

No. 629,010.

Patented July 18, 1899.

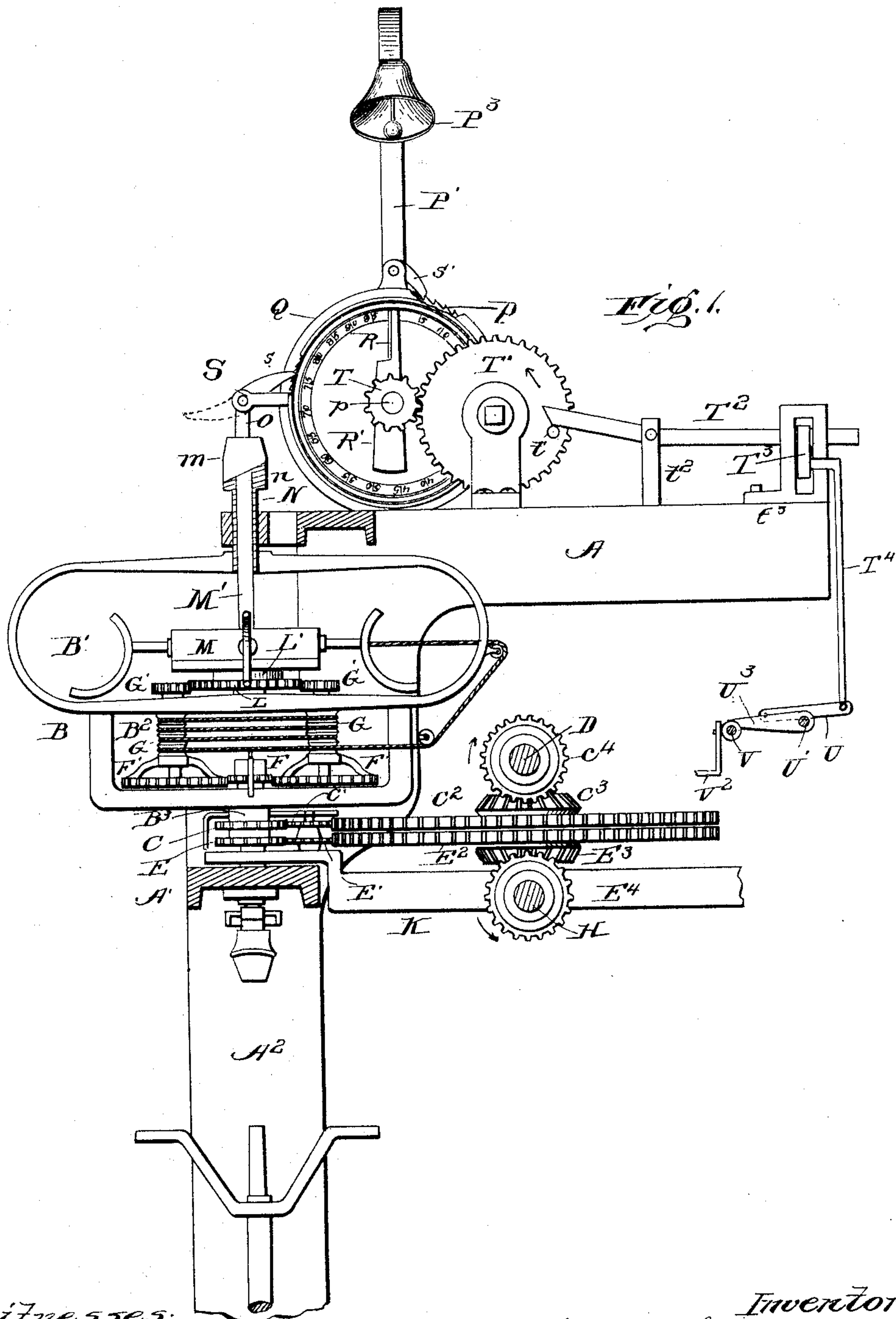
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AUTOMATIC STOPPER FOR CORD OR ROPE MACHINES.

