

(No Model.)

H. M. HEFLIN.

SLIVER TENSION REGULATOR FOR ROVING MACHINES.

No. 486,252.

Patented Nov. 15, 1892.

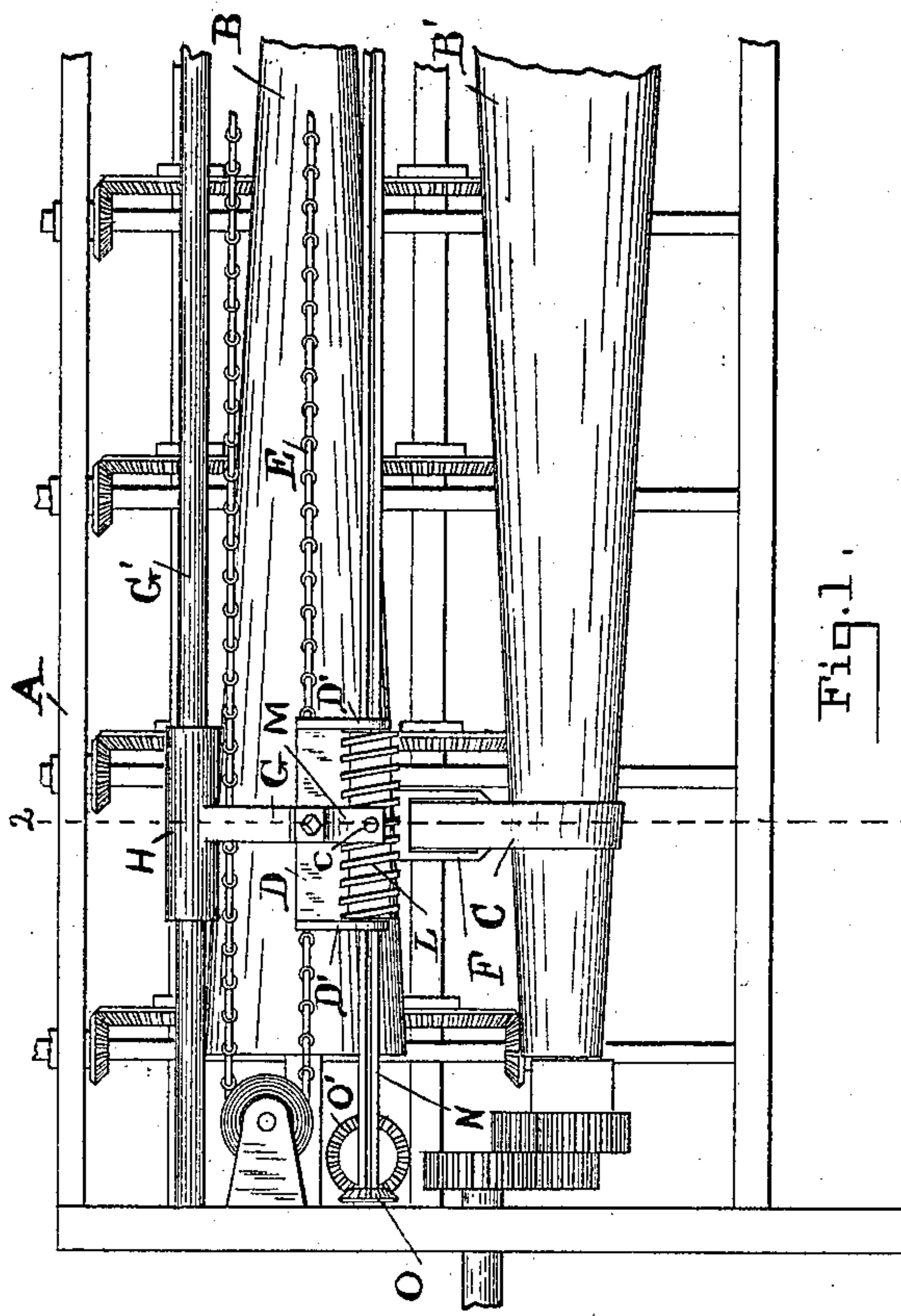


Fig. 1.

