Dec. 23, 1941. E. A. TERRELL ET AL 2,267,679

BOBBIN STRIPPER

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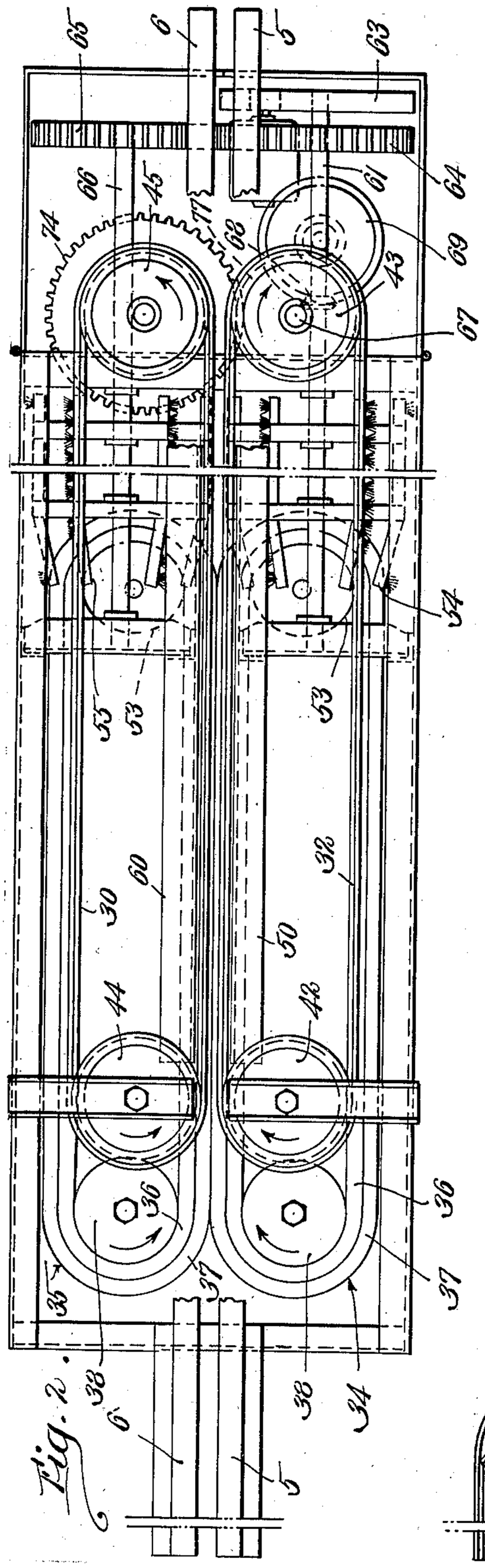


Fig. 2.

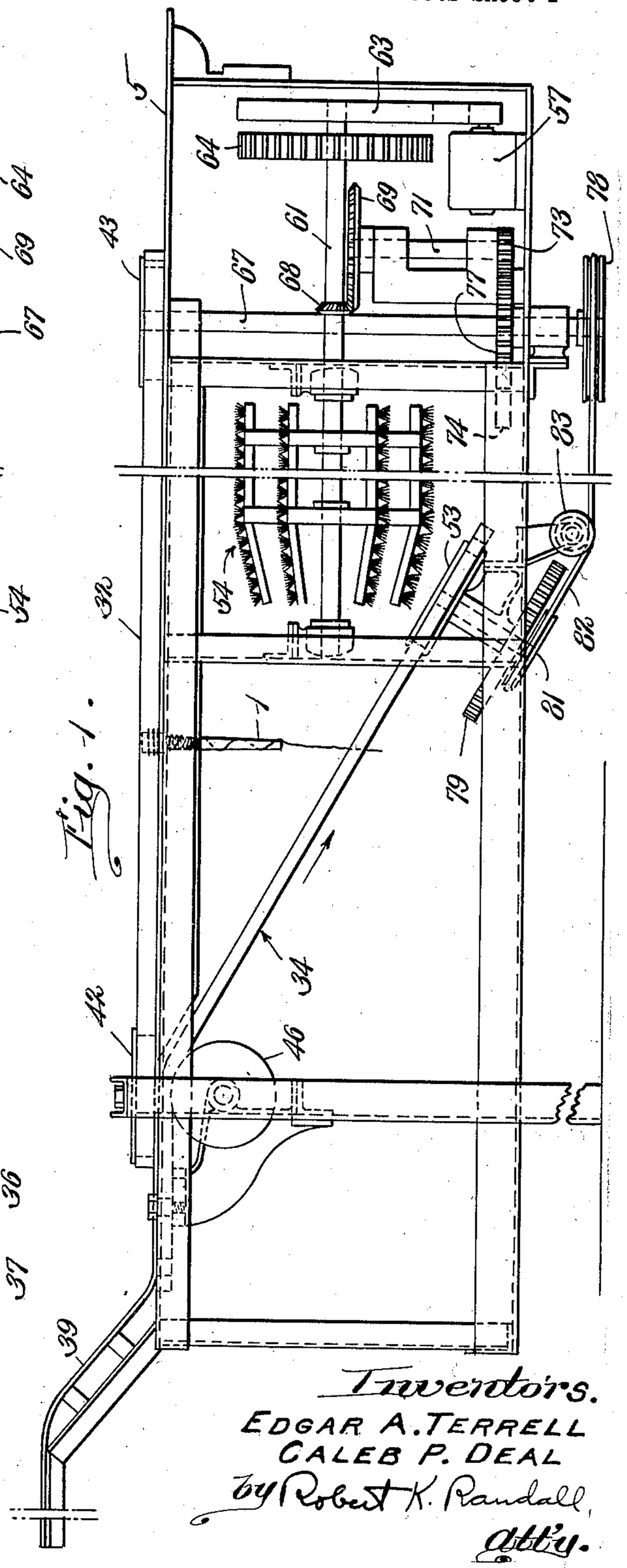


Fig. 1.

