

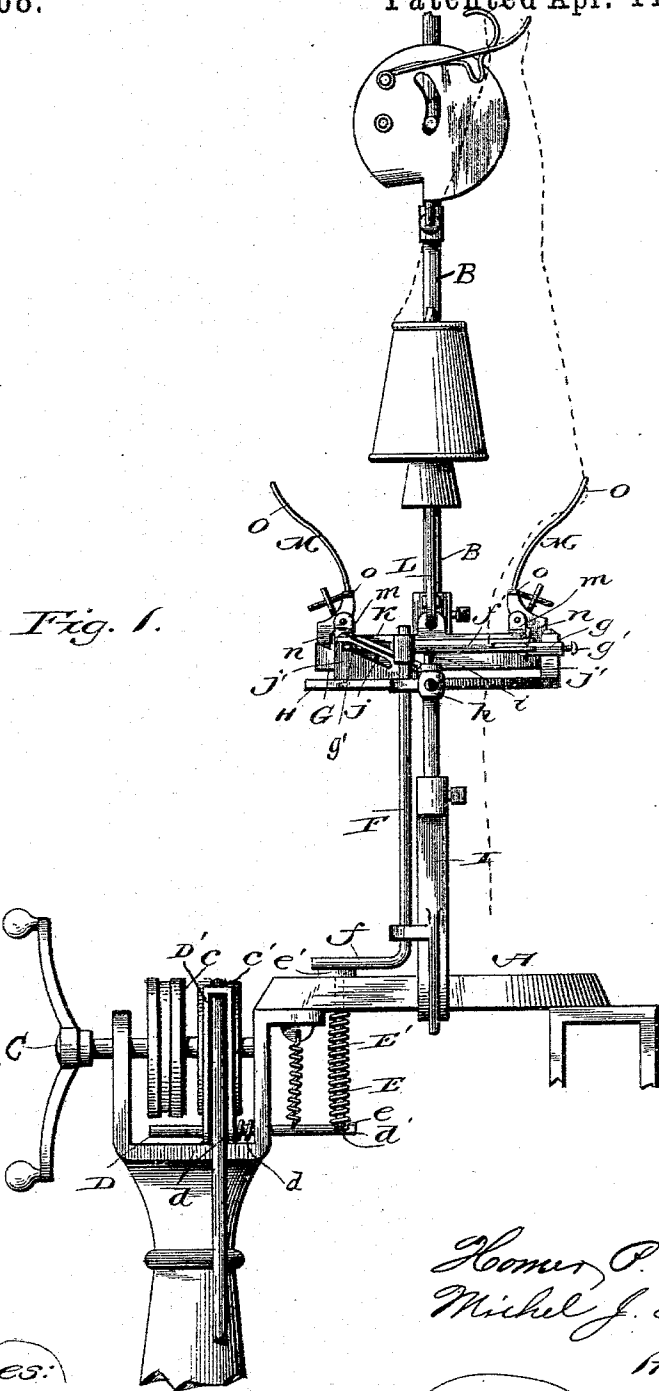
(No Model.)

2 Sheets—Sheet 1.

H. P. SNYDER & M. J. FISHER.
STOP MOTION FOR KNITTING MACHINES.

No. 495,068.

Patented Apr. 11, 1893.



Witnesses:

Wm. C. Moore
May E. Moore

Homer P. Snyder
Michel J. Fisher
Inventors;

Wm. C. Moore
Atty.

