No. 774,323. PATENTED NOV. 8, 1904.

P. HESSE.

TAPE WINDER FOR TAPE LOOMS.

APPLICATION FILED DEC. 11, 1902.

NO MODEL. 3 SHEETS—SHEET 1.

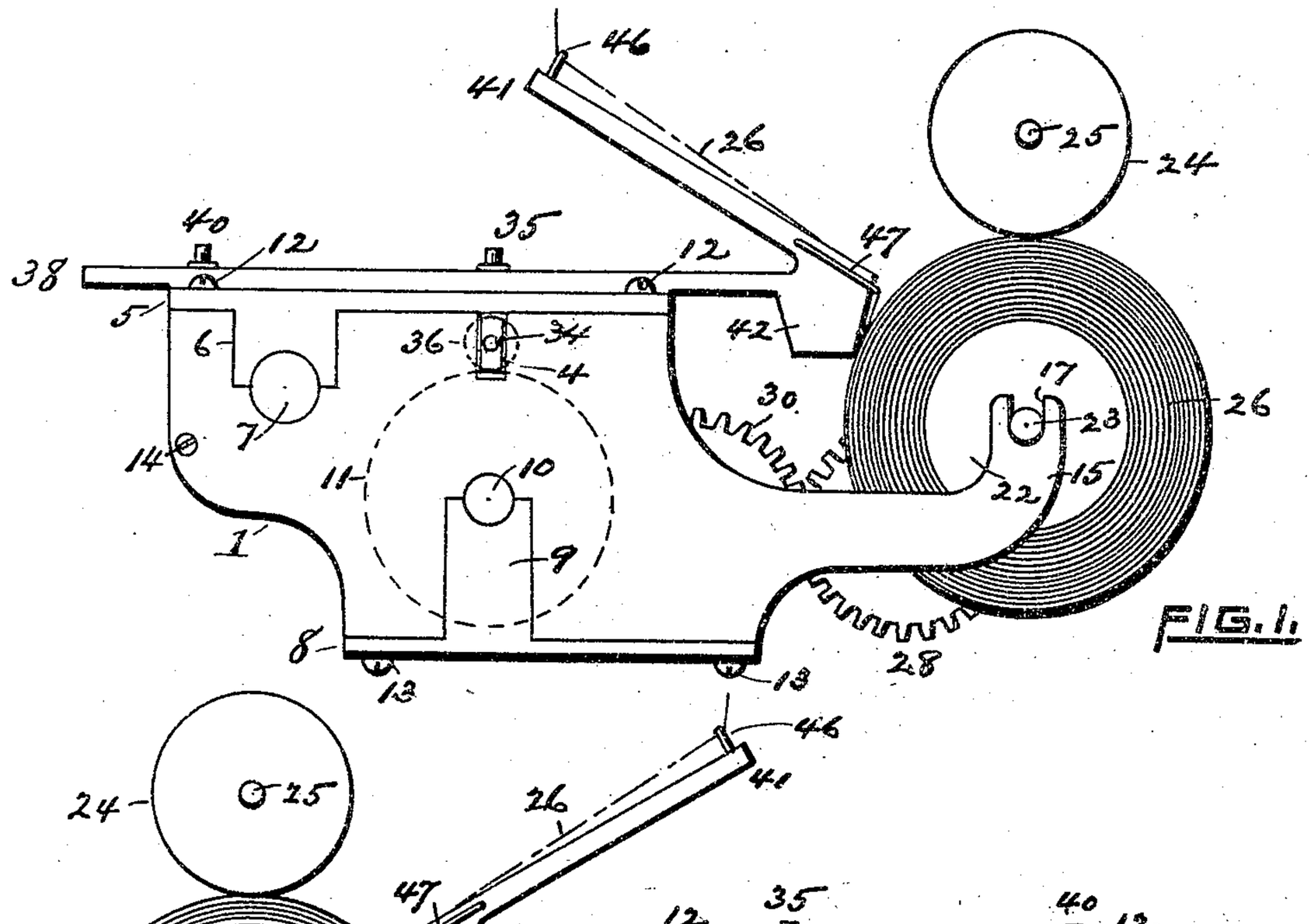

FIG. 1.

