

(No Model.)

W. H. ST. GEORGE.
AUTOMATIC TENSION REGULATOR FOR SPOOLING MACHINES.
No. 517,495. Patented Apr. 3, 1894.

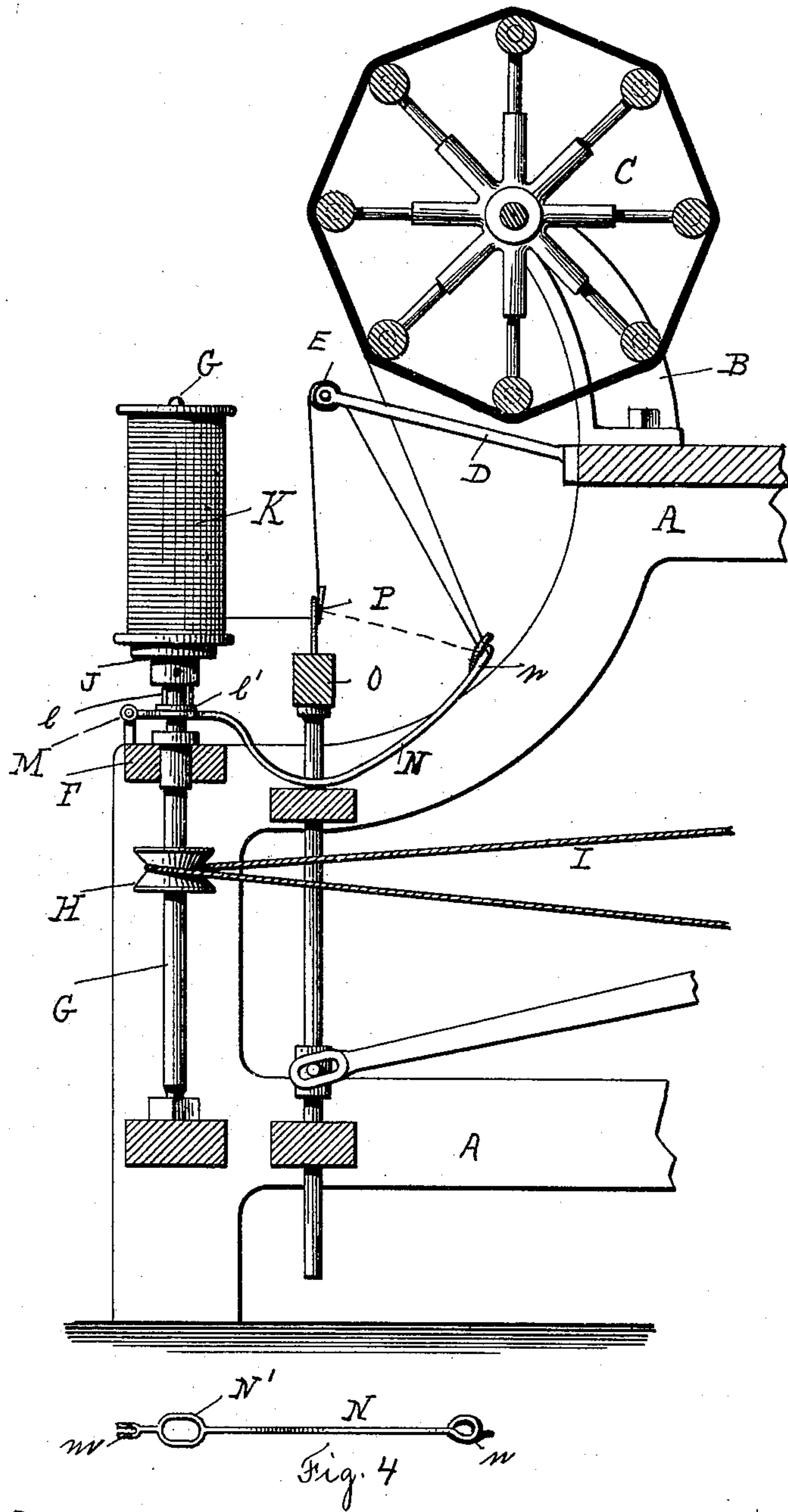


Fig. 1.