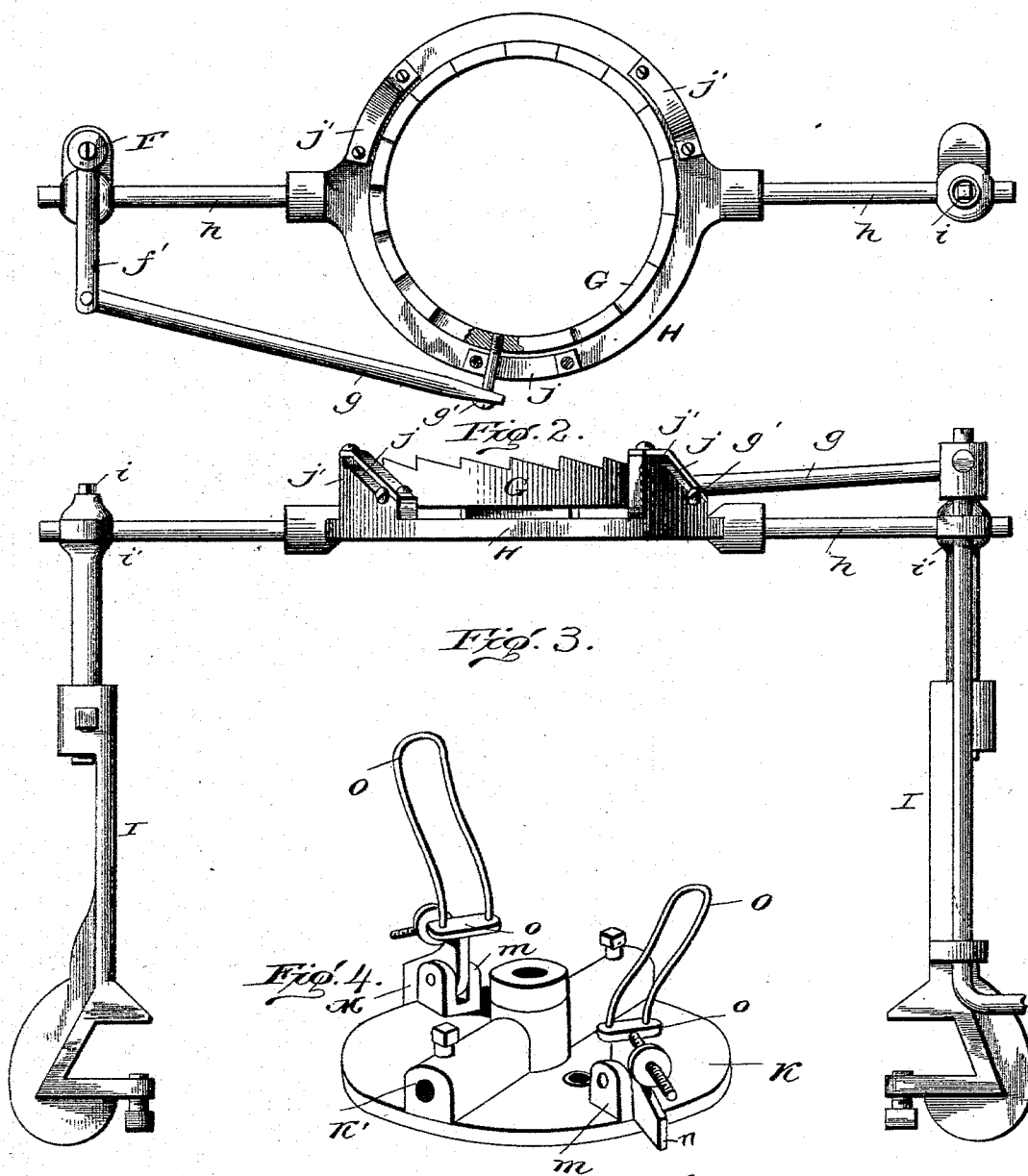
(No Model.)

2 Sheets—Sheet 2.

H. P. SNYDER & M. J. FISHER.
STOP MOTION FOR KNITTING MACHINES.

No. 495,068.

Patented Apr. 11, 1893.



Homer P. Snyder
Michel J. Fisher

Inventors:

By *Wm. Moore,*
Atty.

Witnesses:

Mrs. "Chas. Shice"
 May E. Moore

UNITED STATES PATENT OFFICE.

HOMER P. SNYDER AND MICHEL J. FISHER, OF LITTLE FALLS, NEW YORK.

STOP-MOTION FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 495,068, dated April 11, 1893.

Application filed July 8, 1892. Serial No. 439,406. (No model.)

To all whom it may concern:

Be it known that we, HOMER P. SNYDER and MICHEL J. FISHER, citizens of the United States, residing at Little Falls, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Stop-Motions for Knitting-Machines; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to stop motions for knitting machines, and it relates more particularly to a means for automatically arresting the spindle of a knitting machine technically known as a "sleever," that is a machine to form the sleeves on underwear.

The object of the invention is to provide simple and effective means which are automatically operated on the breakage of the thread to throw the locking mechanism of a belt shipper out of engagement with the latter, so that its spring can move the shipper to throw the belt from the fast to the loose pulley; and a further object is automatically to throw the ratchet mechanism out of the path of the dogs when the thread breaks and the parts are operated to ship the belt from the fast to the loose pulley.

With these and other ends in view, the invention consists in the combination with the vertical spindle of a fixed horizontal annular carrier supported by suitable clamps on the bed of the knitting machine, a ratchet ring connected to the annular carrier and adapted to move thereon both vertically and circumferentially for a limited distance so as to move the same to bring its teeth out of the path of the dogs of the thread loop-guides, a disk rigid with the spindle and having two or more dogs pivoted thereto, each dog having a yielding guide-loop adapted to receive the thread, a rock-shaft supported vertically alongside of the stop-motion and having its upper end linked to the ratchet ring and its lower end provided with a foot, a belt-shipper actuated by a spring, and an endwise-movable spring actuated stem adapted to be re-

leased from the foot of the rock shaft to permit its spring to elevate its lower end out of engagement from the belt-shipper.