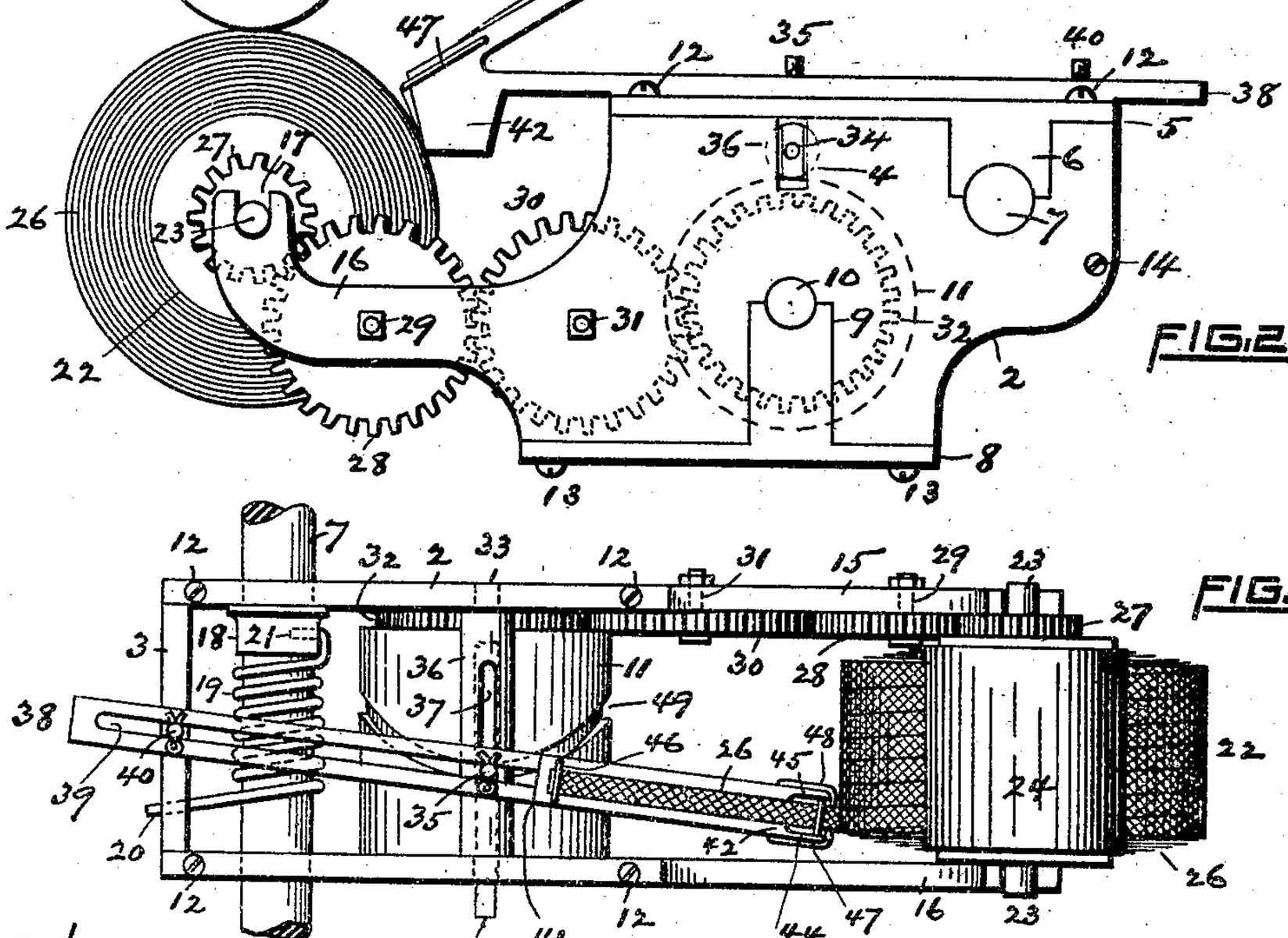

FIG. 2.

FIG. 3.

WITNESSES.

