

(No Model.)

3 Sheets—Sheet 1.

H. P. SNYDER & M. J. FISHER.

STOP MECHANISM FOR CIRCULAR KNITTING MACHINES.

No. 488,039.

Patented Dec. 13, 1892.

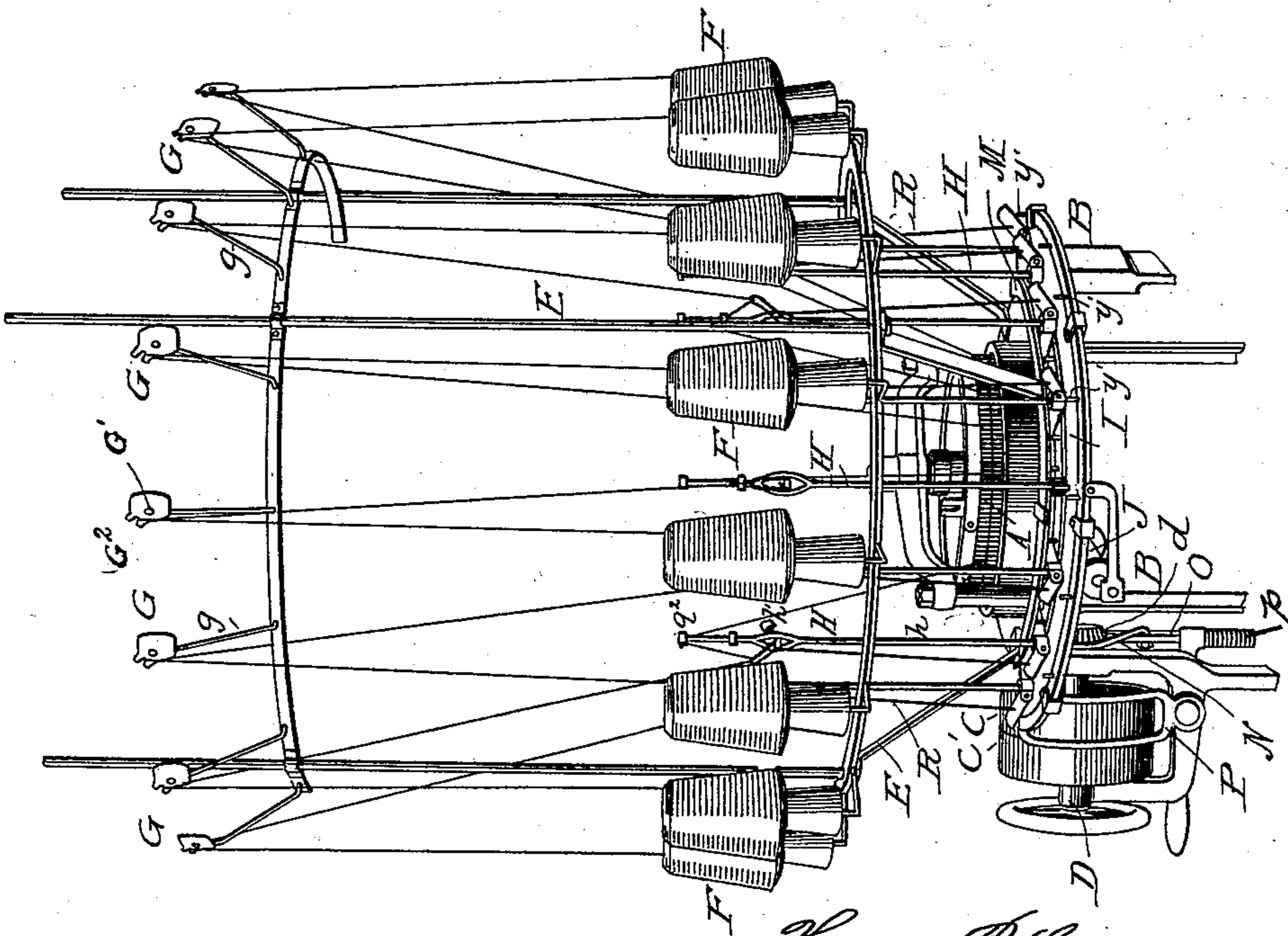
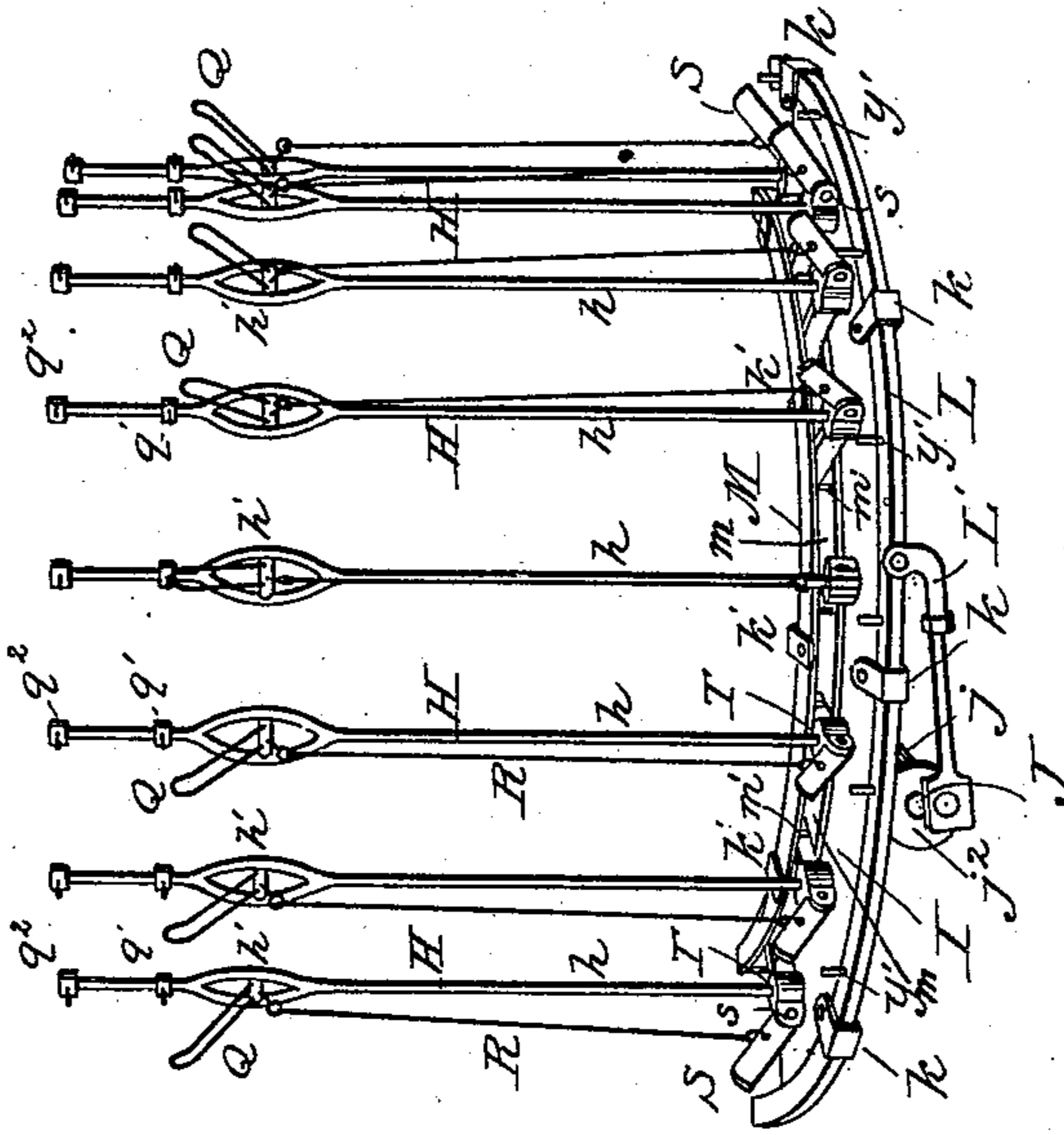


Fig. 2.



