

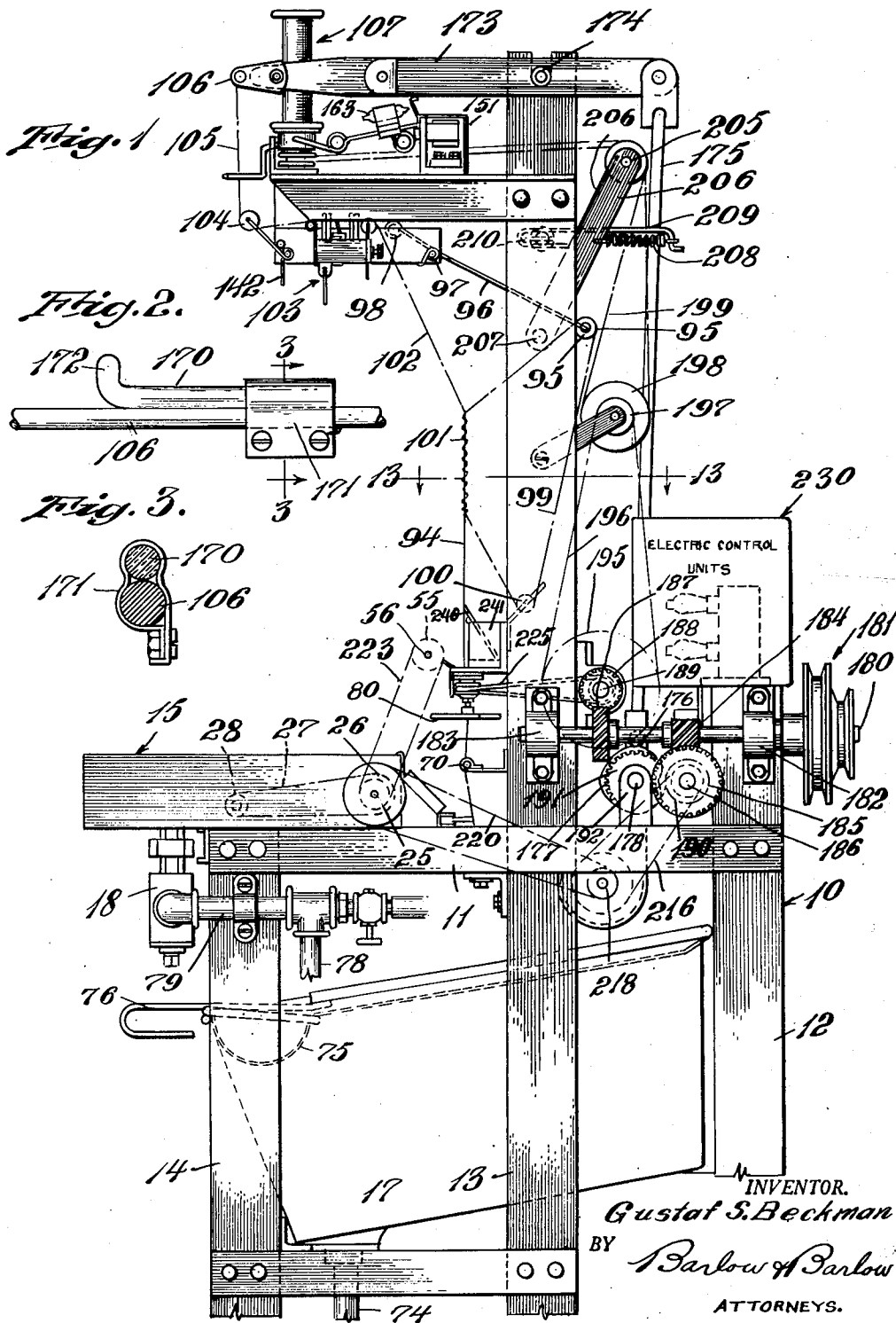
July 7, 1953

G. S. BECKMAN
SILK REELING MACHINE

2,644,200

Filed May 9, 1946

8 Sheets-Sheet 1



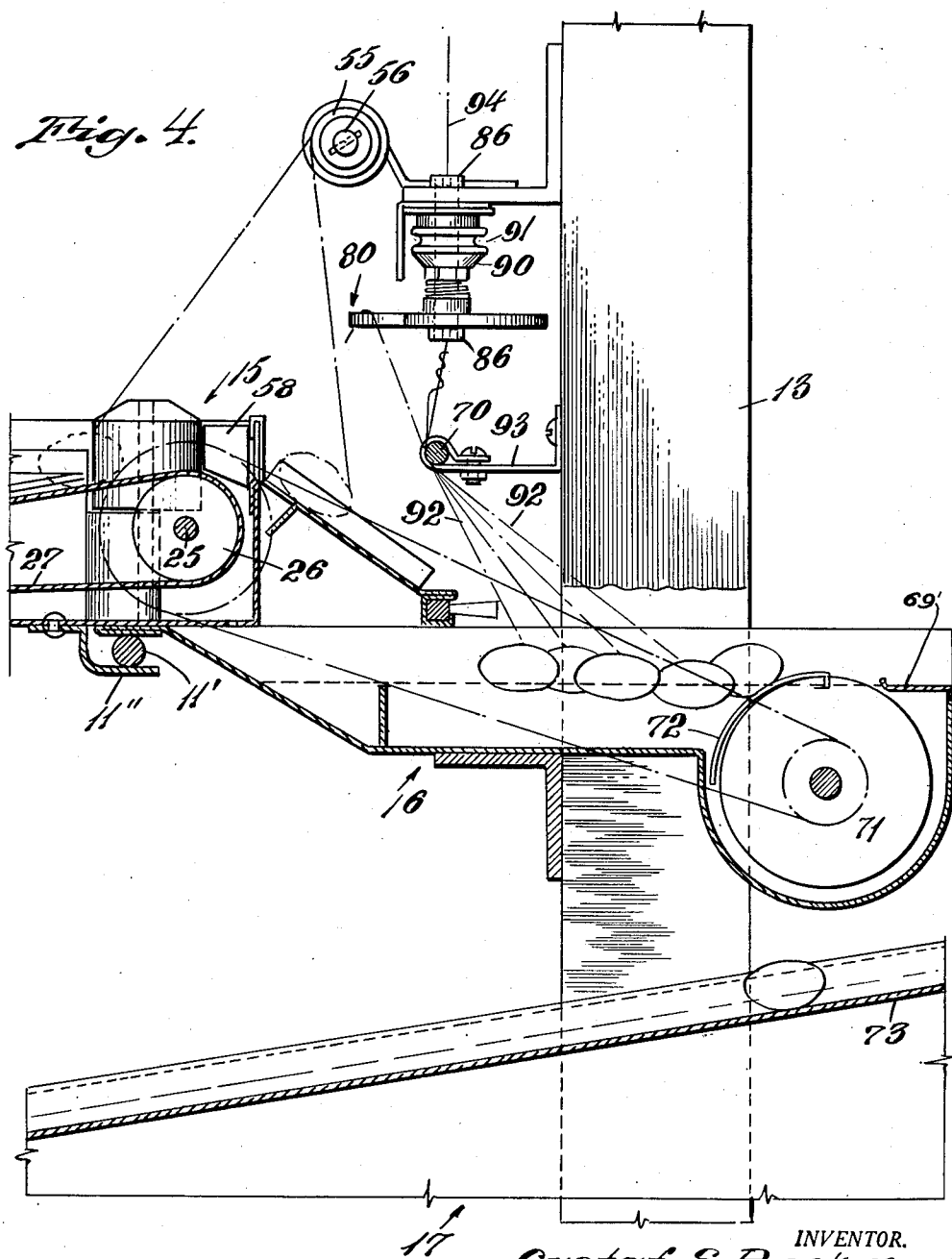
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8 Sheets-Sheet 2