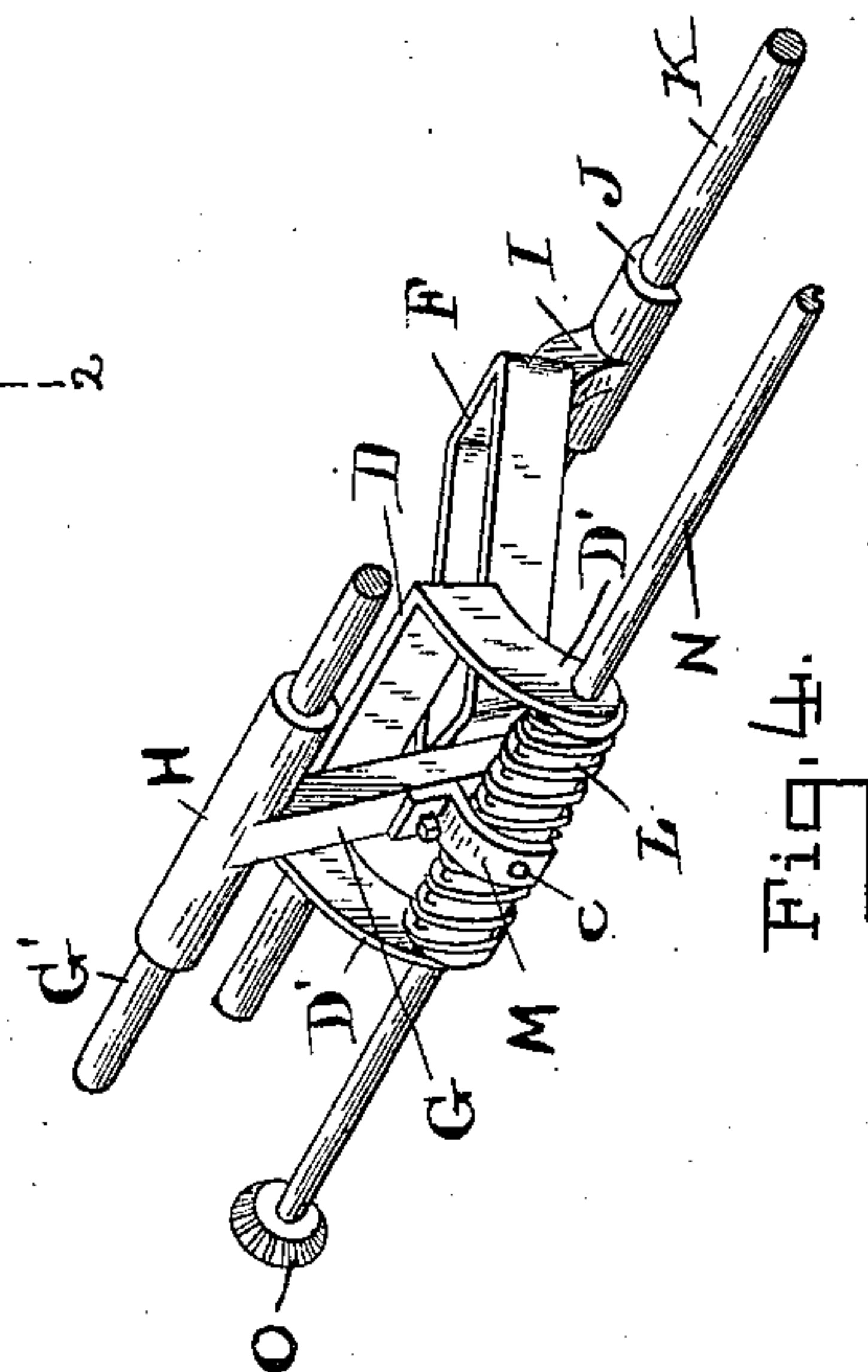


Fig. 4.