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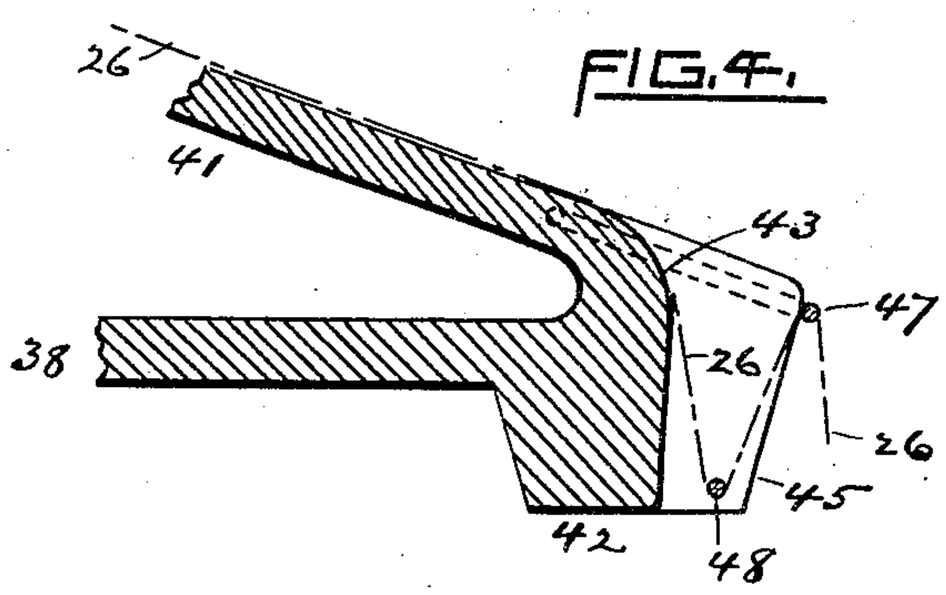
NO MODEL. 3 SHEETS—SHEET 2.

FIG. 4.



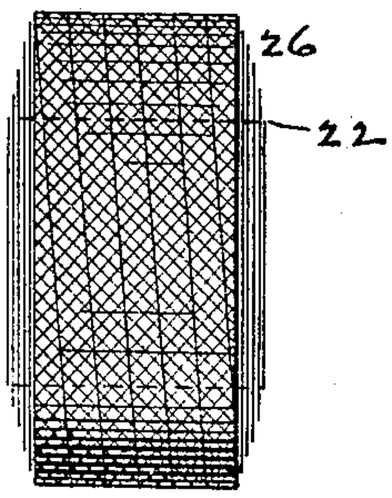


FIG. 5.

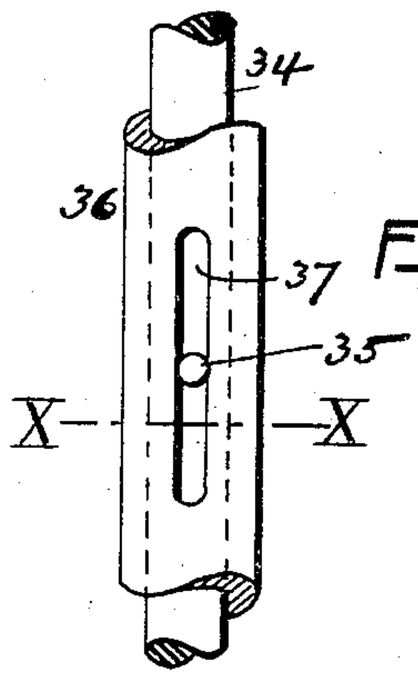


FIG. 6.

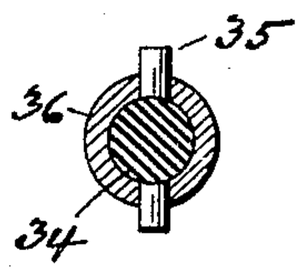


FIG. 7.

WITNESSES.

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No. 774,323. PATENTED NOV. 8, 1904.

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TAPE WINDER FOR TAPE LOOMS.

APPLICATION FILED DEC. 11, 1902.

NO MODEL. 3 SHEETS—SHEET 3.

