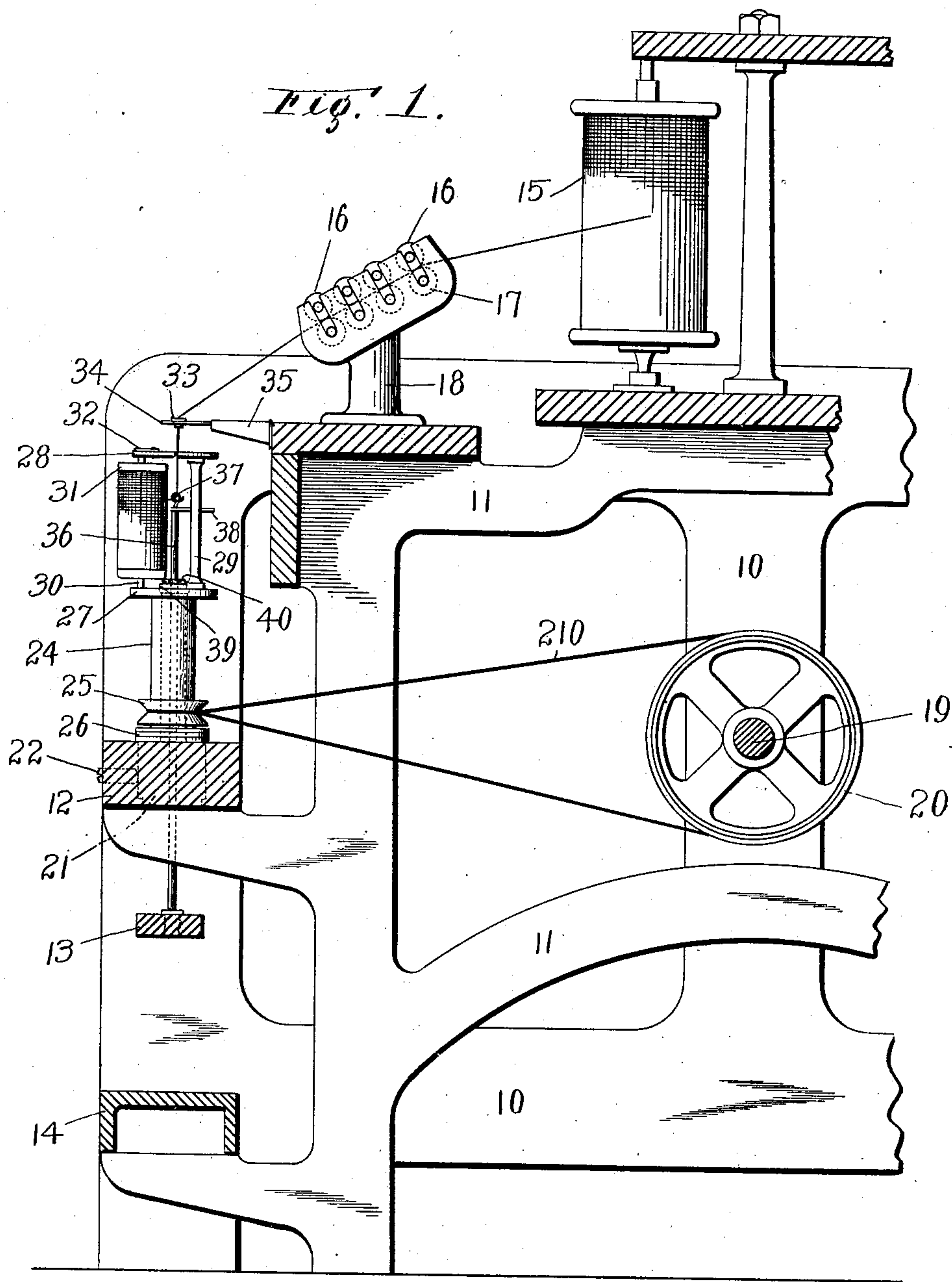
PATENTED OCT. 27, 1903.