Homer P. Snyder
Michel J. Fisher.

Inventors:

Witnesses

Raymond F. Barnes.
May E. Moore.

By their Attorney

Very
Yours,
J. M. Moore,
#

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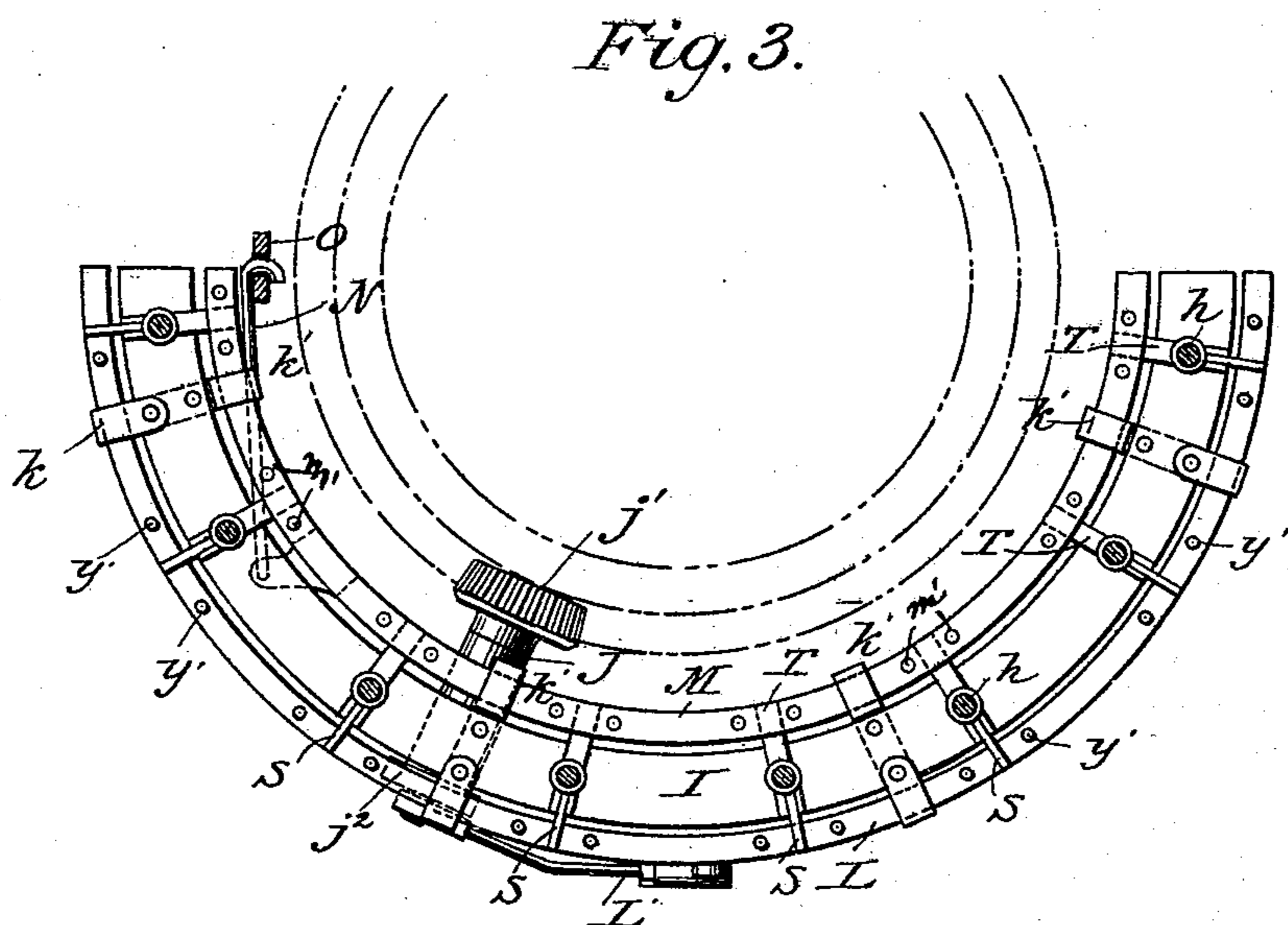
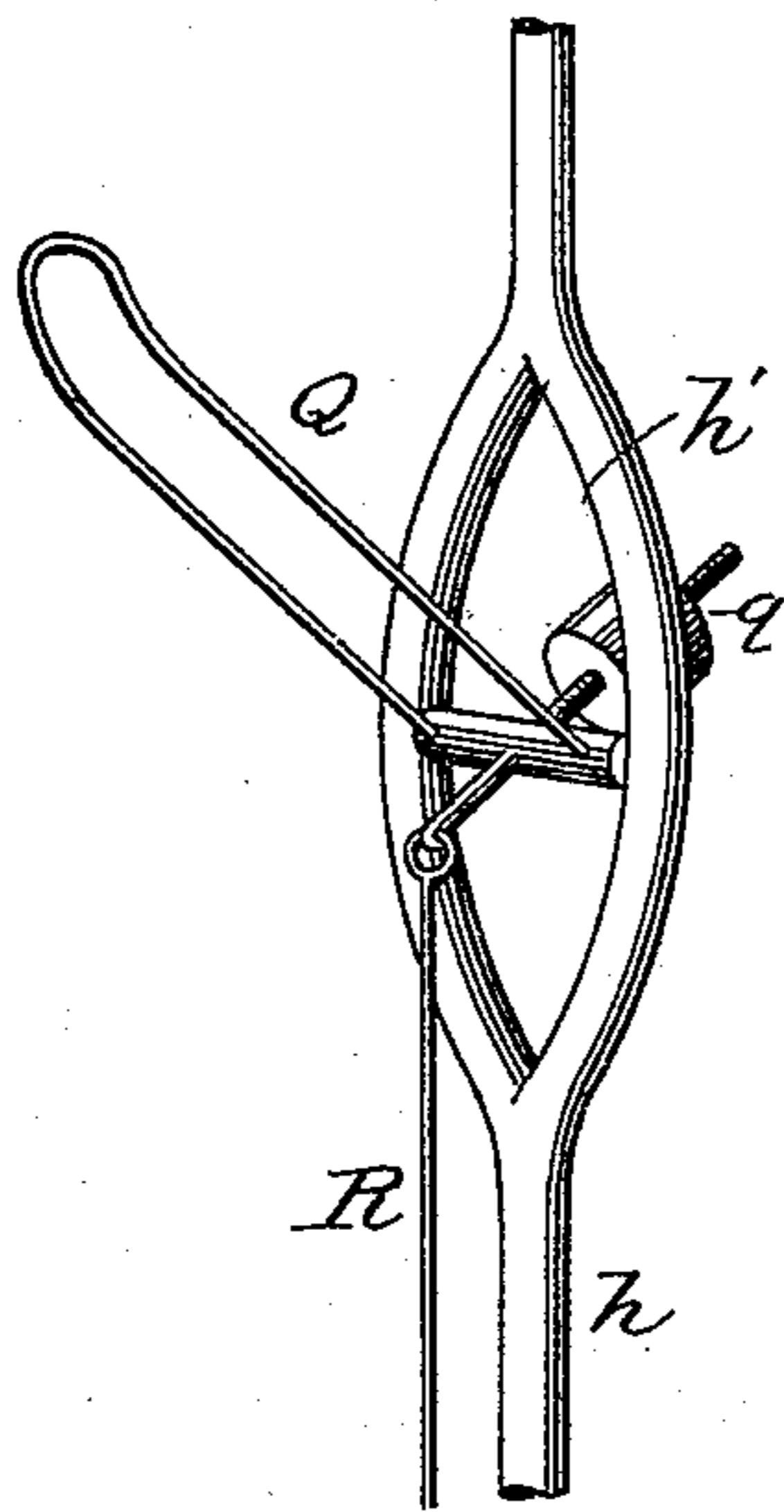


Fig. 4.