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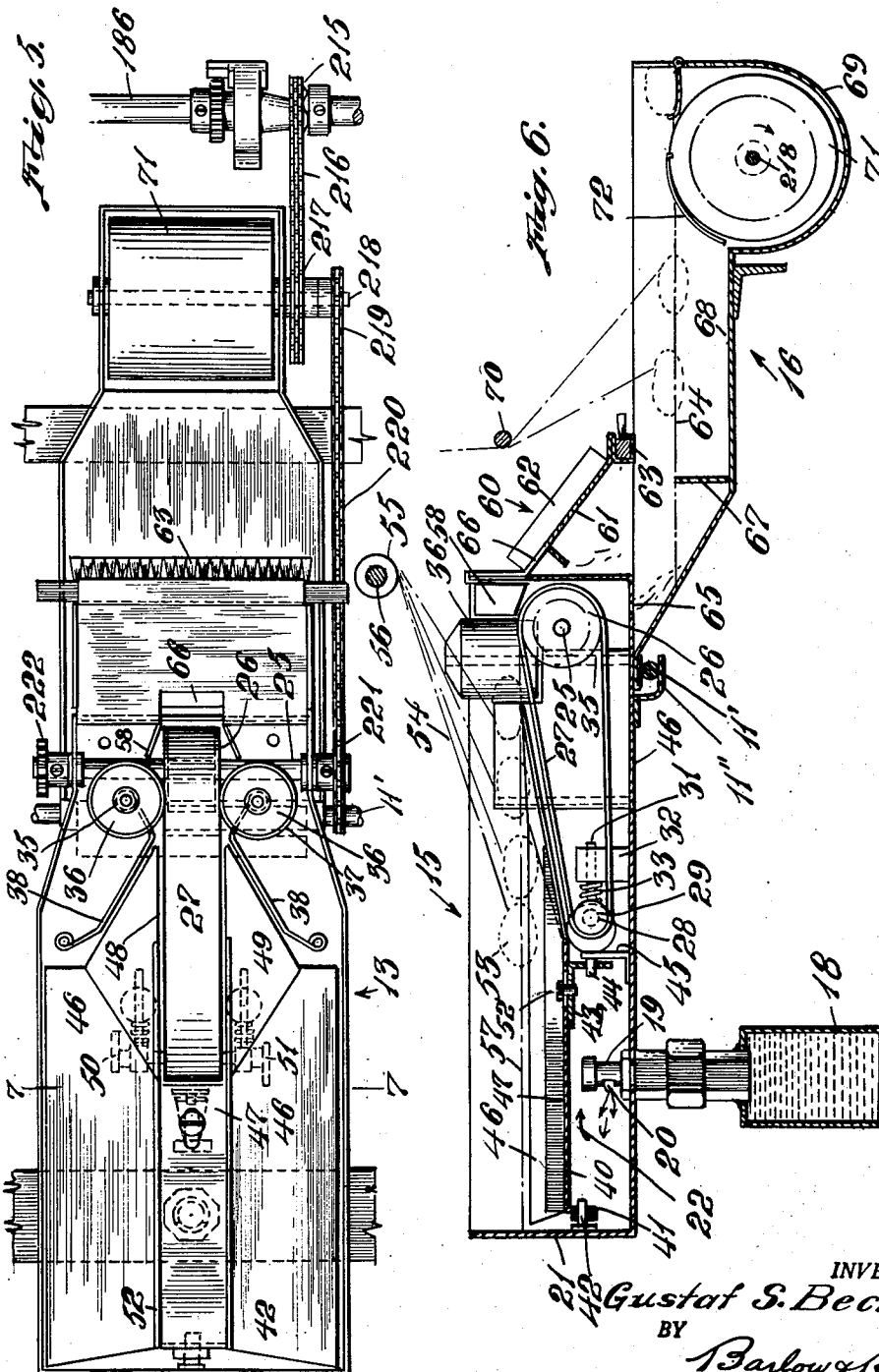
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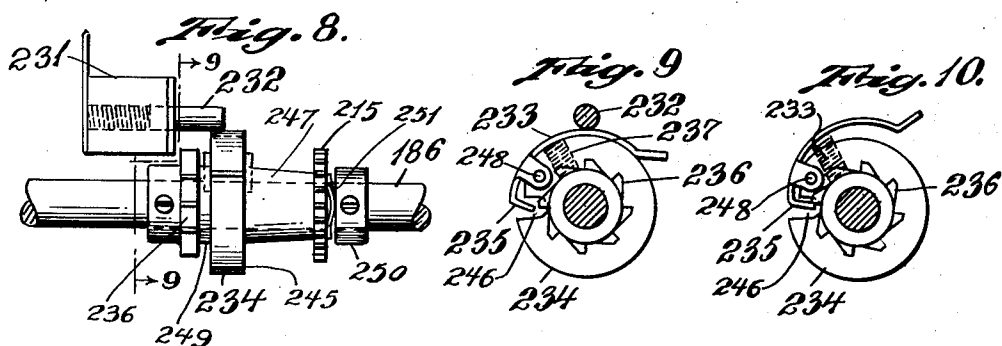
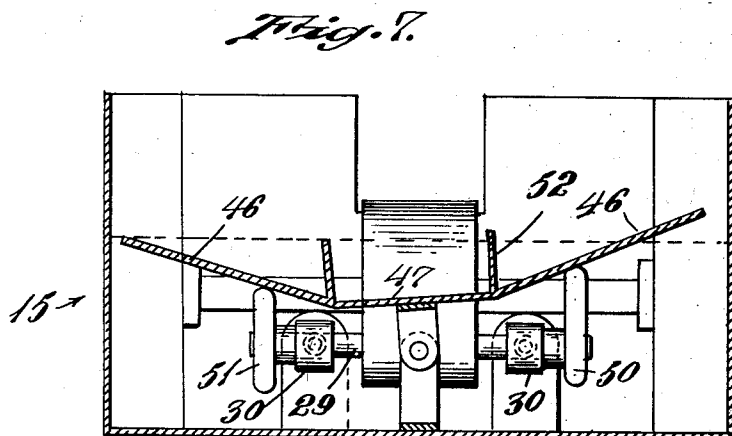
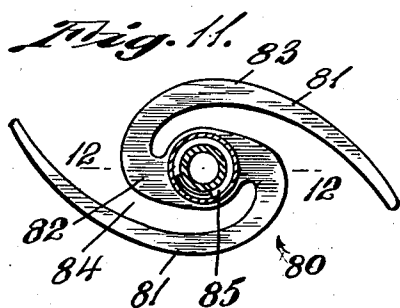
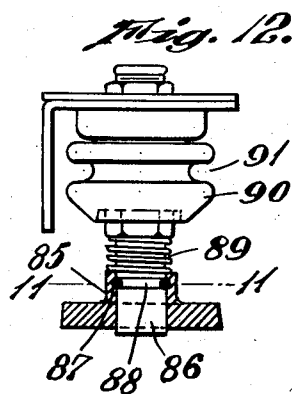
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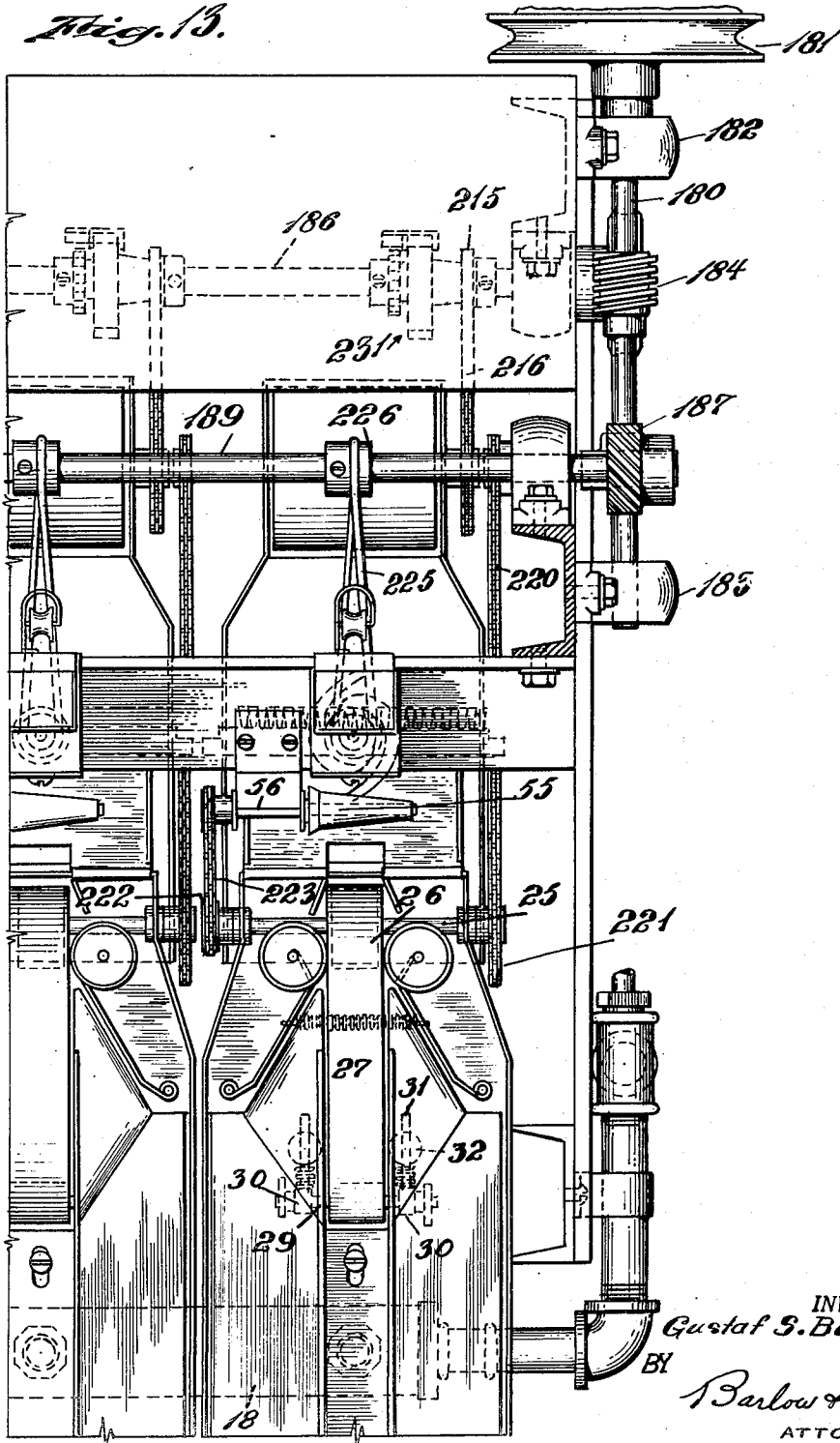
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Fig. 13.