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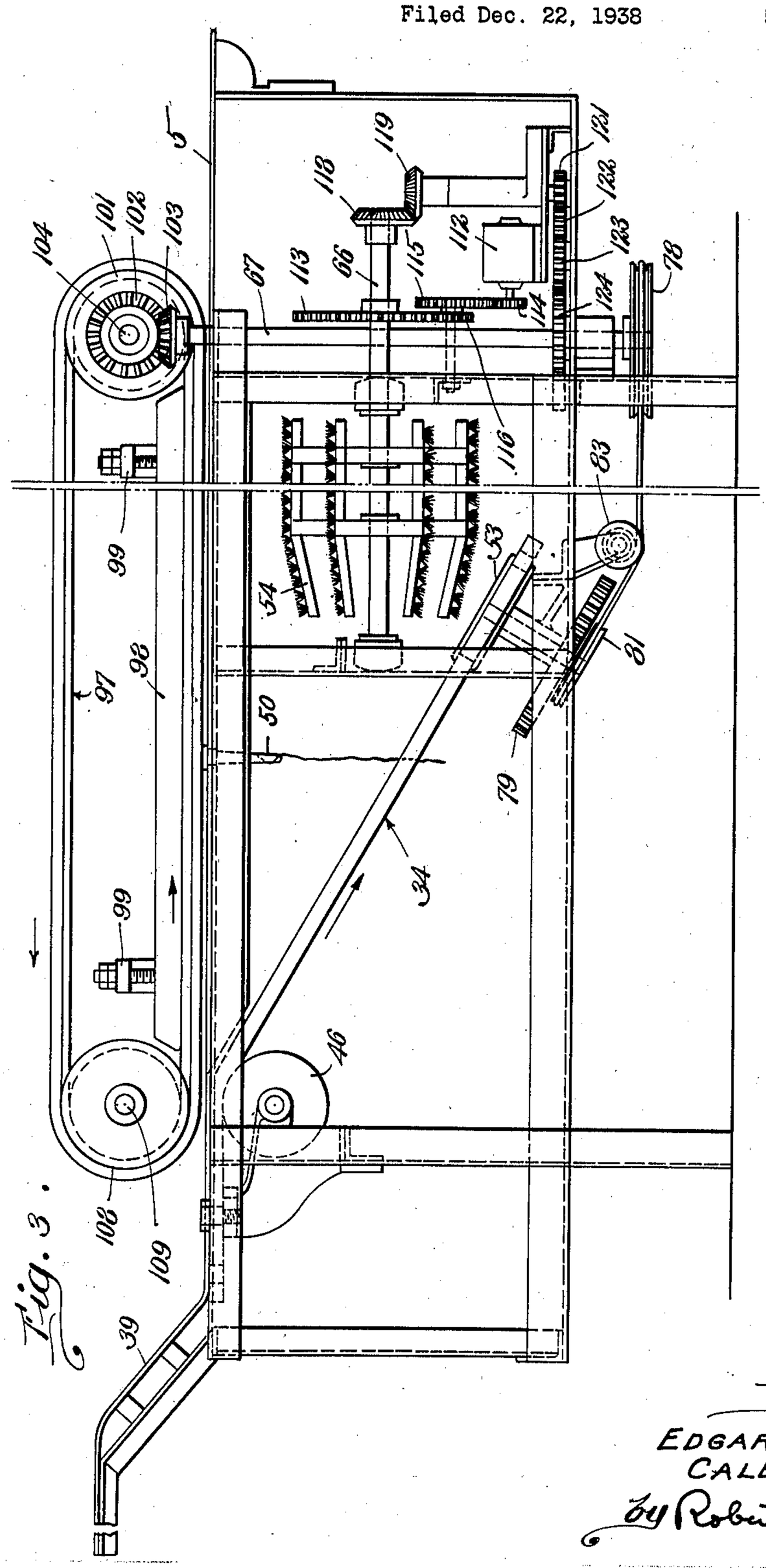


Fig. 3.

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BOBBIN STRIPPER

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Fig. 4.

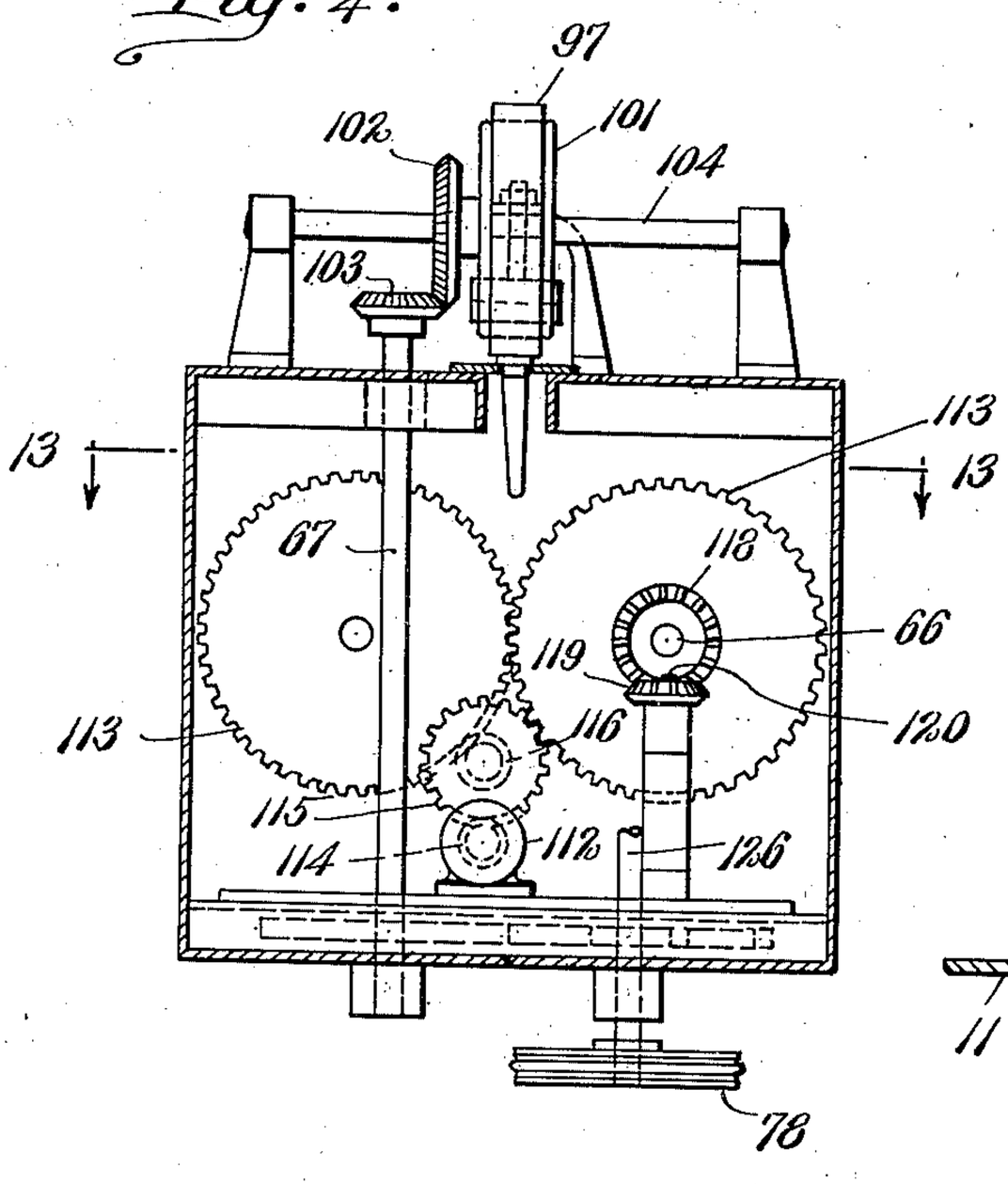



Fig. 5.

