No. 771,059. PATENTED SEPT. 27, 1904.

E. GESSNER, DEC'D.

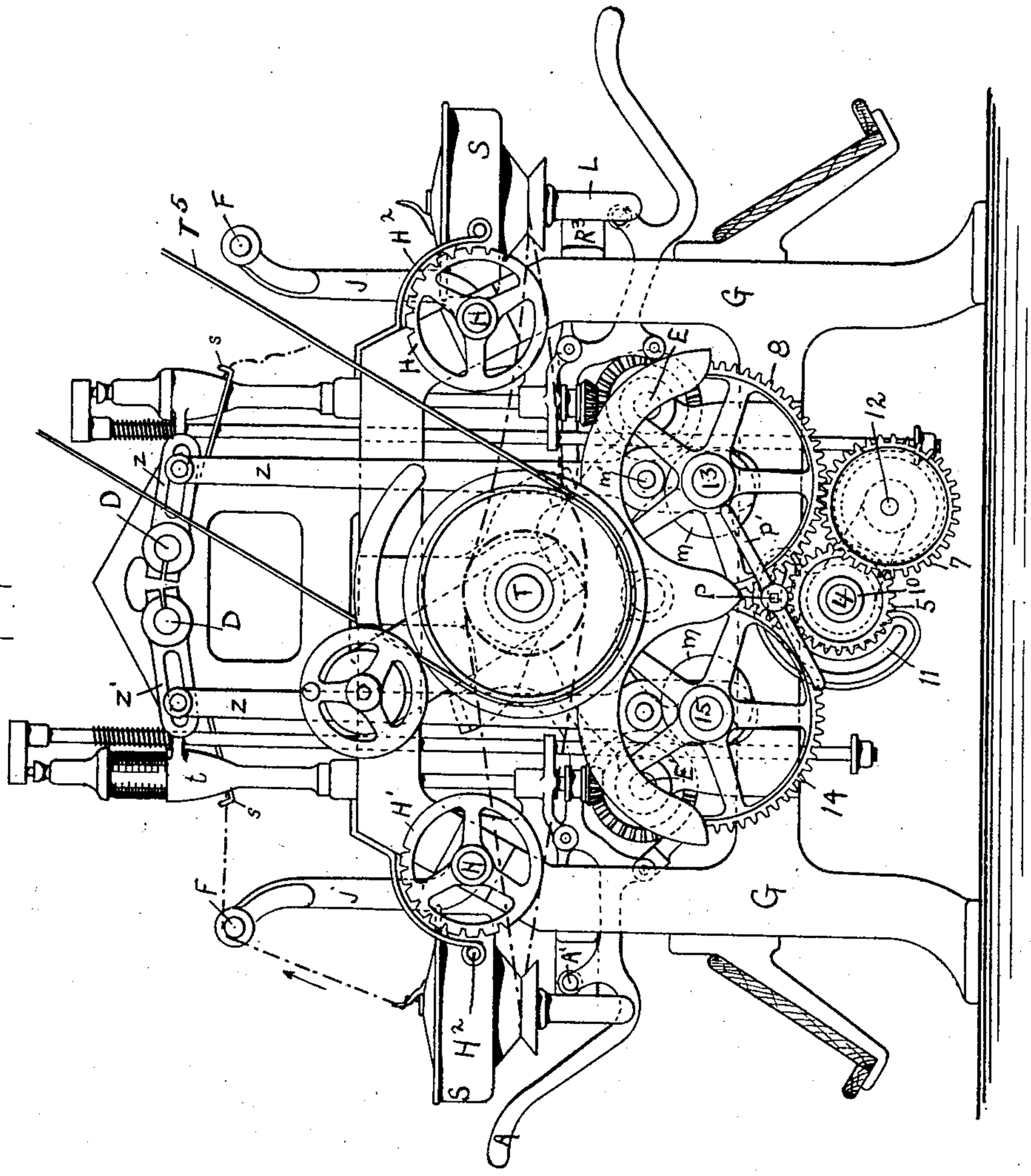
D. GESSNER, ADMINISTRATOR.

SPINNING MACHINE.

APPLICATION FILED MAR. 31, 1898.

NO MODEL. 8 SHEETS—SHEET 1.

FIG. 1.



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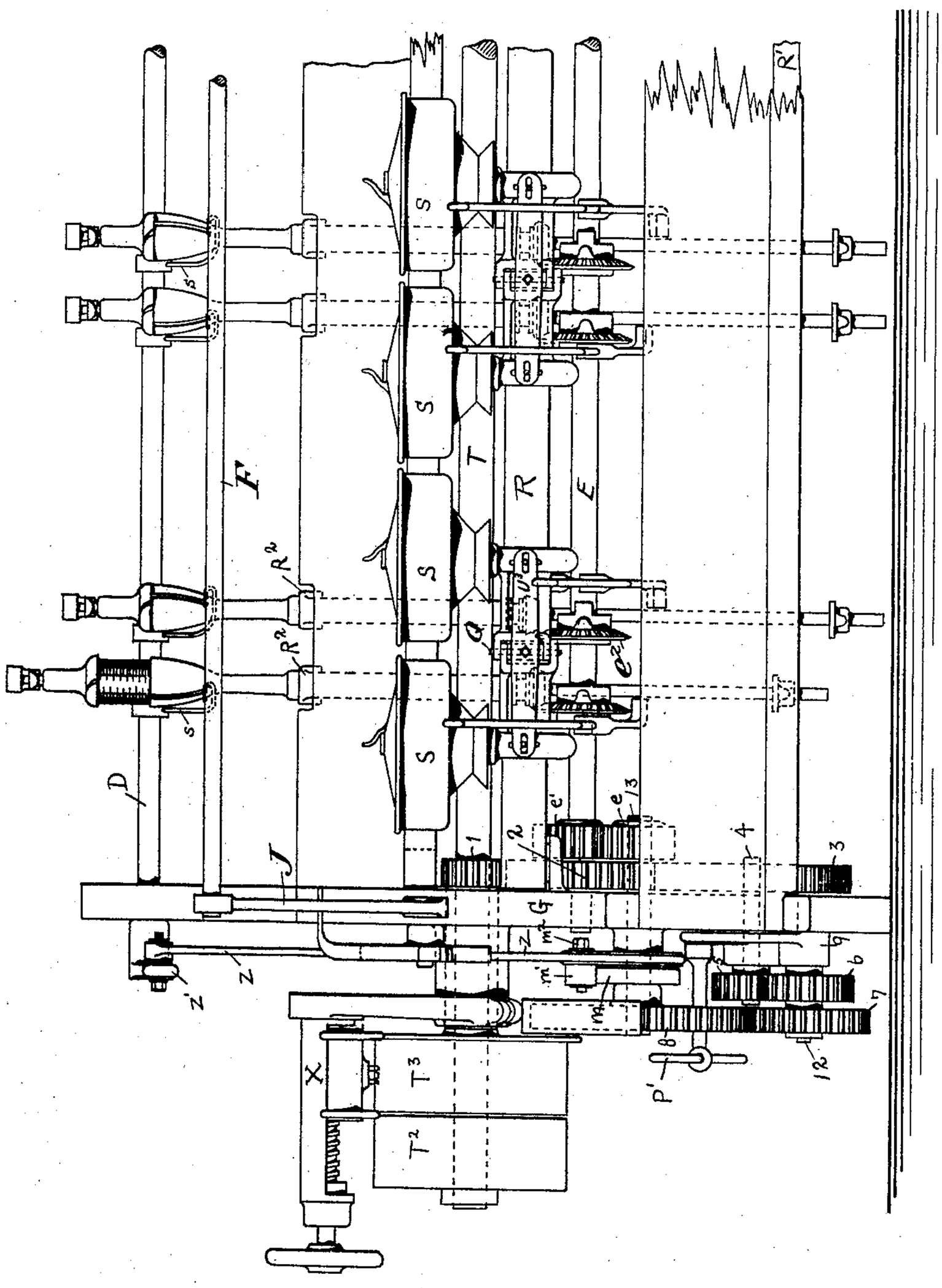
NO MODEL. 8 SHEETS—SHEET 2.

FIG. 2.



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NO MODEL. 8 SHEETS—SHEET 3.

FIG. 3.