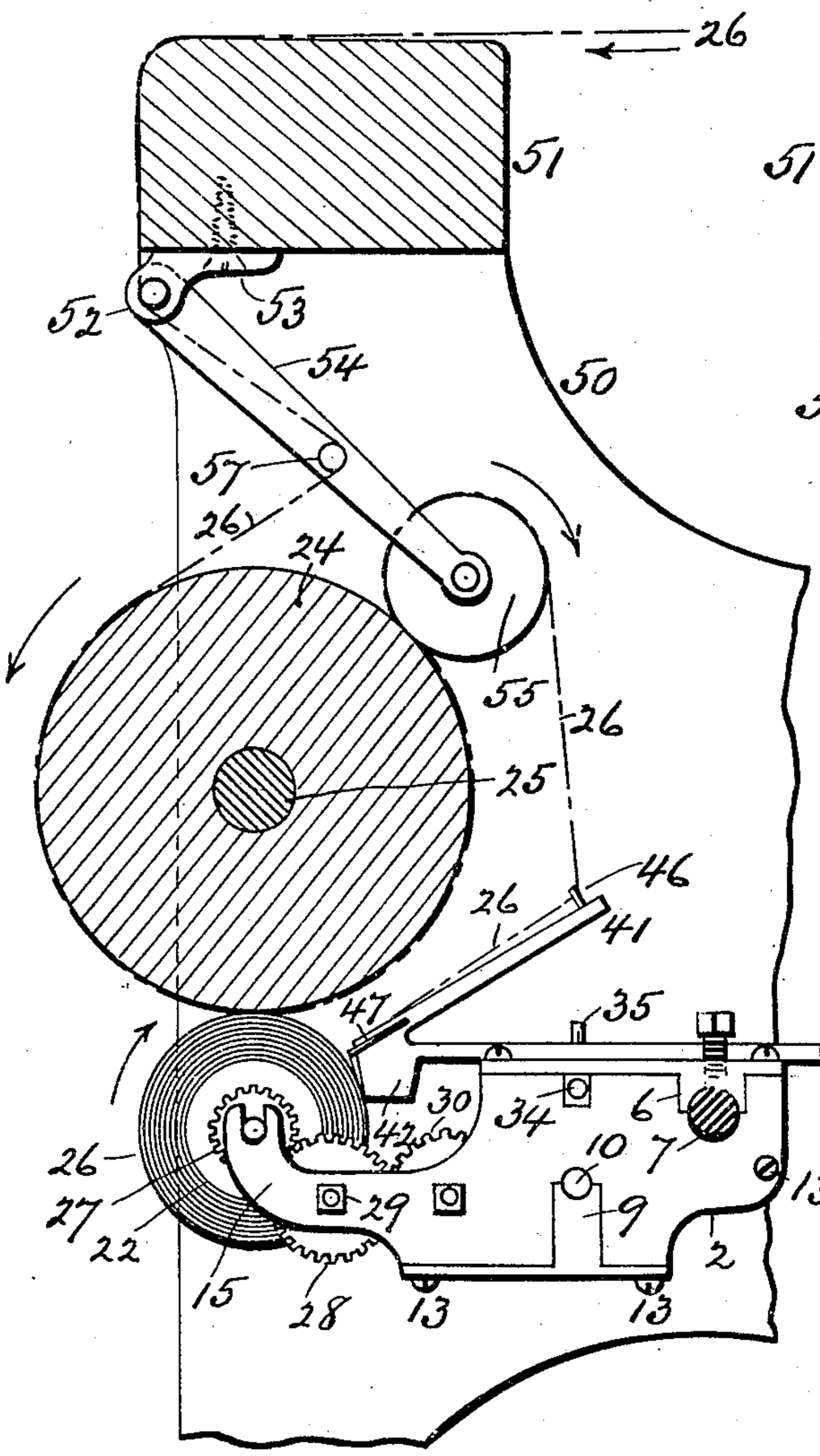

FIG. 9.