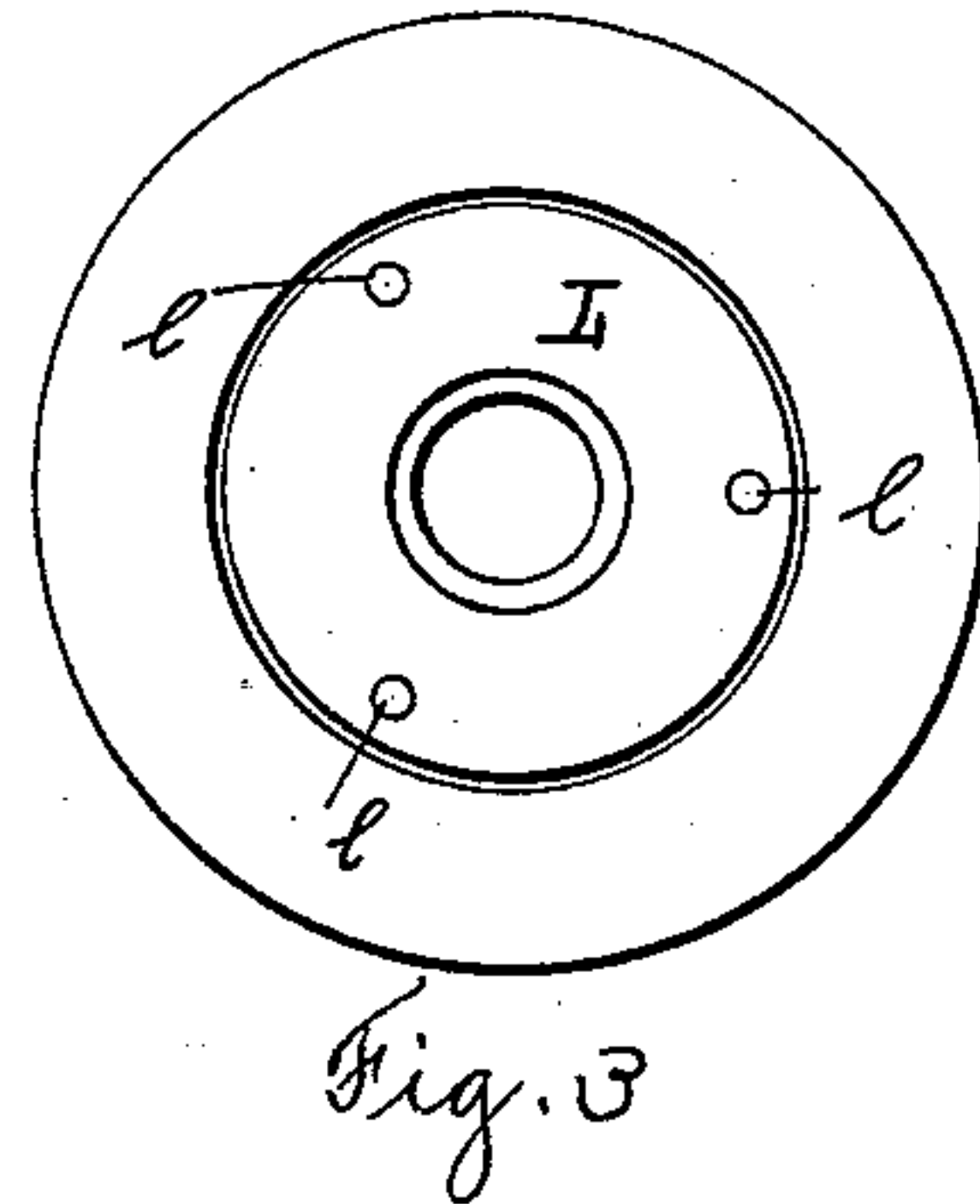
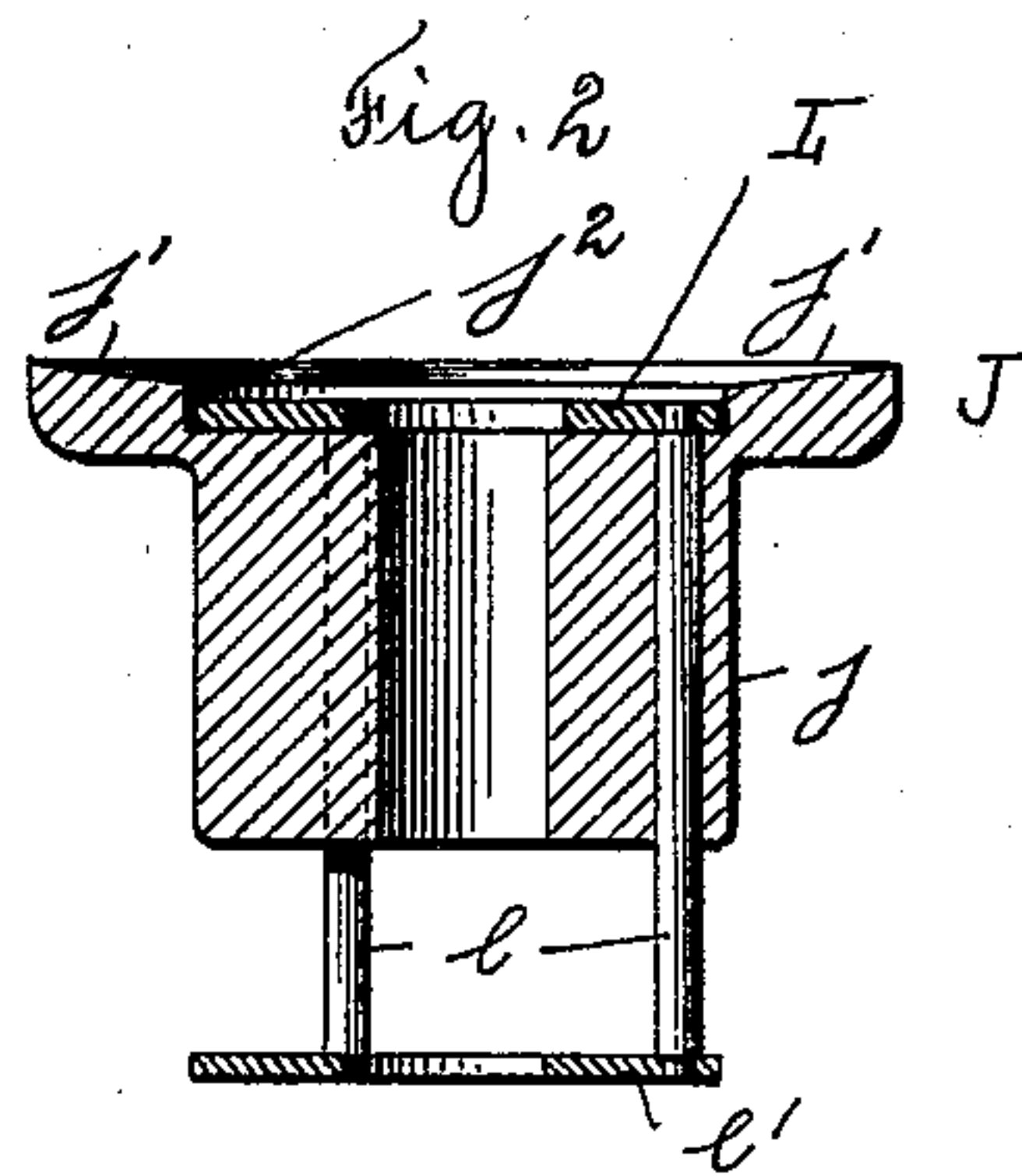