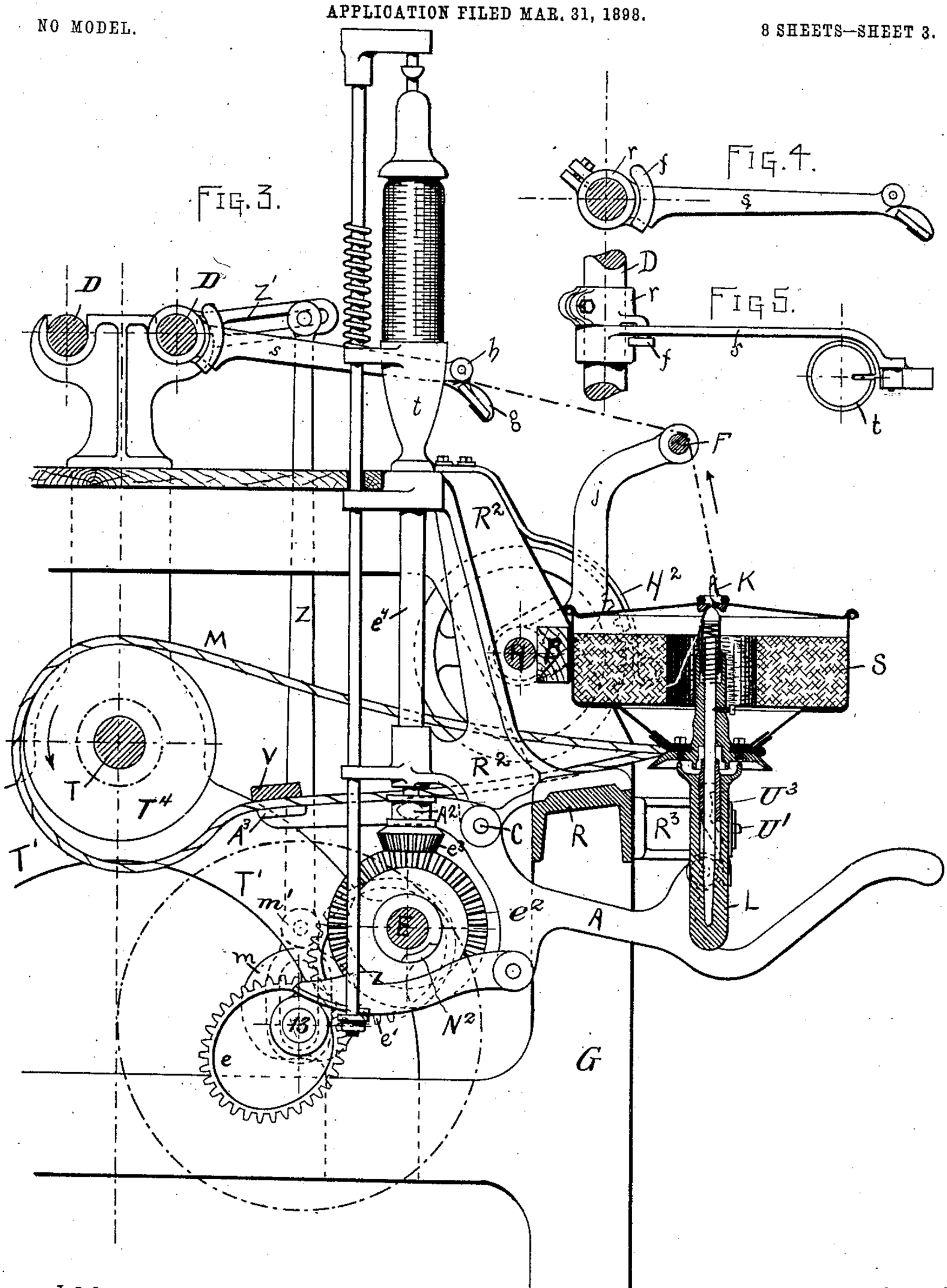

FIG. 4.

FIG. 5.

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SPINNING MACHINE.

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NO MODEL. 8 SHEETS—SHEET 4.

FIG. 6.

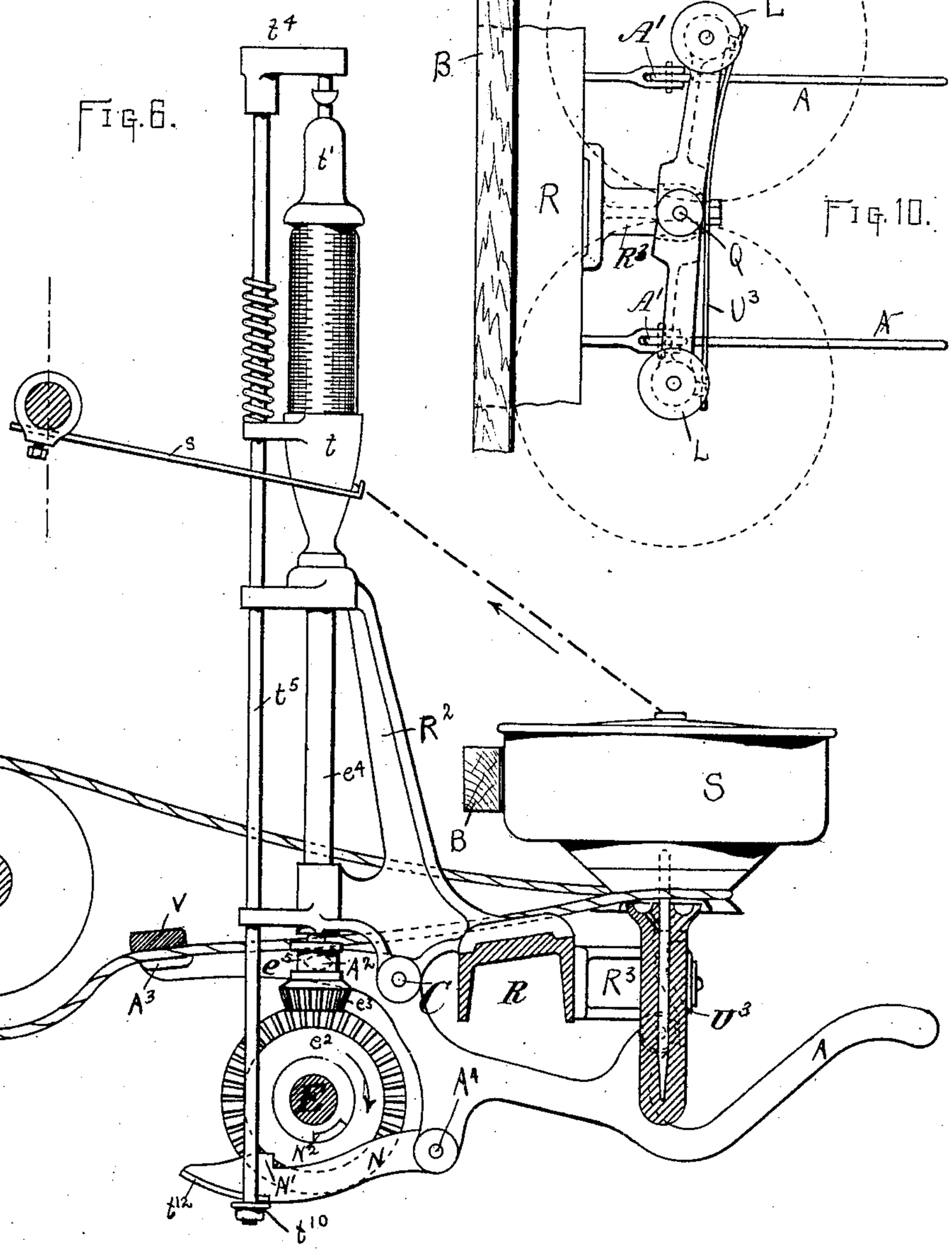

FIG. 10.