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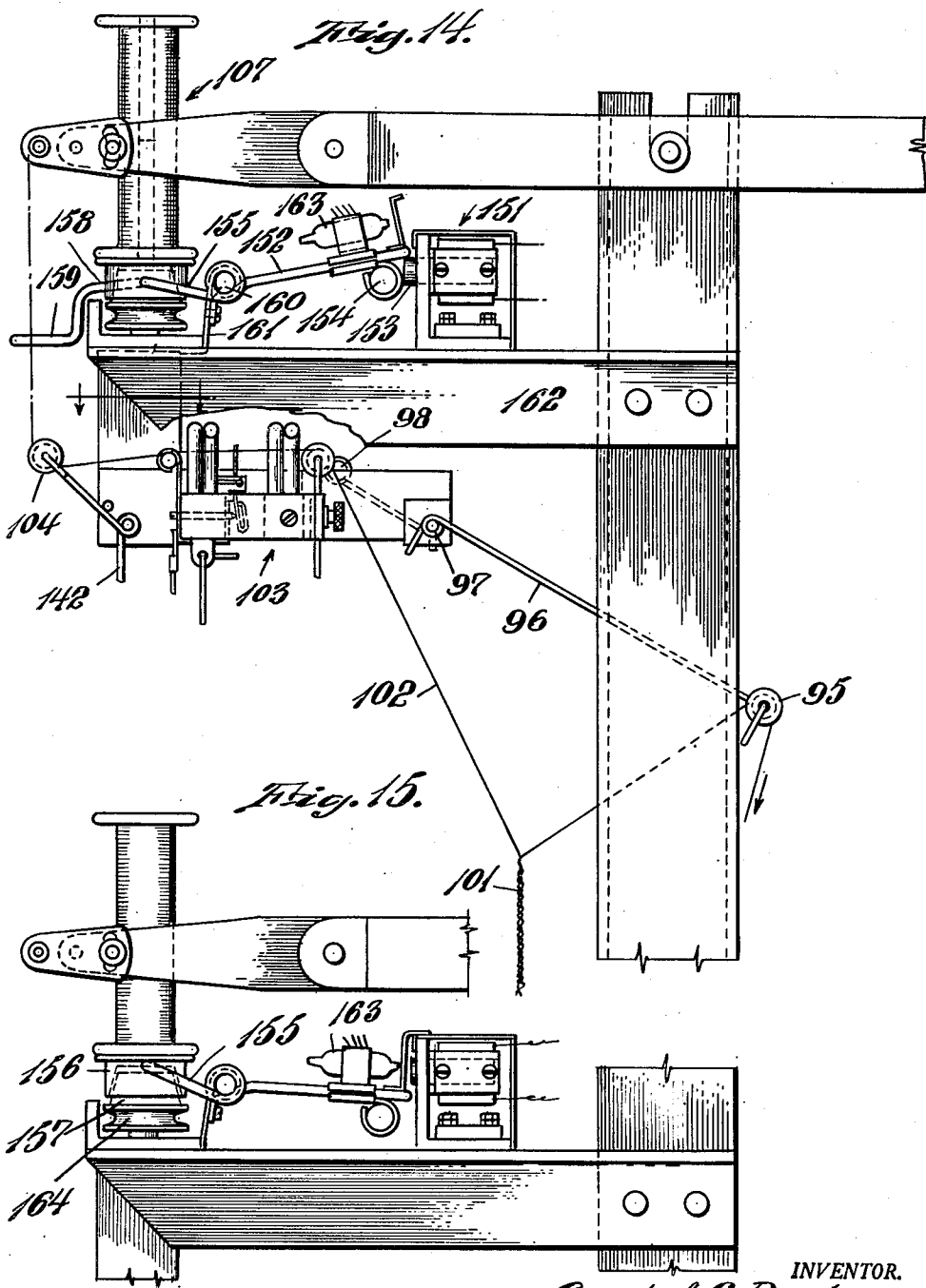
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Fig. 16.