L. F. WEISS.
SPINNING MACHINE.

APPLICATION FILED JAN. 22, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



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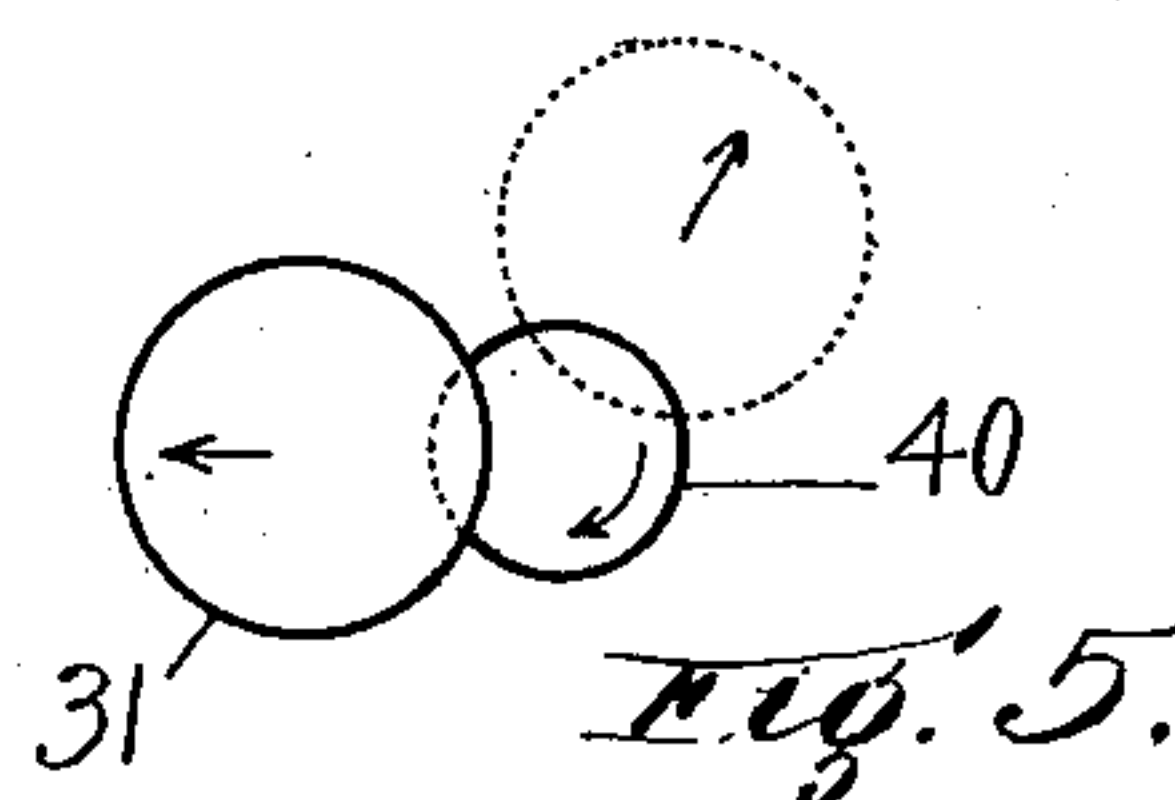