Fig. 3

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM H. ST. GEORGE, OF ASHLAND, MASSACHUSETTS.

AUTOMATIC TENSION-REGULATOR FOR SPOOLING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 517,495, dated April 3, 1894.

Application filed March 15, 1893. Serial No. 466,021. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ST. GEORGE, a citizen of the United States, residing at Ashland, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Automatic Tension-Regulators for Spooling-Machines, of which the following is a specification.

The aim of this invention is to provide a simple and effective automatic tension regulator for spooling machines, and to this end, the invention consists of the device described and claimed in this specification, and illustrated in the accompanying drawings, in which—

Figure 1 is a diagrammatic view of enough of a spooling machine to illustrate my invention. Fig. 2 is a sectional elevation of the tension regulating device. Fig. 3 is a plan of the same, and Fig. 4 is a plan-view of the part I term the lifter-lever.

In spooling or similar machines, the thread or yarn is pulled from the reel, and is wound up on the spool or bobbin, which spool or bobbin is fixed or mounted so as to turn with a revolving spindle. If, as often happens, the thread or yarn on the holder becomes knotted or clogged, so that the thread or yarn will not easily run into the machine, the pull given to the thread by the revolving spool or bobbin, will break the same, which, of course, greatly interferes with the speedy operation of the machine.