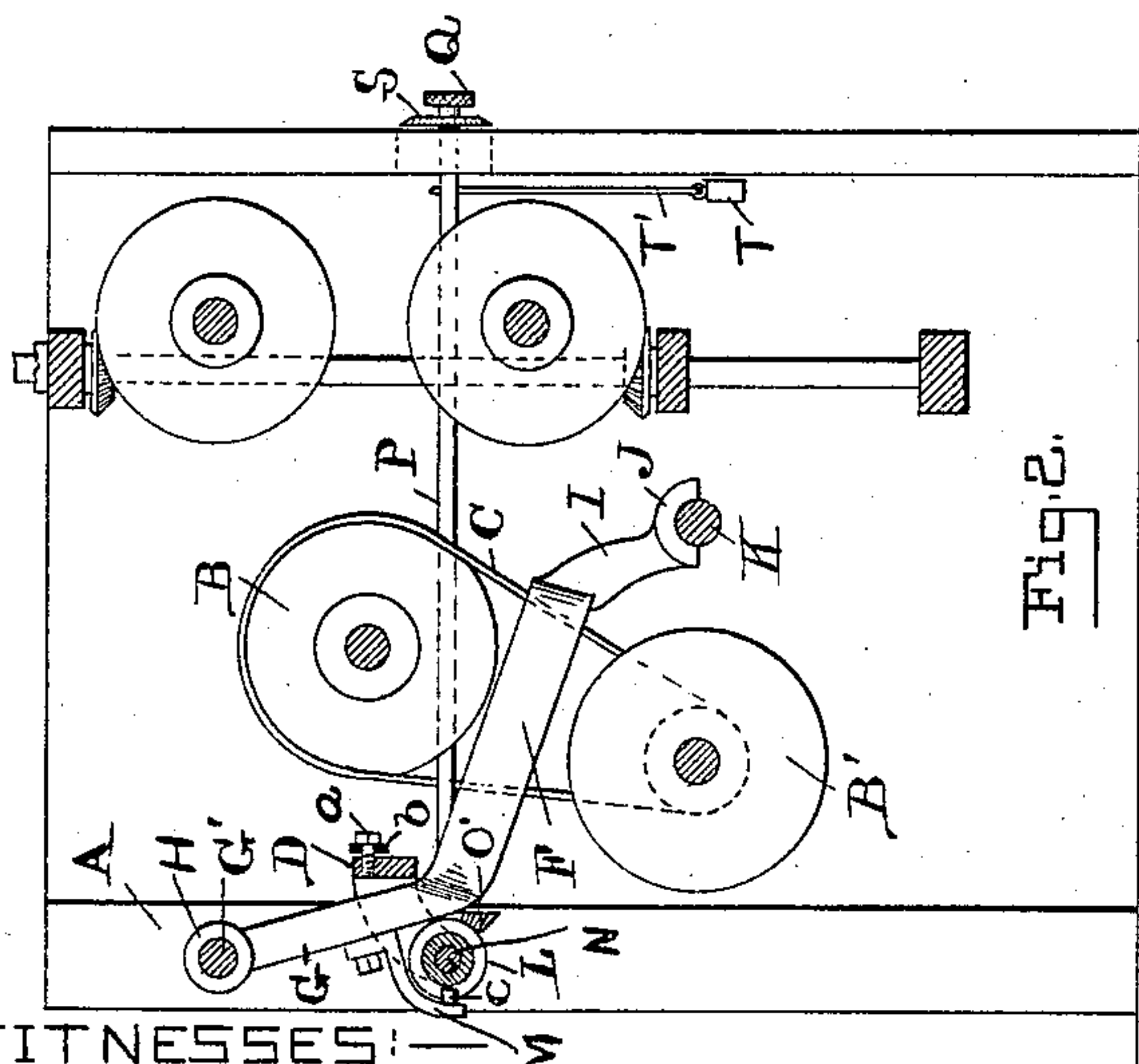


Fig. 2.