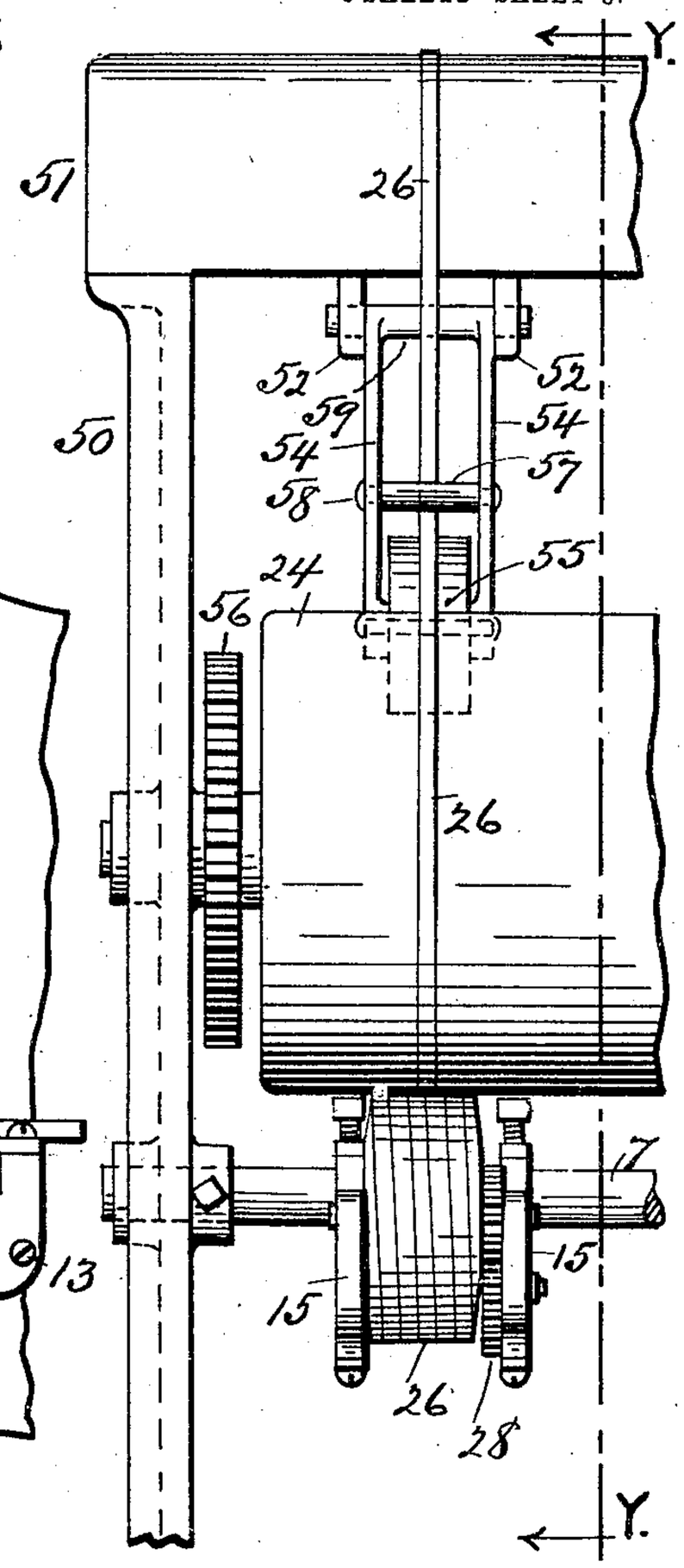

FIG. 10.

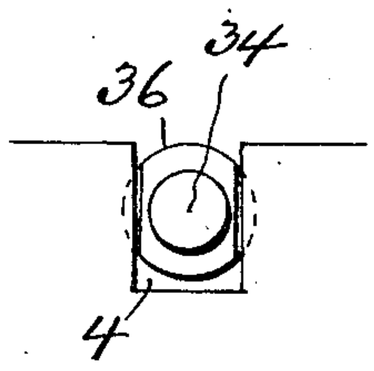

FIG. 8.

WITNESSES.

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No. 774,323. Patented November 8, 1904.

UNITED STATES PATENT OFFICE.

PAUL HESSE, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR OF TWO-FIFTHS TO FRANK WOOD MANUFACTURING COMPANY, OF CUMBERLAND, RHODE ISLAND, A CORPORATION OF RHODE ISLAND.

TAPE-WINDER FOR TAPE-LOOMS.

SPECIFICATION forming part of Letters Patent No. 774,323, dated November 8, 1904.

Application filed December 11, 1902. Serial No. 134,815. (No model.)

To all whom it may concern:

Be it known that I, PAUL HESSE, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Tape-Winders for Tape-Looms, of which the following is a specification, reference being had therein to the accompanying drawings.

Like numerals indicate like parts.

Figure 1 is a view in elevation, showing one side of my invention. Fig. 2 is a view in elevation, showing the opposite side of my invention. Fig. 3 is a top plan of the same. Fig. 4 is a central longitudinal section of the tape-guide. Fig. 5 is a view in elevation of a roll of tape as wound by my improved tape-winding device. Figs. 6, 7, and 8 are detail views. Figs. 9 and 10 illustrate my said tape-winding device in position upon a loom, Fig. 9 being a view, partly in side elevation and partly in section, on line Y Y of Fig. 10, and Fig. 10 being a front elevation.