(Application filed Apr. 10, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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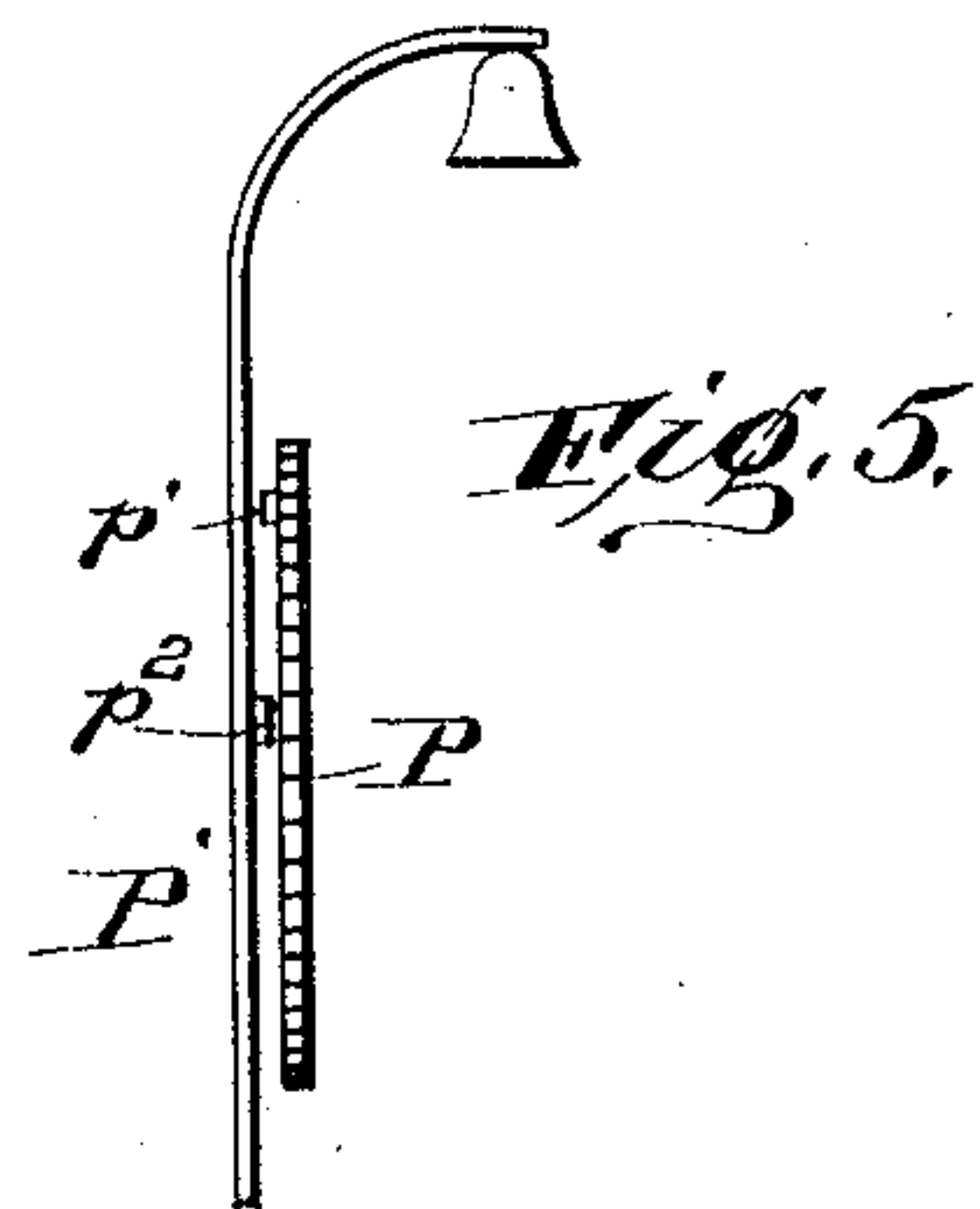
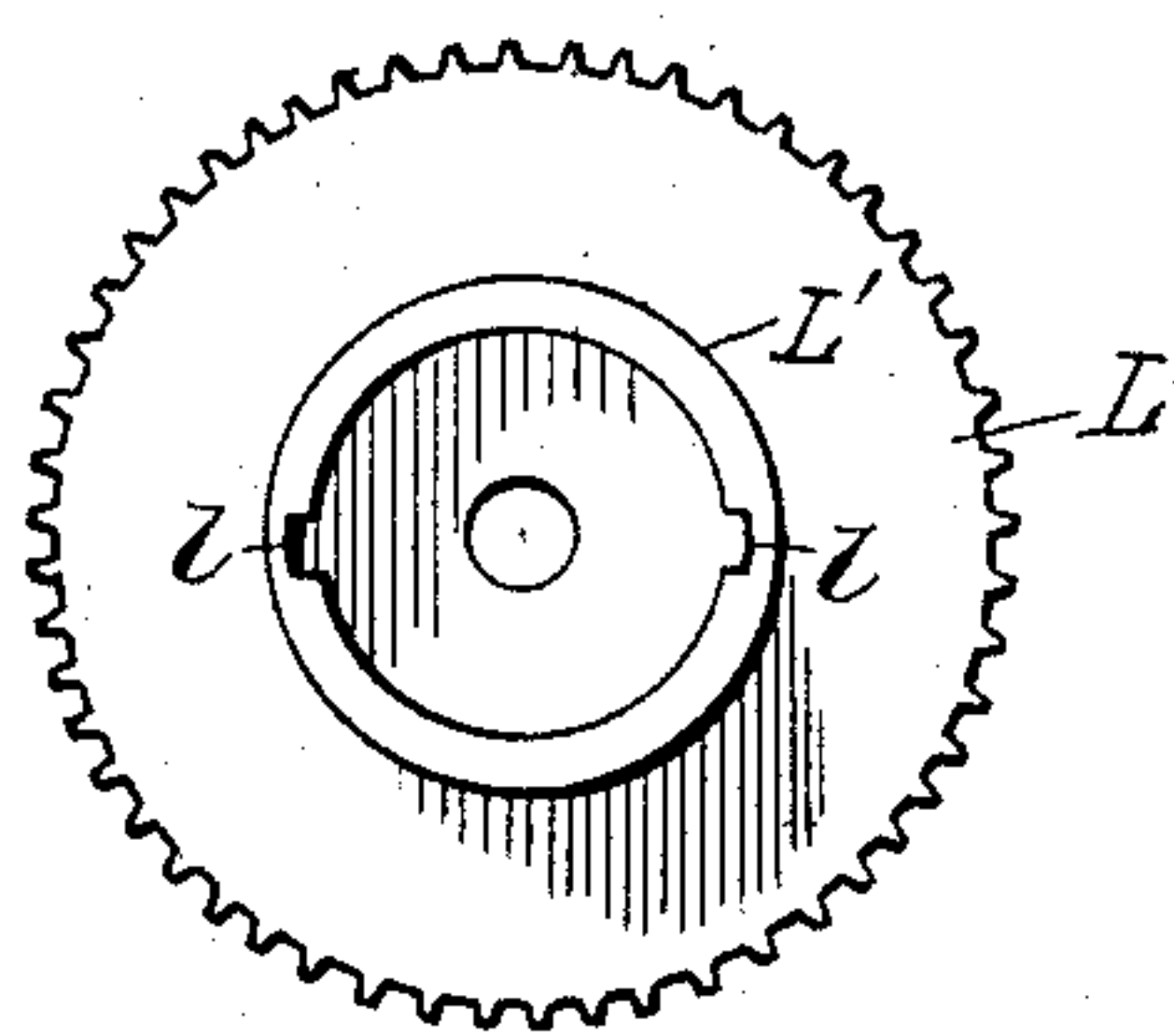