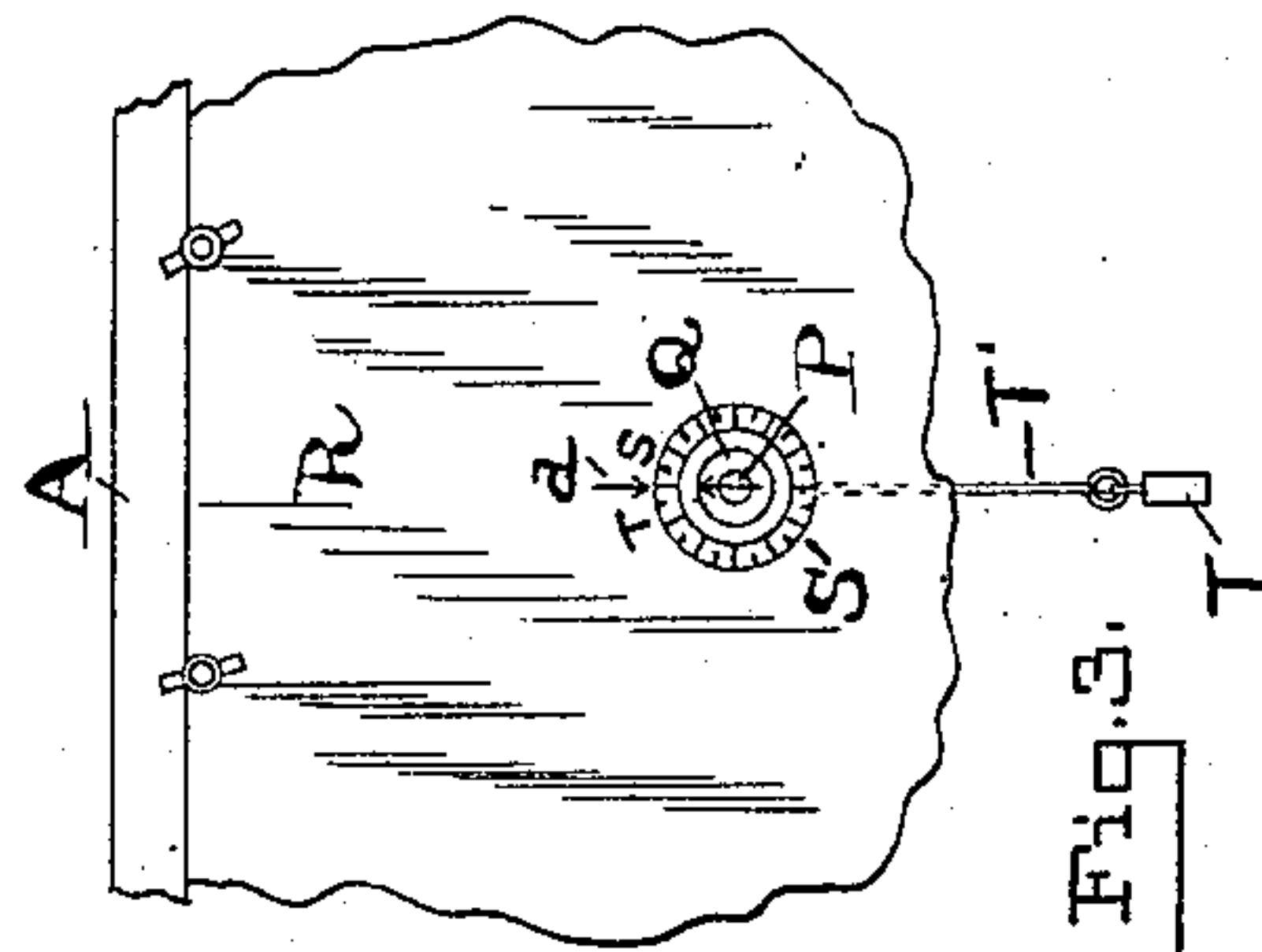


Fig. 3.

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UNITED STATES PATENT OFFICE.

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SLIVER-TENSION REGULATOR FOR ROVING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 486,252, dated November 15, 1892.

Application filed March 29, 1892. Serial No. 426,885. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. HEFLIN, a citizen of the United States, residing at Baltimore city, in the State of Maryland, have
5 invented certain new and useful Improvements in Sliver-Tension Regulators for Roving-Machines, of which the following is a specification.

This invention relates to an improved mechanism for application to cotton-spinning machines termed "slubbers," "speeders," or "fly-frames," with the object of providing means for regulating the tension of the slivers or rovings where they pass from the drawing-
15 rolls to the fliers and bobbins.