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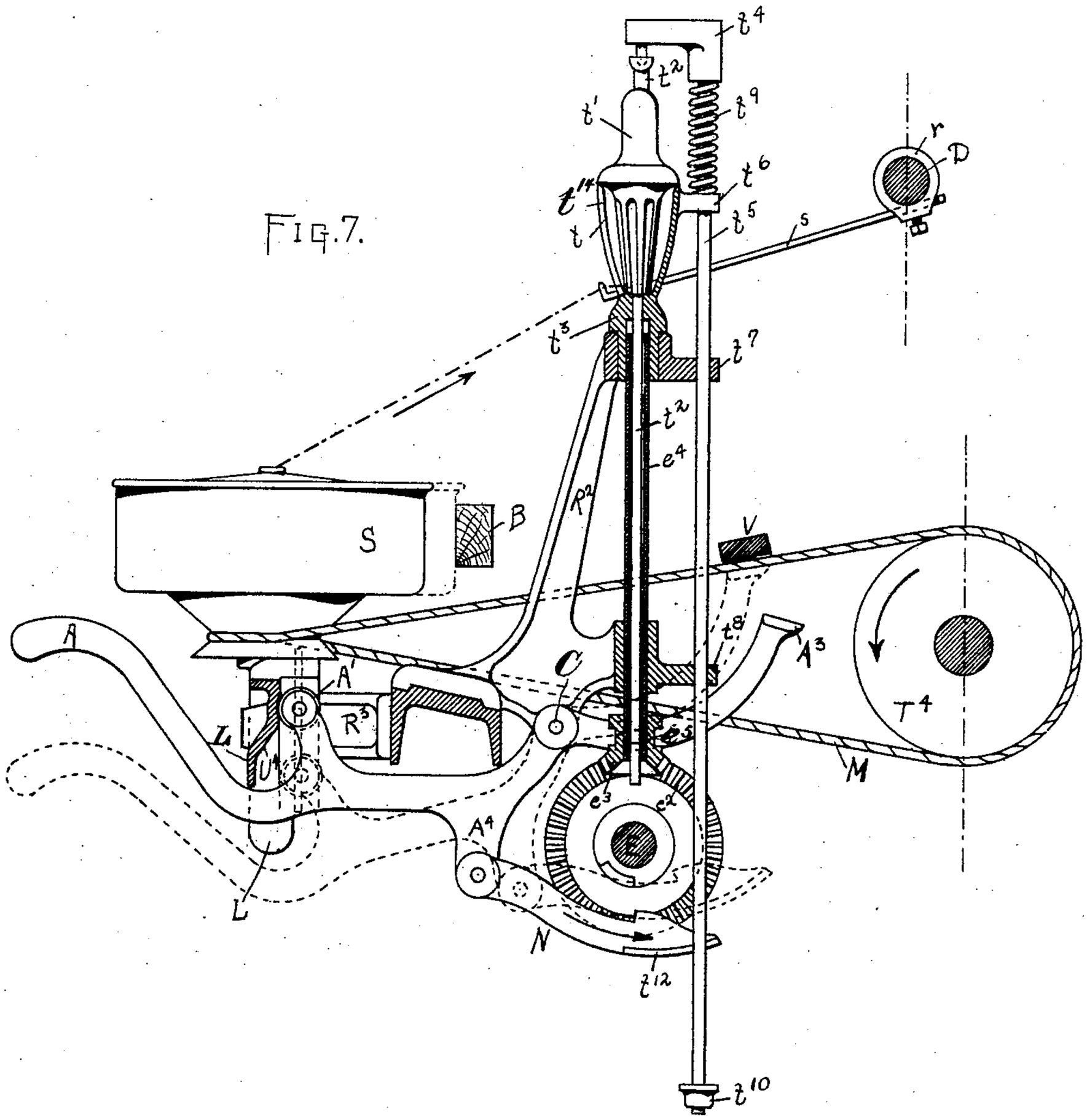
NO MODEL. 8 SHEETS—SHEET 5.

FIG. 7.



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SPINNING MACHINE.

APPLICATION FILED MAR. 31, 1898.

NO MODEL. 8 SHEETS—SHEET 6.

FIG. 8.

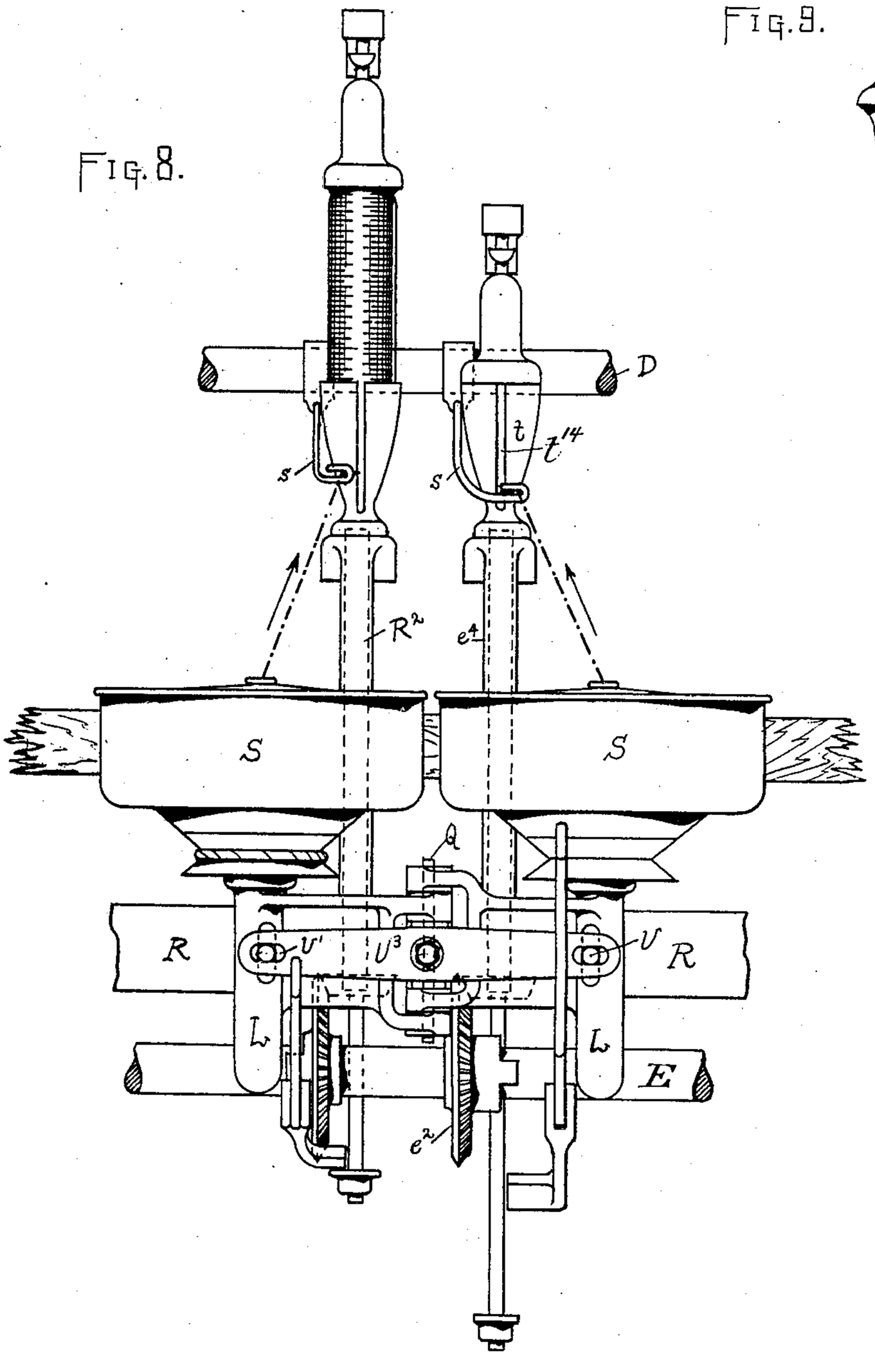
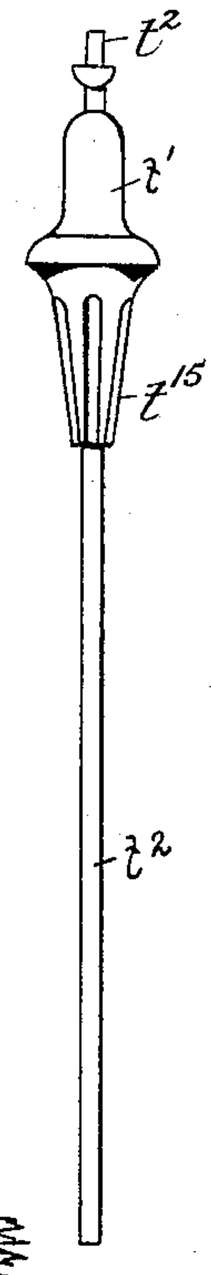


FIG. 9.