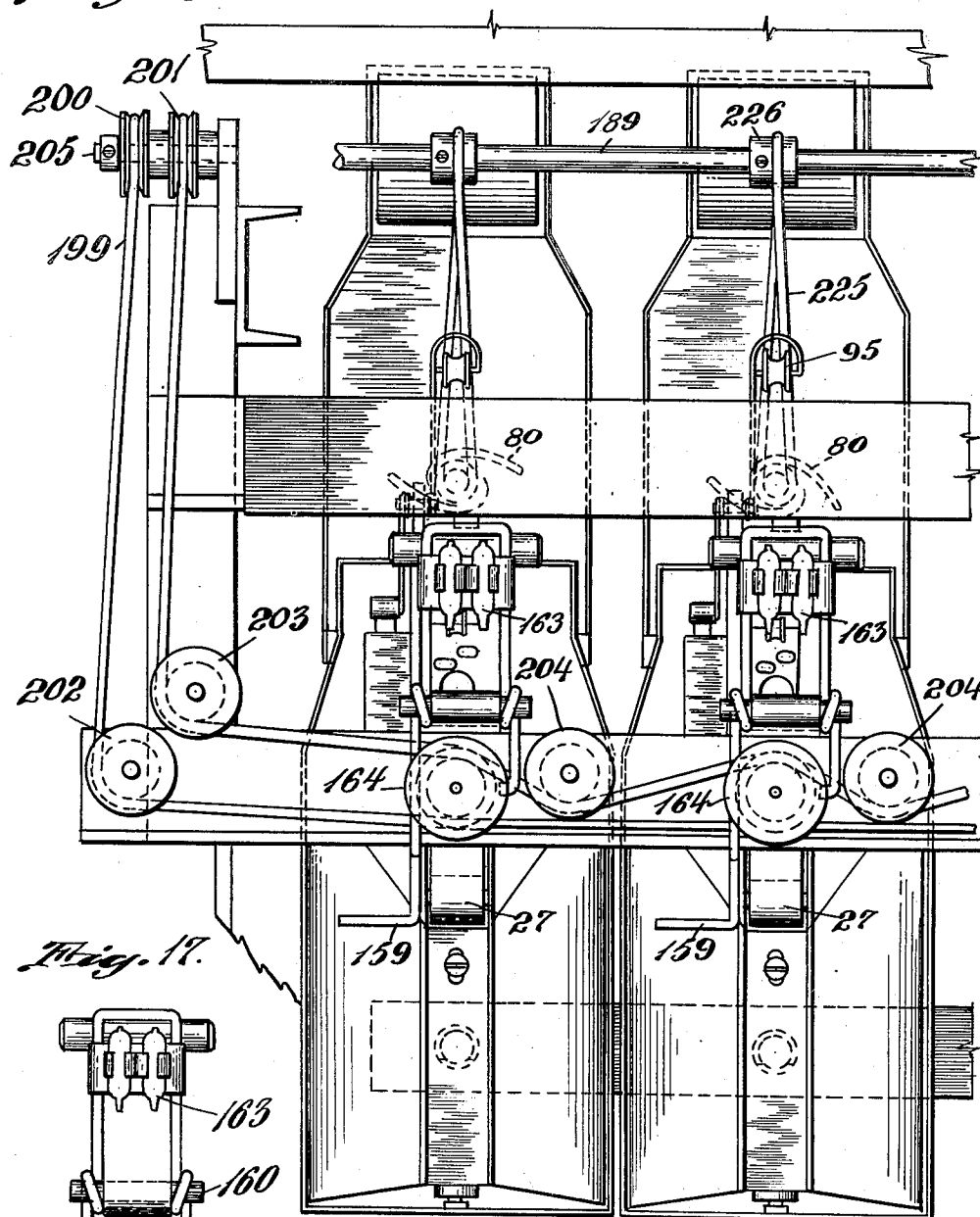
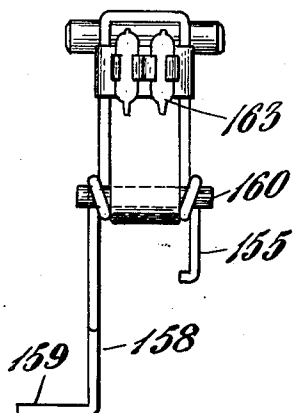


Fig. 17.



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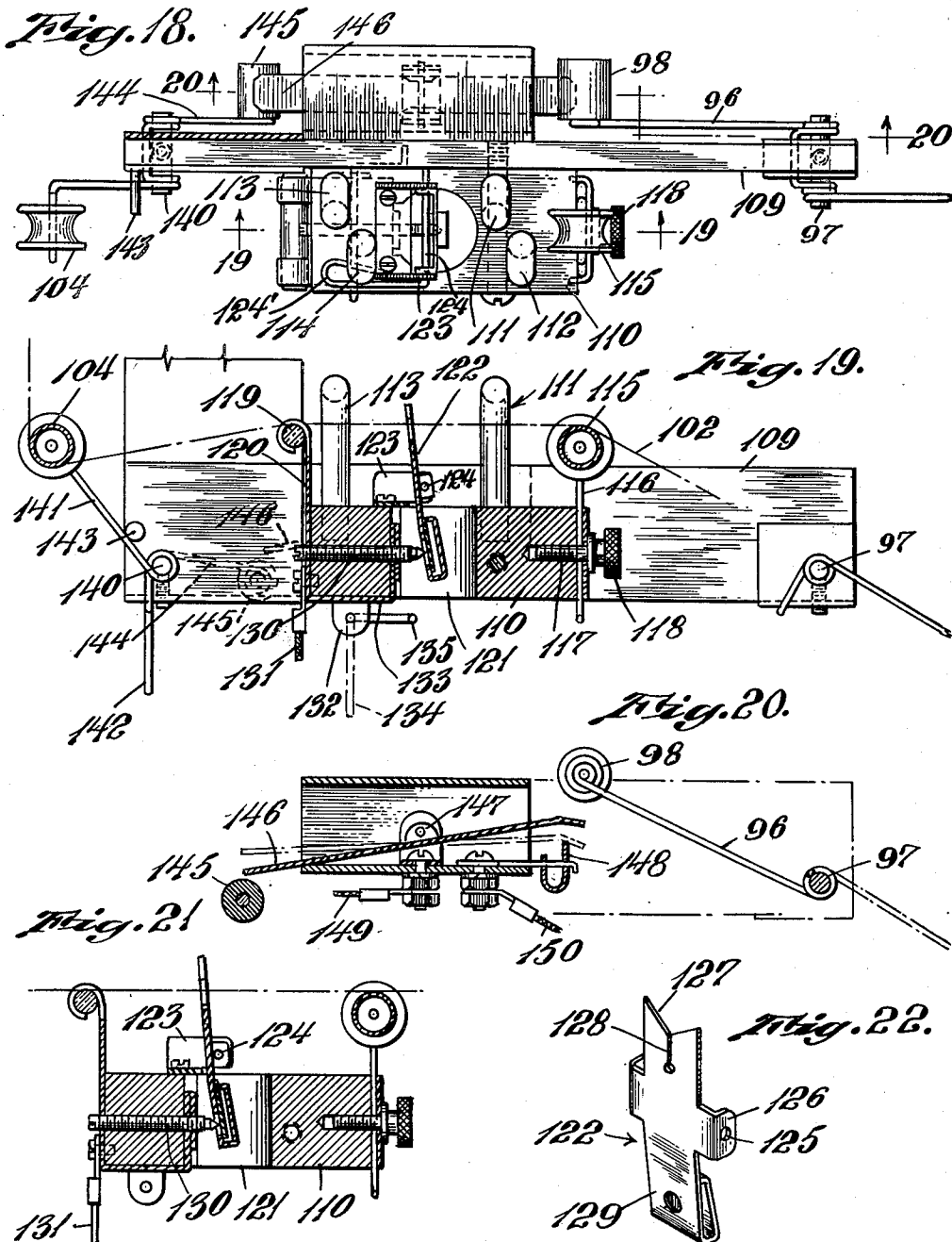
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UNITED STATES PATENT OFFICE

2,644,200

SILK REELING MACHINE

Gustaf S. Beckman, Cranston, R. I.

Application May 9, 1946, Serial No. 668,508

16 Claims. (Cl. 19—3)

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This invention relates to improvements in a silk reeling apparatus and particularly to a machine for automatically supplying silk filaments from cocoons and twisting the filaments into a thread which is thereafter wound onto bobbins, spools or the like.

