

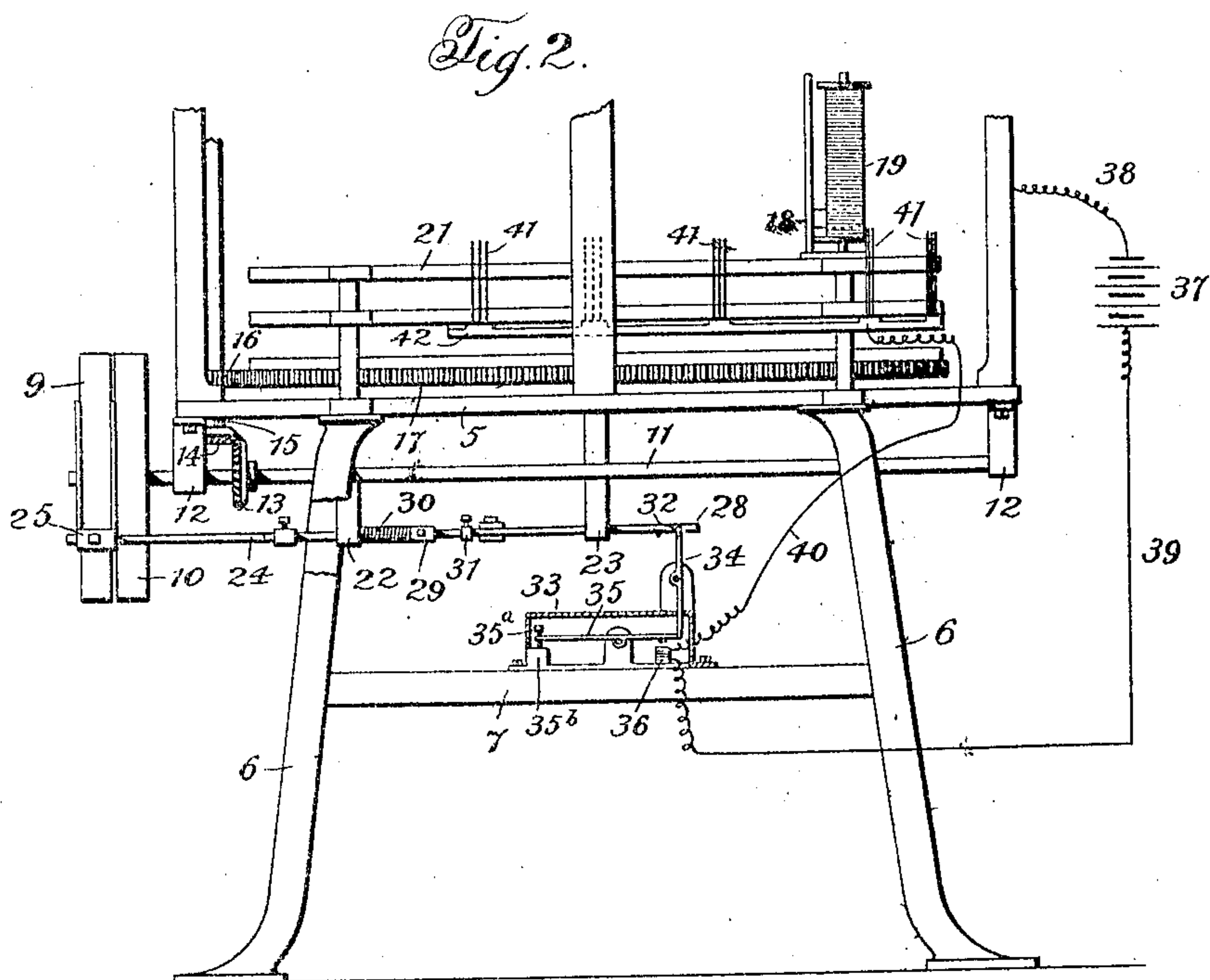
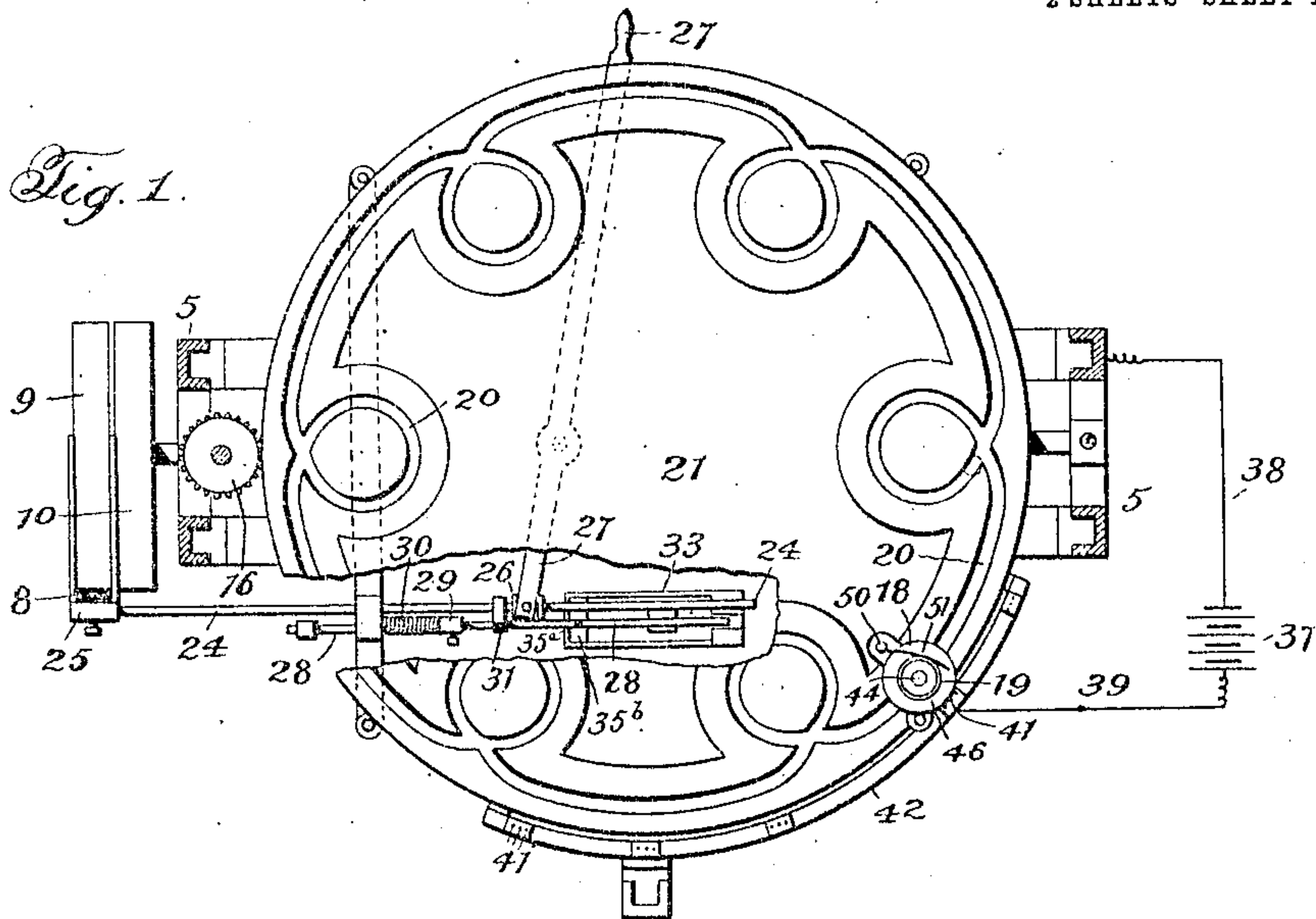
No. 885,523.