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No. 771,059. PATENTED SEPT. 27, 1904.

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SPINNING MACHINE.

APPLICATION FILED MAR. 31, 1898.

NO MODEL. 8 SHEETS—SHEET 7.

FIG. 12.

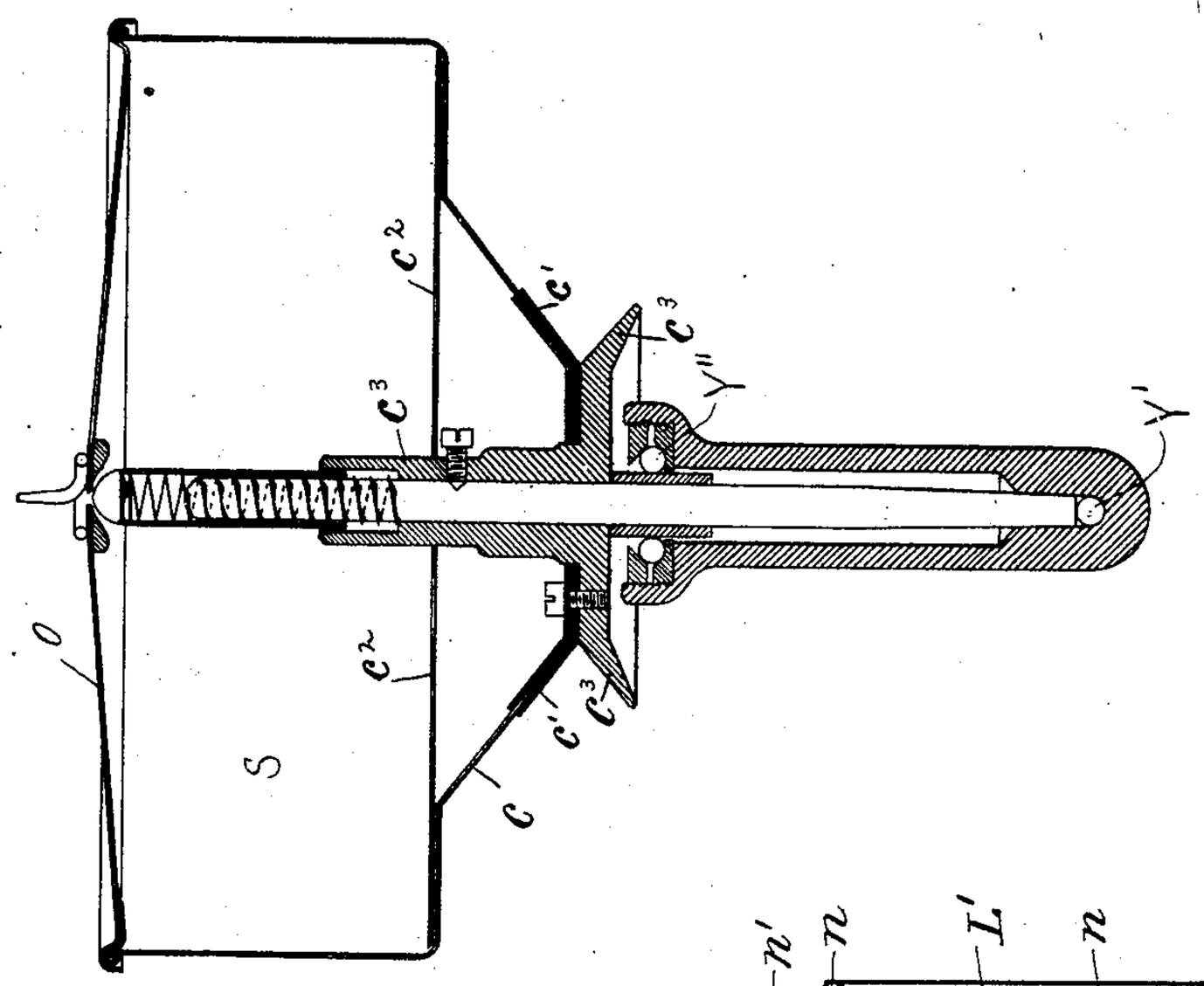

FIG. 16.

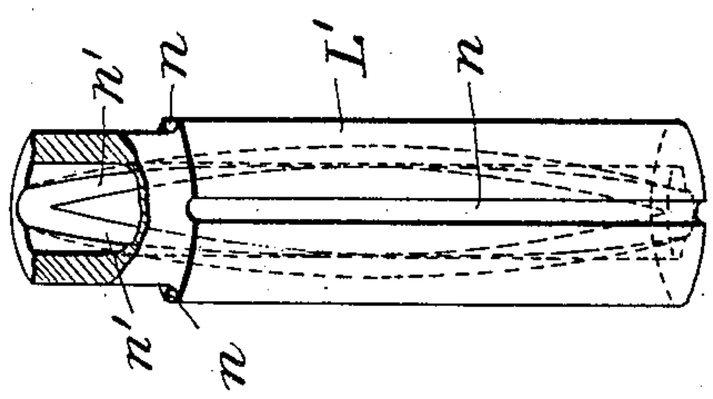

FIG. 11.

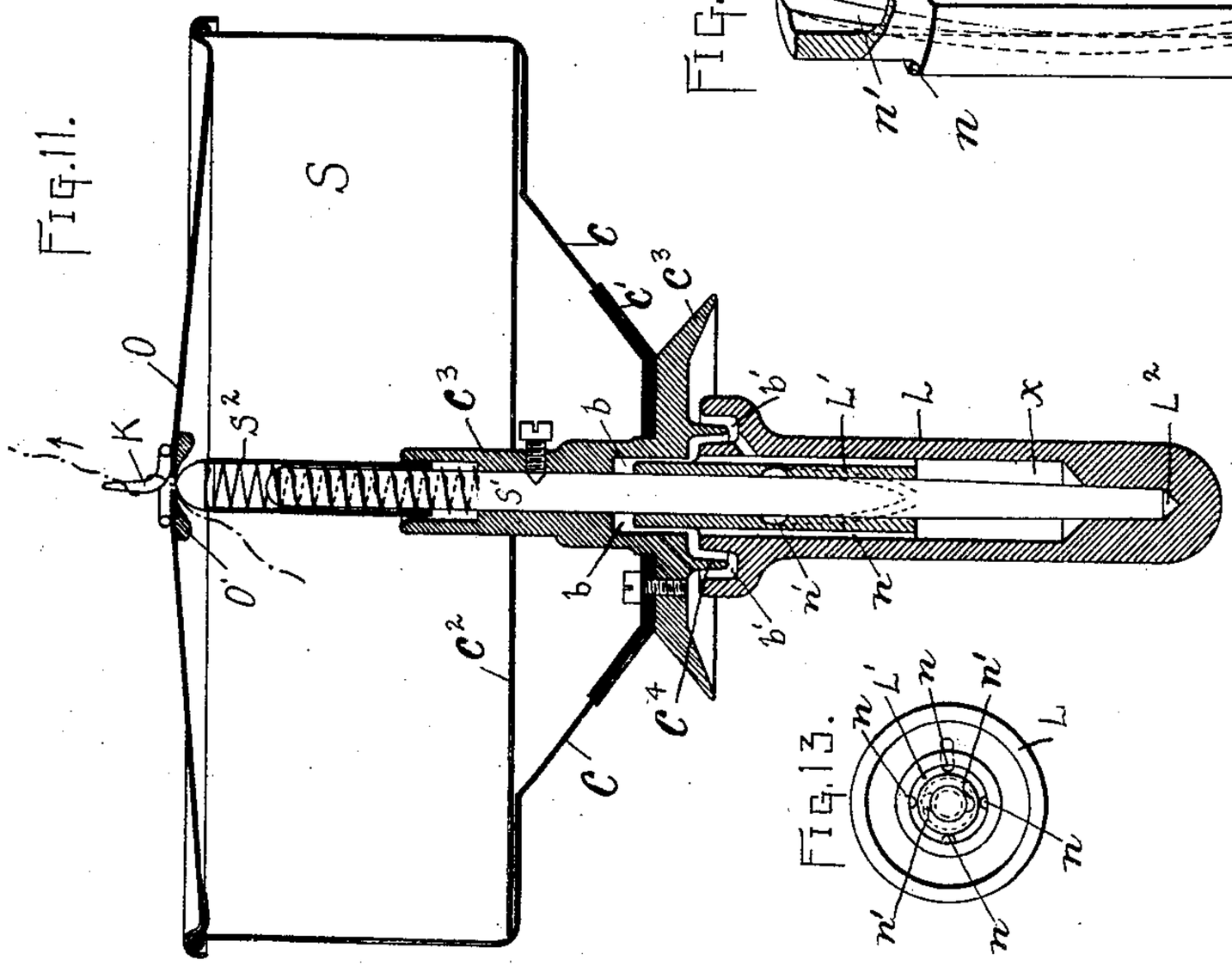

FIG. 13.