One of the objects of this invention is to provide a better control of the cocoons as they are operated upon by the apparatus.

Another object of the invention is to provide an arrangement so that the cocoons and the filaments drawn therefrom will not stick to the material of which the apparatus is made.

Another object of this invention is to so control the flow of water in which the cocoons rest that they will remain separated that the filaments may be more easily drawn therefrom.

Another object of the invention is to provide a pick up wheel for a filament to be added to the twisted thread which will be so arranged that injury to the operator will not occur if the wheel is contacted.

Another object of the invention is to provide an easy way of removing for cleaning the pick up wheel for the filaments even though the same is in operation.

Another object of this invention is to provide a more convenient arrangement for removing the exhausted cocoons from the apparatus.

Another object of this invention is to improve the traverse guide for the silk thread to be reeled.

Another object of the invention is to provide a control for the cocoons and filaments drawn therefrom by which the work will not become injured as drawn from reeling position.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

Fig. 1 is an end elevation of the machine showing the essential parts thereof which enter into the invention;

Fig. 2 is a fragmental view looking at the front of the traverse bar;

Fig. 3 is a section on line 3—3 of Fig. 2;

Fig. 4 is a fragmental sectional view showing the reeling basin and the rear end of the supply basin for the reserve cocoons;

Fig. 5 is a top plan view looking into the supply basin and the reeling basin;

Fig. 6 is a sectional view of the structure shown in Fig. 5;

Fig. 7 is a sectional view on line 7—7 of Fig. 5 through the supply basin;

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Figs. 8, 9 and 10 are details of the driving mechanism for the drive of the shafts associated with the supply and reeling basins;

Fig. 11 is a top plan view partly in section of the pick up wheel;

Fig. 12 is a sectional view of the hub of the pick up wheel shown in Fig. 11 with the parts above the wheel associated therewith;

Fig. 13 is a sectional view on substantially line 13—13 of Fig. 1;

Fig. 14 is a fragmental view in end elevation of the gaging mechanism and spool upon which the thread is wound;

Fig. 15 is a view similar to Fig. 14 but showing the mechanism for declutching the spool in a different position;

Fig. 16 is a top plan view of one end of the machine with the traverse mechanism removed;

Fig. 17 is a plan of the declutching device;

Fig. 18 is a top plan view of the gaging portion of the apparatus;

Fig. 19 is a section on line 19—19 of Fig. 18;

Fig. 20 is a section on line 20—20 of Fig. 18;

Fig. 21 is a sectional view similar to Fig. 19 showing but a part thereof with the movable gage as moved into circuit closing position;

Fig. 22 is a perspective view of the movable gage.

The present improved silk reeling machine comprises in general a supply basin for reserve cocoons of raw silk and a reeling basin into which the cocoons are fed individually by automatic transferring means and from which location the silk filaments are drawn off from a plurality of cocoons which are twisted and reeled. Means are provided for circulating warm water through the two basins to float and degum the cocoons whereby to facilitate the release of the filaments therefrom together with means for ejecting the denuded or spent cocoons from the reeling basin after the silk has been exhausted therefrom. A pickup wheel is provided for engaging the filament of each cocoon as it is transferred from the supply basin to the reeling basin which pickup wheel twists the filament about the thread previously formed and at the same time breaks the filament so that but a short end is cast on. A suitable means is provided for gaging the thread that is formed and should the thread become below size mechanism is actuated whereby additional cocoons from the supply basin are transferred to the reeling basin until the thread arrives at the size desired. The action is sufficiently slow so that each filament arrives at the gaging point prior to the movement of another cocoon

from the supply basin to the reeling basin. Should the thread become broken the spool upon which the thread of that unit is wound will become declutched from its driving mechanism. The apparatus consists of a plurality of units each of which operates individually as to the supply of cocoons or filaments to make up the proper size thread although certain fixedly operating parts of the apparatus are all commonly driven from shafts extending throughout the length of the apparatus. The apparatus is supplied in any desired number of units depending upon the size of the apparatus desired. A suitable detachable guide is provided to relieve the traverse bar from wear. The spent cocoons are collected in a tray which may be easily removed from the machine for discharge of these spent cocoons.

Referring to the drawings, there is a frame work designated generally 10 and consisting of a horizontal supporting frame 11 with vertical supports 12, 13 and 14. This frame work is of angle iron formation of sufficient size to provide the strength necessary. Upon the horizontal supports 11 and on a bar 11', I provide a supply basin 15 having a lip 11'' to extend beneath the bar and which will contain a reserve of cocoons and a reeling basin designated generally 16 which is at an elevation just below the elevation of the supply basin as shown in Fig. 4 or 6. Below these two basins there is a reservoir 17 which contains water which is heated and circulated through the supply and reeling basins. The water is pumped from the supply basin 17 (Fig. 1) to a chamber 18 (see also Figs. 6 and 18) which extends lengthwise of the machine and from which there are conduits to nozzles 19 (see Fig. 6) each of which extends in a supply basin 15 and has an opening 20 directed toward the front of the machine so that water flowing from this opening will strike the front wall 21 of the basin 15 and will then reverse the flow as indicated by the arrow 22 so as to flow toward the rear of the machine and in the direction of movement of the cocoons. By reversing the flow of the incoming water in this manner a circular whirling of the water is prevented which causes the cocoons to collect in groups. This arrangement assists in separating the cocoons although tending to move them in the direction of travel in which it is desired they shall move.

Through all of the supply basins there extends a shaft 25 (see Figs. 5, 6 and 13) upon which in each basin there is mounted a roll 26 over which there is trained a belt 27 of some fiber material which belt also engages a pulley 28 rotatably mounted upon an individual shaft 29 which is mounted in bearings 30 having rods 31 extending therefrom through supports 32 with a spring 33 acting between the supports 32 and the bearings to move the shaft 29 away from the roll 26. Thus, as this belt is operated the shaft 29 is operated. Mounted upon vertical shafts 35 there are rolls 36 at either side of the belt 27 and in contact therewith which are covered as at 37 with some non-metallic material such as fiber and which rolls are located to extend upwardly above the surface of the liquid which is contained in this basin and provide a guide means for the cocoons in the basin. These rolls 36 being in contact with belt 27 are rotated by the movement of the belt 27. Guides 38 consisting of vertical walls converging as shown in Fig. 5 are also pivotally mounted on the shafts 35 below the rolls 36 which may be adjusted to direct the cocoons inwardly toward the belt 27.

A false bottom 40 in the supply basin 15 is provided with a lip 41 having an opening to receive the trunnion 42 for rockably mounting this end of the false bottom in the basin. A bracket 43 is secured to the bottom at a point spaced from the flange 41 and is also provided with an opening to receive a trunnion 44 mounted on bracket 45 extending upwardly from the bottom 46 of the supply basin to provide another pivotal mounting which will be substantially axially aligned with the trunnion 42 for rocking the false bottom 40 about a horizontal axis extending in the direction of movement of the cocoons. The sides 46 of this false bottom are tapered inwardly toward the horizontal portion 47 thereof while this bottom is cut away as at 48 so as to receive the belt 27 in the space thus provided. Additional inclinations of this bottom are provided on either side as at 49 so as to assist the cocoons in being moved toward the conveyor belt 27. In order to rock this false bottom about the pivotal trunnions 42 and 44 I provide cams 50 and 51 (see also Fig. 7) on the shaft 29 so located that as one side of the bottom is raised the other side is lowered that a rocking motion may occur of the false bottom in the liquid. Upwardly extending walls 52 as illustrated more clearly in Fig. 7 are also provided on this false bottom.