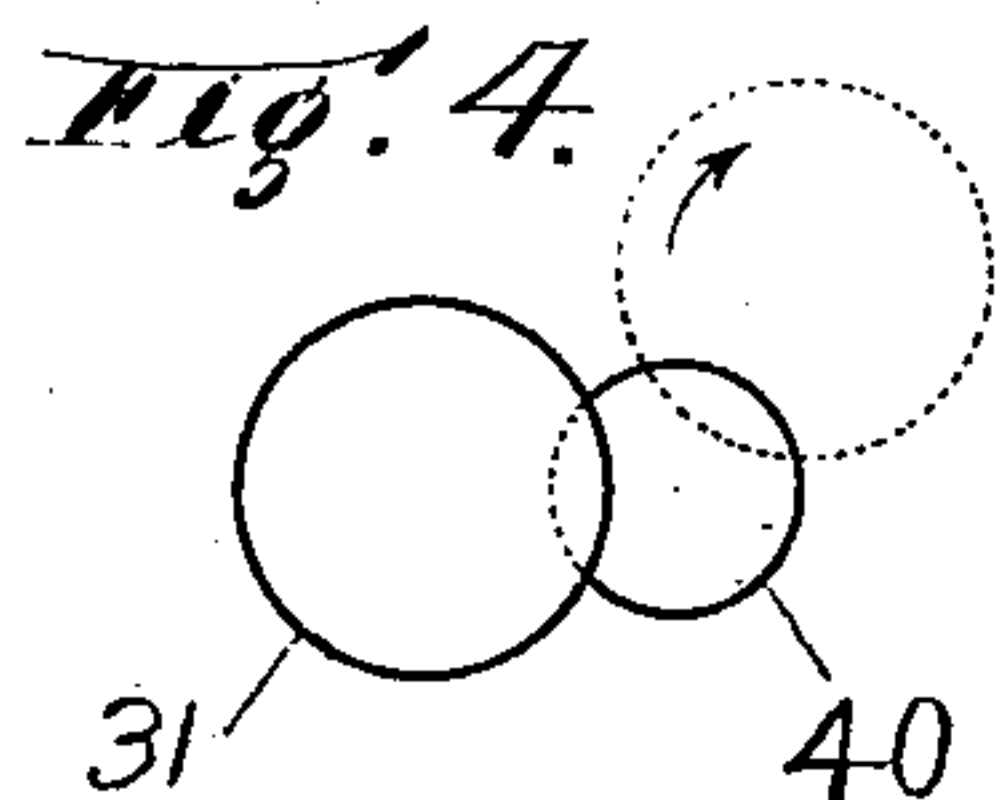
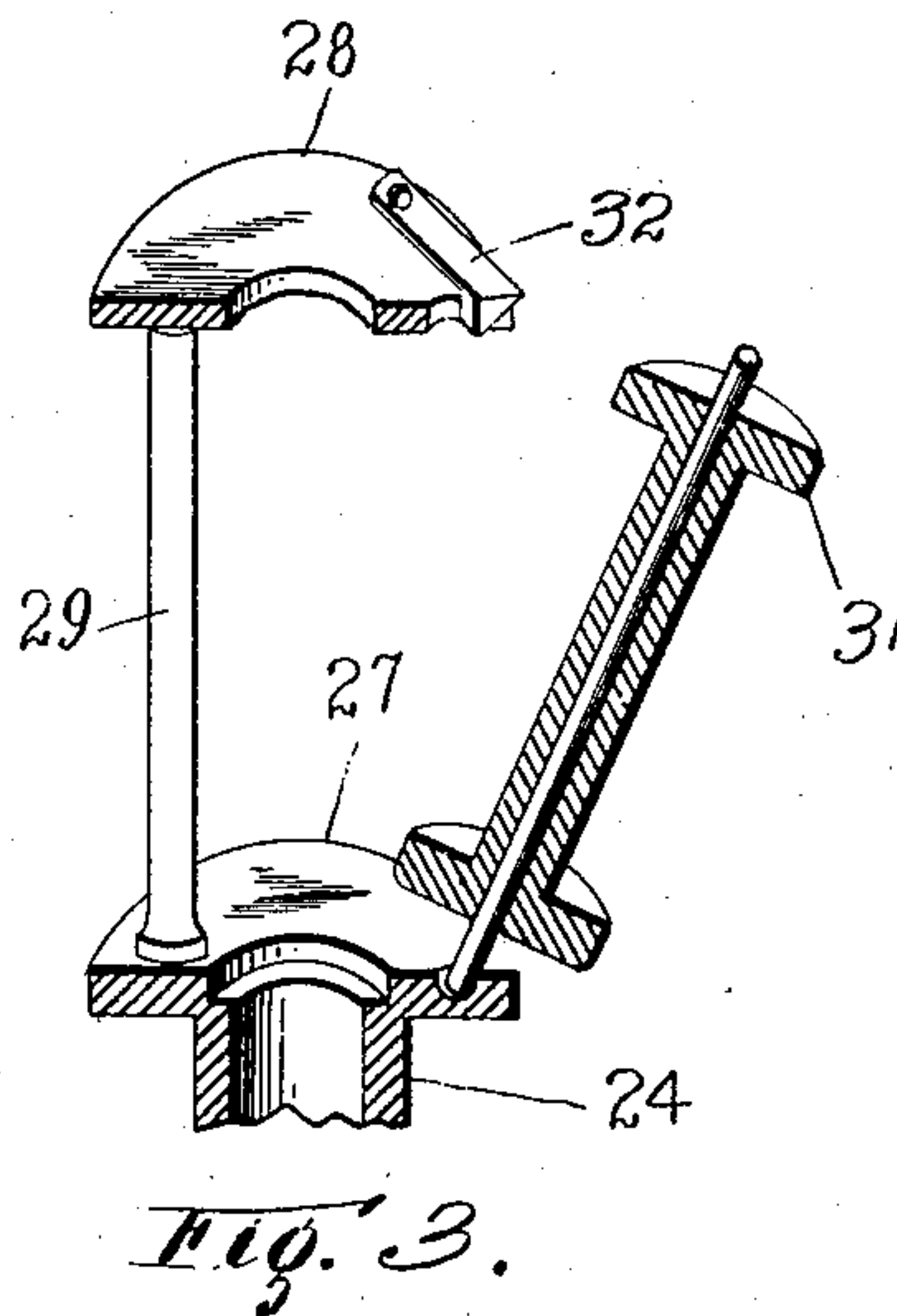
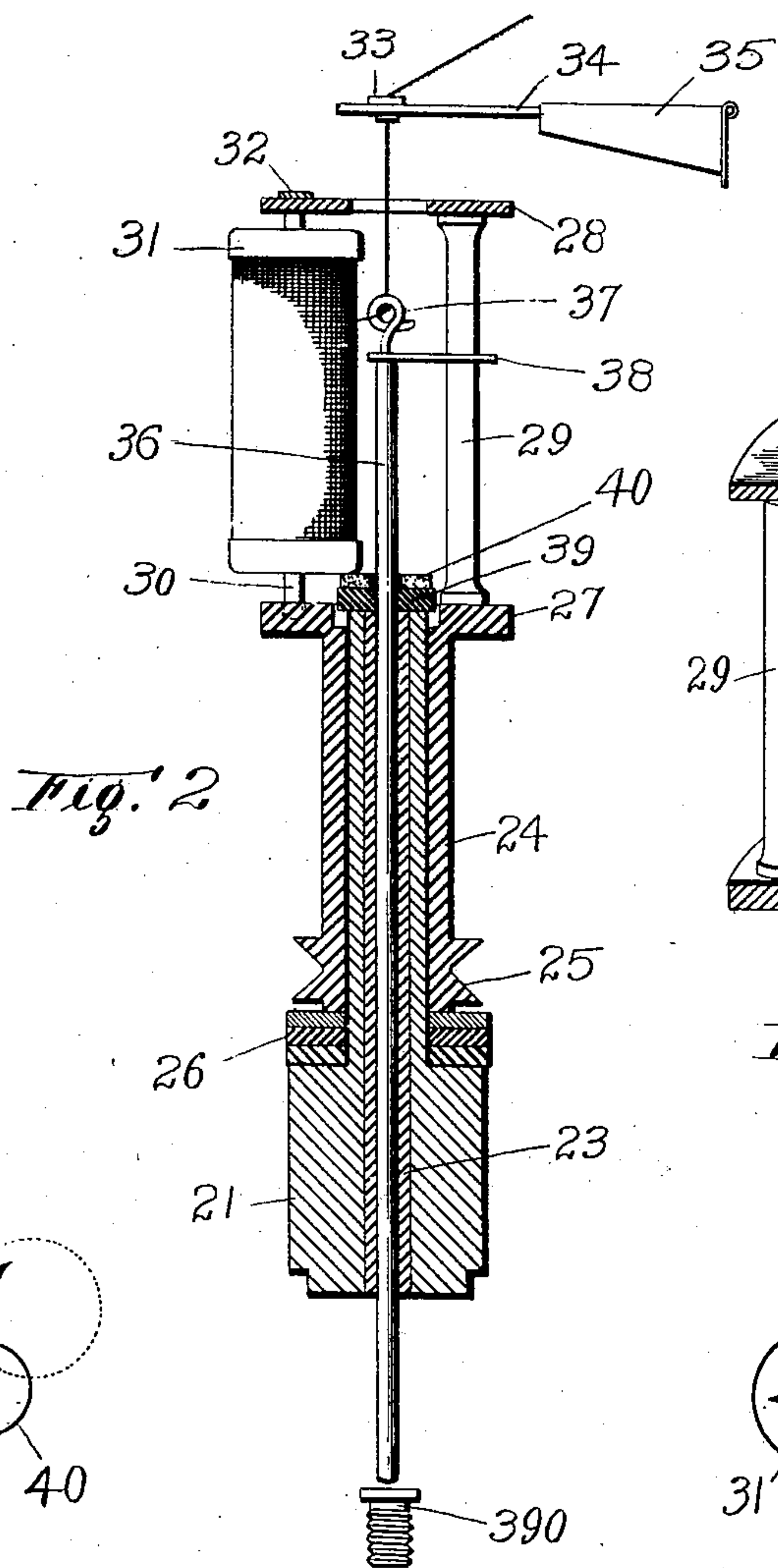