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No. 771,059. PATENTED SEPT. 27, 1904.

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NO MODEL. 8 SHEETS—SHEET 8.

FIG. 15.

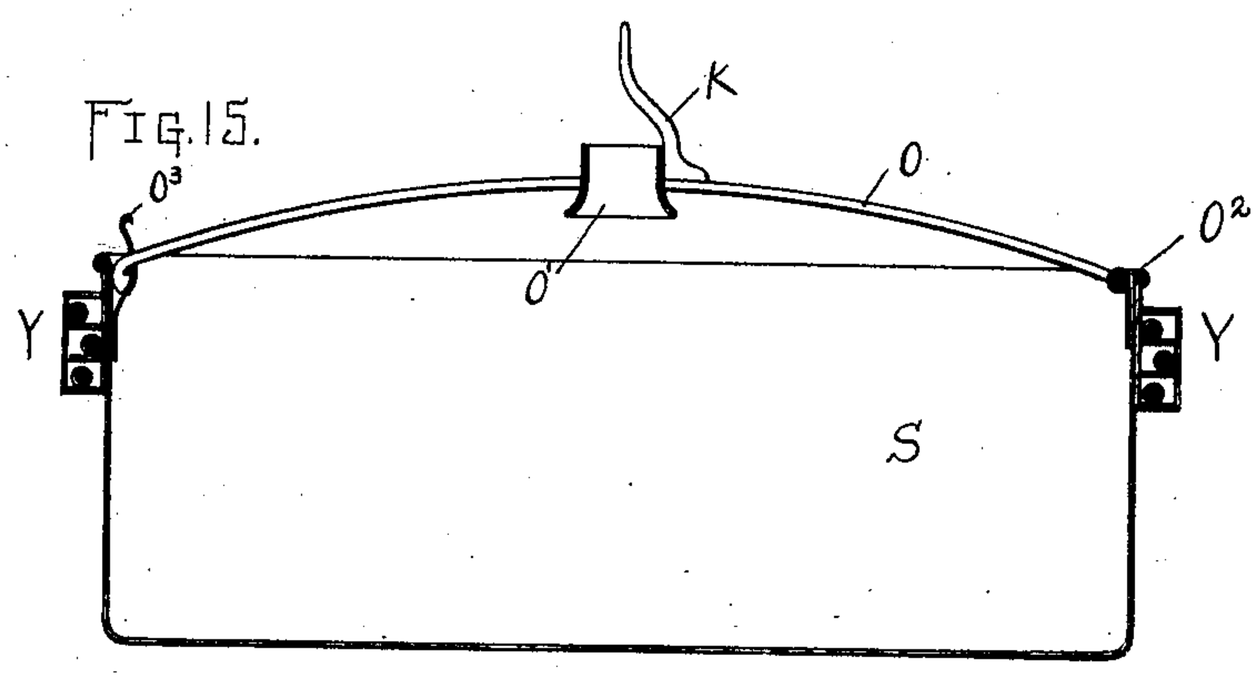
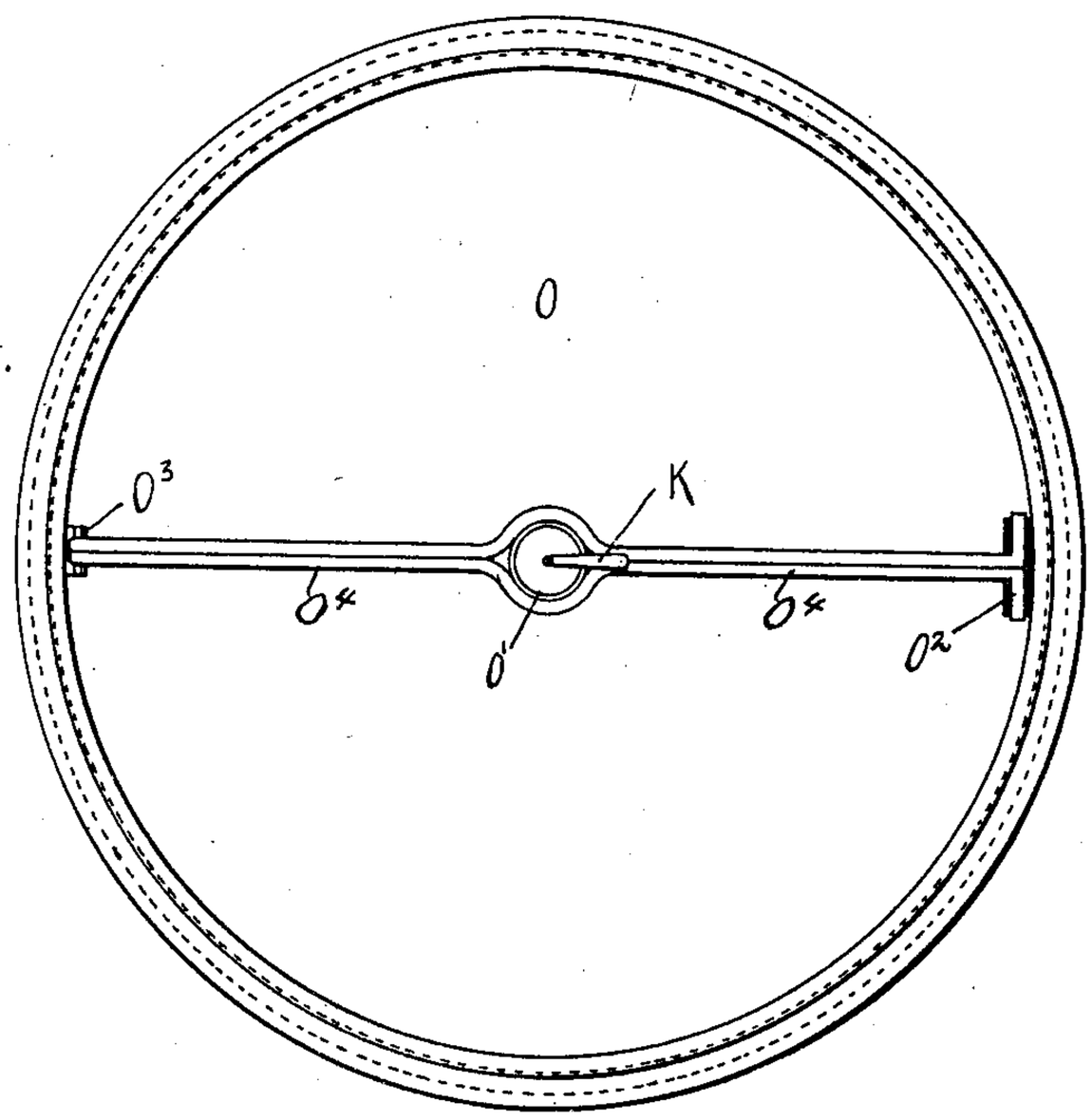


FIG 14.



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David Gessner Admin.
by Griffin & Bull Att'ys.

No. 771,059. Patented September 27, 1904.

UNITED STATES PATENT OFFICE.

DAVID GESSNER, OF WORCESTER, MASSACHUSETTS, ADMINISTRATOR OF ERNST GESSNER, DECEASED.

SPINNING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 771,059, dated September 27, 1904.

Application filed March 31, 1898. Serial No. 675,902. (No model.)