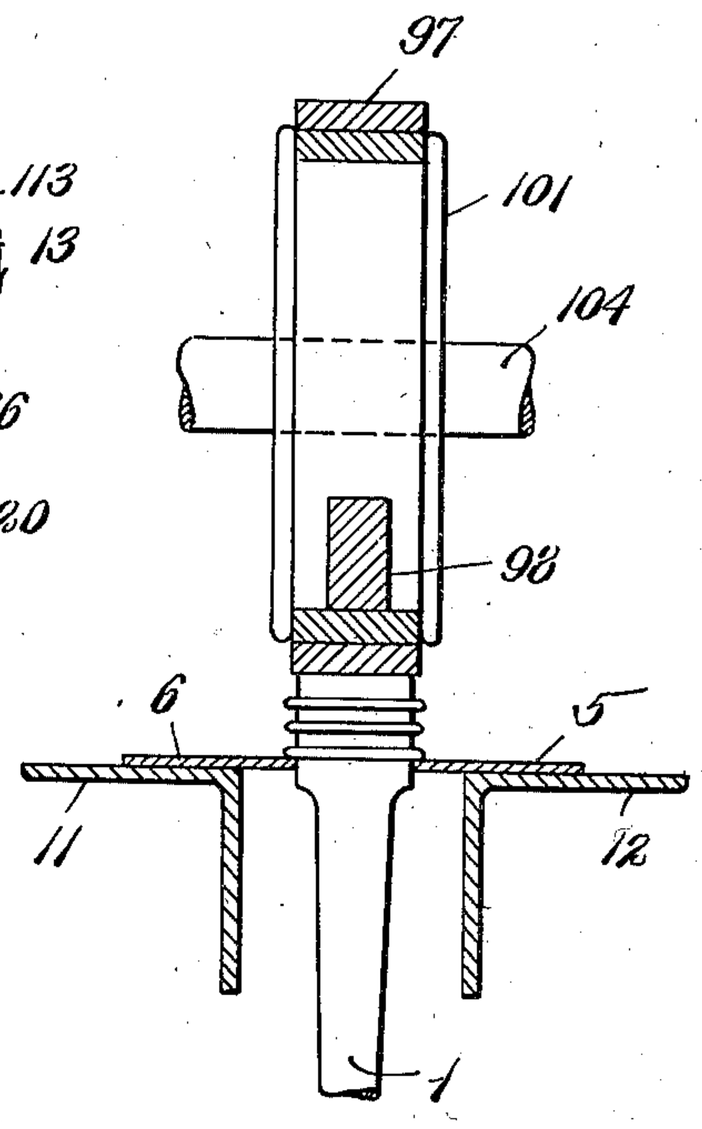
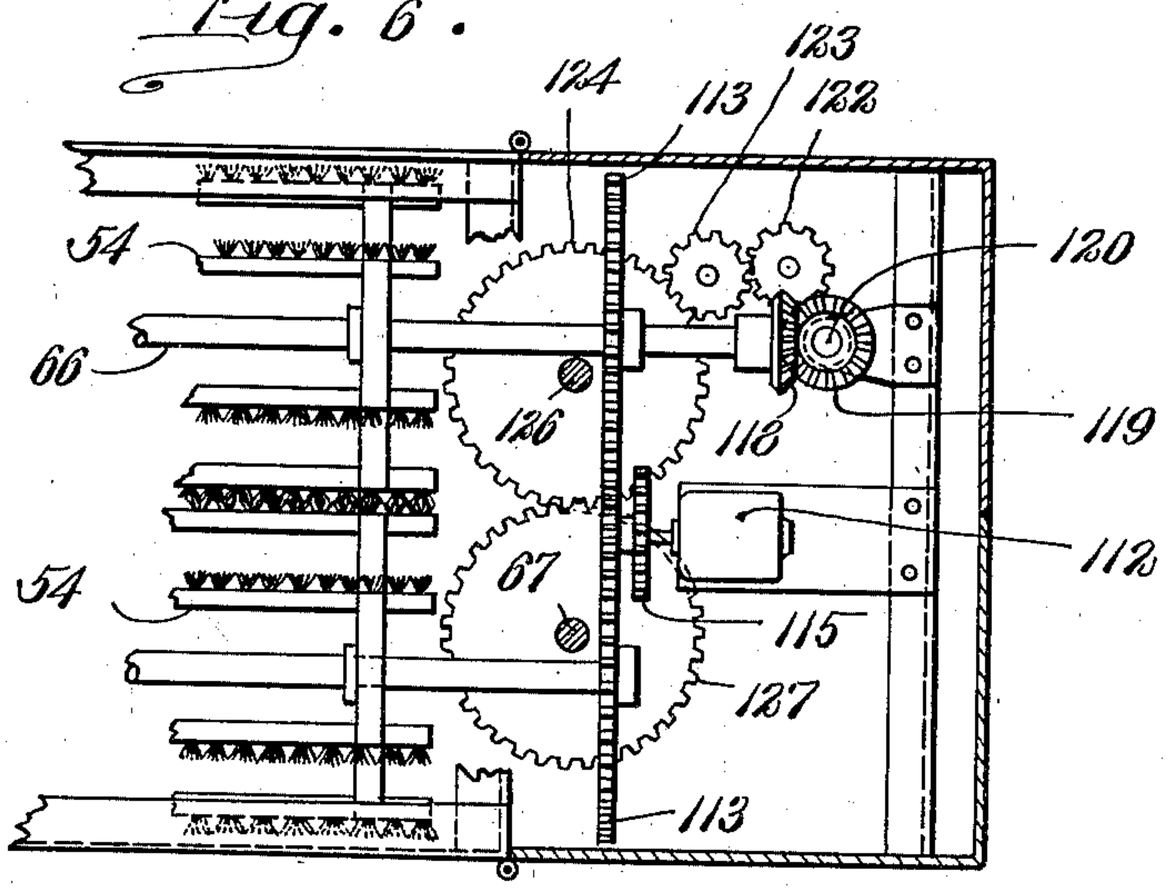



Fig. 6.

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BOBBIN STRIPPER

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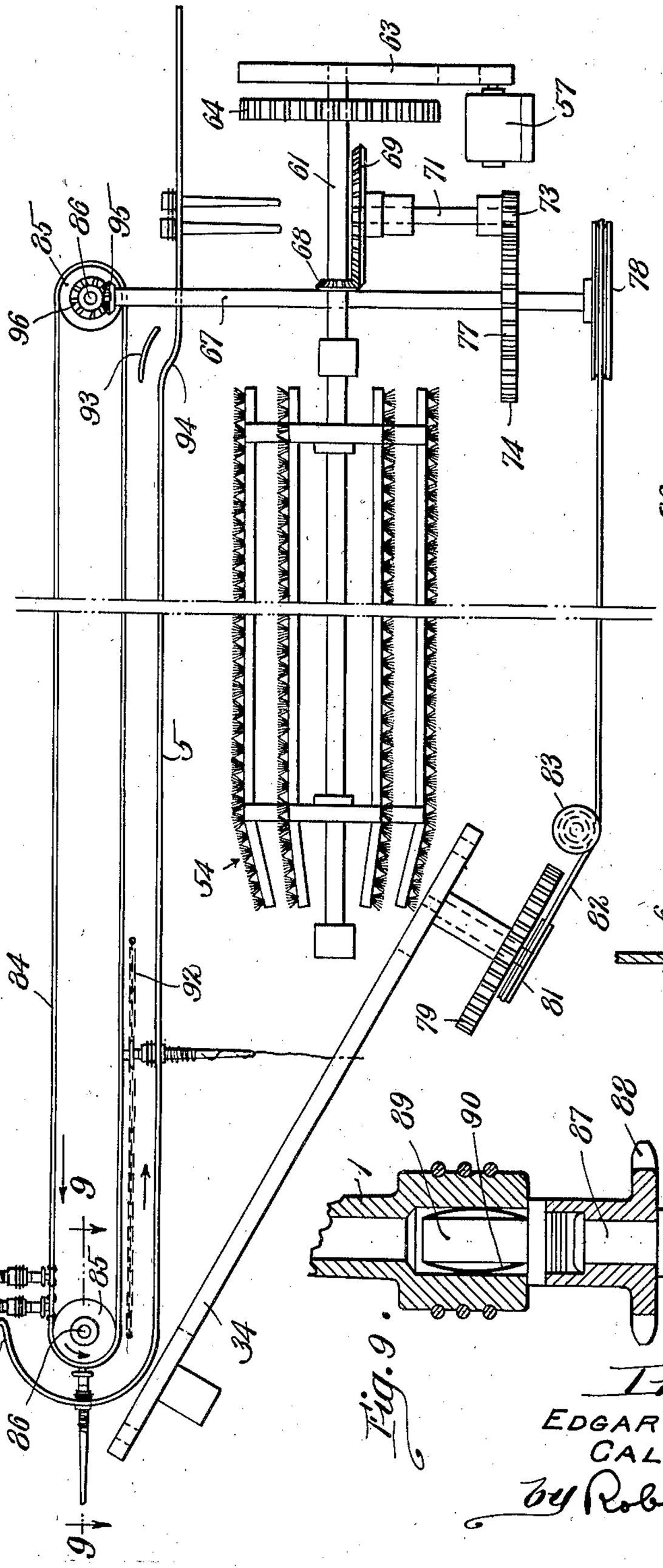


Fig. 7.