Homer P. Snyder
Michel J. Fisher,

Inventors

Witnesses

Raymond F. Barnes.
May E. Moore.

by *Wm. J. Moore,*
Attorney

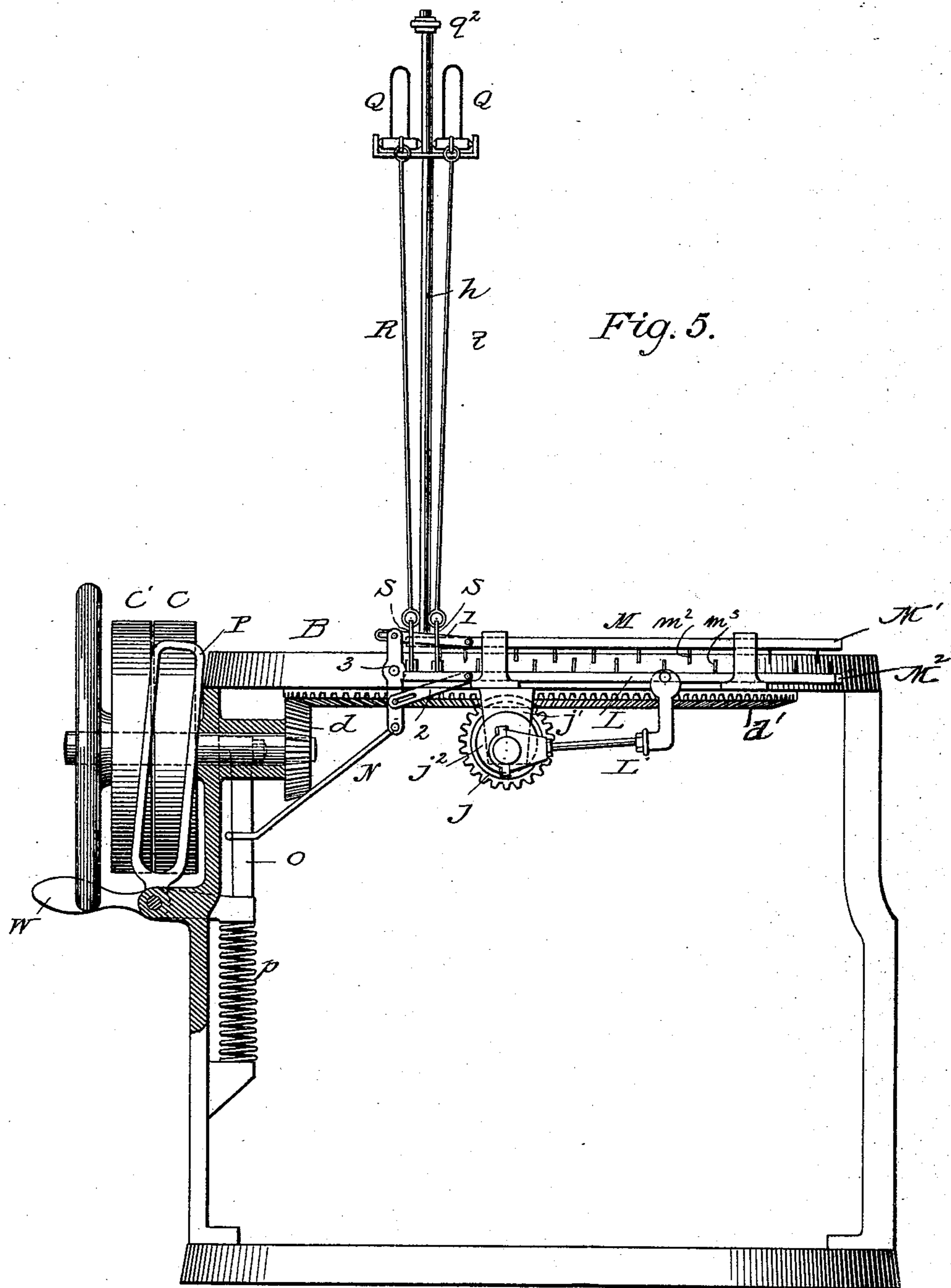
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Inventors,

Homer P. Snyder.
Michel J. Fisher.