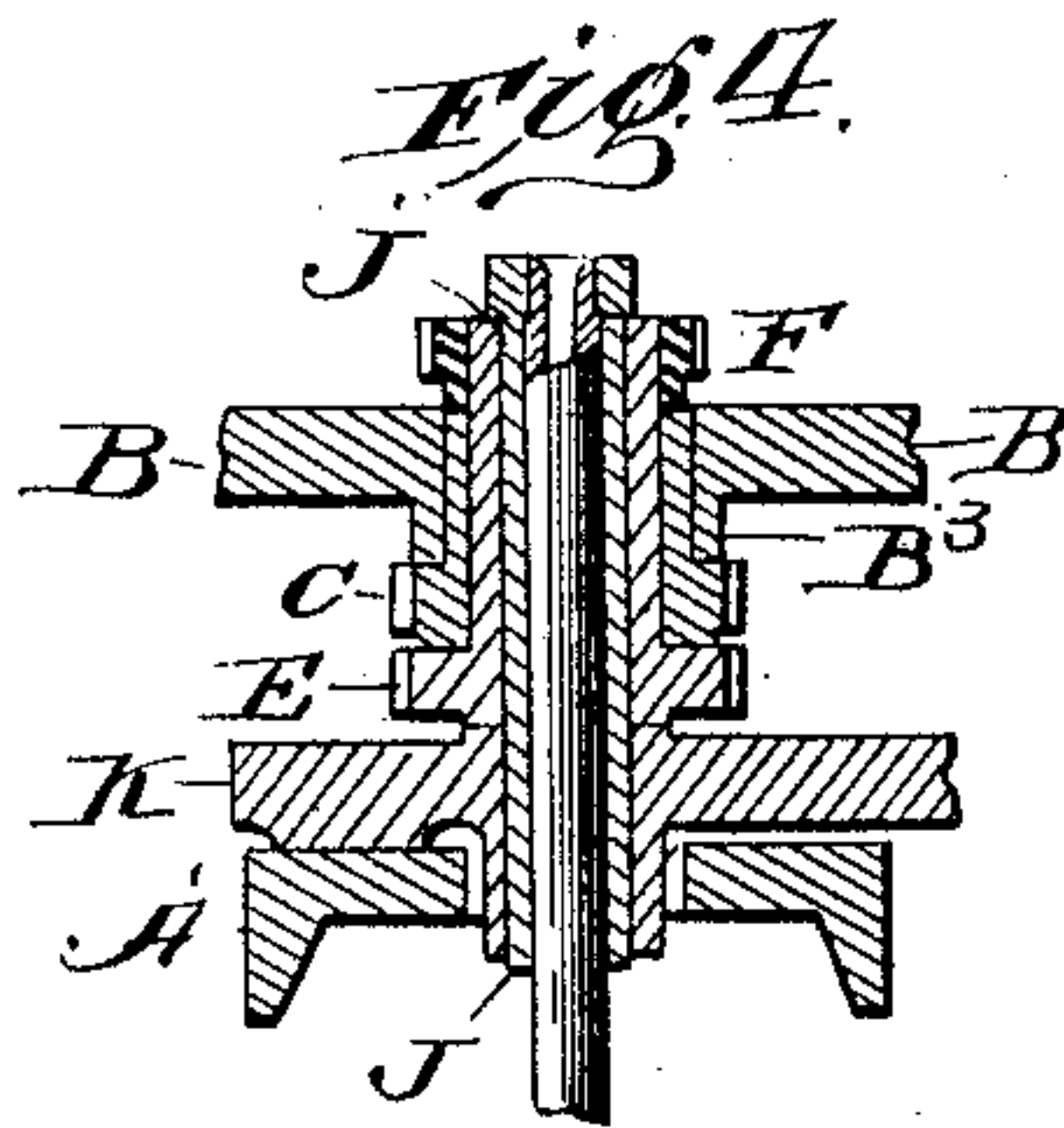
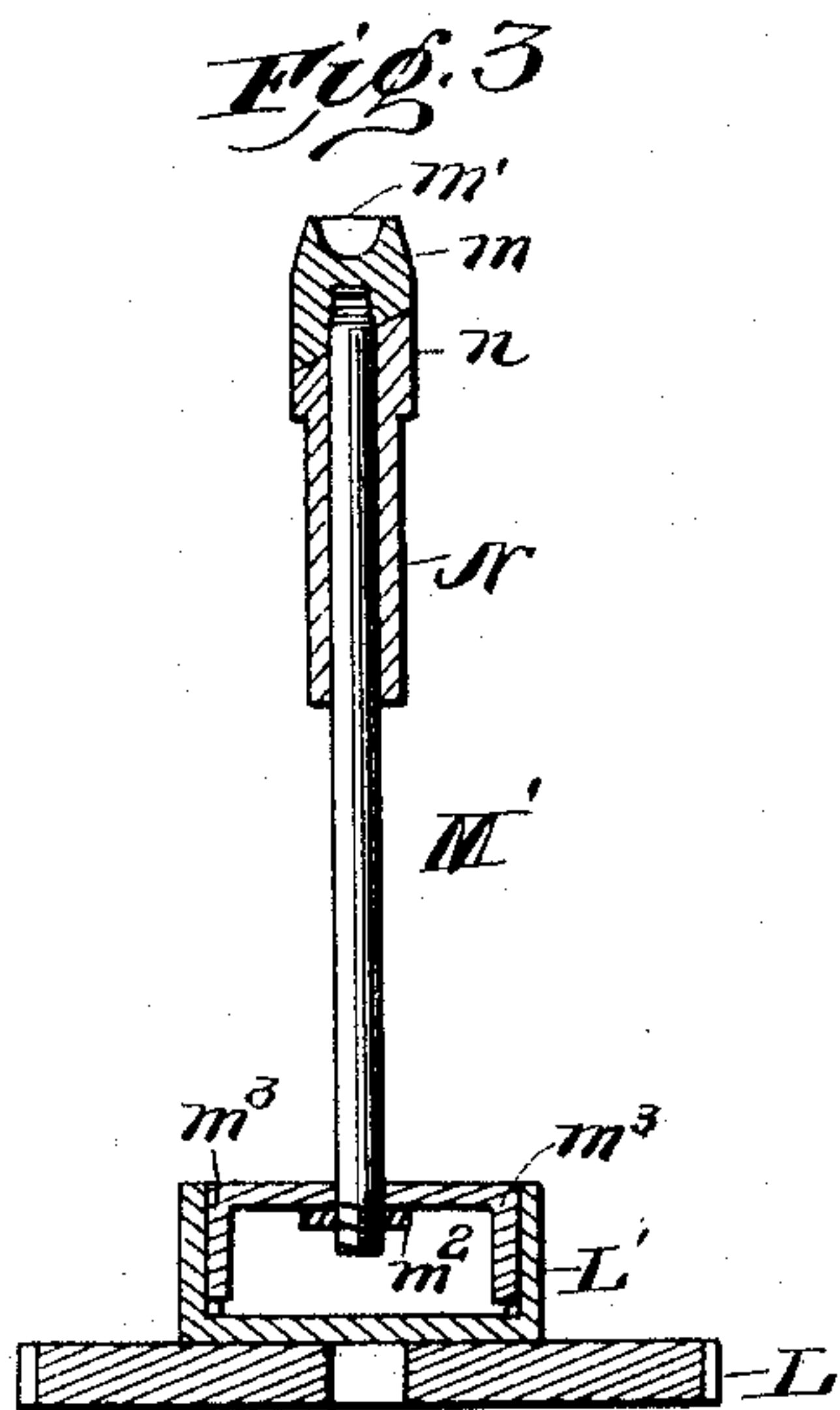