Fig. 6.

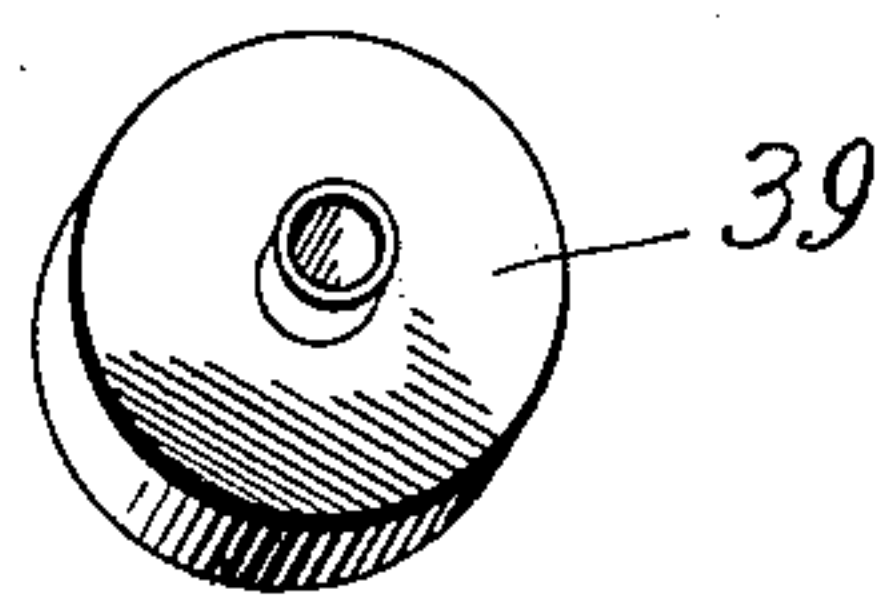
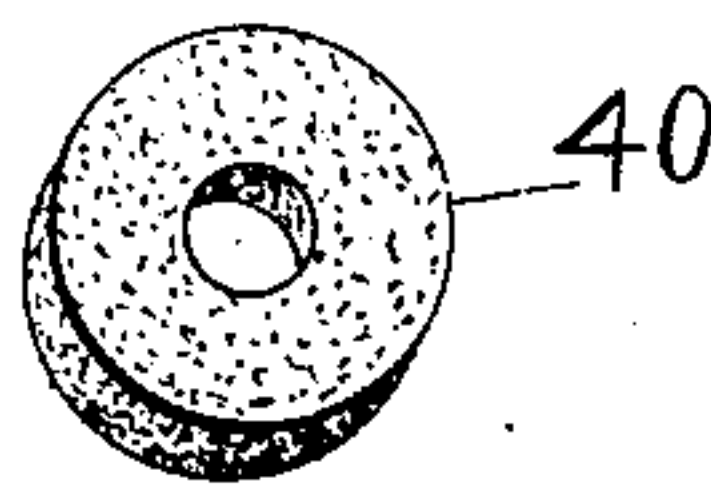


Fig. 7.



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UNITED STATES PATENT OFFICE.

LOUIS F. WEISS, OF WORCESTER, MASSACHUSETTS.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 742,370, dated October 27, 1903.