To all whom it may concern:

Be it known that ERNST GESSNER, late of Aue, Saxony, Germany, did invent a new Improvement in Spinning-Machines, of which the following is a specification.

The accompanying drawings represent a form of machine in which said invention may be embodied.

Figure 1 is an end view of the same. Fig. 2 is a front view with one end omitted. Figs. 3 to 16, inclusive, are details.

The frames G, one at each end, are held together by girds R and R'. The girds R form at the same time supports for the brackets R^3 and R^2, Fig. 3, for holding the spinning-pots S and the winding-spindles, respectively. The main shaft T lies in the semicircular bracket T', attached to the main frame G, Fig. 3, and carries on its outer end the fast and loose pulleys T^2 and T^3. The belt-shifter X, Fig. 2, is clamped to the bushing or bearing of shaft T, so that the operator may clamp it to the bushing at any angle required by the position in which the driving-belt T^5 runs. On the inner side of the bushing, inside the main frame G, the shaft T carries the pinion 1, which drives the intermediate pinion 2, which in turn drives the gear 3, fast to the arbor 4, which passes through the bushing 10 on the frame G and carries on its outer end the gear 5. On the bushing 10, through which the arbor 4 passes, swings the swinging arm 9, which has a circular slot 11 on one end and on its other end carries the arbor 12. Upon the arbor 12 is fastened sleeve-gear 6, which is driven by gear 5 upon arbor 4. Upon the sleeve of gear 6 is keyed the gear 7, which engages with gear 8, fastened on the jack-shaft 13, fastened on the inner end of which is the elliptical gear *e*, which drives an elliptical gear *e'*, fastened to the shaft E. (See Figs. 2 and 3.) Through the circular slot 11 of the swinging arm 9 passes a bolt-screw P, to which is attached a handle P' for locking the swinging arm 9 in any position which the slot 11 permits. Thus the gear 7, keyed on the sleeve of gear 6, may be at any time slipped off and exchanged for a larger or smaller gear and then the swinging arm 9 be adjusted for proper meshing and securely locked by P, and thus the speed of the shaft E be altered at will, as desired.

The gear 8 upon the jack shaft or arbor 13 meshes into gear 14, fastened to jack-shaft 15. The shaft E', passing through the machine and parallel to E, is driven by a train of gearing from jack-shaft 15 in precisely the same manner as shaft E is driven by jack-shaft 13—*i. e.*, by means of elliptical gears. On the jack-shaft 13, just inside the gear 8, is fastened the cam *m* of the form shown in Figs. 1 and 3, working against a roller *m'*, which turns on a stud m^2, fastened to the rod Z, which is forked at its lower end, this fork extending loosely around the jack-shaft 13, next to the cam *m*. At its upper end the rod Z is connected to the slotted arm Z', fastened to the rock-shaft D. This same mechanism is repeated on both sides of the machine, as shown in Fig. 1, and at both ends. The rock-shaft D carries the guide or winder arms *s*, mounted loosely thereon. Adjacent to each arm is fixed on shaft D a clamping-ring *r*, which has a finger *f* projected under the arm *s*, supporting it there and preventing its dropping. The arms *s* may thus each be turned upward by the operator; but when let go the arm will drop onto the finger *f* of the ring *r*, fastened to shaft D. Thus the motion of the spheroid cam *m*, through the rod Z, slotted in arm Z', rock-shaft D, clamp-ring *r*, is communicated to the guide-arm *s*, the upward motion being produced by the lift of the cam *m* and the downward motion occasioned by the weight of the arm. To prevent the guide-arm *s* from sliding sidewise, the finger *f* is turned upward to hold the arm *s* in place. The end of the arm *s* carries a spring *g*, which presses against a small roller *h*, carried by the arms *s* in close proximity to the bobbin-cup *t*.

The shaft H, which lies directly behind the brake-beam B, carries at its outer end a notched hand-wheel H', held in any position by a snap-spring H^2 engaging with the said notches. Fast to the shaft H are the crooked arms J, carrying at their outer ends the rod F, over which the thread passes on its passage from the spinning-pot S to the winder-arm *s*. By

moving the rod F in or out the travel of the thread with respect to the vertical line through the axis of spinning-pot S may thus be varied.

The clamping-bars V are fastened, Fig. 3, to the brackets T′ of the main frame and extend, like the brake-beam B, across the entire width of the machine. Upon the shaft T are fastened the drums or pulleys T^4, which drive through quarter-turn belts M the spinning-pots S. The spinning-pots S are mounted on swing-arms L. These arms L are arranged in pairs, and each pair swings on a pin Q, Figs. 2, 3, 4, 7, 8, and 10, held fast by a bracket R^3, which is fast to gird R. The swinging arms L have in front the guide-pins U, Fig. 3, engaging in slots U′, cut horizontally into spring-plate U^3, bolted to the front of bracket R^3.

Upon the shaft E are fixed the large bevel-gears e^2, which drive small bevel-gears e^3, fast to the lower end of the upright spindle-shells or sleeves e^4, which have their vertical bearings in the brackets R^2. There is sufficient play between the collars of the small bevels e^3 and their bearings to permit them being raised out of or lowered into mesh with the large bevels e^2 on shaft E. Likewise the sleeves or spindle-shells e^4 are sufficiently shortened at the top to permit their being raised when the small bevels e^3 are raised out of mesh with bevels e^2. The upper bearing of e^4 is in the lower terminus t^3 of the spool-cup t, which is fast to the top of bracket R^2. (See Fig. 7.) The hub of bevel-gear e^3 has a circumferential groove e^5 engaging with a sideward projection or finger A^2, fast to the lever A, which has its fulcrum C in the bracket R^2. (See Fig. 6.) By raising or lowering the handle of lever A the finger A^2 will cause the small bevel e^3 to move into or out of mesh with the gear e^2. Hence the upright spindle-shell or sleeve e^4 can be made to revolve or not by simply moving lever A. The arm of lever A, that carries the projection A^2, has on its end a sideward shoe A^3, which will pinch the belt M against the clamping-bar V at the same time when the finger A^2 raises the small bevel e^3 out of mesh with e^2. On the part of lever A between its handle and fulcrum C is an upward-branching arm which carries a roller A′, pressing against the inner surface of the swinging arm L and pushing it against the spring-plate U^3. (See Figs. 6, 7, and 10.) When the lever A is raised into position, the roller A′ rests in a hollow or depression conforming to the surface of the roller, (shown in full lines, Fig. 7,) the spring-plate U^3 presses the swinging arm L against the roller and holds it thus locked in that position. When the roller A′ is depressed by lever A, it will press the swinging arm L a little forward until it has left its depression. It will then be followed by the incline surface U^4, the spring-plate U^3 pushing the swinging arm L against the receding roller A′. This causes a slacking of the belt M, which at the same time is caught by the shoe A^3 and pressed against the clamping-bar V as the handle of lever A descends. Thus the belt is completely arrested by a friction-clutch action. At the same time that the handle of lever A is pressed downward by the operator the outer surface of the spinning-pot S is lightly forced against the leather-padded surface of the brake-bar B, the friction of which stops the momentum of the spinning-pot S, bringing it to a halt simultaneously with the arresting of the driving-belt M by the shoe A^3 against the clamping-bar V.

The yarn which comes from the spinning-pot S goes in the direction of the arrow over and around the end of the winder-arms s through a vertical slot t^{14} of the cup t, Fig. 2, to be wound around a wooden core t', which is corrugated or roughened on the conical end t^{15}, which extends downward into the cup t. This wooden core or bobbin t' has fastened to it and passing through it a light square steel rod t^2, which fits loosely into the hollow square of spindle-shell or sleeve e^4. It is thus turned by the sleeve e^4 whenever the latter is in motion; yet it is capable of being slid out of the cup or raised upward partially, as required.

Upon the top of the steel rod t^2 rests a finger t^4, fastened to the upper extremity of a sliding rod t^5, having its sliding bearings in a projection t^6 of the cup t and in rearward projections t^7 and t^8 of the bracket R^2. Between the finger t^4 and the bearing t^6 a spiral spring t^9 is slipped over the sliding rod t^5 to counteract somewhat its weight in beginning to wind the bobbin, and t^5 has at its lower extremity an adjustable collar t^{10}, which when the rod t^5 is raised sufficiently will hit against or engage a sideward projection t^{12} of the catch-arm N, which hinges upon a pin at the lower projection A^4 of the lever A. As the yarn which comes from the spinning-pot S and is being wound upon the wooden core t' forms a long bobbin it rises in height and takes with it the square rod t^2 inside the shell e^4 and at the same time raises the sliding rod t^5 until the collar t^{10} will reach under the projection t^{12} of the catch-arm N.