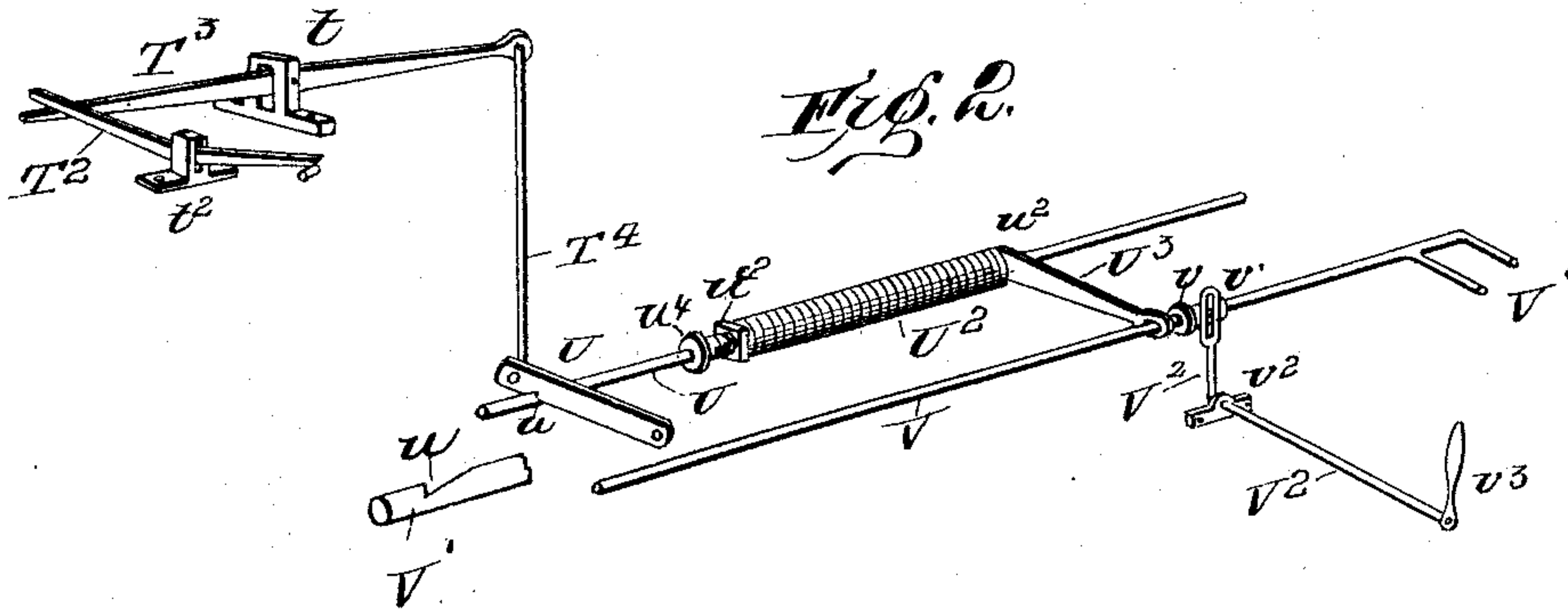
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UNITED STATES PATENT OFFICE.

