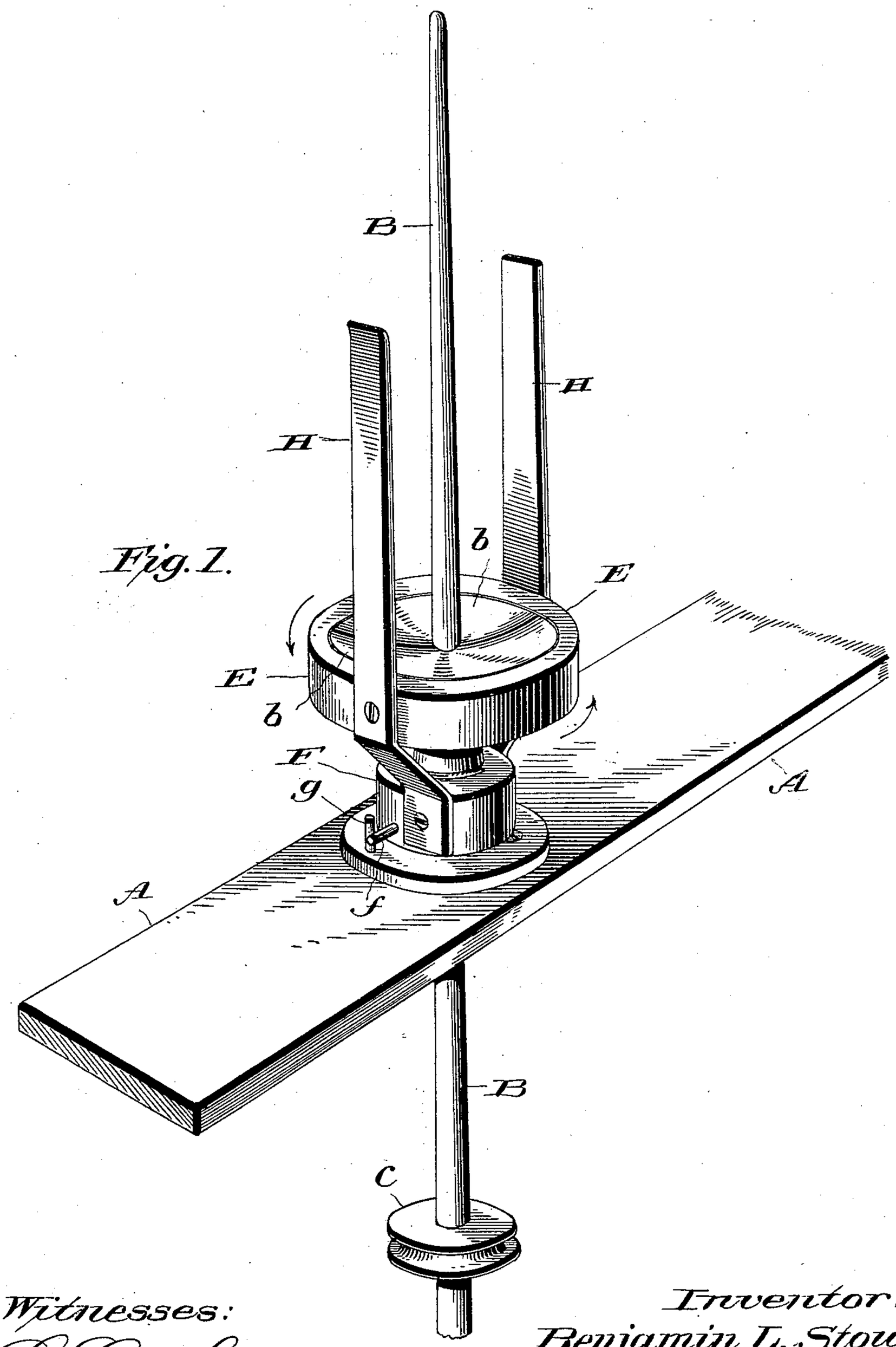
(No Model.) 2 Sheets—Sheet 1.

B. L. STOWE.

SPOOLING OR WINDING FRAME.

No. 529,087. Patented Nov. 13, 1894.

Fig. 1.



Witnesses:
L. C. Hills
J. B. Keefer

Inventor:
Benjamin L. Stowe.
by Marcellus Bailey
his Attorney.

(No Model.) 2 Sheets—Sheet 2.

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No. 529,087. Patented Nov. 13, 1894.

Fig. 2.