Application filed January 22, 1902. Serial No. 90,797. (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 Apparatus for Spinning or Twisting, of which the following is a specification.

This invention relates to an improved apparatus for spinning or twisting.

The especial object of this invention is to improve and perfect the apparatus shown and described in United States Letters Patent No. 506,754, granted to me October 17, 1893.

To these ends this invention consists of the apparatus for spinning or twisting and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a sectional view of a portion of a spinning or twisting frame with my invention applied thereto. Fig. 2 is an enlarged sectional view of a spindle constructed according to my invention. Fig. 3 is a fragmentary perspective view showing the manner in which a spool or bobbin is put in place in the spindle. Fig. 4 is a diagrammatic view illustrating the rotation of the receiving bobbin or spool during the normal operation of the apparatus. Fig. 5 is a diagrammatic view illustrating the rotation of the friction-surface to prevent undue strains being upon the material being acted upon. Fig. 6 is a perspective view of the "drag-piece" or friction-washer, and Fig. 7 is a perspective view of the felt washer or surface carried by the drag-piece.

In the ordinary flier or ring-spinning frames the receiving-bobbin is arranged in line with the axis of the spindle, and the material which is being spun or twisted is carried in an orbit about the receiving-bobbin. This bodily revolution of a line of thread about the spinning or twisting point in an ordinary spinning or twisting machine causes the material to spread or "balloon" out under the centrifugal action. This centrifugal action and the resistance of the air produce a strain upon the material, which strain increases with the speed at which the machine is driven. In practice the strain due to the ballooning or spreading of the material under centrifugal

force is one of the things that limits the speed at which such machines can be run. In addition to this disadvantage the ordinary spinning or twisting operations when practiced at high speeds produce inferior qualities of yarn, as the individual fibers of material tend to fly out from the center, so as to produce a rough and undesirable product. The apparatus described and claimed in my prior patent, No. 506,754, of October 17, 1893, before referred to, was designed to overcome the action of centrifugal force upon the material which is being spun or twisted by providing a construction in which the receiving bobbin or spool is moved bodily around the spinning or twisting point, so that the greater part of the thread which is being spun or twisted will be drawn down in line with the axis of the spindle, so that it will have no tendency to balloon or spread.

To wind the thread upon the bobbin in the construction disclosed in my prior patent, I employed top and bottom friction-surfaces, and although the parts could be adjusted so that the receiving bobbin or spool could be driven either from the top or bottom, as desired, and the pressure between the spool and friction-surfaces could be varied I have found in actual practice that this arrangement of the drag or connections for turning the receiving bobbin or spool was not sufficiently permanent to produce the best results—that is to say, the construction shown in said patent produces too rapid a drag, tending to rotate the receiving bobbin or spool on its own axis at too high a rate of speed, tending to take up the yarn or material being operated upon at a higher rate of speed than the same would be furnished from the top rolls. This necessarily produced an undesirable amount of slippage between the bobbin or spool and the friction-surfaces with which the same engages, and it resulted from this that the friction-surfaces were speedily burned or worn out.

One especial object of my present invention is, therefore, to provide a drag or winding connection for the spool of a spindle of the class shown in my aforesaid patent which will be sufficiently permanent and delicate to cause the rotation of the receiving bobbin or spool upon its axis to take up the material