PATENTED APR. 21, 1908.

O. A. ROBBINS.
BRAIDING MACHINE STOP MOTION.

APPLICATION FILED MAR. 13, 1907.

2 SHEETS--SHEET 1.



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Fig. 3.

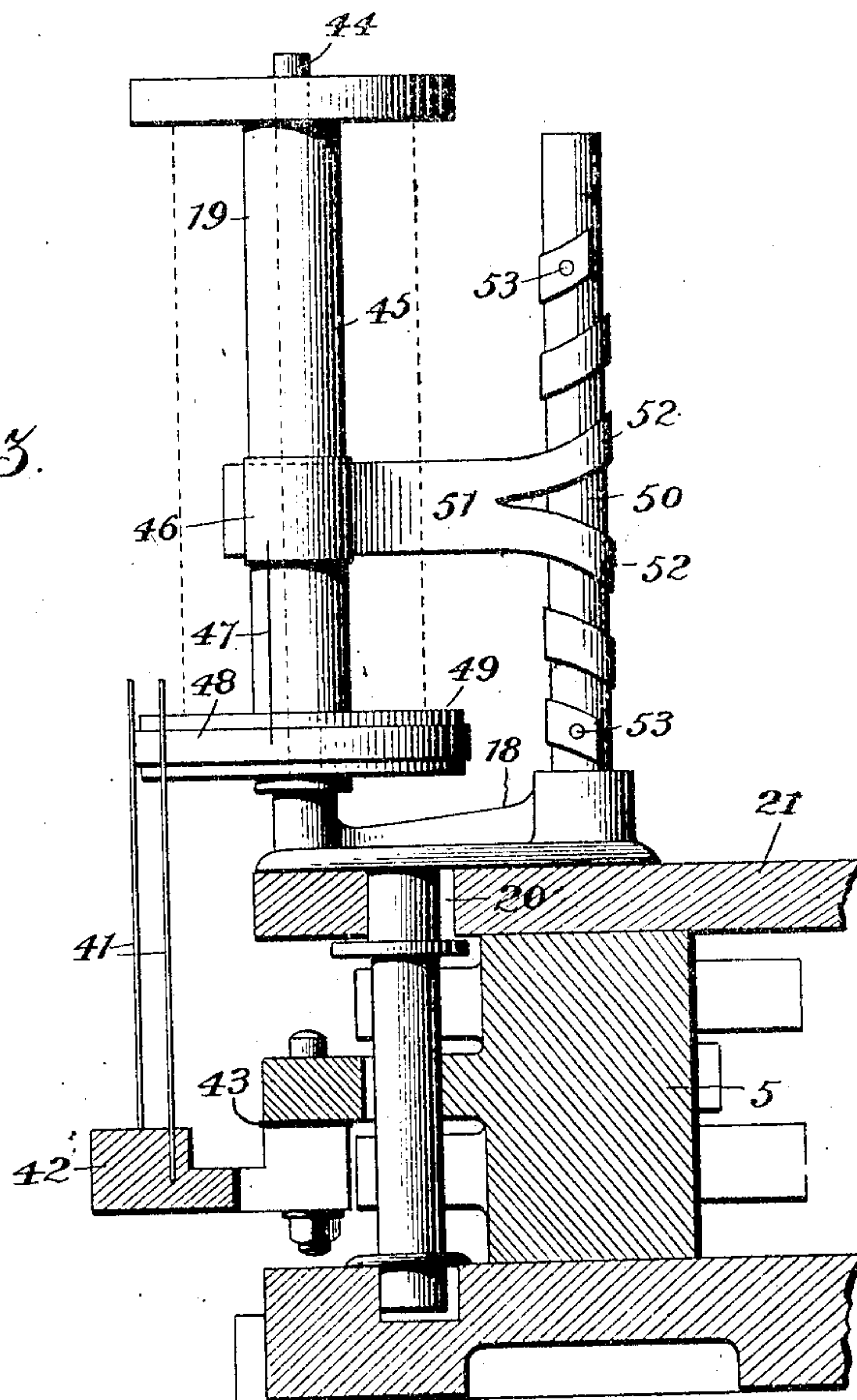
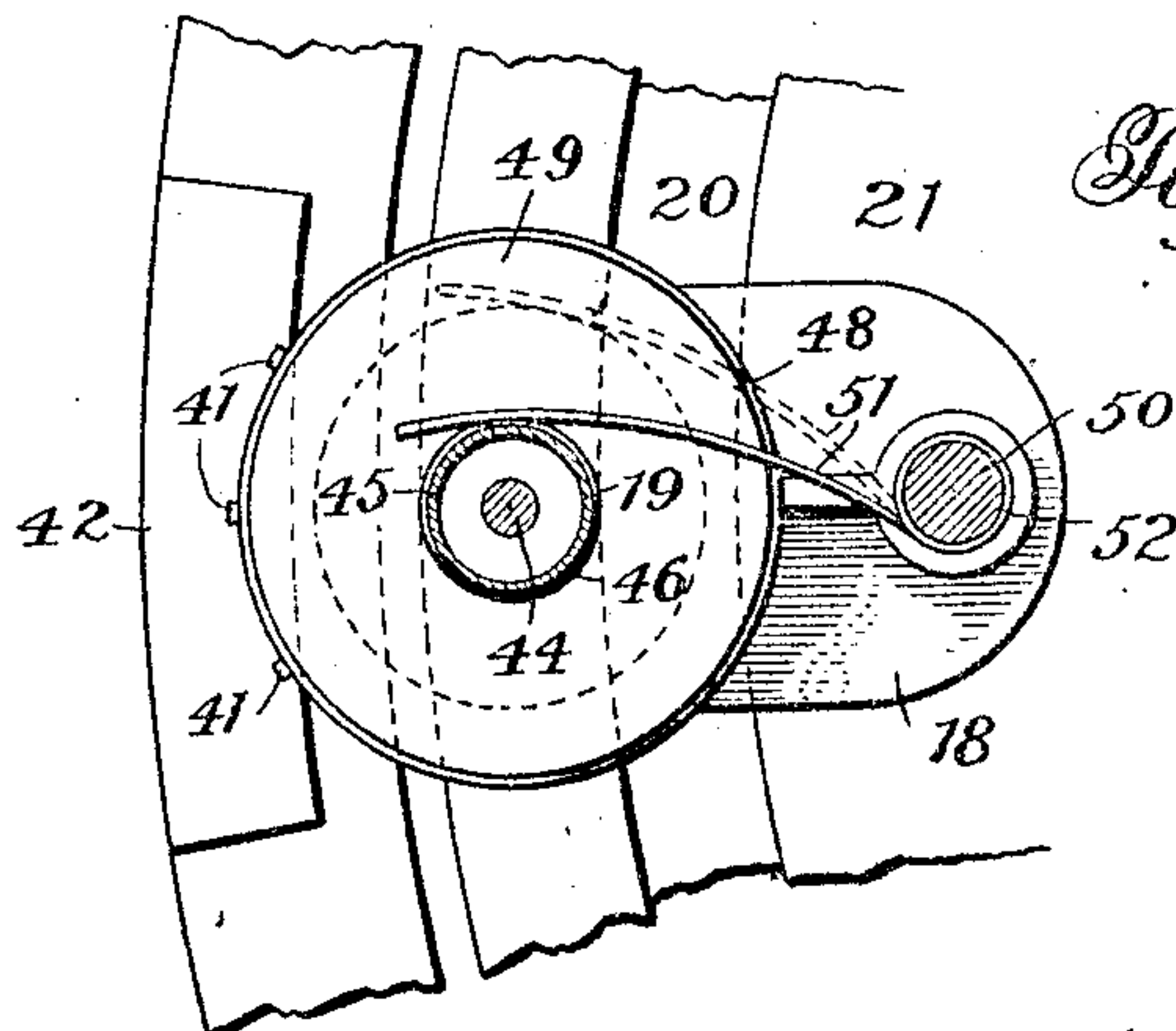