The cocoons which are shown in dotted lines and designated 53 are loaded into the supply basin 15 and the filaments 54 from each of the cocoons are gathered and manually wound about the conical member 55 which is mounted on a shaft 56 rotated intermittently, as will hereinafter appear, for tensioning the filaments. Guides 58 extend from the rolls 36 for confining the movement of the cocoons. The reeling basin which is designated generally 16 is connected to the supply basin by an inclined member 60 having a cocoon conveying surface 61 with flanges 62 which surface is located at such an angle that should a cocoon engage it, it would slide down this member into the reeling basin designated generally 16. A brush 63 extends across the lower end of this member and will permit filaments of the silk from the cocoons to enter the brush although the bristles would prevent the cocoon itself from being raised upwardly due to a pull on the filament and thus acts as a stop to limit lifting the cocoons from the water level 64 in the basin. Water is discharged from the supply basin 15 which is at a level 57 through an opening 65 into the reeling basin and water is also discharged through the cutout portion 66 in the member 60 into this end of the reeling basin. Such water as is so discharged will engage the baffle 67 which extends upwardly from the bottom 68 of the reeling basin and thus will permit the flow of water to be distributed and will flow over the edge of this baffle 67 toward the discharge end 69 of the reeling basin. Filaments from the cocoons being drawn upwardly over a guide 70 tend to move toward the front of the machine and beneath the brush 63. However, as the cocoons become spent and the silk is completely drawn therefrom, they will then float toward the back of the machine, at which point they will abut against a rotatable wheel 71 which is located at the rear end of the reeling basin and nearly completely submerged in the water therein but for a slight portion of the peripheral marginal edge of the wheel which is above the level 64. The wheel 71 has a plate 72 which extends generally on the curvature of the wheel and has one end thereof fastened to the periph-

ery of the wheel and extending over the peripheral surface of the wheel with the free end thereof spaced from the wheel providing an eccentric portion or relatively inclined surface on the said wheel. At each revolution of the said wheel 71 this plate 72 will engage and lift out of the water such cocoon which may be in its path of movement and deposit the same on a hingedly mounted shelf 69', the free end of which is turned upwardly and positioned in close adjacency to the wheel. Upon further movement of said wheel the fastened end of the plate 72 will pass beneath the shelf and the inclined portion of said plate 72 in passing thereby will engage and swing said shelf to raise the same sufficiently to tilt the same for the said cocoon deposited thereon to slide over the rear edge of the basin to drop onto the inclined chute 73 shown in Fig. 4 from which the said cocoon will move by gravity to the trough 75 at the front edge of the machine. This trough has handles 76 by which the trough may be lifted to dump the spent cocoons from the machine. This chute 73 is perforated so that any water flowing thereon will drop into the supply reservoir 17.

Water from the supply reservoir flows into pipe 74 which connects with a pump (not shown) and which is delivered from the pump to pipe 78 and thence through pipe 79 to the chamber 18. Some heating means is provided for this water which is usual in silk cocoon manipulation.

As a cocoon moves from the supply chamber 15 to the reeling chamber 16, its filament 54 which is fastened about the cone 55 swings into the path of a pickup wheel 80 shown in plan view in Fig. 11 and which consists of a pair of arms 81 which each take the shape of generally a figure 6. These arms extend outward radially from the hub as at 82 and then curve in a long sweep as at 83 leaving a collecting space 84 between the arm and the hub and providing an arrangement so that any filament which is picked up in this space 84 will be drawn in across the center of the hollow hub 85 of the wheel. This hollow hub 85 frictionally engages a hollow shaft 86 and is held thereon by spring ring 87 fitting in a groove 88 in the outer surface of this shaft. A spring 89 places some tension upon the wheel so that it will drive with the shaft. The shaft 86 is equipped with a pulley 90 having a groove 91 for receiving a round belt drive.

The thread which consists of an accumulation of filaments designated 92 (see Fig. 4) from the reeling basin passes over the guide 70 supported by bracket 93 from the upright support 18 and through this hollow shaft 86 and thence upwardly as at 94 and extends over a guide pulley 95 supported at the end of arm 96 which is pivoted as at 97 and weighted as at 98 and which serves as a stop motion device. The thread then extends from this guide 95 downwardly as at 99 over a fixed guide 100 and thence around the portion 94 in a spiral path as at 101 and thence upwardly as at 102 and through a gage mechanism designated generally 103 and shown in greater detail in Figs. 18-21, thence under a guide 104 upwardly as at 105 and over a traverse bar designated generally 106 to the spool designated generally 107.

The gage mechanism shown in greater detail in Figs. 18-21 consists of a supporting body 109 carrying a supporting block of insulating material 110 upwardly from which there extends pairs of glass rods 111 and 112 as one pair between which the thread extends and 113 and 114

as another pair between which the thread also extends. A guide roll 115 is supported at one end of the insulating block 110 to guide the thread portion 102 thereover for elevating it to proper height. This guide pulley 115 is supported by bracket 116 which is adjustably held as to height by set screw 117 with thumb nut 118. A glass rod 119 is supported by a bracket 120, at the other end of the block 110 over which the thread extends for elevating the thread as to height. The block 110 is recessed as at 121 to receive a gage member designated generally 122 and supported between a pair of arms 123 supported on the insulating block 110, by means of a pivot 124 which extends through the openings 125 in the arms 126 of the member 122. The member 122 is electrically connected to the support 109 by means of the pivot pin 124 which is made of a length to extend beyond the arms 123 with one end of said pin extending into and resiliently held in engagement with the said support 109 by means of a U-shaped bend 124' placed in the other end portion of the said pin, the free arm of said U-shape abutting against the inner side of the adjacent arm 123 thereby exerting a resilient force on said pin tending to move the same into engagement with said support. It may be here pointed out that the frame of the machine, of which the support 109 is part, provides one side of the electric circuit for operating the gage mechanism and the stop motion mechanism of the machine. Member 122 is provided with inclined edges 127 in the form of a V which extend to a slot 128 of a size such that when the silk is of proper size friction will be exerted on the opposite sides of this slot 128 and will rock this member 122 on its pivot pin 124 so that its lower portion 129 will be spaced from a contact 130 which extends through the block 110 and is in electrical connection with the wire 131. When the thread 102 gets below size, the member 122 swings to complete this electrical connection and will actuate mechanism to be hereinafter described to cause the filament of another cocoon to be supplied to the thread.

An auxiliary manually operated addition filament supplying device is provided in the form of ears 132 extending from the bracket 133 which is in electrical connection with the wire 131 and which pivotally mounts a bell crank wire 134 having an end 135 which may swing into engagement with the body 109 to complete the electrical connection of wire 131 should it be desired to manually actuate said mechanism to add filaments to make up the size of the thread.

The body 109 is provided with a pivotal mounting 140 which pivotally mounts arm 141 upon which the guide roll 104 is rotatably positioned. This arm 141 is limited in its upward movement by a pin 143 but will swing downwardly upon breaking or slackening of the thread, transferring motion to arm 144 which is connected thereto to cause the cylindrical member 145 of insulating material on the end of this arm 144 to rise and swing the plate 146 about its pivot 147 so as to engage contact 148 at the other end thereof to close the said circuit through the electrical conduits 149 and 150 to actuate solenoid 151 to withdraw its core 153 (see Figs. 1 and 14) so that a pivoted rocker 152 which is supported by the core 153 may swing downwardly, due to the same being weighted as at 154 and cause the spool 107 to be lifted by the upward swing of the arm 155 of the rocker 152, as shown in Fig. 15. This will raise the conical clutch 156 from the

cone 157 which is continuously driven by pulley 164 for reeling the silk. The rocker 152 (see Figs. 14 and 17) is pivotally mounted as at 160 on a bracket 161 fixed on the upper horizontal cross beam 162. The said rocker is made of wire bent into a general U-shape providing the arm 155 which extends to be moved into engagement with the bottom of spool 107 and an arm 158 provided with a right angular handle 159 at the free end thereof. These arms 155, 158 are provided with a coil therein intermediate the ends thereof which provide aligned openings for receiving the said pivot 160. A strap is supported on the arms 155, 158 adjacent the bight of the rocker 152 and there is mounted on this strap mercury switches 163, one of which is in the circuit of the solenoid 151 and is moved to open position upon the downward swing of said rocker 152 to interrupt the circuit to the said solenoid 151 after the same has been actuated to withdraw its core 153 from engagement with the bight of the said rocker 152. The other of said mercury switches 163 is for a similar function in the circuit of another solenoid to be herein described. If it is desired, the clutch 156 may be manually disconnected by an upward movement of the arm 158. To reset the machine in operation at this point, the handle 159 is manually moved downwardly to swing the other end of the rocker upwardly past the core 153, which may be manually pushed inwardly for this purpose and then released, to be in position to support the rocker 152 in the raised position to permit engagement of the spool 107 with the cone 157 and to close the circuits of the said solenoid at the mercury switches 163.