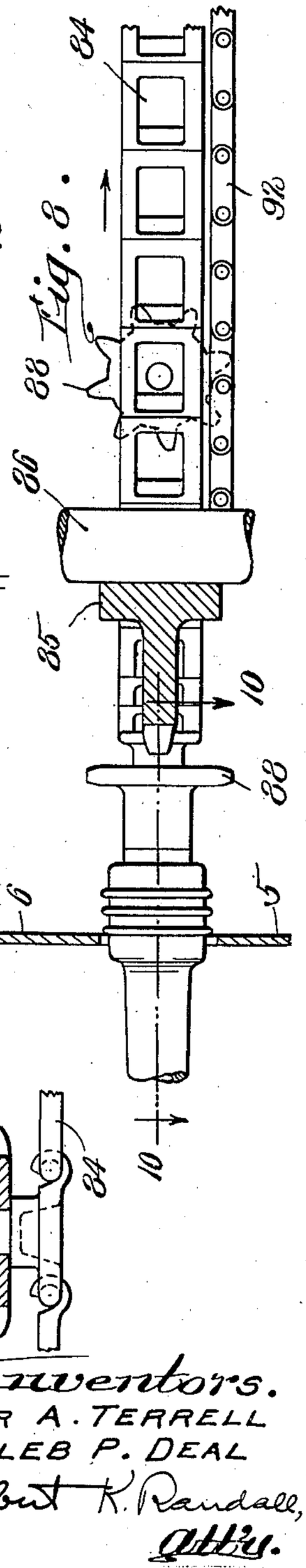


Fig. 8.

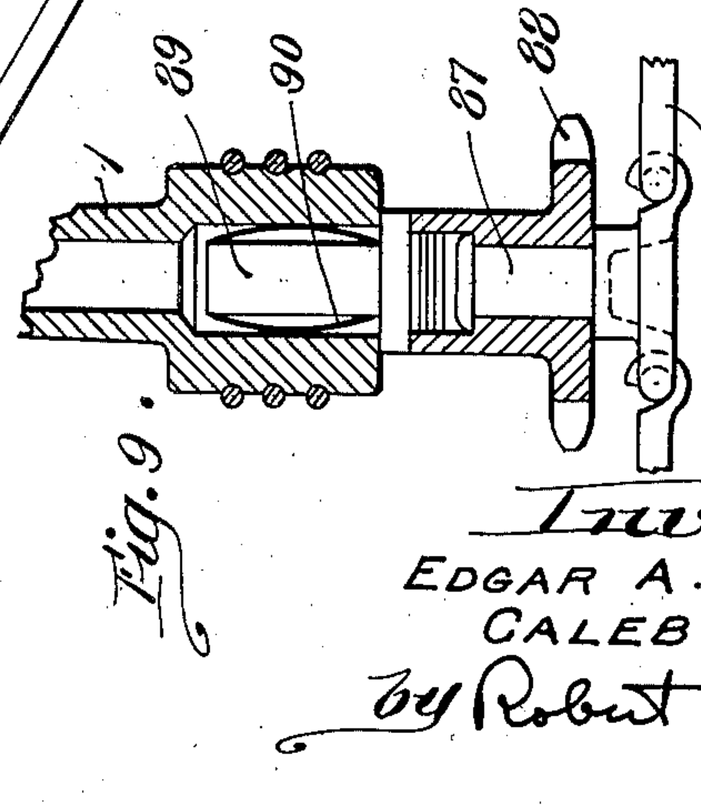


Fig. 9.

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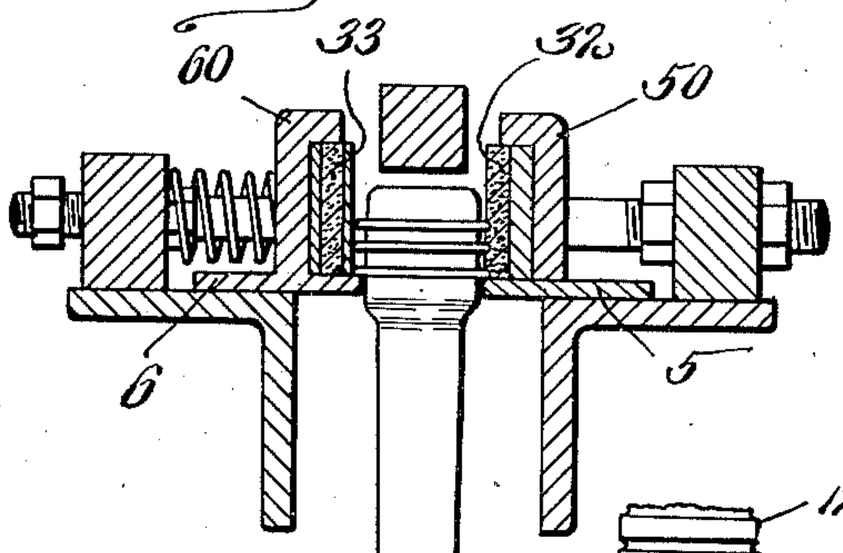
Fig. 10.