My invention relates to mechanism for winding tape into rolls upon a tape-loom as said tape is woven; and it consists of the novel construction and combination of the several parts, as hereinafter described, and specifically set forth in the claims.

The purpose of my invention is to so wind a tape-roll that its sides slope or taper inwardly as the diameter of the roll increases.

In the drawings, 1 and 2 represent the two opposite sides of a bracket or frame which support the operative parts of my device. They are connected at the rear by the strip 3. Each of the sides 1 and 2 has the slot 4 and two other slots, as shown in Figs. 1 and 2. On the top of each side piece 1 (or 2) is a strip 5, having a square projection or block 6, which fits into one of the slots of said side piece, as shown. The bottom of said block has a semicircular concave seat, and the bottom of the slot into which said side piece fits also has a semicircular concave seat, both seats together forming a circular journal-bearing. A fixed rod 7 passes through said bearings, as seen in Figs. 1, 2, and 3. On the bottom of each side piece 1 (or 2) is a strip 8, having a square projection or block 9, which fits into the remaining slot of said side piece, as shown. The top of said block 9 has a semicircular concave seat, and the upper end of said slot has a semicircular concave seat, both seats together forming a circular journal-bearing. In said bearings are mounted the journals 10 of a cam-roll 11. The strips 5 and 8 are secured to the side pieces 1 and 2, respectively, by screws 12 13, and the side pieces 1 and 2 are secured to the end piece 3 by screws 14. The side pieces 1 and 2 terminate in forwardly-projecting arms 15 16, each of which has a socket 17.

The bracket hereinbefore described is loosely mounted or hung on the rod 7. On the rod 7 on the inner side of the side piece 2 is a flanged collar 18, fastened thereon. A spiral spring 19 is wound around the rod 7 and has one end projecting through the end piece 3, as shown at 20, or otherwise secured thereto, and its opposite end bent, as seen at 21, and entering through the collar 18 into the rod 7 or otherwise secured thereto.

In the sockets 17 of the bracket-arms 15 16 is mounted a tape-roll 22, its journals 23 23 being loosely supported in the said sockets. A sand-roll 24, having journals 25, is properly mounted, as usual, in a fixed support and is in rolling contact with the tape-roll 22 when the latter is uncovered or with the tape 26 thereon when the tape has been wound thereon, as shown.

On that one of the journals 23 of the tape-roll 22 which is contiguous to the side piece 2 is a gear or pinion 27, fastened thereon. A gear 28 is mounted on a journal or stud 29, which passes through the side piece 2 and meshes with the gear or pinion 27. A gear 30 is mounted on a journal or stud 31, which passes through the side piece 2 and meshes with the gear 28. The cam-roll 11 has on that one of its journals 10 which is contiguous to the side piece 2 a gear 32, fastened thereon, but preferably of a smaller diameter

than the cam-roll 11, and the gear 32 meshes with the gear 30.

A tube 36 has its two ends 33 squared on opposite sides, and these ends are mounted in the slots 4 of the side pieces 1 and 2. In this manner the tube is prevented from turning. The tube 36 has two diametrically opposite longitudinal slots 37, centrally located, as illustrated in Figs. 3, 6, and 7. A rod 34 is loosely mounted in the tube 36 and is movable longitudinally therein. A transverse pin 35 is fixed centrally in the rod 34 and projects out through the two slots 37 of the tube 36. The squaring of the ends of the tube 36 and the engagement of said tube in the slots 4 of the side pieces 1 and 2 in order to prevent said tube from rotating are shown in enlarged detail in Fig. 8.

A tape guide or lever 38 is in the form of a strip or bar and has a central longitudinal slot 39. A fulcrum-pin 40, which is set in the upper edge of the end piece 3, has its upper portion projecting through the slot 39 of the tape-guide 38. The pin 35 also projects through said slot 39. The tape-guide comprises also an upwardly-directed piece or strip 41, and the parts 38 and 41 unite and are integral with a head 42, whose upper corner is rounded off, as shown at 43 in Fig. 4, and there are also two projecting sides 44 45, which are integral with the head 42. A wire loop 46 is mounted on the upper end of the piece 41 at a right angle thereto, a wire loop 47 is mounted on the head 42 and sides 44 45, as shown in Figs. 1, 2, 3, and 4, and a cross-wire 48 extends at right angles between the side pieces 44 45 in the aperture there formed, as seen in Figs. 3 and 4.