JOSEPH HOLDEN, OF ANNISTON, ALABAMA.

AUTOMATIC STOPPER FOR CORD OR ROPE MACHINES.

SPECIFICATION forming part of Letters Patent No. 629,010, dated July 18, 1899.

Application filed April 10, 1899. Serial No. 712,483. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH HOLDEN, a citizen of the United States, residing at Anniston, in the county of Calhoun and State of Alabama, have invented certain new and useful Improvements in Cord or Rope Machines; and I do hereby 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.

My invention relates to cord and rope machines; and the object of my invention is to provide a mechanism for regulating the length of skein to be made and after said length is finished and wound upon the reel to automatically stop the machine.

In the accompanying drawings, forming a part of this specification, I have shown my invention as applied to a cord and twine making machine, showing a modern type of ring-frame machine embodying a stretching and reeling mechanism mounted in a casing comprising an upper and lower compartment. It will appear that my invention is adapted to be applied to twisting and doubling machines generally, as well as other types, such as beam-warppers, chain-warppers, slashers, and reels.

Figure 1 is a side elevation of one of the stretching and reeling mechanisms embodied in the upper compartment of the casing, being a transverse section through the same and showing my invention applied to one of the ring-frames, it being understood that regardless of the number of ring-frames used the attachment of my invention to any one of such frames will control all the frames and spindles in the machine of which it forms a part. Fig. 2 is a diagrammatic view in perspective, showing the connecting parts of the belt-shifting mechanism assembled, the casing and supports not being shown. Figs. 3, 4, and 5 are detail views.

Referring more particularly to the drawings, A A' A² denote a part of the frame and casing of a cord and twine machine having an upper and lower chamber, the former containing the stretching and reeling mechanism embodying the stretching-drums, flier, and reel and the latter the spindle and strand-twisting mechanism, which latter are not shown, as my invention is connected only with

the upper chamber or above the division A'. The stretching and reeling mechanism is mounted in a frame B, having compartments B' B². Said frame receives a rotary motion about a vertical central axis by means of a pinion C, attached to a hub B³ in the frame B and driven through the intermediate pinion C' by the gear C², which receives its motion through the bevel-gears C³ and C⁴ from the driving-shaft D. Within the hub B³ is a sleeve formed of the elongated hub of the pinion E and having at its upper end a pinion F, engaging the gears F' F', attached to the stretching-drums G G. The pinion E is driven through the intermediate pinion E' by the gear E², which receives its motion through the bevel-gears E³ E⁴ from the shaft H, which revolves in a direction opposite to that of the shaft D. As shown in Fig. 1, the frame B turns about the hub of the pinion E as its lower bearing, and, as is shown in Fig. 4, the hub of the pinion E turns about a tube J, fixed in and projecting upward from the end of the yoke K. The drums G are integral with the gears F and are attached with set-screws to vertical spindles, which carry upon their upper ends pinions G', engaging a gear L upon the drum L', upon which is mounted the reel-plate M.

The foregoing description comprises mechanism well known and forms no part of my present invention.

In Fig. 3 I show a detail view of the drum L' detached and the rod M' mounted thereon. ll denote slots or channels open at the top formed in said drum at points diametrically opposite.

Figs. 1 and 3 show in detail the actuating-rod M', having a head m fixed thereon, which is therewith beveled upon its under side and recessed upon its upper side at m'. The lower end of said rod is screw-threaded and is fastened to a supporting-frame having a threaded perforation by a nut m². Said frame has vertical supports m³ m³, adapted to be mounted in slots ll, as shown in Fig. 3, and ride vertically thereon, as hereinafter described. Said supports are held in place in said slots by the reel-plate M, which fits over the drum L'. The rod M' is thus made fast to and revolves with the drum and at the same time is allowed a vertical movement in the slots ll.