In machines of the class to which this invention relates the speed of the bobbins must change as the diameter of the bobbins increases with the winding on of the sliver.
20 During the operation of the machine the sliver is continually varying in thickness or diameter. Should it become a little lighter or smaller in diameter, it will run slack, as the increase in diameter of the bobbin is not as great, while the change in speed is uniform and the delivery from the front rolls always remains uniform whatever the variations in the sliver may be. Should the sliver run a little heavier or greater in diameter, then it will become
25 taut, as the increase in diameter of the bobbin will be greater in proportion while the speed changes uniformly. Changes in the weather affect the cotton sliver. In damp weather the cotton lies more compactly and
35 a smaller sliver is the result, and the fliers become sticky, causing the sliver to run slack. In cold weather the diameter of the sliver increases, which would cause it to run taut. Such variations in the tension of the sliver
40 are detrimental to a first-class product of the machine. Slackness in the sliver would operate against the effectiveness of the twist, while if too taut the sliver is subjected to a strain. Obviously irregularities in the thread
45 result. It is therefore important that the tension of the sliver be kept uniform as nearly as possible. My invention contemplates the accomplishment of this result.

A well-known way of obtaining the differential motion of the fliers and bobbins is by
50 means of cone-pulleys and a belt connecting

them, with mechanism for shifting said belt intermittently step by step from one end of the cone-pulleys toward the opposite end as the diameters of the bobbins increase. Means
55 are provided for regulating the length of intermittent movement of the belt-shifter to suit different hanks of sliver. Changing the position of the belt by turning backward or forward the mechanism for intermittently
60 shifting it to regulate the tension of the sliver is not practical and cannot accomplish the result, as a sufficiently-fine adjustment cannot be secured by this means, and such a manipulation of the machine would affect the
65 whole mechanism and disturb the build of sliver on the bobbins.

My invention in the form here shown embodies means for adjusting the cone-belt to regulate the tension of the sliver entirely independent of the mechanism for imparting the regular intermittent shift. A construction for carrying out this object is illustrated in the accompanying drawings, in which—

Figure 1 shows a rear elevation of that portion of the machinery of a spinning-machine
75 which embraces the cone-pulleys, my invention being shown applied. Fig. 2 shows a cross-section of the machinery, taken on the line 2 2 of Fig. 1. Fig. 3 shows a fragmentary elevation of a front panel which closes
80 in the machinery. Fig. 4 shows an enlarged perspective view of the cone-belt shifter.

In the drawings the letter A designates the main frame of the machine; B B', the cone-
85 pulleys, suitably mounted one above the other, the upper one B being the driver and the lower one B' the driven, and C the belt connecting said pulleys. When the machine is started with empty bobbins, the belt is at the
90 fast end—i. e., passing over the large end of the driver-cone and the small end of the driven cone. A belt-shifter engages the belt and is carried in a frame D, to the front side of which frame an endless chain E is
95 connected by means of a screw *a*, passing through a flat link *b* of said chain and fastened in the frame. With each increase in diameter of the bobbin by the winding on of the sliver the belt is shifted toward the opposite end of the pulleys by suitable mechanism
100 connected with the chain E for the purpose of

intermittently graduating the speed of the bobbins. The length of shift is determined by previous adjustment of said actuating mechanism, so that it will accord with the hank of the roving under treatment. This is the well-known arrangement and operation and needs no further description here.

The desideratum with me is to adjust the belt on the cone-pulleys independent of its driving mechanism, and this I accomplish by the following-described mechanism: The belt-shifter proper or the holder or guide for the belt consists of a rectangular frame F, through which the belt passes. The said rectangular frame has an arm G at its rear end projecting up through the frame D, hereinbefore mentioned, and having a sleeve H, formed on its end, which sleeve fits loose on a guide shaft or rail G'. At the front end the rectangular frame has a downward-extending arm I, with a saddle J on its end, which fits loose upon another guide shaft or rail K. The frame D has two side arms D', between which a worm or screw L is mounted longitudinally, and a curved bracket M is secured to the rear side of the arm G of the belt-frame F and takes partially around the said worm or screw L. This bracket carries a pin c, which engages the thread of the worm or screw. A spline-shaft N extends longitudinally through the worm or screw L and carries at one part a fixed bevel-pinion O. This bevel-pinion is engaged by a similar bevel gear-wheel O' on the end of a rod or stem P, which extends through the frame and out of the front of the same, where it is provided with a circular knob Q, suitably milled on its periphery. This knob has a circular plate or disk S formed with it and fitting close to the outer side of a panel R, which closes in the front of the machinery. The said disk is graduated around its periphery, and the panel has a central mark d to register with the graduations on the disk, on one side of which center mark is inscribed the letter "T" to indicate "taut," while on the other side of the mark is the letter "S" to indicate "slack." A small weight T is suspended by a cord T' from the stem or rod P, for a purpose hereinafter explained.