A cam-groove 49 is cut in the periphery of the cam-roll 11, and the lower end of the pin 35 projects and travels in said cam-groove.

In Figs. 9 and 10 is illustrated the manner of mounting said tape-winding device upon the frame of the tape-loom. In these figures, 50 represents a portion of said frame, and 51 a cross bar or beam constituting a part of the loom. The outer upper edge of the beam 51 is rounded, as shown, to enable the tape 26 to pass over it. Brackets 52 are fastened by screws 53 to the under side of the beam 51, and in said brackets is pivotally and loosely mounted a yoke having two branches or arms 54. Between said arms 54, at the lower end thereof, a roll 55 is rotatably mounted, adapted to bear by its weight against the sand-roll 24, which sand-roll is driven by power communicated by the gear 56 on the shaft 25. A small roll 57 is mounted between the arms 54 upon a pivot 58.

Having thus described the parts of my improved tape-winder, I will now explain its operation. By unscrewing the screws 12 the strips 5 and the block 6, connected therewith, are detached from the side pieces 1 and 2. The device can then be mounted on the rod 7, and when said strips and their blocks are replaced and secured the bracket or device is properly in position on said rod. In like manner the cam-roll 11 may be detached when desired by unscrewing the screws 13, whereupon the strips 8 and their blocks 9 are removed, thus allowing the withdrawal of the cam-roll 11. When said cam-roll 11 is replaced, it is readily mounted and held rotatably in position by screwing the strips 8 again in place. The removal of the strip 5, as explained, also permits the withdrawal of the tube 36 and rod 34 when desired. The roll 22 is easily lifted and detached from the sockets 17 of the bracket-arms 15 16. As the bracket is loosely mounted on the rod 7, which is fixed in position, as illustrated in Figs. 9 and 10, the action of the spiral spring is to elevate normally the forward end of the bracket, so that the roll 22 or the tape 26 wound thereon is forced into contact with the sand-roll 24, which constitutes a part of the tape-loom and which is rotated by power. The tape 26 as it is woven passes down from the loom over the top and front sides of the beam 51, thence over the tubular portion 59 of the yoke, thence to the rear of the roll 57, thence to the front of the sand-roll 24, down under and then up on the rear of the sand-roll 24, then up over the roll 55. Thence it passes along the top of the angularly-directed part 41 of the thread-guide, over the rounded part 43 of the head 42, thence under the wire 48, thence up over the loop 47, and thence to the roll 22. In the drawings the roll 22 is shown as wound with tape 26. By force of the spring 19 the bracket is so elevated that the outer portion of the rolled tape is crowded up against the sand-roll 24, which is rotated by power and turns upon a fixed support. The rotation of the sand-roll 24 causes the roll 22 to turn also. As the roll 22 turns it rotates with it the pinion 27, which turns the gear 28, which turns the gear 30, which turns the gear 32. The turning of the gear 32 rotates the cam-roll 11, which is secured thereto. The rotation of the cam-roll 11, provided as it is with the cam-groove 49, causes the pin 35 to travel back and forth in the cam-groove 49; but as the ends of said pin pass through the longitudinal slots 37 of the tube 36 said pin in moving is confined to a straight or linear direction, and so slides the rod 34 longitudinally in the tube 36 and carries laterally back and forth the tape-guide 38, which oscillates horizontally on the fulcrum-pin 40 as a pivot. The result is that the forward end of the tape-guide describes an arc back and forth, and so delivers the tape 26 to the roll that it is wound spirally thereon, as illustrated in Fig. 3; but the fuller the tape-roll becomes

the farther back it pushes the tape-guide 38 longitudinally upon the pins 35 and 40 along the slot 39, and thus the radial distance from the fulcrum-pin 40 to the forward or delivering end of the tape-guide is diminished. The shorter this radial distance is the shorter is the arc of the oscillation of the tape-guide in delivering the tape to the roll. The result is that the roll of tape is built up with tapering sides, as seen in Figs. 3 and 5, to secure which is the purpose of my invention. A tape-roll so shaped in winding is a useful novelty. It has been heretofore common to wind such rolls with straight edges, the roll being everywhere of uniform width; but as tape is generally narrow it is very liable to slip off of the edge of the roll. To prevent this, I wind it, as already described, with tapering edges.