The bevel-gear e^2 has upon its collar a clutch-nose N^2, which will hit against the projection N′ of the catch-arm N and yank the arm N forward, which causes the lever A, to which it is attached, to be jerked downward precisely the same as if the operator had pressed it down by hand, as seen in dotted line. This will cause the spinning-pot S to be stopped, as well as the quill t^4, carrying the bobbin-rod t^2, thus permitting the operator to remove the full bobbin by pushing the top of the wooden core from under the finger t^4 of the sliding rod t^5 and then slip out the wooden core, with its bobbin-rod t^2 and the bobbin of yarn wound upon the two. As soon as the bobbin of yarn has been slipped off the lower end of t^2 the bobbin-rod is returned and ready

to start winding another bobbin of yarn. A new end of yarn coming from the pot S is wound around the wooden core and then dropped into the cup *t*, where as soon as the lever A is raised again it will start winding, as before.

The manner of mounting the pot S and its spindle S′, to which it is fastened, can be varied; but by the construction shown both top and bottom bearings are constantly and uniformly kept in oil and are mounted in a reciprocating carriage, herein shown as a swinging arm. Such mounting permits not only the extremely simple and prompt arrest and restarting of the spinning-pot, but also of its accompanying bobbin-spindle, and may enable a great saving of attention on the part of the operator—a saving of oil—and may do away with a great deal of complicated mechanism. Figs. 11, 12, and 13 show that part of the swinging arm L upon which the pot S and the spindle S′ have their bearing. The bushing or sleeve L′ surrounds and revolves with the spindle S′ about its middle, forming its main bearing, the bottom of the spindle resting at L^2 in a socket-like hole in the arm L. The bushing or sleeve L′ has upon its exterior surface vertical oil channels or slots *n*, running parallel with its axis. On its inner side it has two spiral channels *n′*, winding like screw-threads, one winding toward the left and the other toward the right. The oil contained in the receptacle *x* will, as soon as the spindle S′ begins to revolve, run up into that channel *n′* which runs counter to the direction in which the spindle S′ revolves. It will be dashed off at the upper end of the bushing or sleeve L′ into the cup receptacles or recesses *b* and *b′*, where it is caught, to escape from there downward again through the channels *n* on the outer surface of the bushing L′, thus keeping the spindle S′ constantly oiled throughout its entire length of bearing. In Fig. 12 is shown the spindle S′, mounted upon ball-bearings Y′ at the bottom and Y at the middle. The pot S or yarn-receptacle should be made so as to embody great strength, rigidity, and lightness of weight and should balance perfectly throughout.

Aside from the kind of material used for spinning in such a machine much depends upon the construction of the pot S and its spindle and the correct manner of holding it while revolving as to the number of revolutions the operator may dare to give his machine, and the best form of constructing the pot S is shown in Figs. 11 and 12. The lower portion of the pot S is formed into a cone *c* with its small end downward, and at the bottom it is stiffened on the exterior by parts *c′*, which conform precisely to the shape of the cone *c*. On its under side it is fastened to part c^3, which is likewise conical, and thus the two parts form a groove-pulley around which the belt M passes. The upper portion of the piece c^3 is cylindrical, and over it and around it passes the false bottom c^2 of the pot S, thus giving the pot S firm support in all its lower regions. By thus making the pot S and conical part c^3 into a grooved pulley the belt pulls directly on these strong parts, which have the spindle fastened to their interior, instead of driving the spindle by a pulley direct and then fastening the pot to the spindle separately. The spindle thereby is freed from all torsion and can consequently be made much lighter than would be possible by any other method of construction. The downward projection or ring c^4 of the piece c^3 (see Fig. 11) prevents all oil from flying out and confines the oil to its receptacle *b*. The false bottom c^2, which reaches over the neck or upward portion of the piece c^3, stiffens the pot S, and thus insures steady running at high speed. The balancing-rings Y, Fig. 15, may be attached to the upper portion of the pot S in a similar manner to that of balancing extractors and permit self-balancing of the pot S in case it should be loaded one-sided by the material placed within. Of course such rings could be placed inside the pot S as well as outside.

To prevent the thread of sliver or roping placed inside the pot from flying apart during spinning, it should be led centrally out of the pot. For this reason the cover O carries an eye O′, placed centrally in the cover O, which is hinged to the pot S at O^2 and fastened by a simple snap or catch hook upon the opposite side O^3. Close to the eye O′ is fastened a wire point or tailpiece K, so twisted as to bring its terminus directly over the center of the eye O′ or the pot S. The thread as it passes from the interior of the pot S is slung one or more times around K, thus preventing it becoming in any way tangled with the sliver thread that lies in coils inside pot S, which would be quite likely to happen if merely drawn loosely through eye O′ or opening of the pot. This also prevents the twist of the yarn, which it receives during spinning, from extending through the eye O′ into the pot and causing it there to curl and come in collision with the fibers and layers of the untwisted and comparatively open coils of sliver lying within.

A further construction or means for accomplishing the prevention of twist in the yarn reaching through the opening of pot S downward into its interior and causing snarling or balling-up is shown in Figs. 11 and 12, where the spindle S′ is lengthened out so as to reach close up toward the opening in the cover O, being crowned on top with the hollow shell S^2, with the view of avoiding all twist in the material below such point. To make this possible for all numbers respectively of sizes of yarn to be spun, the conical shell S^2 conforms somewhat to the lower and inner curvature of the eye O′ and has in its interior a fine spiral spring resting on a shoulder upon the inner neck of part c^3 for pressing the shell upward.

Thus the crown-shell S^2 will slightly press against the thread as it leaves upward from out the interior of the pot through eye O′ and choke off all twist in the yarn reaching to any portion of the pot. Not only is the shell S^2 used for the prevention of twist reaching into the interior of the pot, but it will also aid the draft-rod F in stretching the yarn. When the draft-rod F, Fig. 3, is thrown forward, so as to be almost directly over the center of S or twister-tail K, of course the thread will simply be drawn taut between the rod F and the point of resistance where the shell S^2 presses the yarn against the eye O′; but a real draft or stretch in the sense as it is understood in a regular spinning-machine would not take place, because the thread simply twists together at the point of resistance; but as soon as the draft-rod F (see Fig. 3) is thrown backward toward the left of the center of pot S the thread will twist itself more or less around the twister-tail K, from which it follows that the twist of the yarn begins to take place only at that point where it leaves the twister-tail K in its upward passage to the draft-rod F, which enables one to get a certain amount of draft. Supposing the thread receives a certain amount of resistance at its leaving-point between the shell S^2 and the eye O′ through the spring within the shell, the piece of yarn between this point and the top of K naturally receives less twist and remains more open than the piece of yarn between the tip K and the rod F. Hence it must receive more stretch. To diminish the twist of the yarn at its stretching-point, (between the tip K and tip of S^2,) the guide-arm F is simply thrown farther toward the center of the pot S by the notched hand-wheel H′ on the outside of the machine, and vice versa.

A positively uniform take-up of the winding-spool is of great importance in order to secure a uniform draft and twist of the yarn. The most important provision for securing a uniform take-up of the yarn is the usage of the elliptical gears *e* and *e′*, which drive the spool-spindle. Next in order come the cams *m*, which raise or lower the winder-arms *s*, and in addition the spheroidal form of the spool-cup *t* may be mentioned as of great advantage to attain this result. The elliptical gears *e* and *e′*, Fig. 3, give to the spool-spindle a changeable speed in such a way that the circumferential speed at any one point of the cone formed at the bottom end of the bobbin will be the proper one to secure an absolute uniformity of draft or tension. The spool-spindle will when the above parts are properly proportioned run at such a speed that it will wind the yarn with uniform tension when at the smallest as well as the largest diameter of the bobbin. The cam *m*, Figs. 1 and 3, causes a constantly regular guiding of the winder-arm *s*, which synchronizes with the elliptical gears *e* and *e′* to secure a perfect cone shape at the end of the bobbin, which is materially aided by the spheroidal form of the bobbin-cup *t*, whose curvature conforms closely to the radius described by the end of the winder-arms *s*, which guides the thread in close proximity to the cup *t*.