N denotes a sleeve inserted through an opening in the top of casing A and is made fast by its lower end to the top of the flier-frame, at the center thereof, and revolves with it. *n* denotes a head formed integral with said sleeve, beveled on its upper end, having a perforation therein which registers with the internal diameter of the sleeve. The rod M', as shown in Figs. 1 and 3, passes through the sleeve N, (the supporting-frame being removed,) and the under side of its head or beveled portion bears against the upper side or beveled portion of the head *n*.

o denotes a connecting-rod pivoted at its upper end, while the lower end rests loosely in the recess *m'* in the head *m*, as shown in Fig. 1.

P denotes a toothed disk mounted upon a shaft *p*, having a stud *p'* on its rear face at a point opposite or directly in rear of the pointer R, as shown in Fig. 5. P' denotes a spring-arm having a beveled boss P² thereon, which lies in the path of said stud *p'*. P³ denotes an alarm-bell at the free end of said arm P'. The disk P is partially inclosed in a circular case Q, bolted to the top of the casing A and broken away in two places to expose the teeth of the disk. Said case Q is provided on its face with numbers ranging, say, from "100" to "0," forming a dial. R denotes a pointer for said dial, forming a part of the arm R', which is made fast to the shaft *p*. Said arm is fast on the tooth-disk shaft and moves with the disk and is adapted to be moved by hand to set the pointer and move the gears to correspond with the length of skein as indicated by numbers on the dial.

S denotes an arm pivoted to the center of case Q and of a length about equal or slightly exceeding the radius of the disk P. The outer end of this arm has hinged or pivoted thereto the connecting-rod O and also carries a pawl *s*, which engages the teeth of the disk P, as hereinafter mentioned. *s'* denotes a stop-pawl mounted upon the case Q, which also engages said teeth and prevents a return movement of the disk when the pawl *s* is disengaged.

T denotes a pinion fast on the shaft *p*, which meshes with a gear-wheel T'. The ratio of the gear is as one to three, for example; but this ratio of course may be varied to suit the particular machine.

t denotes a stud on the gear-wheel.

T² denotes a trip-arm pivotally mounted on the casing A by a bracket B². One end of said arm lies in the path of the stud *t'*, while the other end bears upon the free end of a tilting arm T³, pivoted to a bracket B³, secured to the top of said casing. The opposite end of the arm T³ carries a depending rod T⁴, as shown in Fig. 2, which passes through a perforation in the casing A and is secured to a gravity-latch U, pivoted at one end to a standard inside the casing, (not shown,) while its opposite end is adapted to engage a recess *u*, formed in a horizontal rod U', mounted inside the casing A to supports. (Not shown.) Said rod

is actuated by a coiled spring U², embracing the same. Said spring bears at its end *u*² against an arm U³, while its other end is secured to an adjustable nut *u*³ on a threaded sleeve attached to a collar *u*⁴. Said collar bears against a standard inside the casing. (Not shown.) The arm U³ is rigidly fastened by one end to the rod U', while its opposite end is perforated to admit the passage of a rod V, carrying a belt-shifter V', which rod slides in bearings supported inside the casing by supports. (Not shown.)

v denotes a collar rigidly fastened to the rod V at a point between the arm U³ and a rocker-arm V². This rocker-arm is secured to the rod V in a slotted bearing *v'* and held from lateral movement thereon by a pin-bolt. The lower end of said arm is bent at an angle and passes through a bearing *v*², fastened inside the casing, to a support. (Not shown.) *v*³ denotes a handle for rocking said arm when it is desired to start the machine. Said handle may also serve to stop the machine by hand without engaging my automatic stopping mechanism or disturbing the registering mechanism.

Before starting the twisting-machine my indicator is first set to indicate on the dial the length of skeins to be made and reeled. The belt is then shifted by the handle *v*³ to the fixed pulley, as shown in Fig. 2, the rocker-arm simultaneously striking the collar *v*, which moves the arm U³ forward. This movement being communicated by the arm U³ to the rod U' moves it forward until the recess *u* comes under the latch U, which falls into it and locks the parts in this position, while the rocker-arm adjacent to the collar *v* is free to be moved back by the arm U³. While in this position the rocker-arm is free to throw the rod V back and shift the belt upon the loose pulley without disturbing the relation of the measuring or registering mechanism to the amount of unfinished cord and will take up its function when the machine is again started and automatically stop the machine when the balance of the cord is finished and wound. The twisting-machine being in motion, the reel and flier mechanisms actuate by measuring and automatic stopping mechanism as follows: The reeling mechanism revolves the drum L', carrying the rod M', and the flier mechanism revolves the flier-frame which carries the sleeve N. Said mechanisms cause the reel and flier-frame to revolve in the same direction; but they revolve at different rates of speed. The flier revolves fifty times while the reel revolves forty-nine times. The heads of said rods meeting in inclined planes and the rod M' having its supporting-frame free to move vertically, while the base of the rod N is fixed, the rod M' will move upward once for every fifty revolutions of the flier. This upward movement of the rod M' is imparted to the rod O, thus raising the arm S, which actuates the pawls *s* to press upward in the teeth of the disk. This upward movement