In the event that either stretch of the yarn extending to the guide 95 and the guide 115 becomes broken, it will cease to pull downwardly on the guide 95 and the arm 96 which is weighted as at 98 will swing downwardly about its pivot 97 and the weight 98 will engage and swing the plate 146 into engagement with the contact 148 and close the circuit to the solenoid 151 to energize the same to withdraw its core 153 to permit the said rocker 152 to swing, as previously described, to declutch the spool 107.

In order that the thread may traverse on the spool 107 I have mounted a glass rod 170 upon the traverse bar 106 at a location in front of each of the spools 107. This glass rod 170 is bound to the traverse bar 106 by a clamp designated 171 and shown more particularly in Figs. 2 and 3. This glass rod 170 extends upwardly as at 172 so as to prevent the thread from traversing upon this end of the rod while the clamp will prevent the thread from traversing in the other direction along the rod 170 to an excessive extent. The traverse bar 106 is mounted at the end of a lever 173 which is pivoted at 174 in the upright 13 and is rocked by means of rod 175 which has a cam follower 176 engaging the cam 177 at the end of the shaft 178.

The drive for this apparatus is supplied to a power shaft 180 through pulley 181. This shaft extends inwardly from the back of the machine and is suitably supported in bearings 182 and 183 (Fig. 1). A worm 184 drives the worm wheel 185 on shaft 186 which extends throughout the length of the machine. A spiral gear 187 on shaft 180 drives spiral gear 188 on shaft 189 which also extends throughout the length of the machine and from these two shafts 186 and 189 power is derived for operating the various mechanisms of the individual units. The traverse motion is also

common to all of the units and is driven from the opposite end of the machine wherein there is provided a gear 190 meshing with gear 191 in suitable bearings 192 to drive shaft 178 upon which shaft the cam 177 is mounted for reciprocating the traverse motion which is common to all the units. The drive for the spindles upon which the bobbins 107 are mounted is also common to all of the units and is taken from the same end of the machine as is the traverse motion. In this case there is a pulley 195 (see Fig. 1) which through belt 196 drives pulley 197, to which there is fixed the pulley 198 and about which there extends the round belt 199 extending upwardly over the two pulleys 200 and 201 (see Fig. 16) and from which this belt travels over guide pulleys 202 and 203 and contacts each of the pulleys 164, the same being tensioned by idlers 204 in between these pulleys 164 for each of the spindles. The two pulleys 200 and 201 are loosely mounted upon shaft 205 at the upper end of arm 206 (see Fig. 1) which is pivotally supported as at 207 from the upright support 13 and which is tensioned by spring 208 extending from arm 209 which is adjustably held as at 210 on the upright support 13.

The drives for shafts 25, 56 and 218 are individual for each unit and are taken from the shaft 186 by means of a clutch 234 to be hereinafter described. There is one such clutch for each unit which is held normally stationary, as will hereinafter appear. The clutch 234 carries a sprocket gear 215 rotatable therewith and which is connected by means of a sprocket chain 216 to rotate a sprocket gear 217 fixed on shaft 218 on which is mounted the drum 71, there being a shaft 218 for each unit. A sprocket gear 219 is fixed to the shaft 218 and drives a sprocket chain 220 which extends to sprocket gear 221 on the end of shaft 25 to drive this shaft and also the pulley roll 26 which is mounted thereon. At the opposite end of this shaft there is provided a sprocket 222 driving sprocket chain 223 which extends upwardly to drive shaft 56 upon which the cone 55 is mounted.

From the shaft 189 which is continuously rotating when the apparatus is in operation a round belt 225 extends about the drum 226 to drive the pulley 90 on the shaft 86 by engaging the groove 91 thereof.

The clutch 234 herein shown (see Figs. 8, 9 and 10) comprises a cylindrical body 245 having a recess 246 extending inwardly and radially from the periphery thereof, and a shank 247. This body is mounted on the shaft 186 for free rotation thereon. The sprocket gear 215 is mounted on this shank 247 for rotation therewith. A pawl-like member 233 made of flat stock and extending generally on the curvature of the body 245 is pivotally mounted intermediate the ends thereof on the body 245 as at 248 and extends generally along the periphery of said body 245. One end of the member 233 on one side of the pivot 248 has a right angularly extending finger 235 which extends into said recess 246. A compression spring 237 carried by the body 245 at a location to engage the member 233 on the other side of the pivot 248 tends to swing said member about said pivot to move said finger 235 inwardly into the said recess 246, as shown in Fig. 10. There is also mounted on the shaft 186 for rotation therewith, a toothed wheel 236 of much less diameter than the body 246 at a position thereon adjacent to the side of the body 246 distant from the said shank and spaced therefrom such as by means of a collar 249. A collar 250 is fixed to the shaft

186 and a flat washer spring 251 is interposed between said collar and the free end of the shank 247 and tends to move said body toward said collar 249.

The finger 235 is of a width (see Fig. 5) to extend in overlapping relation with said wheel 236 and under the force of said spring 237 is moved into engagement with the teeth of said wheel 236, thus connecting said ratchet wheel 236 to said shaft for rotation therewith. However, the clutch is normally held in the declutched relation by means of a solenoid 231 which is mounted at a location so that its core 232 when at the outward position will overlap and engage that portion of the member 233 on the side of the pivot thereof to hold said finger in the raised position and out of engagement with the teeth of the wheel 236, there being sufficient frictional engagement between said core and member 233 to prevent free rotation thereof on said shaft 186. Upon energizing of the said solenoid 231, such as by closing of the electrical circuit thereof at contact 130 or through contact manually made by wire 134, the core 232 will be drawn within the solenoid windings to free member 233 to be moved by the spring 237 to swing the finger 235 inwardly into engagement with the teeth of the wheel 236 to clutch the said gear 215 with the shaft 186, as previously described. The other mercury switch 163, previously referred to, is in the circuit of this solenoid 231 and operates as previously described in the branch circuit of the solenoid 231 to open the same upon the movement of said rocker 152 in the direction to declutch the spool 171 so that no current will flow through said solenoids when the apparatus is not reeling yarn. The opening of this said branch of the circuit will de-energize the solenoid 231 and its core will return in a usual manner (not shown) to the outward position thereof. The wheel 236 and body 245 will now move as a unit and through gear 215 will drive such mechanism as is connected therewith, as previously described. In the rotation of body 245 the advancing end of the member 233 will ride beneath the core 232 to be engaged thereby to move the said member 233 against the action of the spring 237 to swing the said finger 235 out of engagement with the wheel 236 and thus declutch the gear 215 from the shaft 186 to arrest the motion of the different parts driven thereby. It will now be apparent that the clutch 234 is intermittently operated in response to the condition of yarn, whether the same be broken or require additional filaments, as above described.