The invention further consists in the construction and combination of parts which will be hereinafter fully described and claimed.

To enable others to more readily understand our invention, we have illustrated the same in the accompanying drawings, in which—

Figure 1 is an elevation of so much of a knitting machine embodying our improvements as is necessary to a proper understanding of its construction and operation. Fig. 2 is a sectional top view of the ratchet ring, carrier, and connected parts. Fig. 3 is a view in detail of the annular carrier and the ratchet ring, showing the inclined guide-connection between the parts and the means for supporting the annular carrier. Fig. 4 is a perspective view of the spindle disk and the pivoted dogs with the threaded loop-guides.

Like letters denote corresponding parts in all the figures of the drawings, referring to which—

A designates the bed of an ordinary knitting machine, preferably of the class to which reference has been made, B is the usual vertical spindle thereof carrying the horizontal needle bed and cam disk, C the driving shaft of the machine, and *c c'* the loose and fast pulleys respectively on said shaft. In suitable guides or bearings below the driving shaft and its pulleys is arranged a sliding shipper rod D, which is actuated outward by a coiled spring *d* coiled around the same; and the outer end of this shipper rod has a suitable shipper arm D' which is adapted to engage with the belt to move the same from the fast pulley to the loose pulley. The inner end of this shipping rod D is provided in its upper side with a recess or seat *d'*, and in this seat is adapted to fit the foot *e* of a vertical stem E, said stem passing freely through a vertical opening in the bed A. The upper end of this vertical stem is provided with an enlargement or head *e'*, and around the stem is fitted a coiled lifting spring E' adapted normally to lift or elevate the stem when the foot of the rock shaft F is free from engagement with its head so that its foot *e* will be lifted out of the seat *d'* in the shipper rod, thus allowing the coiled spring of said shipper rod

to slide the same and its arm to move the belt from the fast to the loose pulley.

F indicates the vertical rock shaft which is arranged above the bed A and in juxtaposition to the head of the endwise movable stem E; and the lower end of the rock shaft has an angular foot *f* adapted to engage with the head of the stem E so as to hold the latter depressed and in position for the foot of the stem to be locked to the shipper rod. The vertical rock shaft F carries an arm *f'* at its upper end, and to this arm is connected one end of a link *g*, the other end of which is pivoted to a stud or pin *g'* of the movable ratchet ring G. This ratchet ring is arranged in a horizontal position loosely around the vertical spindle B at a suitable distance above the bed, and said ring is supported in position by an annular stationary carrier H. This carrier is in the form of an open ring arranged below the ratchet ring, and it is provided with radial horizontal arms *h*, *h*, which arms are held by set screws *i* in the socket *i'* provided in the upper ends of the vertical stems of the clamps I, I, which are adapted to be secured in fixed positions on the bed of the machine, whereby the annular carrier is rigidly held in proper position. The ratchet ring and its annular carrier are connected in a manner to permit the ratchet ring to have a limited rotary and vertical movement for the purpose of lowering the ratchet ring, when the thread breaks, so that its teeth will be out of the path of the dogs; and this connection between the carrier and ring is effected by means of the inclined ways or guides *j* provided in the cast lugs *j'* on the annular carrier, and in said inclined guides operate the pins or studs *g'* which are rigidly secured to the ratchet ring. Within the ratchet ring is fitted a horizontal disk K, having a vertical socket and set screw by which the same is clamped to the vertical spindle B of the machine; and this plate or disk K is further provided with a transverse bearing K' in which is secured the lower part of the cop-carrying yoke L, the vertical arms of which are adapted to receive and sustain the bobbins on which the cops are wound. To this disk K are pivotally connected the dogs M, M, designed to engage with the teeth on the ratchet ring supported by the stationary carrier; each dog being fixed between a pair of cast lugs *m* on the upper side of the disk at or near its periphery. The dogs are each pivoted at an intermediate point of their length in said lugs, and the outer end of said dog has a tail piece *n* formed so as to engage with the teeth of the ratchet ring; and the inner end of said dog has a transverse head *o* to which is secured the ends of a flexible wire loop O forming the lower guides for the thread. These inclined loop-guides are inclined upward and outward from the heads of the dogs, and said guides are normally held by the tension of the threads in such positions that the tail pieces of the dogs clear the teeth of the ratchet ring; but when one