Fig. 4.



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UNITED STATES PATENT OFFICE.

OLIVER A. ROBBINS, OF CHARLOTTE, NORTH CAROLINA.

BRAIDING-MACHINE STOP-MOTION.

No. 885,523.

Specification of Letters Patent.

Patented April 21, 1908.

Application filed March 13, 1907. Serial No. 362,161.

To all whom it may concern:

Be it known that I, OLIVER A. ROBBINS, a citizen of the United States, residing at Charlotte, in the county of Mecklenberg and State of North Carolina, have invented certain new and useful Improvements in Braiding-Machine Stop-Motions, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention provides a stop mechanism for braiding-machines in which is included an electrically-releasable power-shifting device of novel construction which is caused to be actuated to stop the machine by the closing of an electric circuit upon exhaustion of the supply of material on any one of the bobbins, novel means being provided to close the circuit under such conditions.

When read in connection with the precise description hereinafter, the details of construction and arrangement of parts contemplated by this invention will be apparent from the accompanying drawings, forming part hereof, wherein a preferable embodiment of the invention is disclosed, for purposes of illustration.

Like reference-characters refer to corresponding parts in the several views of the drawings, wherein my invention is illustrated as applied to a braiding-machine, only such parts of the machine being shown in the several views as are necessary for the proper exposition of the invention, and wherein—

35 Figure 1 is a plan view; Fig. 2 is a view in elevation; Fig. 3 is an enlarged view, in elevation, of a bobbin, its mounting, and associated parts, some of which are shown in section; and Fig. 4 is a plan view of some of the parts shown in Fig. 3, the bobbin being shown in section.

Having more particular reference to the drawings, 5 designates the frame of the machine, which is supported by legs 6, having a tie connection 7 thereon.