Operation

In operation the group of filaments 92 are drawn from the cocoons in the reeling basin 16 over guide 70 and through the hollow shaft 86. Thence as shown in Fig. 1 the thread extends in the usual loop known in silk reeling up to the bobbin or spool 107. Should any one of the filaments 92 fail thus making the thread smaller in size, the gage member 122 will swing on its pivot to engage the electrical contact 130 to close the electric circuit of solenoid 231. The circuit of the apparatus includes the control box shown in Fig. 1 and designated generally 230. The closing of said circuit of solenoid 231 will through means in said control box energize the solenoid 231 to withdraw the core 232 to permit the clutching of gear 215 with the shaft 186 whereby the parts driven through this gear 215 will be set into motion. Upon the clutching of the gear 215, motion therefrom will be trans-

mitted, as previously described, to the shafts 25, 56 and 218 and set into motion such parts as described and operated thereby to effect the discharge of a cocoon into the basin 16 and for its filament attached to the cone 55 to be positioned at a location to be engaged by an arm 81 of the continuously rotating member 80 to wrap said filament about those projecting through the shaft 86. The timing is such that the added filament will be carried to the gage just prior to the clutch 234 completing a revolution. Should the added filament be insufficient to build the yarn to the required size, the gage 122 will remain in engagement with contact 130 to maintain the circuit closed for another revolution of the clutch 234 for another cocoon to be cast on the yarn, as previously described. Upon the yarn being brought to the required thickness or size, the member 122 will be moved thereby out of engagement with contact 130 to open the circuit at said contact 130 to permit de-energizing of solenoid 231 and thereby permitting said clutch 234 to declutch the gear 215 from shaft 186, thus bringing to rest such parts driven by the said gear 215. The pickup wheel 80 is constantly revolving but should the hand engage this wheel because of its light frictional drive the wheel would stop and the same may be grasped and withdrawn from the shaft 86 for cleaning the same if desired. As the cocoons are exhausted from the supply chamber the operator will add new cocoons and wrap the filaments from each cocoon around the cone 55. Should the thread break the arm 96 will rock to close contact 148 and will energize the solenoid 151 to lift the spool 107 to declutch the same and thus stop the drive of the spool from the constantly driven belt which drives the other spools of the apparatus. The same stopping of the operation of the spools may be caused by the dropping of pulley 104 which similarly actuates the stop control.

Lubricant may be provided for the silk thread as it emerges from shaft 86 by a wick applicator 240 in a chamber of lubricant 241 for each unit.

I claim:

1. In a silk reeling machine, a supply basin for containing a reserve of cocoons of raw silk, means for moving liquid in the basin to move cocoons toward one end thereof, a false bottom in said basin, means for rockably mounting said bottom on an axis extending generally in the direction of movement of the cocoons and means to rock said false bottom about said axis to agitate the liquid in said basin and cause separation of the cocoons.

2. In a silk reeling machine, a supply basin for containing water and a reserve of cocoons of raw silk, a smooth surfaced conveyor belt having an upwardly inclined upper surface at such an angle as to frictionally retain and convey cocoons from said basin.

3. In a silk reeling machine, a supply basin for containing water and a reserve of cocoons of raw silk, a smooth surfaced conveyor belt having an upwardly inclined upper surface at such an angle as to frictionally retain and convey cocoons from said basin, a pulley about which one end of said belt passes, a shaft for mounting said pulley, and resilient means to urge said shaft in a direction to tension said belt.

4. In a silk reeling machine, a supply basin for containing water and a reserve of cocoons of raw silk, a smooth surfaced conveyor belt

having an upwardly inclined upper surface at such an angle as to frictionally retain and convey cocoons from said basin, a pulley about which one end of said belt passes, a shaft for mounting said pulley and cam means on said shaft and a false bottom resting on said cam means to be rocked upon rotation of said shaft.

5. In a silk reeling machine, a supply basin having end walls over one of which the liquid and cocoons are discharged from the basin, said basin containing water and a reserve of cocoons of raw silk, a conduit provided with an opening for admitting water into said basin in a direction to first flow against the other end wall of the basin and then reverse its flow to proceed in the direction of the discharge end for feeding movement of the cocoons into working position.

6. In a silk reeling machine, a supply basin for containing water and a reserve of cocoons of raw silk, a conveyor belt having an upwardly inclined upper surface to convey cocoons from said basin and a false bottom extending in said basin on either side of the belt and having surfaces sloping from above the belt toward said conveyor belt to move cocoons onto the belt.

7. In a silk reeling machine, a supply basin for containing water and a reserve of cocoons of raw silk, a conveyor belt having an upwardly inclined upper surface to convey cocoons from said basin and a pair of rolls having vertical axes on opposite sides of said belt adjacent the discharge end thereof to guide the cocoons along the belt.

8. In a silk reeling machine, a supply basin for containing water and a reserve of cocoons of raw silk, a conveyor belt having an upwardly inclined upper surface to convey cocoons from said basin and a pair of rolls having vertical axes on opposite sides of said belt adjacent the discharge end thereof to guide the cocoons along the belt, said rolls and belt being provided with non-metallic surfaces.

9. In a silk reeling machine, a supply basin for containing water and a reserve of cocoons of raw silk, a conveyor belt having an upwardly inclined upper surface to convey cocoons from said basin and a pair of rolls having vertical axes on opposite sides of said belt adjacent the discharge end thereof, and so located as to be driven by the edge of said belt.

10. In a silk reeling machine, a supply basin, a reeling basin to receive cocoons from said supply basin for containing cocoons to be reeled, a brush supported above the reeling basin and through which the filaments from the cocoons lead in being reeled while retaining the cocoons in the basin.

11. A silk reeling machine as set forth in claim 10 wherein a guide is positioned above the reeling basin and said brush is substantially vertically below said guide.

12. In a silk reeling machine, a supply basin, a reeling basin having an end wall and receiving cocoons from said supply basin for containing cocoons to be reeled, said reeling basin being at a level below said supply basin, the supply

basin having a bottom wall overlapping the end wall of the reeling basin and having an opening in the overlapping bottom wall of a size to discharge water from the supply basin to the reeling basin in controlled amounts.

13. In a silk reeling machine, a supply basin, a reeling basin to receive cocoons from said supply basin for containing cocoons to be reeled, said reeling basin being at a level below said supply basin and means to discharge water from the supply basin to the reeling basin, and means to control the flow of water in said reeling basin, comprising a vertical dam with discharge of water into the reeling basin back of said dam.

14. In a silk reeling machine, a supply basin, a reeling basin to receive cocoons from said supply basin for containing cocoons to be reeled, and a cylindrical rotary drum at the end of said reeling basin partly immersed in said basin and having a member extending along the periphery thereof and outwardly therefrom for engaging and moving a spent cocoon to raise the same out of the water to discharge the same out of said reeling basin.

15. In a silk reeling machine, a supply basin, a reeling basin to receive cocoons from said supply basin for containing cocoons to be reeled, and a cylindrical rotary drum at the end of said reeling basin partly immersed in said basin and having a member extending along the periphery thereof and outwardly therefrom for engaging and moving a spent cocoon to raise the same out of the water to discharge the same out of said reeling basin and an inclined chute to receive said spent cocoons and a trough to receive the cocoons from said chute.

16. In a silk reeling machine, a supply basin, a reeling basin to receive cocoons from said supply basin for containing cocoons to be reeled, and a rotary drum at the end of said reeling basin partly immersed in said basin and having a cam surface extending along the periphery thereof for engaging and moving a spent cocoon to raise the same out of the water to discharge the same out of said reeling basin, an inclined chute to receive said spent cocoons and a trough to receive the cocoons from said chute, said trough being removable from position for dumping the cocoons collected.

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