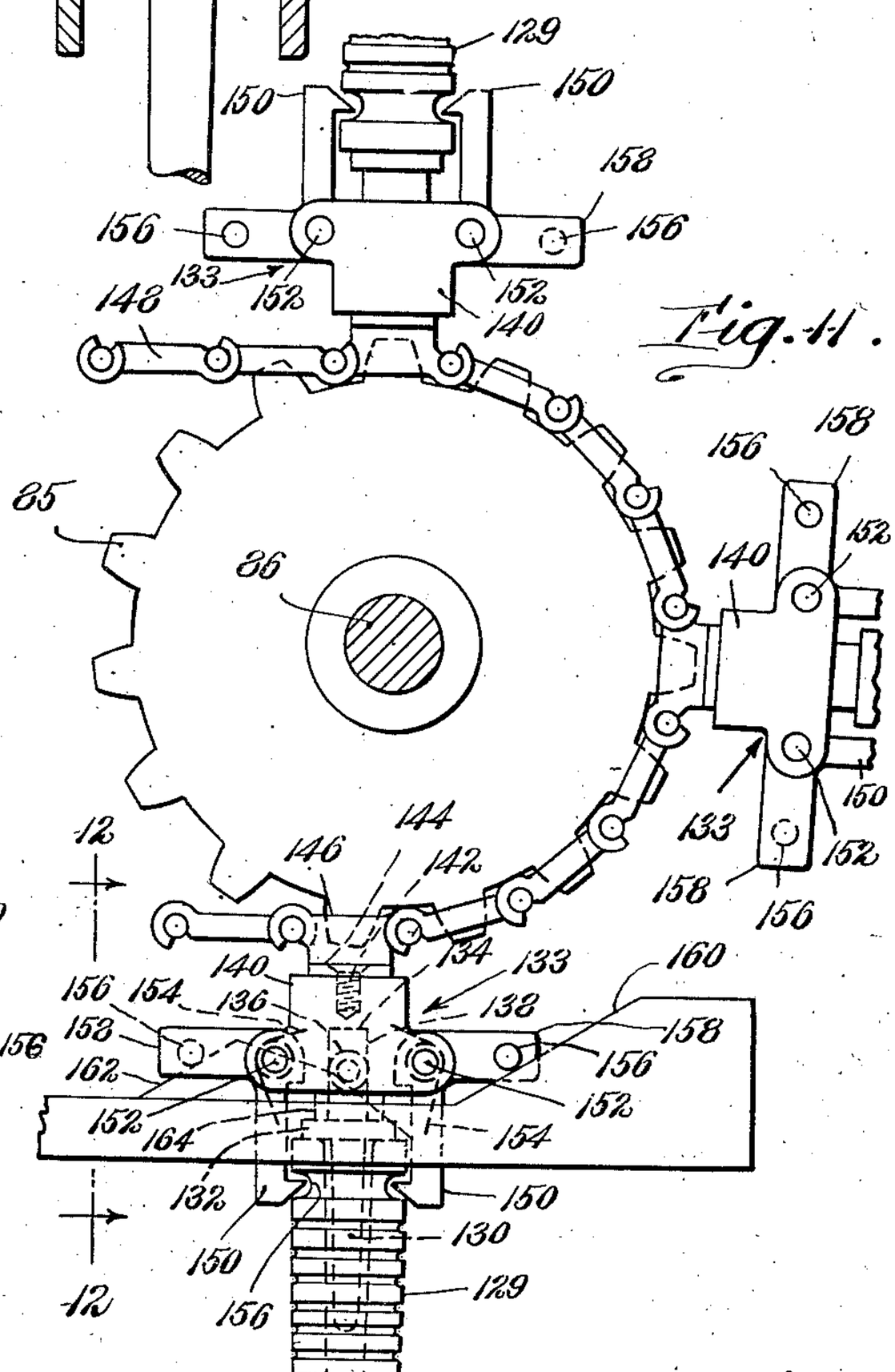
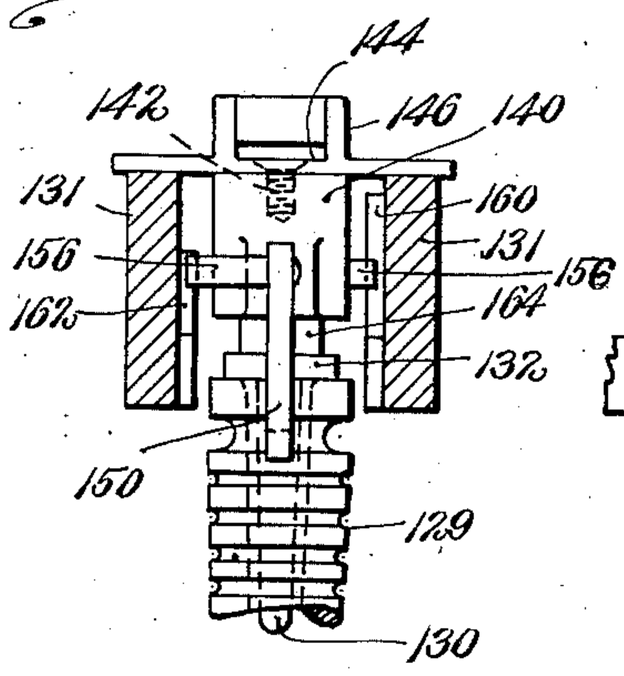




Fig. 11.

Fig. 12.

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Patented Dec. 23, 1941

2,267,679

# UNITED STATES PATENT OFFICE

2,267,679

## BOBBIN STRIPPER

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Application December 22, 1938, Serial No. 247,255

21 Claims. (Cl. 28—19)

This invention relates to machines for stripping waste yarn from bobbins, and has as its main object the provision of mechanism for stripping such waste from rayon or silk loom bobbins which must be stripped without roughening their smooth surfaces, or scratching or chipping the enamelled finish thereof, as such injury would result in fracture of these delicate yarns during subsequent use of the bobbins in weaving.

The general aim of the invention is to provide rapid and effective stripping devices, particularly adapted for rayon and silk bobbins, which in their action shall make no abrasive or scraping contact with any surfaces on the bobbins which come in contact with the yarn. In particular, the invention includes among its objects the modification of the principles embodied in United States Letters Patent to Leonard Kleeb, Jr., No. 2,132,344, dated October 4, 1938, adapting the mechanism of such patent to use with special types of bobbins and under special circumstances, as where compressed air is not available or too costly, or mechanical contact is needed to free the ends of the particular yarns to be stripped, and for other purposes.

To these ends, and in accordance with one principle of the invention, the yarn-bearing portions of the bobbins are subjected to the wiping or brushing action of a wiping belt or pair of opposed wiping belts freeing the ends of waste yarn from the wound masses of such yarns on the barrels of the bobbins and delivering the freed ends to traveling yarn-engaging surfaces which unwind and draw off the remainder of the yarns forming the wound masses over the tips of the bobbins while the latter are being propelled after the manner of the Kleeb patent by opposed driving belts laterally engaging the heads or rings of the bobbins, along spaced tracks which support the bobbins by engagement with their head ends or the rings thereon. In accordance with another principle of the invention, a single belt is provided to engage the butt ends of special types of bobbins unsuited for lateral frictional engagement with the paired opposed Kleeb belts, as well as for use with the standard type of bobbins; this single belt feed is in an additional embodiment further modified to provide positive feed of the bobbins along the spaced tracks by providing bobbin-engaging projections on the belt. The invention also provides special means for both supporting and propelling the bobbins along a path in pendent relation while subjected to the action of the aforesaid end-freeing and drawing-off means in the absence of the spaced tracks, for use in connection with bobbins which have no laterally projecting heads of appreciably greater diameter than the yarn-bearing portions, or on which the yarn is wound to a point so close to the butts that known means for supporting the bobbins in pendent relation are unsuitable.

In accordance with another principle of the invention, the bobbins are rotated on their axes while being propelled along their path during the stripping, by driving the opposed driving belts at unequal speeds, or by replacing one driving belt by a stationary surface, where the Kleeb type of bobbin drive is used; or, in the case of the single overhead belt, by providing parts in connection with the bobbin heads which enter into rolling contact with stationary parts alongside the path of the bobbins in a similar manner to the rolling engagement of the bobbin heads at one side with the stationary belt or surface, to rotate the bobbins on their axes while subjected to the action of the end-freeing means.

Other objects of the invention, and the manner of their attainment, are as will be made plain hereinafter.

Illustrative embodiments of the invention are shown in the accompanying drawings, in which

Fig. 1 is a side elevation of a machine embodying the invention and employing opposed belts to feed the bobbins, a certain portion of the central section of the machine having been omitted for convenience of illustration.

Fig. 2 is a plan view of the same machine, similarly shortened.

Fig. 3 is a side elevation, also shortened, showing a machine embodying the invention and employing a single feed belt disposed in a vertical plane.