45 The machine is actuated by a belt 8, which is shiftable on fast and loose pulleys 9 and 10, on a transverse shaft 11, journaled in hangers 12, attached to the frame of the machine, this shaft transmitting power by means of gear 13 and pinion 14 to a shaft 15, journaled in the frame of the machine. A spur-pinion 16, keyed on shaft 15, meshes with an external gear 17, associated with which are various mechanisms, not necessary for present pur-

poses to describe, arranged to actuate the carrier 18, which impels the bobbins 19, only one of which is shown, along groove 20 of cam 21, in a manner common to machines of this character.

The device for shifting belt 8 from one of pulleys 9 and 10 to the other includes hangers 22 and 23, on which is longitudinally movable a rod 24, carrying a strap-fork 25 arranged to engage the belt. Rod 24 has attached thereto a collar 26, and for the purpose of manual shifting of the belt a hand-lever 27 is pivotally connected with this collar and fulcrumed on some convenient part of the machine. Also mounted for longitudinal movement in hangers 22 and 23 is a rod 28, disposed adjacent to and parallel with rod 24. A collar 29 is attached to rod 28 intermediate hangers 22 and 23, and a coil-spring 30 is disposed on the rod and positioned between hanger 22 and collar 29, the spring having a tendency to move collar 29 and thereby the rod away from this hanger. Attached to rod 28, and embracing and longitudinally movable on rod 24 is a kicker 31, arranged for engagement with collar 26 of the latter rod in the direction of the force exerted by the spring 30. Rod 28 is formed with a notch or shoulder 32.

For the purpose of holding spring 30 normally under tension, and to automatically release the spring at the proper time, an electrically-actuated device is mounted on tie connection 7. This device includes a magnet-box 33, on which is pivoted an arm 34, weighted to maintain it in a position substantially at right angles to rod 28, and one end of which projects into the magnet-box and the other end of which is engageable with the notch or shoulder 32. Within the magnet-box is a trip-lever 35, pivoted intermediate its ends, and one end of which is normally in engagement with the side of arm 34 at or near its end projecting into the magnet-box, whereby arm 34 in engagement with rod 28 normally holds spring 30 under tension. Adjacent to trip-lever 35 is a magnet 36, which is arranged when energized in a manner described below to draw the trip-lever, which constitutes an armature for the magnet, from engagement with arm 34, whereby tension against spring 30 is released in an obvious manner. In order that trip-lever 35 may be adjusted for proper engagement with

arm 34, the free end of the lever is provided with a set-screw 35^a, which is engageable with a seat 35^b in the magnet-box, whereby upward swing of the arm of the lever adjacent to arm 34 may be regulated.

When the releasing mechanism is tripped and the spring released, the spring, through the instrumentality of collar 29, rod 28, kicker 31, collar 26, and rod 24, will cause the strap-fork 25 to move in the direction of the arrow and shift the belt from fast pulley 9 to loose pulley 10 and thereby stop shaft 11 and the actuation of the machine. It will be noted that collar 26 is so positioned on rod 24 that this rod may be manually moved by lever 27 to shift the belt without engagement with kicker 31, and, therefore, that manual shifting may be effected without interference with or by the automatic shifting mechanisms.

For the purpose of energizing magnet 36 when the supply of material carried by any one of bobbins 19 is exhausted, the positive pole of a battery 37 or any other suitable source of electricity is connected with the machine by a conductor 38, and the negative pole is connected with the magnet by a conductor 39, the magnet being connected in turn by a conductor 40 with upright ribbon-steel springs or wires 41 arranged in groups at intervals adjacent to cam 21. Springs 41 are supported by brackets 42 bolted to the main part of the machine and insulated therefrom by insulation 43.

The bobbin 19, which is carried by a spindle 44 of carrier 18, is formed with a drum 45, around which is disposed a band 46 of metal or other suitable conductive material, and this band is connected by a conductor 47 with a band 48 of conductive material disposed around a flange 49 of the bobbin, such a flange being formed at each end of the drum, whereby a spool-like structure is provided. Band 48 is arranged for intermittent electrical contact with springs 41 as the carrier travels along groove 20 of cam 21. Springs 41 are disposed in groups of several; and, should a good connection not be made with band 48 when the first of a group is struck, other springs of the group will be engaged, whereby several will be simultaneously in contact and a good connection insured. Mounted on carrier 18, and adjacent to bobbin 19, is a standard 50, from which projects a spring 51, which is arranged for resilient engagement with the material wound on the bobbin and with band 46 when the material is exhausted therefrom and the band exposed. Spring 51 is slit for a considerable portion of its length to form bifurcations 52, which latter are coiled around standard 50 from its central part toward each end and fastened thereto at or near the ends by rivets 53, the free end of the spring projecting from the central portion of the standard and being held under tension against the bobbin.