By their Attorney

J. M. Moore

Witnesses

Raymond A. Barnes.

May E. Moore.

UNITED STATES PATENT OFFICE.

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

STOP MECHANISM FOR CIRCULAR-KNITTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 488,039, dated December 13, 1892.

Application filed May 14, 1892. Serial No. 433,064. (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 Mechanism for Circular-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 and figures of reference marked thereon, which form a part of this specification.

Our invention relates to stop mechanism for circular-knitting machines, and is designed to be applied to any of the ordinary forms of such machines, the object being to provide a mechanism by which the yarn may be fed to the machine from the ordinary cones without the necessity of rewinding, thus saving a large amount of waste, and to prevent the passage of knots, kinks, or imperfections in the yarn into the machine by causing such imperfection to actuate a mechanism which transfers the belt driving the machine from the fast to the loose pulley or shifts the driving mechanism in such manner as to stop the machine and give the operator a chance to repair the yarn or remove the defective portion. We secure these results by the peculiar formation and arrangement of the thread-guides which control pivoted dogs adapted to make connection between pins carried on a segmental plate which is constantly reciprocated by the action of a pitman driven by a bevel-gear meshing in the cylinder driving-gear, and a second series of pins carried by a normally-stationary segmental plate connected by a suitable link with the belt-shifting device.

In the drawings accompanying this specification, Figure 1 is a perspective view showing the stop mechanism as applied to a circular rib-knitting machine; Fig. 2, a perspective view of those particular portions forming the subject of our invention removed from the machine; Fig. 3, a plan view of the operating-dogs and inner and outer segmental plates and belt-shifting device; Fig. 4, a de-

tail of one of the weighted thread-guides; Fig. 5, a sectional elevation of a modified form of the apparatus.

Referring to the drawings, A is a cylinder of a knitting-machine, B a frame supporting the operating parts, and C C' fast and loose pulleys mounted on a shaft D, supported by the frame in suitable bearings and carrying at its inner end a bevel-gear d , by means of which the cylinder is driven.

Mounted on the frame B is a skeleton frame E, supporting spindles carrying cones F, from which the thread or yarn is fed through weighted eccentric guides G, mounted on arms g , extending from the upper part of the skeleton frame, the object of said eccentric guides being to give a certain amount of tension to the thread, and also to operate the stop mechanism by releasing the thread when the feed from the cone is checked by imperfections in the yarn or thread, as will be hereinafter described.

For the purpose of stopping the machine when a defect or break in the thread occurs we provide a second series of guides H H, Fig. 2, mounted on a segmental casting I, partially surrounding the cylinder and bolted to the frame of the machine. This casting carries near its center a short shaft J, journaled in a bearing j , depending from the casting and carrying at its inner end a bevel-gear j' , meshing with the cylinder-gear d' and at its outer end a small disk j^2 .

Projecting outward from the casting I are a number of bearings $k k$, in which reciprocates a segmental plate L, which receives motion from the disk j^2 by means of a pitman L', and carries on its upper surface a series of pins $y' y'$, &c., equal in number to the number of spindles which the machine is intended to carry. On the inner side of the casting I is a second set of bearings $k' k'$, in which is mounted a movable slotted segmental plate M, connected at its end by a link N with a pivoted arm O, which normally holds the belt-shifter P in such position that the belt shall be on the driving-pulley.

Within the slot m of the plate M is a series of projecting-pins $m' m'$.

Each of the thread-guides H consists of an upright rod h , with an enlarged opening

h' near its upper end, in which is pivoted a U-shaped yoke Q, which is counterbalanced by a weighted arm q , and guides or rings q' q^2 , through which the thread passes on its way to the knitter-cylinder.