of the pawl is limited to turning said disk the space of one tooth only for every upward movement of the rod. As the disk turns the indicator fast on its shaft turns with it. The gear-wheel which meshes with the spur is simultaneously actuated, and its stud as it comes in contact with the trip-arm, as shown in Fig. 1, lifts it. This occurs the instant the indicator moves around and points to the required number on the dial, which represents the length of the skein to be made. At the same instant the trip-arm bears down upon the tilting arm and lifts the latch from the recess in the rod U' , causing the spring to throw it, and through the arm U^3 to throw the rod V and shift the belt upon the loose pulley. At the same instant the stud p' , which is fixed to the rear face of the disk, comes in contact with a boss P^2 and forces the spring-arm backward and, suddenly releasing it, causes the bell to sound an alarm. This alarm mechanism may be dispensed with and is useful only where a number of machines are attended by a single operator.

If for any reason it should be desired to run the machine without operating my mechanism, it is only necessary to lift the connecting-rod from contact with the actuating-rod M' .

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

1. In a cord and rope making machine having an automatic stopping mechanism, the combination of the sleeve rigidly attached to the flier, the actuating-rod mounted within said sleeve and attached to the reel-drum in slotted bearings, the tooth-disk actuated by said rod, and means actuated by the tooth-disk shaft for shifting the belt from the fixed to the loose pulley.

2. In a machine of the class described, the combination of the sleeve, the actuating-rod mounted therein, means operated by the driving-shaft for effecting the rotary movement of said rod, the connecting-rod loosely mounted on the actuating-rod, the toothed disk, and means for operating said disk by said rods.

3. In a machine of the class described, the combination with the flier and reel of the actuating-rod and sleeve connected therewith, means for actuating said rod, the toothed disk, means for connecting the said disk and rod, a dial, an indicator for said dial attached to the toothed-disk shaft, and means operated

by said shaft for shifting the belt from the fixed pulley.

4. In a cord and rope machine of the class described the combination of the toothed disk, the pivoted arm carrying a pawl and a depending connecting-rod for operating said arm, means connected with said depending rod for operating said disk the arm R' fast on the toothed-disk shaft having an indicator, a dial for said indicator, and means actuated by said shaft for shifting the belt from the fixed to the loose pulley.

5. In a cord and rope machine, the combination of the toothed disk the pivoted arm having a pawl and depending connecting-rod hinged thereto, the actuating-rod M having a recessed upper end adapted to receive the lower end of said connecting-rod, means for operating the rod M , a dial-plate arranged in front of said disk having an indicator fastened on the disk-shaft, a spur-wheel on said shaft meshing with and operating a gear-wheel carrying a stud, a trip-arm in the path of said stud-operating mechanism which shifts the belt upon the loose pulley.

6. In a cord and rope machine having an automatic stopping and measuring mechanism, the combination of a toothed disk, the pivoted arm carrying a pawl engaging said disk and provided with a depending connecting-rod pivoted thereto, means for operating said rod from the driving-shaft, a dial-plate and an indicator for the same the latter mounted upon the toothed-disk shaft, a spur-gear mounted upon said shaft engaging a gear-wheel having a stud, a trip-arm engaging said stud, the tilting arm having depending rod operating the gravity-latch, the gravity-latch engaging the spring-actuated bar, and means connected to said bar for shifting the belt substantially as described.

7. In a machine of the class described, the combination of the toothed disk, means for actuating the same, the arm R fast on the disk-shaft, means operated by said shaft for lifting the gravity-latch U , the spring-actuated rod holding said latch and carrying an arm U^3 and a shifter-rod having a collar v and a rocker-arm secured thereto.

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

JOSEPH HOLDEN.

Witnesses:

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JNO. W. COLEMON.