as the same is spun or twisted without placing undue strains upon the same, while at the same time the friction or drag surface will be loosely mounted, so that instead of
 5 acting to rotate the spool or receiving-bobbin the friction-surface itself will be rotated whenever the strain upon the material increases to an undesirable extent. To accomplish these objects, I have provided a drag
 10 or frictional driving mechanism for the receiving bobbin or spool by employing a friction-surface within the orbit of the receiving bobbin or spool instead of frictional surfaces which bear on the outside of the receiving
 15 bobbin or spool. By employing a friction disk or surface which is within the orbit of the receiving bobbin or spool, and hence engages with the inner side of the spool or bobbin, the bobbin will be rotated in the op-
 20 posite direction to which the receiving bobbin or spool is rotated in the construction shown in my patent before referred to, while to prevent the friction-surface from wearing or burning out when the tension of the ma-
 25 terial prevents the receiving-bobbin from turning I preferably mount the friction-surface loosely, so that the same will be free to turn when required to do so in order to prevent undue strains upon the material—that
 30 is to say, in an apparatus for spinning or twisting constructed according to my present invention in the construction herein specifically illustrated I employ a metallic friction disk or washer, which rests loosely on
 35 top of the stationary stud upon which the spindle is mounted. The metallic friction disk or washer is provided with a surface or covering of felt, and during the normal operations of spinning the friction disk or
 40 washer remains stationary and imparts the necessary rotation to the receiving bobbin or spool; but when the rotation of the receiving spool or bobbin imparts undue tension to the material being acted upon the friction-disk
 45 instead of remaining stationary will rotate or turn upon its bearing on top of the stationary stud, and by means of this construction I have found in practice that I am enabled to secure a very permanent sensitive
 50 drag which will permit the bodily revolution of the receiving spool or bobbin about the spinning or twisting point without producing that degree of slippage between the bobbin and its friction-surface which will burn or
 55 wear out the friction-surface.

Further objects of this invention are to provide a form of spindle of the class referred to which will provide bearings for both ends of the receiving-bobbin and to operate the
 60 spinning or twisting eye, so that the positive raising and lowering of the lifter-rail will not unduly strain the material if the same is not being delivered rapidly enough from the drawing-rolls.

65 Referring to the accompanying drawings for a detail description of an apparatus embodying my present improvements, as shown

in Sheet 1, 10 designates the usual outside frame of a spinning or twisting machine, and 11 designates the usual framing in which the
 70 spindles are mounted. Between the frames 11 may be mounted the bolster-rail 12, the lifter-rail 13, and the bottom rail 14. The lifter-rail 13 may be moved up and down as the machine operates in any of the usual
 75 manners, as by the usual heart-shaped cam, which mechanism it is not necessary to herein show or describe, the same being well understood in spinning or twisting machinery, and my present improvements requiring no de-
 80 parture from the same.

In the drawings I have shown only one spindle, it being understood that my improvements are applicable to any organized spinning or twisting machine. 85

The spool from which the material is drawn is designated by the numeral 15, and of course two or more spools may be mounted in the usual manner, so that a number of threads
 90 can be drawn in when it is desired to associate them together. From the spool 15 the thread passes between the top rolls 16 and 17, which may be mounted in the usual top-roll frame 18.

Journalled in the frames 11 is the usual driv- 95 ing-shaft 19, carrying the drum 20, and from the drum 20 the usual quarter-turn belts 210 may be led to drive the spindles.

Secured in the bolster-rail 12 by a screw 22 is a stud 21, on which the spindle is journalled. 100 The stud 21 and the construction of the spindle is most clearly illustrated in Fig. 2. As shown in this figure, the stud 21 is provided with a brass bushing 23 for receiving the spinning-eyerod 36, as hereinafter described. 105

Journalled on the stud 21 and supported by washers 26 is a spindle 24, having the ordinary whirl 25. At its upper end the spindle 24 is provided with top and bottom bearing-plates 27 and 28, which are connected by
 110 posts 29. The top and bottom bearing-plates 27 and 28 are designed to receive the spool or bobbin 31 between them. The rod 30, on which the receiving spool or bobbin is mounted, is arranged to fit into a depression or socket in
 115 the bottom plate 27 and may be snapped into place into a socket in the top plate 28, behind a catch 32. The sockets in the bearing-plates 27 may be arranged directly over each other, so that the rod 30 will stand exactly perpen-
 120 dicular, although in practice I preferably arrange these sockets so that the rod 30 will be slightly inclined forwardly and inwardly to counteract the tendency of the spool or bobbin to ride upon the rod 30 when the spindle
 125 is driven at high speeds.

From the drawing-rolls 16 and 17 the thread or material to be acted upon passes through the usual thread-guide 33, carried by a thread-guide support 34, extending from a thread-
 130 board 35.

At the upper end of the rod 36 is a spinning-eye 37, and in order that the rod 36 may be driven at the same speed as the spindle

24, the rod 36 is provided with a projecting arm 38, arranged to engage one of the arms or upright posts 29.