Fig. 4 is an elevation of the machine of Fig. 3 from its right-hand end, shown partly in section.

Fig. 5 is an enlarged view of the spaced rails and the single feed belt of Fig. 4, with a bobbin being fed thereby, in sectional end elevation.

Fig. 6 is a plan view in section on line 13—13 of Fig. 4, illustrating the driving mechanism of the machine of Figs. 3 and 4.

Fig. 7 is an elevation, also shortened, of the working parts of a modified form of the invention employing positive bobbin-engaging and driving devices on the vertically disposed feed belt of the machine of Fig. 3.

Fig. 8 is a horizontal section on line 9—9 of Fig. 7, on a larger scale, showing details of the

link belt and of the means for rotating the bobbins on their axes.

Fig. 9 is a section through one of the spindles carrying the bobbins in Figs. 7 and 8, showing the bobbin-holding and rotating means.

Fig. 10 is a view in vertical transverse section similar to Fig. 5, showing the rotation and translation of the bobbins by means of one stationary and one traveling belt.

Fig. 11 is a diagrammatic view of a conveyor chain arrangement using clamps to support headless bobbins.

Fig. 12 is a vertical transverse section on line 12—12 of Fig. 11, showing also the rails which support the chain.

In the embodiment of the invention of Figs. 1 and 2, the bobbins 1 are fed manually into the space between the horizontal portion of tracks 5, 6, at the left-hand side of the machine, so as to be suspended between the tracks by engagement of the latter with their heads or the rings fixed on such heads. They are slid along the tracks by hand until they slide down the inclined portions 39 thereof under the force of gravity into the nip of the opposed and coengaging runs of belts 34, 35, such runs traveling in the same direction and ordinarily at the same speed, though in certain instances a difference in speed has been found advantageous. Each belt 34, 35, comprises a backing of corded rubber belting 36 of substantially square section and a similarly shaped surfacing of deep sponge rubber 37. These belts come together on the line joining the centers of their idle pulleys 38, just at the foot of the inclined chute 39, thence extend horizontally beneath and along the tracks and over spaced rollers 46 at each side of the path of the bobbins, and thence obliquely downward around pulleys 53, still in contact with each other; separating as they pass around driven pulleys 53. Thus, bobbins sliding down chute 39 by gravity are fed by the pressure of succeeding bobbins or by hand into the nip of belts 34, 35, the sponge rubber surfacing thereon enveloping the yarn-bearing portions of the barrels of the bobbins just below their heads, and carrying the bobbins onward along the tracks until the heads of the bobbins are frictionally engaged between the spaced and parallel runs of feed or driving belts 30, 32, traveling just above the main horizontal portions of tracks 5, 6, which extend throughout the length of the machine. The opposed parallel courses of belts 30, 32, run in the same direction immediately above tracks 5 and 6. One course is backed up by the vertical flange of fixed angle iron 50 adjustably mounted on track 5, and the other course by the vertical flange of a similar angle iron 60 loosely mounted on track 6 by screws and slots and yieldingly pressed inward by springs as in the Kleeb patent. This arrangement makes the opposite courses of the belts 30, 32, grip the rings of the successive bobbins yieldingly and slide or carry the bobbins alternately along the tracks.

Feed belts 30, 32, are carried on flanged idle pulleys 44, 42, respectively, and are driven by flanged pulleys 45, 43, of equal diameters. When the bobbin heads enter between feed belts 30, 32, the grip of the latter belts upon the head ends is so much firmer than that of the yielding-surfaced wiper belts upon the barrels of the bobbins that the feed belts assume the mastery and determine the rate of progress of the bobbins through the machine, and are capable of causing relative motion between the bobbins and the wiping surfaces of the wiper belts 34, 35, if desired. Ordinarily, the opposing surfaces of wiper belts 34, 35, travel at equal speeds and so that the horizontal component of motion of these wiper belts as they travel obliquely downward to pulleys 53 equals the speed at which the bobbins are propelled along tracks 5 and 6 by feed belts 30, 32. By reason of the diverging paths of the two pairs of belts, the wiper belts have a downward movement relative to the bobbins during which their sponge rubber surfaces exert a wiping action over the entire length of the bobbin from head to tip. As the sponge rubber on the two lower belts embraces practically the entire circuit of the bobbin barrel, this wiping action directed toward the tip of the bobbin acts to free the end of yarn and retains its grip thereon after the bobbin has been drawn from between the two lower belts.

To render the end-freeing action of the lower belts 34, 35, more effective, it is preferred to rotate the bobbins on their axes in a direction tending to unwind the yarn therefrom while the bobbins are gripped between the two lower belts. This is easily effected by driving the feed belts 30, 32, at unequal speeds, as the latter grip the bobbins tighter than the resilient-surfaced wiper belts 34, 35, even though the latter are commonly backed up by straight rigid guide-strips (not shown) to hold their opposing courses parallel. In fact, in certain instances, one feed belt 30, 32, has been dispensed with entirely, as shown in Fig. 10, merely using one driving belt 32 pressing the bobbin rings against a stationary length of leather-surfaced sponge rubber 33 fixed to yieldingly mounted vertical flange 60, so that the bobbin rolls along such stationary surface and travels at half the speed of the single feed belt. A still greater increase in the efficiency of the end-starting belts 34, 35, has been attained in certain instances by likewise driving one of these belts 34, 35, faster than the other, to increase the relative motion between the belts and the bobbin surfaces in a direction counter to the wind of the bobbins.

After the bobbin has been withdrawn axially from between the end-starting belts 34, 35, the end of the yarn clings to or is gripped between the sponge rubber surfaces of such belts and is carried along by one or the other thereof, as they separate, and mechanically transported and delivered into engagement with one of the proximate reduced or tapered end portions of two intermeshing winding rolls 54, 55, having brush-clad slats extending along their exterior for any desired extent.

These winding reels have their axes disposed lengthwise of the tracks, and their peripheral surfaces of rotation disposed in parallel relation to each other, and are of substantial length to ensure complete unwinding of the waste from all the bobbins. As the bobbins proceed along tracks 5 and 6, toward the discharge end thereof, under propulsion of belts 30, 32, the yarn is speedily drawn off from the bobbin by being wound about one or other of winding reels 54, 55. Such reels are rotated at a sufficiently great peripheral speed with respect to the speed of lateral travel of the bobbins so that the helically disposed windings on the reels have a very gradual pitch, and thus the point of winding engagement of the individual yarns with the surface of one roll or the other is kept in substantially vertical alignment with the respective bobbins from which they are being unwound, and thus the yarn will render freely from over the tips

of the bobbins because the line of draft of the yarn from each bobbin is substantially vertical and thus in line with the bobbin axis. The pressure of following bobbins forces those which have been stripped along the tracks and off the end thereof into a suitable container. This manner of mechanical transference of the yarn end to the winding reels does away with any need to employ a cutter to cut the pendent ends of yarn to a uniform length at any point in the machine.

Electric motor **57** drives one reel-shaft **61** by belt **63** and suitable large and small pulleys; gear **64** fixed on shaft **61** drives equal gear **65** fixed on the other reel-shaft **66**. Reel-shaft **61** drives vertical shaft **67** carrying belt-driving pulley **43** through bevel gears **68**, **69**, and jackshaft **71** carrying spur gear **73** engaging with large gear **77** fixed on shaft **67**. This gear **77** drives larger gear **74** to propel pulley **45** and its belt more slowly. Pulley **78** fixed on the foot of shaft **67** drives both pulleys **53** and thus the two oblique belts **34**, **35**, in unison through equal gears **79**. by reason of pulley **81** and round belt **82** guided by idlers **83**.