The knob Q is located at a point from which the attendant may have in full view all the rovings or slivers. If any of the slivers should be noticed running slack, the attendant will turn the knob toward the letter "T." This, it will be observed, turns the worm or screw L through the bevel-gear O O' and spline-shaft N. The screw-thread, which engages the pin c, moves the belt-shifter back toward the fast ends of the cones. The knob is turned until the sliver is brought to the proper tension. Should the sliver run too tight, the knob is turned toward the letter "S," which operation has the opposite effect—i. e., moves the belt-shifter and belt farther toward the slow end of the pulleys to lessen the speed and relieve the sliver. It will be seen that by means of

this mechanism a very fine adjustment is obtained by which the tension of the sliver may be perfectly controlled and regulated without in any way interfering with or affecting the working parts of the machine outside of the shifter itself.

When the shifter is wound back to the fast end of the cones when a new set of bobbins is to be started, if the dial-knob has been turned during the building of the preceding set of bobbins it will be turned back until its center mark d registers with the center mark on the graduated indicator-plate S. This will bring the parts in proper adjustment for starting. If the dial-knob has been turned more than half-way around in adjusting the tension of the sliver, some confusion might arise as to when the parts are in their normal state, as the knob may have made a complete revolution and still the center marks would register. Hence I have provided the weight T, which will indicate when the knob is back at its original position by depending straight downward from the stem to the full length of the cord.

A frame fitted with my appliance is capable of turning out better quality of work. The rovings can be run with less twist to the inch, which makes it easier for the rolls of the succeeding machines to draw down the twisted sliver, and saves the roll-coverings from wear. The result is a better and even thread. Moreover, the inconvenience and loss of time incident to the breaking down of the sliver ends is in a great measure avoided, whereby the machine will turn out a greater quantity of work in a specified time.

My invention is applicable to roving-machines of all kinds, and may be embodied in many different forms and operated in many different ways. Hence I am not limited to the construction shown, but claim, broadly, any means for carrying out the invention set up herein.

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

1. In roving machinery, the combination of cone-pulleys for driving the bobbins, a belt running over said pulleys, a holder or guide for said belt, driving mechanism for intermittently shifting the said holder and belt step by step from one end of the pulleys toward the other, means for adjusting the holder and belt independently of the said driving mechanism, and a permanently-located handle for operating said adjusting means.

2. In roving machinery, the combination of cone-pulleys for driving the bobbins, a belt running over said pulleys, a holder or guide for said belt, a worm or screw on which said belt-holder may be adjusted, and intermittent shifting mechanism connected with said screw.

3. In roving machinery, the combination of cone-pulleys for driving the bobbins, a belt running over said pulleys, a movable frame,

intermittent shifting mechanism connected with said frame, a holder or guide for said belt, mounted in the frame and movable therein, and means for adjusting the said holder to different positions in the frame without affecting the intermittent shifting mechanism.

4. In roving machinery, the combination of cone-pulleys for driving the bobbins, a belt running over said pulleys, a movable frame, intermittent shifting mechanism connected with said frame, a worm or screw mounted in the frame, and a holder or guide for the belt, engaging said worm or screw and adjustable thereon.

5. In roving machinery, the combination, with cone-pulleys for driving the bobbins, a belt running over said pulleys, a holder or guide for the belt, carried in a frame, and mechanism connected with said frame for intermittently shifting the belt, of a worm or screw mounted in the frame and engaging the said holder, a spline-shaft running through

said worm or screw, and a rod or stem gearing with said spline-shaft and carrying a dial-knob, for the purpose described.

6. In roving machinery, the combination, with cone-pulleys for driving the bobbins, a belt running over said pulleys, a holder or guide for said belt, carried in a frame, and mechanism connected with said frame for intermittently shifting the belt, of a worm or screw mounted in the frame and engaging the said holder, a spline-shaft running through said worm or screw, a rod or stem gearing with said spline-shaft and carrying a dial-knob, and a weight suspended from said stem, for the purpose described.

In testimony whereof I affix my signature in the presence of two witnesses.

HENRY M. HEFLIN.

Witnesses:

THS. KELL BRADFORD,
LEE PURCELL.