The aim of my invention is to provide an improved tension regulator, so proportioned and designed, that if the thread or yarn on the holder should become tangled, or if, for any reason, the thread or yarn will not easily run out to the spool or bobbin, the spool or bobbin will be so manipulated with relation to the revolving spindle that only a very slight tension will be put upon the yarn or thread, and the spool or bobbin will be so adjusted as to easily slip with relation to the revolving spindle. By this means, if the thread becomes knotted on the holder, the thread will not be broken, but will be simply kept under a slight tension between the holder and the spool, until the operator can attend to the same.

Referring now to the drawings, I have

shown one simple form of spooling machine, with my improvement applied thereto; it being understood, of course, that my improvement can be applied and adapted to any form of spooling or similar machine.

In the drawings, A represents part of the framing of the machine, and from this framing, extend suitable brackets as B between which brackets, the yarn or thread-holder C is mounted. I have shown in the drawings only one spindle, it being understood, of course, that my invention is applicable to a gang, or to a double machine.

F represents the usual bolster-frame of the machine, and in a bolster, and in the usual step, is mounted the usual spindle G, which has fastened to the same the whirl or pulley H, which is driven by means of the belt I, from any suitable means, not necessary here to show.

Mounted rigidly on the spindle, above the bolster is a part I term the friction-plate or ring J. This friction-plate or ring consists of a hub j , and an extending flange or friction-plate j' , which is under-cut, as shown. When the spool or bobbin K is placed upon the spindle G, the same will normally rest upon this friction-plate j' and it will be seen that the outer edge of the lower part of the spool or bobbin will rest on the friction-plate j' , and by this means, there will be imparted to the spool or bobbin from this friction-plate j' , a rotary movement. The upper part of the friction-plate or ring J is cut away or recessed as at j^2 , as shown, and fitting into this recess j^2 is a small lifter-plate or washer L, and this lifter-plate has connected thereto, three pins l , which fit in holes in the friction-ring J, as shown, and extend down through the friction-ring, and these three pins l are connected or united at their lower ends to a washer l' , which is loosely mounted upon the spindle G, as shown.

On the bolster is arranged or fastened a small lug M, to which one end m of the peculiarly shaped lever N is pivoted. This lever, I term the lifter-lever, and the same is formed with a yoke N' , as shown, and straddles the spindle G, and bears on the under side of the washer l' . This lever may be made out of strong wire, and is carried up,

as shown, toward the top of the frame A, and has formed at the end thereof, an eye or hook *n*.

The usual traverse-rail is indicated as at 5 O, and the same may carry the usual guiding hook or eye P. This traverse-rail O is automatically moved up and down to properly guide the thread on to the spool by any of the usual mechanisms, which are well understood, 10 and not necessary herein to describe at length.

Extending from the frame A are the brackets D, which carry in the same the rod or roller E, and the yarn or thread is led from the reel or holder C down through the eye *n* 15 of the lever N, then over the guide or roller E, down to the hook P mounted on the traverse-rail to the spool or bobbin K. In some cases, the thread might be led directly from the loop *n* to the hook P, as indicated by a dotted line, but I prefer the first described arrangement. By this means, it will be seen 20 that a loop is formed in the thread between the reel and the spool, and that this loop is connected to the end of the lever N. In the normal operation of the machine, this lever N has no effect on the bobbin or spool, but if the yarn on the holder should not, or for any cause, the yarn could not be freely drawn to the spool or bobbin, the revolving spool or 30 bobbin will put a tension on the thread between the spool and the holder. This will raise the lever N, and by the means before described, will raise the spool off of the friction ring or plate *j'*, and the spool or bobbin, when thus raised, will be supported upon the 35 lifter-plate L. This lifter-plate L is made very small, as shown, and bears on the spool only at a very slight radius, so that when the spool is raised by the lifter plate, there will be only a very slight friction put on the spool 40 from this revolving lifter-plate, and the parts are so proportioned, that this slight friction will not tend to injure or break the yarn, and it will be seen also that the tension of the 45 thread will regulate the friction between the friction plate and the spool, and that if the yarn or thread runs hard from the reel, then the governing device, before described, will slow down the revolution of the spool; and 50 thus, my device works as well as a governor device, as a device for entirely stopping the action of the spool. Again, in some cases, the yarn or thread might simply catch or clog for a minute. In this case, the lifter would simply 55 raise the spool until the snarl would come out, when the tension on the thread being relieved, the spool would be allowed to bear again on the friction-plate, and the machine would operate in the usual manner. 60 By this means, it will be seen that I have provided a simple and efficient tension regulator, which helps greatly in the operation of a spooling or twisting machine. Of course, in some cases, I might so design and arrange 65 the lifter-plate, that the spool would be absolutely stopped when the same is raised clear of the friction-ring, but I prefer, in most