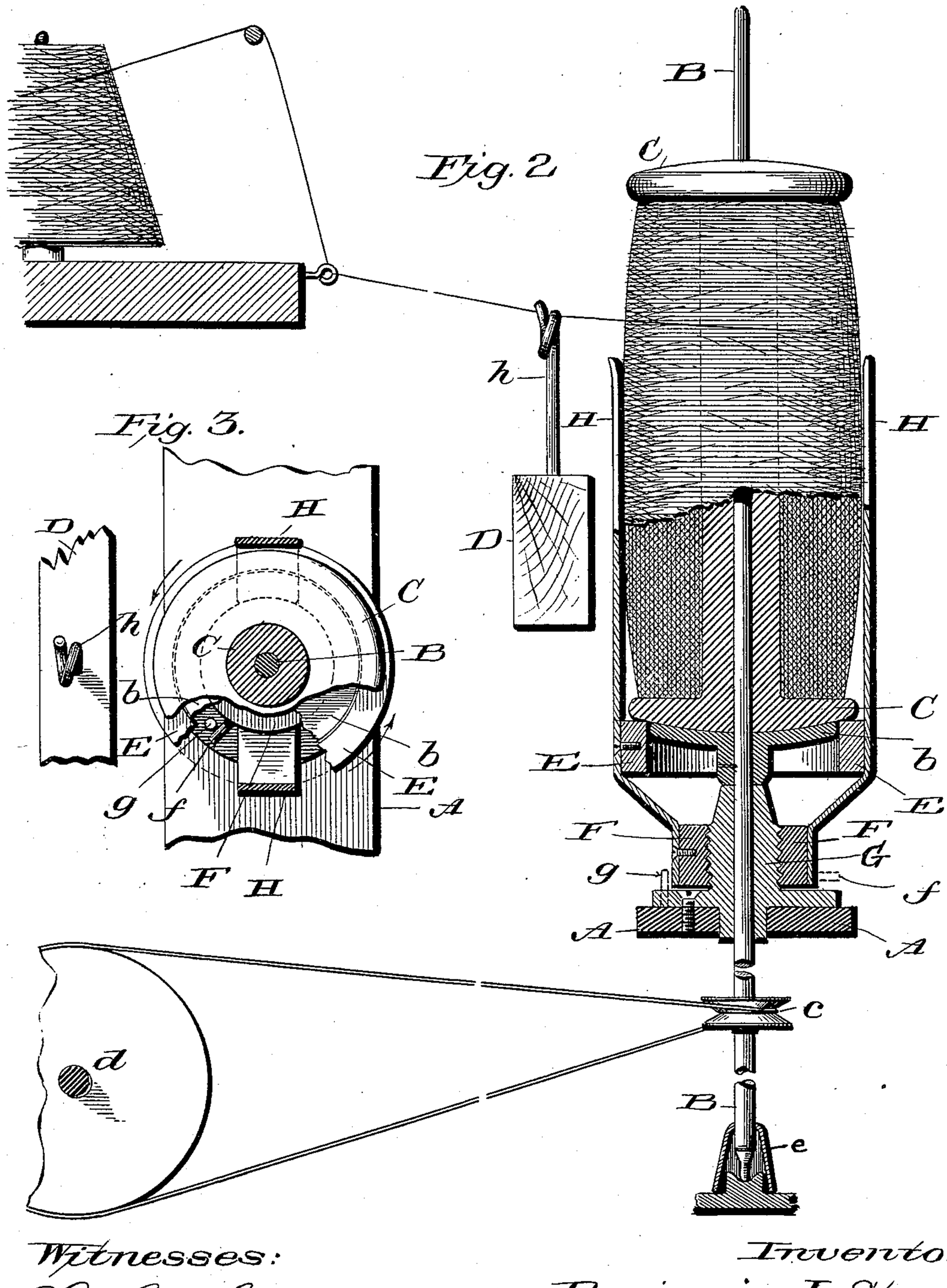

Fig. 3.

Witnesses:
L. C. Hills.
F. B. Keeler

Inventor:
Benjamin L. Stowe,
by Marcellus Bailey
his Attorney.

UNITED STATES PATENT OFFICE.

BENJAMIN L. STOWE, OF JERSEY CITY, NEW JERSEY.

SPOOLING OR WINDING FRAME.

SPECIFICATION forming part of Letters Patent No. 529,087, dated November 13, 1894.

Application filed August 16, 1894. Serial No. 520,494. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN L. STOWE, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Spooling or Winding Frames, of which the following is a a specification.

My invention relates to a stop motion for automatically arresting the spool as well as preventing it from overrunning after the required amount of thread or yarn has been wound upon it.

Under my invention, I provide means by which the spool is automatically lifted up and out of engagement with its driving spindle after thread or yarn has been wound upon it sufficient to bring it to a predetermined diameter. The means consists of a lifter capable of rotary movement and so mounted, that, when rotated, it will also move longitudinally of its support, this being accomplished by giving it a screw, or pin and spiral slot, or equivalent connection with said support as hereinafter described. The lifter is extended up along side of the spindle and at such distance therefrom as to permit the spool on the spindle to be wound to the required diameter without contacting with the lifter. Any accumulation of thread beyond that point increases the diameter of the spool, until it contacts with the lifter, and by this contact turns the lifter in such direction, and to such extent as to raise it until projections upon it engage one of the heads or other suitable part of the spool, and lift the same up from its driving seat upon the spindle.

The nature of my invention will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective view; and Fig. 2 is a vertical cross section of so much of a spooling machine, as is needed to illustrate my invention. Fig. 3 is a sectional plan of the spooling spindle and parts carried by and operating in connection with the same.