The parts as thus far described are adapted to operate substantially in the same manner as in my previous patent before referred to—that is to say, the receiving bobbin or spool 31 revolves bodily around the spinning or twisting point, the spinning-eye turning in unison with the spindle and having an up-and-down motion to lay the thread upon the receiving bobbin or spool. In the present construction, however, instead of connecting the spinning-eye spindle 36 positively to the lifter-rail 13 the spinning-eye spindle 36 is preferably arranged simply to have its lower end rest upon the bearing-piece 49, secured in the lifter-rail, and I consider this an advantageous feature in practice, as by means of this construction the positive up-and-down motion of the lifter-rail cannot strain or break the material, as the downward motion of the spinning-eye spindle 36 is simply caused by its own weight.

The construction of the drag or frictional connection for rotating the receiving bobbin or spool and the operation thereof is most clearly illustrated in Figs. 4 to 7. In order to provide a delicate drag which will not tend to rotate the receiving bobbin or spool at too high a rate of speed, I have provided a metallic friction washer or disk 39, which rests loosely on top of the stud 21 and is provided with a facing 40, of felt or other material—that is to say, in a spinning or twisting apparatus constructed according to my present invention I preferably employ a friction-surface or drag-piece located within the orbit described by the axis of the receiving bobbin or spool. During the normal operation of the machine, as illustrated in Fig. 4, the weight of the receiving bobbin or spool bearing upon the friction disk or washer will cause the receiving bobbin or spool 31 to rotate upon its own axis at the same time that it revolves bodily about the spinning or twisting point. When, however, the material is not delivered from the drawing-rolls as fast as required by the normal operation of the receiving bobbin or spindle, the drag-piece or friction-disk 39, as illustrated in Fig. 5, instead of standing stationary, so as to cause the rotation of the receiving bobbin or spool, will move or rotate upon its bearing upon the end of the stud 21, and in practice I have found that by means of this arrangement I can provide a delicate and reliable drag which will operate without wearing or burning the friction-surface.

Numerous changes may be made by skilled mechanics in practicing my invention without departing from the scope thereof as expressed in the claims. For example, if there is not sufficient frictional resistance between the metallic drag-piece or loose friction-

washer and the top of the stationary stud 21 these surfaces may have rosin or adhesive material applied thereto, or the relative area of contact between these parts may be increased to produce the desired results. I do not wish, therefore, to be limited to the construction or to the proportion of parts which I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a spinning or twisting machine, the combination of a receiving-bobbin mounted to revolve bodily around the spinning or twisting point, and a friction-surface inside the orbit described by the axis of the receiving-bobbin.

2. In a spinning or twisting machine, the combination of a receiving-bobbin mounted to revolve bodily around the spinning or twisting point, and a loosely-mounted friction-surface acting normally as a “drag” to rotate the receiving-bobbin, but free to revolve to prevent undue strain upon the material being spun or twisted.

3. In a spinning or twisting machine, the combination of a receiving-bobbin mounted to revolve bodily around the spinning or twisting point, and a friction-surface inside of the orbit described by the axis of the receiving-bobbin acting normally as a “drag” to rotate the receiving-bobbin, but free to revolve to prevent undue strain upon the material being spun or twisted.

4. In a spinning or twisting machine, the combination of a fixed stud, a spindle journaled on said stud, a receiving-bobbin eccentrically mounted in said spindle, so as to revolve bodily around the spinning or twisting point, and a “drag-piece” or washer resting on the end of the stud inside of the orbit described by the axis of the receiving-bobbin, and normally acting as a “drag” to rotate the receiving-bobbin, but free to revolve on its bearing on the end of the stud to prevent undue strain upon the material being spun or twisted.

5. In a spinning or twisting machine, the combination of the bolster-rail, a fixed stud extending up therefrom, a spindle journaled on said stud, a receiving-bobbin eccentrically mounted on said spindle so as to revolve bodily around the spinning or twisting point, a friction-piece or “drag” loosely supported by the stud, and having a washer or covering of felt acting normally as a “drag” to rotate the receiving-bobbin, but free to turn to prevent undue strain upon the material being spun or twisted.

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

LOUIS F. WEISS.

Witnesses:

LOUIS W. SOUTHGATE,
PHILIP W. SOUTHGATE.