cases, to keep a slight tension on the yarn, when the spool is raised from the friction-ring. 70

The details and arrangement of 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. 75

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

1. The combination in a spooling machine of the revolving spindle, the friction-plate 80 mounted on the spindle adapted to rotate the bobbin, the reel or source of thread supply, means for forming a loop in the thread between the source of supply and the bobbin, and means controlled by the tension of the 85 thread in this loop adapted to lift the bobbin, mounted on the spindle, away from the friction ring as the tension of the thread in the loop increases, substantially as described.

2. The combination in a spooling machine 90 of the revolving spindle, the friction-plate turning with the spindle, and adapted to revolve a bobbin placed upon the spindle, the lifter-plate mounted in the friction-plate, means for forming a loop in the thread be- 95 tween the source of supply and the spindle, including a part around which the loop of the thread passes, as the hook or eye *n*, and connections from this hook or eye *n* adapted to raise or adjust the lifter-plate to thereby 100 vary the frictional driving power of the bobbin, depending upon the tension of the thread in the loop, substantially as described.

3. The combination in a spooling machine of the revolving spindle, the friction-ring 105 mounted on the spindle, the lifter-plate recessed into the friction-ring, and having pins extending through the friction-plate, a suitable lever arranged to lift the lifter-plate, said lever having a hook or eye through which 110 the thread passes between the source of supply and the bobbin, whereby the tension of the thread between the source of supply and the bobbin will raise the lifter plate to raise the bobbin from the friction-ring, substan- 115 tially as described.

4. The combination in a spooling-machine of the revolving spindle G having the friction-ring J mounted thereon, the lifter-plate L housed within the friction-plate, the lever 120 N pivoted to the bolster-rail, and connected to the lifter-plate, said lever having an eye or hook *n*, through which the thread may be looped between the source of supply and the bobbin, whereby the tension of the thread in 125 this loop will raise the lifter plate and thus the bobbin from the friction-ring, substantially as described.

5. The combination in a spooling machine of the revolving spindle G having the friction-ring J attached thereto, the lifter-plate 130 L recessed into the friction-ring, and having the pins *l* projecting through the friction-ring, and united at their lower ends by the

washer *l'*, the yoked lever *N* pivoted to the bolster-rail, and having a hook *n* formed on the end thereof, said hook *n* being arranged so that the thread or yarn will form a loop between the source of supply and the traverse-hook, whereby the tension of the thread will raise the lifter-plate to lift the bobbin from the friction-ring, substantially as described.

6. The combination in a spooling machine of the revolving spindle, a friction-plate mounted on this spindle against which the spool is adapted to rest, and means for varying the friction between the friction-ring and the spool or bobbin operated from the tension on the thread between the source of supply and the spool or bobbin, substantially as described.

7. The combination in a spooling machine of the revolving spindle, the friction-plate mounted on this spindle against which the spool or bobbin rests, and means operated by the tension of the thread between the source of supply and the bobbin, for varying the

area of the frictional surface upon which the spool or bobbin rests substantially as described. 25

8. The combination in a spooling machine of a revolving spindle, the friction plate carried thereby, the lifter-plate housed in the friction-plate, of the lever having the eye, said lever being adapted to raise said lifter-plate, of the guide or roller *E*, the source of thread-supply, the thread passing from the source of supply through the hook on the lever, then over the roller *E* to the bobbin, whereby the tension in the thread in the loop between the source of supply and the roller *E* will tend to raise the lifter-plate, substantially as described. 30 35

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses. 40

WILLIAM H. ST. GEORGE.

Witnesses:

LOUIS W. SOUTHGATE,
E. M. HEALY.