A modification is shown in Figs. 3, 4 and 6, adapting the invention principles to the stripping of paper cops **50** having merely a metallic flanged ferrule with thin lateral edges instead of a head of sufficient depth to be engaged laterally between opposed feed belts. In this case, a two-ply belt **97** with a sponge rubber or other frictional surface and a backing of leather or rubberized textile belting engages the flanged heads of the bobbins from above as they hang between the tracks **5**, **6**, being pressed down into frictional propelling engagement with the bobbin ferrules by vertically adjustable presser-strip **98** mounted between the two runs of the belt on brackets **99**. Belt-pulley **101** is driven from vertical shaft **67** through bevel gears **102**, **103** and shaft **104**, the other belt pulley **108** rotating freely on shaft **109**. Fig. 6 shows a slightly different gear drive from the preceding machine, motor **112** driving one of the intermeshing large gears **113** fixed on the two reel-shafts through reduction gears **114**, **115**, **116**. One reel-shaft drives the end-starting belts **34** through bevel gears **118**, **119**, shaft **120**, gears **121**, **122**, **123**, **124**, shaft **126** and pulley **78**, thence as before described in connection with Figs. 1 and 2. Gear **127** meshing with **124** drives vertical shaft **67** to propel the belt **97** as already indicated. This feed will also handle the common type of bobbins, as shown in Fig. 5.

Another modification for use where positive means is desired for propelling the bobbins along the spaced tracks in pendent relation and for positively rotating them on their axes while so doing is shown in Figs. 7 to 9. The machine is substantially the same as in the case of the embodiment of Figs. 1 and 2, except that a link belt **84** having the positive propelling devices is disposed in a vertical plane and arranged in a manner related to belt **97** of Figs. 3 to 6. This link belt is stretched around sprockets **85** rotating on horizontal shafts **86** at opposite ends of the machine, every other link or so bearing a headed stud **87**, on which swivels a small sprocket **88** carrying an axial extension **89**, Fig. 9, with springs **90** to enter and engage the counterbore in the head of a bobbin **1** when placed thereon manually and hold it snugly in place thereon until the travel of chain **84** carries the head of the bobbin under, and the barrel of the bobbin between, the recurved and overhanging ends **91** of tracks **5**, **6**. The tracks engage the bobbin rings to prevent escape of the bobbins from spring-clutches **90**. As the bobbins make the turn around left-hand pulley **85** their yarn-bearing barrels enter between concurrent sponge-rubber-surfaced belts of similar construction to **34**, **35**, of Figs. 1 and 2, whereupon engagement of sprockets **88** with a short section of chain **92** stretched alongside their path rotates the spindles and thereby the bobbins reversely to their wind while the bobbins are lightly embraced by the end-starting belts **34**, **35**. The remainder of the construction and operation of this machine is as described in connection with that of Figs. 1 and 2, except that a fixed cam **93** pulls the bobbins off from the spring-clutches **90** at a dip **94** in the tracks, and one shaft **86** is rotated to drive sprocket **85** and chain **84** from vertical shaft **67** through bevel gears **95**, **96**.

To adapt the invention principles to the stripping of bobbins which have neither heads nor flanges permitting their support by spaced tracks, which includes a wide range of cone base bobbins and of types which have a cone which is larger than the actual head, a further modification shown in Figs. 11 and 12 has been found useful. The particular bobbin **129** there shown has a tapered bore for the spindle of the spinning frame and merely an annular groove for engagement by the shuttle jaws, the diameter at the butt being merely a continuation of the taper of the yarn-bearing portion. Consequently, it cannot be supported in pendent tip downward relation in the stripping machine by spaced tracks. In this embodiment the machine is like that of Figs. 7 to 9, with the tracks **5**, **6**, replaced by chain-supporting rails **131** and the swiveling spindles of that form replaced by spring-jaw clamping carriers **133**. These carriers each comprise a short spindle **130** to enter the bore of the bobbin and a flange **132** on which the butt of the bobbin rests. The tang **134** of the spindle is received and held by a set-screw **136** within a bore **138** in a frame **140** attached by screw **142** to an attachment surface **144** formed integrally on special links **146** of a link belt **148** supported and driven like link belt **84** of Fig. 7. Jaws **150** are pivoted on frame **140** at **152** at opposite sides of spindle **130**, and their toothed lower extremities are pressed inward toward spindle **130** by springs **154** to enter the annular groove **156** of the bobbin and thus hold it in place thereon when the bobbin is in pendent tip downward relation at the bottom run of link belt **148**.

The waste-bearing bobbins to be stripped are placed on the individual spindles of the top run of link belt **148** and pressed down into engagement with the jaws **150** by hand while the link belt is traveling and the bobbin stripping operation is proceeding. As before, the link belt carries the yarn-bearing portions of the bobbins between and into contact with the opposed and co-engaging surfaces of obliquely traveling wiper belts **34**, **35**, Fig. 7, to free the ends and deliver them to the opposed winding reels for completion of the unwinding, the wiper belts in this instance being disposed in a single plane obliquely disposed, as in Fig. 7, instead of traveling first horizontally and then obliquely as in Figs. 1 to 3.

As the bobbins approach the end of the lower run of link belt **150**, fixed cams **160**, **162**, respectively at opposite sides of the path of the bobbins engage pins **156** projecting transversely from the integral angular heels **158** of jaws **150**,

each cam simultaneously lifting one heel and thus withdrawing its respective jaw from engagement with the bobbin groove so that the stripped bobbin is permitted to drop off from spindle 130 into a catcher box.

It will be noted that a spacing collar 164 is provided about the tang 134 of spindle 130, confined between flange 132 of the spindle and frame 140 of the supporting and propelling unit. By varying the height of this spacing collar, the jaws can be made to enter properly within the groove of bobbins having different depths of head, or to bring the yarn-engaging portions of the bobbins into proper relation with the end-freeing devices. In the present machine, the special attachment links 146 have lateral extensions which ride on horizontal rails 131 at each side of the bottom run of link belt 148 to prevent the chain from sagging; thus, these bars constitute tracks supporting and guiding the units which in turn support and propel the bobbins, instead of the tracks supporting the bobbins directly as in the other machines illustrated herein.

While we have illustrated and described certain forms in which the invention may be embodied, we are aware that many modifications may be made therein by any person skilled in the art, without departing from the scope of the invention as expressed in the claims. Therefore, we do not wish to be limited to the particular forms shown, or to the details of construction thereof, but what we do claim is:

1. In a bobbin stripper, in combination, a driven endless traveling surface propelling the bobbins along a path in pendent tip downward relation with their yarn-bearing surfaces and tips free, belts wiping free the ends of the yarn wound on the bobbins while thus propelled, and rotating unwinding means extending along such path, engaging and unwinding over the tips of the bobbins the ends of yarn thus freed while the points of winding engagement of the yarn travel along the rotating unwinding means in pace with the respective bobbins.

2. In a bobbin stripper, in combination, spaced tracks supporting the bobbins by their heads in pendent tip downward relation, an endless belt propelling the bobbins along the tracks in such relation, means frictionally engaging the yarn-bearing portions of each bobbin to wipe loose the end of yarn and thereafter draw off endwise from the bobbin a length of such yarn, and an unwinding roll taking the ends of yarn from their engagement with the drawing-off means and winding them onto itself, such roll being disposed below and lengthwise of the tracks.