It will be seen that there can be an electric circuit from band 46 through conductor 47, flange-band 48, springs 41, conductor 40, magnet 36, conductor 39, source of electricity 37, conductor 38, through the machine to carrier 18, to standard 50, and through spring 51 to band 46, a complete circuit being formed when this band is uncovered. A short circuit from the machines to springs 41 is prevented by insulation 43 between brackets 42 and the machine.

When the machine is in operation, flange-band 48 of the bobbins intermittently engages springs 41 as the bobbins travel along those parts of groove 20 adjacent to the periphery of cam 21. When band 46 of any bobbin is uncovered by exhaustion of the material thereon at a time the flange-band 48 of that bobbin is in engagement with one or more springs 41, the circuit is closed, the magnet energized, the belt shifted as a result of the release mechanism being tripped, and the machine stopped. When the bobbin-band is uncovered at a time the flange-band is not in engagement with a spring 41, the circuit will be completed on the next engagement of the flange-band and a spring 41.

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

1. The combination in a braiding-machine including a movable bobbin, of a stop-motion comprising an electrically-affected power-shifter, a source of electricity, a contact device on and insulated from the machine for electrical contact with said bobbin, an electric circuit including the source of electricity, the bobbin, power-shifter, and contact device, and means associated with said bobbin whereby the circuit is closed upon exhaustion of material carried by the bobbin.

2. The combination in a braiding-machine including a movable bobbin in electrical contact with the machine, of a stop-motion comprising an electrically-affected power-shifter, a source of electricity, a contact device on and insulated from the machine for electrical contact with said bobbin, a conductor between the source of electricity and the machine, a conductor between the source of electricity and the power-shifter, a conductor between the power-shifter and the contact device, and means associated with the bobbin whereby the circuit is closed upon exhaustion of material carried by the bobbin.

3. In a braiding-machine, the combination with a movable bobbin included in an electric circuit, of a resilient contact device arranged adjacent to the path of said bobbin and to be engaged thereby.

4. In a braiding-machine, the combination with a movable bobbin included in an electric circuit, of a contact device to be engaged by said bobbin while in motion and comprising

a strip of conductive material arranged adjacent to the path of the bobbin, and a support for said contact device insulated from the machine.

5 5. In a braiding-machine, the combination with a movable bobbin included in an electric circuit, of an insulated support on said machine, and upright resilient contact devices positioned in groups on said support adjacent to the path of said bobbin and arranged
10 to be engaged thereby.

6. A bobbin for braiding-machines comprising a spool-like structure having a drum with a flange, a contact-band on the drum, a
15 contact-band on the flange, and a conductive connection between said contact-bands.

7. In a braiding-machine, a bobbin associated with a resilient contact-arm movable therewith, said bobbin comprising a flange
20 arranged for direct electrical contact with a fixed part of the machine, a band on said bobbin with which said arm is capable of contact, and a conductor between said flange and band.

25 8. In a braiding-machine, the combination with a carrier including a spindle and a standard adjacent thereto, of a bobbin on said spindle and formed with a flange, a band on said flange arranged for contact with a fixed
30 part of the machine, a band on the drum of the bobbin, a conductor between said bands, and a resilient arm carried by said standard

and arranged for contact with said drum-band.

9. In a braiding-machine, a stop-motion 35 comprising a shifter-rod, a kicker-rod, a fixed projection on one of said rods, a kicker on said other rod, said shifter-rod being capable of movement independently of said kicker-rod without bringing said kicker and projec- 40 tion into engagement, a spring having a tendency to move said kicker-rod in direction to drive said kicker and projection together whereby said shifter-rod is moved, and a trip device coöperating to hold said spring 45 normally under tension.

10. In a braiding-machine, a stop-motion comprising a shifter-rod having a fixed projection thereon, a kicker-rod carrying a 50 kicker capable of engagement with said projection, said shifter-rod being capable of movement independently of said kicker-rod without bringing said kicker and projection into engagement, a spring having a tendency 55 to move said kicker-rod in direction to drive said kicker against said projection and move said shifter-rod, and a trip device coöperating to hold said spring normally under tension.

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

OLIVER A. ROBBINS

Witnesses:

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E. McCOMB.