The spindle rail is shown at A.

B is the spindle, stepped at *e*.

c is the spindle driving whirl, driven by band or cord from the roller or drum *d*.

C is the spool with its lower head resting upon the spool driving disk *b* fast to and revolving with the spindle.

D is the up and down traversing eye beam, carrying the eye *h*, through which the yarn is conducted from the large bobbin, on the stationary part of the frame to the spool. Thus far there is nothing new in the machine.

I come now to the stop motion spool lifter in which my invention is comprised.

I have shown in the drawings that form of the device which I have found on the whole to be best adapted for practical every day use, but I desire to say at the outset that its form and construction can be varied within wide limits without departure from my invention, the characteristics of the device being that it is capable of both rotary and up and down movements, the up and down being consequent upon the rotary movement; that this rotary movement is due to the contact of the spool with the lifter, after the spool reaches a predetermined diameter; and that the lifter when it rises will engage the spool and raise it out of engagement with its driver.

The drawings illustrate the preferred embodiment of a stop-motion spool-lifter possessing these characteristics.

H are stiff vertical arms of metal or other suitable material placed on diametrically opposite sides of the spindle and at such distances apart as to accommodate a spool of the predetermined diameter without frictional contact therewith. These arms, which may be termed gage arms, have attached to them a ring E—the lifting ring—which encircles the spool-driving disk *b*, and normally is located a little below and out of contact with the head of the spool, which head projects beyond the edge of the disk and overhangs the ring as seen in Fig. 2. The gage-arms at their lower ends are bent inwardly to meet a collar F, to which they are made fast. This collar surrounds the spindle bearing G and is internally screw-threaded to engage a corresponding screw-thread upon the bearing, the pitch of the thread being such as to give to the collar, when the latter is rotated to a predetermined extent, the lift or rise necessary to raise the lifting-ring far enough to engage the spool-head and lift it from its seat on the driving-disk *b*.

Under the arrangement shown in the drawings, one revolution of the collar F suffices for the purpose. The collar rotates in the same

direction with the spindle, when it rotates at all, that direction being indicated by the arrow in Figs. 1 and 3.

Projecting up from the top of the spindle rail is a stationary vertical stop pin or shoulder *g* which extends across the path of a horizontal stop pin *f* on the collar F, and normally stands just in rear of the latter, as shown in Fig. 3, so as to permit the collar the requisite range of rotary movement before its pin *f* brings up against the fixed stop or shoulder *g*.

In Fig. 2, the lifter is shown as having made about one-third of a turn from the position represented in Fig. 3.

The mode of operation is as follows: In its normal position and while the spooling operation is going on, the lifter is in the position shown in Figs. 1 and 3—the pin *f* being just in front of the stop *g*, and the lifting ring E, being down out of engagement with the spool. As soon however as the spool accumulates yarn enough to bring it to the predetermined diameter, then any further increase will increase its bulk to such extent as to bring it in frictional contact with the gage arms H. The moment this takes place, the lifter as a whole will be rotated until the pin *f* brings up against the stop shoulder *g*, and in so moving, it will rise far enough to cause its lifting ring to meet the spool head and then lift the spool out of engagement with the driving disk *b*. Rotary movement of the lifter ceases the instant the stop pins, *g*, *f*, meet, and the rotary movement of the spool stops with it—the arms H acting as a brake to effectually prevent an appreciable independent movement of the spool.

Having described my improvements and the best way now known to me of carrying the same into effect, what I claim herein as new and of my invention is as follows:

1. In a stop motion mechanism for spooling machines, the combination with the spooler spindle of a rotatable gage extending alongside of and at a predetermined distance from the spindle so as to contact with and be moved by the yarn on the spool when the windings on said spool reach a certain diameter, and a spool lifting device adapted to be operated by said gage, substantially as hereinbefore set forth.

2. In a stop motion mechanism for spooling machines, the combination with the spooler spindle of a rotatable gage extending alongside of and at a predetermined distance from the spindle, so as to contact with and be moved by the yarn on the spool when the windings on said spool reach a certain diameter, a spool lifter adapted to be operated by said gage, and a stop for arresting the movement of the lifter at the desired point, substantially as hereinbefore set forth.

3. The combination with the spooler spindle and the spool, of the gage-arms, extending up on each side of the spindle, the lifting ring carried by said arms, the internally-screw-threaded collar to which said arms are secured, and the externally screw-threaded bearing for said collar, substantially as hereinbefore set forth.

4. In combination with the spooler spindle and spool, the gage arms extending up on each side of the spindle, the lifting ring carried by said arms, the screw threaded collar to which said arms are secured, the correspondingly screw-threaded bearing or support for said collar, the stop pin carried by and moving with the collar, and the fixed stop or shoulder *g* for engaging said stop pin, substantially as and for the purpose hereinbefore set forth.

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

B. L. STOWE.

Witnesses:
EVELYN NORRIS,
NATHAN STOWE.