Attached to the yoke Q is a rod R, which serves when the yoke is lifted to elevate a catch S, which is pivoted by a horizontal pivot s to a dog T, and lies when down in the path of movement of the pins $y' y'$, carried by the segmental plate L. The dogs T, which are capable of rotation on the upright rods h as axes, are elongated at their rear ends and project into the slot m of the plate M, and thus lie in position to impart movement to it through the pins $m' m'$ and through connecting-link N to move the pivoted arm O and allow the spring p , controlling the action of the belt-shifter, to throw the belt over to the idle-pulley.

In operation the thread passes from the cones over the eccentric guides G, from them through the U-shaped yoke, and thence through one of the guides q^2 to the cylinder. It will be seen that the thread must sustain the weight of the yoke, connecting-rod, and latch, or such part of it as is not counterbalanced by the weighted arm q , and that should the thread break the latch would fall in the path of movement of the pins on the constantly-reciprocating segmental plate and motion be transferred by the dogs to the inner plate and from it to the shifter, and thus stop the machine.

The eccentric guides G are provided for the purpose of causing the stoppage of the machine, as heretofore stated, by a check in the feed of the yarn due to imperfections.

The guides, as shown in Fig. 1, consist of a plate G, eccentrically mounted on a pivot G' and provided with a projection or tongue G^2 , over which the yarn passes, the guide being held in position by the preponderance of weight on the side opposite the tongue G^2 . In operation it is obvious that a check in the feed would cause the yarn to pull down on the tongue G^2 , tilt the eccentric on its pivot, and raise the weight. If this action should continue, the eccentric would be pulled down far enough to release the thread from the tongue and through this release permit the yoke Q to drop, and its connected latch would be operated and the machine stopped.

The belt-shifter P consists of a yoke, pivoted to the frame through which the belt passes to the pulley. To the pivot is rigidly connected a horizontal hand-lever W, the inner end of which is pressed upward by the spring p and held firmly in contact with an arm O, pivoted to the frame and connected by a link N to the movable sector. In this position of the parts the belt would be on the driving-pulley and the machine operative. The movement of the sector-plate pulls the end of the arm O over out of contact with the hand-lever and the upward pressure of the

spring tilts the lever and through its pivot the belt-shifter P.

In Fig. 5 we have shown the same general arrangement of parts with the exception that the inner segmental plate M is divided into two parts $M' M^2$, each carrying a series of pins $m^2 m^3$ and connected at their ends by short links 1 and 2 to opposite ends of a pivoted rocker-arm 3, which is in turn connected by a link to the shifter-controlling arm O', the difference between the constructions being that while in the main form the pins actuated by the dogs are carried in a single movable slotted sector-plate, in the modified form there are two plates, one above the other, each carrying pins, and the movement of either plate serves to move, through the corresponding connecting-link, the shifter-controlling arm. In both forms the operation is substantially the same.

We are aware that weighted thread-guides operated by the breaking of the thread have been used in looms and other weaving-machinery, and, therefore, do not broadly claim the device.

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

1. In a circular-knitting machine, the combination of a reciprocating segmental plate, a series of pins carried thereby, a movable segmental plate, normally stationary, a series of pins carried thereby, a belt-shifting mechanism, a link connecting the normally-stationary plate thereto, a series of pivoted dogs, latches connected thereto, and yokes for holding the latches out of operative contact with the pins, said latches serving to make connection between the reciprocating plate and the movable plate and operate the shifting-lever.

2. In a stop-motion for circular-knitting-machines, the combination of a reciprocating segmental plate provided with pins and adapted to be driven from the cylinder of the machine, a movable segmental plate normally stationary, provided with pins and a belt-shifting device, a link connecting the movable plate and belt-shifting device, thread-guides, dogs pivoted thereto, latches carried by the dogs, and yokes sustained by the thread, controlling the action of the latches, substantially as described.

3. In a knitting-machine, the combination of a reciprocating segmental plate, a movable plate normally stationary, connected to the belt-shifter, dogs for making connection between the plates, yokes sustained by the thread for controlling the action of the dogs, and eccentric guides controlling the yokes, as and for the purpose described.

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

HOMER P. SNYDER.
MICHEL J. FISHER.

Witnesses:

JAMES D. NESTER,
E. J. COFFIN.