The guide or winder arm *s* is shown in detail in Figs. 4 and 5. Upon the rock-shaft D, which is oscillated through the cam *m* and its connected arm Z and Z′, is fastened a clamped ring *r*, which has a finger *f*. This finger *f* carries and supports winder-arm *s* and imparts to it the necessary upward motion for properly winding the thread, and thus the motion is compulsory. The downward motion is occasioned by the weight of the arm. A sideward movement or sliding of the arm *s* on the shaft D is made impossible on one side by the shoulder of the clamped ring *r* and on the other side by the finger *f*.

The method of guiding the yarn is shown in Figs. 4 and 5, where a spring *g* presses the thread against a roller *h*, which causes the thread of yarn to suffer a certain amount of resistance or tension close to the winding-point that will assist in producing a very firm bobbin without any damaging result to the thread itself. In order to introduce the thread easily between the pinching-surfaces—that is, between *g* and *h*—the winder-arm *s* is positively held only from below. Therefore one simply needs to lift the arm up high, and its oscillation is immediately stopped, notwithstanding the rock-shaft D continues its motion, so that the thread can be easily introduced between *g* and *h*. To reverse the twist in the yarn, the spindle-belt M is turned the other way to drive the pot in the other direction. In order that this may be done with ease and without any difficulty, the winding-spool spindles are placed close together, so that the belts to the spinning-pot can never collide with it or need be drawn around, as shown in Figs. 6 and 8.

The number or size of yarn is regulated by the taking up of the speed of shaft E through the change of gears upon the sleeve of gear 6 on the arbor 12 of the swinging arm 9. The arm 9 is revolubly mounted and through the circular slot 11 and fastening-bolt P can be easily adjusted for proper meshing. (See Figs. 1 and 2.)

In the operation of the machine the operator will set the guide-bar F in such position to one side of the axis of rotation of the pot, so that the draft between the twister-tail K and the guide-bar F will be proper for the number of yarn that he is spinning. The greater the draft required the farther he will move the guide-bar F away from the axis of rotation of the pot. In order that the twister-tail K and the eye O′ shall not get out of position, they are connected with the opposite sides of the pot S by a reinforcement O^4, extending from the hinge O^2 to the catch O^3 of the cover.

It will be observed that each lever A controls the spinning operation on each bobbin independently of the others, so that if the operator wishes to stop any particular winding-spindle and its coöperating spinning-pot he may do so by moving its lever A without interfering with the continuous running of any of the other winding-spindles or spinning-pots in the machine. Having done so, the shaft D will continue its oscillating movement; but this will not interfere with the operator in uniting a broken thread between any spinning-pot and bobbin which he has stopped, because he has only to lift the arm *s* upward sufficiently so that it will be out of contact with its actuator *r*, and thus will not partake of the oscillating movement of the shaft D. When any bobbin in the machine has reached its normal size, the accumulation of the yarn having raised the rod T^2, the rod T^5, with its projections T^4 and T^{10}, acts as a detector, detecting when the bobbin is full and automatically throwing into connection the members N′ and N^2, so that the power of the machine is exerted to stop the spinning on that particular bobbin without stopping the spinning on any other bobbin in the machine.

What is claimed is—

1. In a spinning-machine, in combination with the spinning-pot and its spindle, a pulley having a portion of its bearing-surface formed upon the pot.

2. In a spinning-machine, in combination a spinning-pot, its spindle, a downward conical extension from the bottom of the pot and a pulley formed by said downward extension and an attached cone.

3. In a spinning-machine in combination a spinning-pot, its spindle, a sleeve c^3 and a lateral extension forming with the bottom of the pot a bearing-surface for a driving-belt, substantially as described.

4. In a spinning-machine, in combination, a spinning-pot having a central exit-opening, its spindle, and a yielding upward extension of said spindle with the pot coöperating with the walls of said exit-opening to form a tension device.

5. In a spinning-machine in combination, a spinning-pot, a central guide for the material at its exit from the pot, a central upwardly-extending tension member within the pot adapted to engage the material between itself and said exit-guide, and a thread-engaging projection outside of the exit-opening and substantially coincident with the axis of the pot.

6. In a spinning-machine in combination, a spinning-pot, its spindle, its cover having an exit-opening, a yielding upward extension of the spindle acting with the cover to form a tension device, and a projection carried by the cover substantially at its center of rotation and engaging the material immediately after leaving the said opening.

7. In a spinning-machine in combination a spinning-pot, its spindle, a cap S^2 mounted upon said spindle, a spring interposed between said cap and said spindle and an eye O′ between which and said cap tension is applied to said material at its exit from said pot, substantially as described.

8. In a spinning-machine, in combination a spinning-pot, a cover provided with a catch and a reinforcing cross-tie extending across the cover and contacting therewith from its hinge to its catch, and carrying substantially at the center of rotation the tension appliances, substantially as described.

9. In a spinning-machine, in combination the spinning-pot, its spindle, the sleeve L′ and the pulley c', c^3 overlapping said sleeve, substantially as shown.

10. In a spinning-machine, in combination the spinning-pot S, the conical bottom extension *c* and the members c' and c^3 secured thereto constituting a pulley for driving said spinning-pot, substantially as described.

11. In a spinning-machine, in combination the spinning-pot, the cover therefor, the eye O′ substantially at the center of rotation and a reinforcement connecting said eye with the hinge and fastening of said cover, substantially as described.

12. In a spinning-machine in combination a spinning-pot, its cover, the eye O′, the twister-tail K substantially at the center of rotation and a reinforcement connecting said eye and twister-tail with opposite sides of said pot, substantially as described.

13. In a spinning-machine, in combination, a series of spinning-pots, their spindles, a shaft having a series of driving-drums T^4 thereon, an independent belt M connecting each spinning-pot with its drum and means whereby each pot independently of the other may be moved toward its drum to slacken its belt, substantially as described.

14. In a spinning-machine, in combination, a series of spinning-pots, a connection whereby each is driven independently of the others, a reciprocating carrier of each independently of the others and mechanism whereby each may be reciprocated independently of the others so as to render its driving mechanism inoperative and an independent brake for the driving mechanism of each, substantially as described.

15. In a spinning-machine, in combination, a series of spinning-pots, a connection whereby each is driven independently of the others, a reciprocating carrier of each independently of the others and mechanism whereby each may be reciprocated independently of the others so as to render its driving mechanism inoperative and an independent brake for each pot, substantially as described.

16. In a spinning-machine, in combination, a series of spinning-pots, a connection whereby each is driven independently of the others, a reciprocating carrier of each independently of

the others and mechanism whereby each may be reciprocated independently of the others so as to render its driving mechanism inoperative, an independent brake for the driving mechanism of each and an independent brake for each pot, substantially as described.

17. In a spinning-machine, in combination, a series of spinning-pots, a connection whereby each is driven independently of the others, a reciprocating carrier of each independently of the others and mechanism whereby each may be reciprocated independently of the others so as to render its driving mechanism inoperative and a detector whereby said last-named mechanism is thrown into operation upon the completion of the winding, substantially as described.

18. In a spinning-machine, in combination, a series of spinning-pots, an independent reciprocating carriage for each of the same, an independent driving mechanism for each of the same, a series of winding-spindles, mechanism whereby each of said winding-spindles is driven and an independent lever whereby each winding-spindle and its companion spinning-pot are arrested simultaneously, substantially as described.

19. In a spinning-machine, in combination, a pair of spinning-pots, a pair of winding-spindles; the axes of rotation of said spindles being closer together than the axes of rotation of said pots and the belt for driving one of said pots extending on the opposite side of the axes of rotation of said spindles from the belt for driving the other of said pots, substantially as described.

20. In a spinning-machine in combination the winding-spindle, the thread-guide, the reciprocating arm *s* upon which the thread-guide is mounted, the oscillating shaft D and the finger R fixed to said shaft and extending under said arm *s* whereby said arm is supported from below, substantially as described.

DAVID GESSNER,
Administrator of the estate of Ernst Gessner, deceased.

Witnesses:
C. M. WILSON,
CHAS. RATHJEN.