3. In a bobbin stripper, in combination, two driven endless traveling surfaces propelling the bobbins sidewise along a path through engagement with opposite sides of the heads of the respective bobbins, means acting on the yarn-bearing portions of the bobbins to free the ends, unwinding means engaging and drawing off the yarns thus freed, and means driving the two endless traveling surfaces at unequal speeds.

4. In a bobbin stripper, in combination, spaced tracks supporting the bobbins by their head ends in pendent tip downward relation, a fixed surface at one side of the tracks, a traveling surface at the other side of the tracks frictionally engaging the bobbin heads and pressing them against the fixed surface, and means stripping the bobbins while propelled along the tracks and rotated by the traveling surface.

5. In a bobbin stripper, in combination, spaced tracks supporting the bobbins by their head ends in pendent tip downward relation, a belt traveling in a vertical plane having a course disposed lengthwise of the tracks immediately above the bobbin heads on the tracks, the belt having surfaces engaging the head ends of the bobbins and propelling the bobbins with continuous travel along the tracks, means acting on the yarn-bearing portions of the bobbins while supported by the tracks to start the ends of the yarn free, and means engaging and unwinding the yarns thus freed.

6. In a bobbin stripper, in combination, spaced tracks supporting the bobbins by their head ends in pendent tip downward relation, an endless belt running along and over the tracks having propelling devices engaging the head ends of the bobbins to slide the latter along the tracks, wiper means traveling with and simultaneously relatively to the bobbins, and means stripping the bobbins while on the tracks by engaging and unwinding the ends of yarn.

7. In a bobbin stripper, in combination, spaced tracks supporting the bobbins by their head ends in pendent tip downward relation, a driven endless traveling surface engaging the heads and sliding the bobbins along such tracks, belts traveling first along and then obliquely away from the tracks and engaging the yarn-bearing portions of the bobbins, and opposed winding rolls to which the ends of yarn from the bobbins are delivered by the said belts.

8. In a bobbin stripper, in combination, spaced tracks supporting the bobbins by their head ends in pendent tip downward relation, a belt extending along and above the tracks, means pressing the belt downward into frictional contact with the head ends of the bobbins sufficient to exceed the frictional drag of the bobbins on the tracks, means driving the belt, and means stripping the bobbins while on the tracks.

9. In a bobbin stripper, in combination, means supporting and propelling bobbins along a path in pendent tip downward relation, rotating means engaging and unwinding the yarn from the bobbins, and traveling means engaging the ends of yarn from the bobbins and transporting such ends into winding engagement with the rotating unwinding means.

10. In a bobbin stripper, in combination, means supporting and propelling bobbins along a path in pendent tip downward relation, a pair of rotating winding reels having their axes extending along said path and at least one thereof having a yarn-engaging portion of reduced diameter at one end, and traveling means engaging the ends of yarn from the pendent bobbins and conducting these ends into the space between the rolls adjacent the portion of reduced diameter.

11. In a bobbin stripper, in combination, spaced tracks supporting the bobbins for lateral movement in pendent tip downward relation, opposed belts engaging the yarn-carrying portions of the bobbins beneath the tracks and acting to free the ends of yarn, and a driven endless traveling surface to which the bobbins are fed by the opposed belts and which thereafter propels the bobbins along the tracks.

12. In a bobbin stripper, in combination, end-freeing and unwinding devices, and endless chain, means driving the same, opposed spring-closed jaws on the links of the chain engaging grooves in the heads of the bobbins and carrying the bobbins laterally in pendent tip downward relation while the waste yarn thereon is being en-

gaged by the end-freeing and unwinding devices, and means opening the jaws to drop the bobbins.

13. In a bobbin stripper, in combination, spaced tracks supporting the bobbins for lateral movement in pendent tip downward relation, and opposed traveling surfaces engaging the yarn-bearing portions of the pendent bobbins beneath the tracks, propelling the bobbins along the tracks and also drawing off the yarn from the bobbins.

14. In a bobbin stripper, in combination, means engaging the bobbin heads defining a path of movement therefor, and opposed traveling surfaces engaging the yarn-carrying portions of the bobbins to propel the bobbins along the path and moving away from the heads of the bobbins to draw off the yarn from such portions.

15. In a bobbin stripper, in combination, means engaging the bobbin heads defining a path of movement therefor, and means moving in a direction along and away from such path, propelling the bobbins along such path and also drawing the yarn off of the bobbins.

16. In a bobbin stripper, in combination, a driven endless traveling surface propelling the bobbins along a path in pendent tip downward relation with their yarn-bearing surfaces and tips free, mechanical means physically grasping and freeing the ends of yarn from the traveling pendent bobbins and carrying such ends along substantially in vertical line with the respective bobbins whence they came, and unwinding means taking the ends from the freeing means and drawing off the remaining yarn over the tips of the bobbins.

17. In a bobbin stripper, in combination, a driven endless traveling surface propelling the bobbins along a path in pendent tip downward relation with their yarn-bearing surfaces and tips free, mechanical means physically grasping and freeing the ends of yarn from the traveling pendent bobbins and carrying such ends along substantially in vertical line with the respective bobbins whence they came, and unwinding means to which the ends are transferred by the carrying means and unwinding the remaining yarn from the traveling pendent bobbins while keeping the line of draft of the yarn from each bobbin substantially vertical.

18. In a bobbin stripper, in combination, a driven endless traveling surface propelling the bobbins along a path in pendent tip downward relation with their yarn-bearing surfaces and tips free, mechanical means physically grasping and freeing the ends of yarn from the traveling pendent bobbins and carrying such ends along substantially in vertical line with the respective bobbins whence they came, and an unwinding roll having its axis disposed lengthwise of and below the path of the bobbins, taking the ends from the freeing means and pulling off the yarn from the traveling bobbins in a vertical direction.

19. In a bobbin stripper, in combination, a driven endless traveling surface propelling the bobbins along a path in pendent tip downward relation with their yarn-bearing surfaces and tips free, mechanical means physically grasping and freeing the ends of yarn from the traveling pendent bobbins, and an unwinding roll taking the freed ends from the grasp of the freeing means, such roll having its axis disposed in the direction of travel of the bobbins and rotated fast enough to maintain the point of winding engagement of the individual yarns with the surface of the roll in substantially vertical alignment with the respective bobbins from which they are being unwound.

20. In a bobbin stripper, in combination, means engaging opposite sides of the bobbin heads or rings and rolling the bobbins between said means by reason of their relative motion with respect to each other and thus propelling the bobbins along a path in pendent tip downward relation, end-starting means acting on the yarn-bearing portions of the bobbins, and winding means receiving the freed ends and drawing off the yarn over the tips of the bobbins.

21. In a bobbin stripper, in combination, a driven endless traveling surface, clamps thereon gripping portions of the bobbin heads that are remote from and less in girth than the yarn-bearing portions of the bobbins, the clamps carrying the bobbins laterally along a path in pendent tip downward relation with their yarn-bearing surfaces and tips free, belts wiping free the ends of the yarn wound on the bobbins while thus propelled, and rotating unwinding means extending along such path, engaging and unwinding over the tips of the bobbins the ends of yarn thus freed while the points of winding engagement of the yarn travel along the rotating unwinding means in pace with the respective bobbins.

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