of the threads breaks the dog through the loop-guide of which passes the thread is dropped so that its tail piece engages with one of the teeth of the ratchet, so that the ratchet ring is turned a limited distance by the movement of the disk and its attached dog; whereby the ring is depressed vertically so that its teeth are out of the path of the dogs on the revolving disk of the spindle, and this obviates breakage of the ratchet teeth or the parts associated with the ratchet ring and the dogs. This turning movement of the ratchet ring is sufficient to move the link *g* and rock the vertical shaft in its bearings on one of the upright clamps I, and the lower piece or foot *f* of said rock shaft is thus withdrawn from engagement with the head of the vertically-movable stem, E, the spring of which lifts the same so that its toe or foot is withdrawn from the seat in the shipper rod D, thus releasing the latter and permitting its spring to move said shipper rod, and cause its shipper arm to move the belt from the foot to the loose pulley, thus stopping the machine automatically on the breakage of a thread.

To start the machine, the shipper rod is pushed inward and the stem E depressed so that its toe engages with the inner end of the shipper rod, (in Fig. 1 this is shown as already having been done) and the rock shaft is turned to bring its foot in engagement with the head of the stem and to elevate the loose ratchet ring into position to be engaged by either of the dogs on the next breakage of a thread.

We are aware that changes in the form and proportion of parts and details of construction may be made without departing from the spirit or sacrificing the advantages of our invention and we therefore reserve the right to make such modifications as fairly fall within the scope of our invention.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a stop motion for knitting machines, the combination with a spindle and a shipper mechanism, of the disk carried by the spindle and having the dogs carried thereby and the thread guides, an annular ratchet capable of a limited turning and vertical movement adapted to be engaged by the dogs, and mechanism intermediate of the annular ratchet and the shipper mechanism, substantially as and for the purpose described.

2. In a stop motion, substantially as described, the combination with a spindle and a shipper mechanism, of an annular ratchet connected by intermediate devices with said shipper mechanism, and capable of a limited turning and vertical movement, the rotary disk carried by said spindle, the dogs pivoted to said disk and arranged normally out of engagement with said annular ratchet, and the yielding thread guides secured to said dogs, as and for the purpose described.

3. In a stop motion, substantially as described, the combination with a shipper mechanism and a spindle, of the rotary disk car-

ried by said spindle, the dogs on said disk and having the thread guides, an annular ratchet capable of a limited turning and vertical movement and normally sustained in position to be engaged by either of the dogs on the breakage of a thread, and connections intermediate of the annular ratchet and the shipper mechanism, as and for the purpose described.

4. In a stop motion, substantially as described, the combination with a spindle and a shipper mechanism, of a rotary disk on said spindle, the dogs pivoted to said disk and carrying the upright guide loops, an annular stationary carrier below the disk, and an annular ratchet connected to the shipper mechanism and to said annular carrier to have a limited vertical movement thereon to adapt the same to fall out of the path of the dogs on the disk, as and for the purpose described.

5. In a stop motion, substantially as described, the combination with a spindle and a shipper mechanism, of the annular stationary carrier, a disk rigid with the spindle, the dogs pivoted to said disk and having the tail-pieces thereof at the edge of the disk, the guide-loops carried by the dogs and extending upwardly therefrom, and an annular ratchet connected by inclined guides and studs to the carrier, said ratchet being adapted to have a limited vertical movement and being connected by intermediate devices to the shipper mechanism, as and for the purpose described.

6. In a stop motion, substantially as described, the combination with a spindle and a shipper rod, of a disk carrying the connected dogs and thread guides, an annular ratchet, the vertical rock shaft linked to said ratchet, and an endwise movable stem arranged to be locked to the shipper rod and to be held in position by the rock shaft, as and for the purpose described.

7. In a stop motion, substantially as described, the combination with a spindle, of the spring-pressed shipper rod having a seat in its inner end, a vertically-movable spring lifted stem having its toe adapted to fit in the seat in the shipper rod, a rock-shaft arranged to hold the stem depressed, a disk carried by the spindle and having the connected dogs and thread guides mounted thereon, an annular ratchet linked to the rock-shaft, and the annular stationary support to which the annular ratchet is connected by the inclined guides adapted to permit said ratchet to have a limited vertical movement below the dogs, as and for the purpose described.

In testimony whereof we affix our signatures in presence of two witnesses.

HOMER P. SNYDER.
MICHEL J. FISHER.

Witnesses:

FRED. J. SMALL,
E. J. COFFIN.