It is obvious that instead of the specific construction shown for the oscillation of the tape-guide other mechanical means may be employed which will give it such movement.

This invention is also applicable to looms for weaving ribbons and other narrow wares.

I claim as a novel and useful invention and desire to secure by Letters Patent—

1. In a tape-winding machine the combination of a rotatably-mounted tape-roll having a pinion, a rotatably-mounted cam-roll having a cam-surface and provided with a gear, a train of gears between said pinion and the cam-roll gear, a pivotally-mounted tape-guide adapted to deliver tape to the tape-roll and capable of an oscillating movement derived from said cam-surface, and means adapted to rotate said rolls and gears, substantially as described.

2. In a tape-winding machine, the combination of a rotatably-mounted tape-roll having a pinion, a rotatably-mounted cam-roll having a cam-groove and provided with a gear, a train of gears between the said pinion and the cam-roll gear, a pivotally-mounted tape-guide adapted to deliver tape to the tape-roll, a tube mounted in the vertical plane of the axis of the cam-roll above the same and parallel thereto and provided with two diametrically opposite longitudinal slots, a rod mounted loosely and longitudinally in said tube and having a transverse pin which projects through said longitudinal slots, one end thereof being loosely connected with the tape-guide and the other end projecting into said cam-groove, and means for rotating said gears and rolls, substantially as described.

3. In a tape-winding machine, the combination of a rotatably-mounted tape-roll having a pinion, a rotatably-mounted cam-roll having a cam-groove and provided with a gear, a train of gears between said pinion and the cam-roll gear, a fulcrum-pin, a tape-guide adapted to deliver tape to a tape-roll and having a longitudinal slot and capable of an oscillating movement upon said fixed fulcrum-pin which projects through said slot, a tube mounted in the vertical plane of the axis of the cam-roll above the same and parallel thereto and provided with two diametrically opposite longitudinal slots, a rod mounted longitudinally and loosely in said tube and having a transverse pin one end of which projects through the upper tube-slot and through the longitudinal slot of the tape-guide and the other end of which projects through the lower tube-slot into said cam-groove, and means for rotating said rolls and gears, substantially as described.

4. In a tape-winding machine, the combination of a tape-roll and means to rotate the same, a traveling tape-guide adapted to deliver tape to the tape-roll at consecutively-different positions and mechanism intermediate the tape-roll and tape-guide actuated by the tape-roll to give the tape-guide the requisite travel, substantially as described.

5. The improved tape-guide herein described having an approximately **V** shape with a head at the apex provided with a rounded edge, two parallel longitudinally-projecting sides at its end and provided with tape-guiding wires or loops arranged substantially as shown and for the purpose specified.

6. In a tape-winding machine, the combination of a rotatable sand-roll turned by power, a tape-roll mounted in a proper support and rotatable by its contact with the sand-roll, a fulcrum-pin, an oscillating tape-guide longitudinally movable on said fulcrum-pin, and means of giving said tape-guide said longitudinal and oscillating movements, substantially as specified.

7. In a tape-winding machine, the combination of a rotatable tape-roll, a cam-roll rotatably mounted and provided with a cam-surface, a rotatable sand-roll, means adapted to impart rotatory motion from the sand-roll to the tape-roll, a fulcrum-pin, an oscillating tape-guide longitudinally movable on said fulcrum-pin, and means intermediate said cam-roll and tape-guide to communicate oscillatory reciprocating movement to said tape-guide from said cam-roll, substantially as described.

8. In a tape-winding machine, the combination of a sand-roll rotated by power, a tape-roll rotatable by its contact with the sand-roll and provided with a pinion, a rotatable cam-roll having a cam-groove and provided with a gear, a fixed fulcrum-pin, a tape-guide having a longitudinal slot and capable of an oscillating movement upon said fixed fulcrum-pin which projects through said slot, a tube mounted in the vertical plane of the axis of the cam-roll above the said cam-roll and parallel thereto and provided with two diametrically opposite longitudinal slots, a rod mounted slidably

in said tube and having a transverse pin one end of which projects through the upper tube-slot and through the longitudinal slot of the tape-guide and the other end of which projects through the lower tube-slot into said cam-groove, and means for rotating said rolls and gears, substantially as specified.

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

PAUL HESSE.

Witnesses:
HOWARD A. LAMPREY,
JOSEPH R. BULLOCK, Jr.