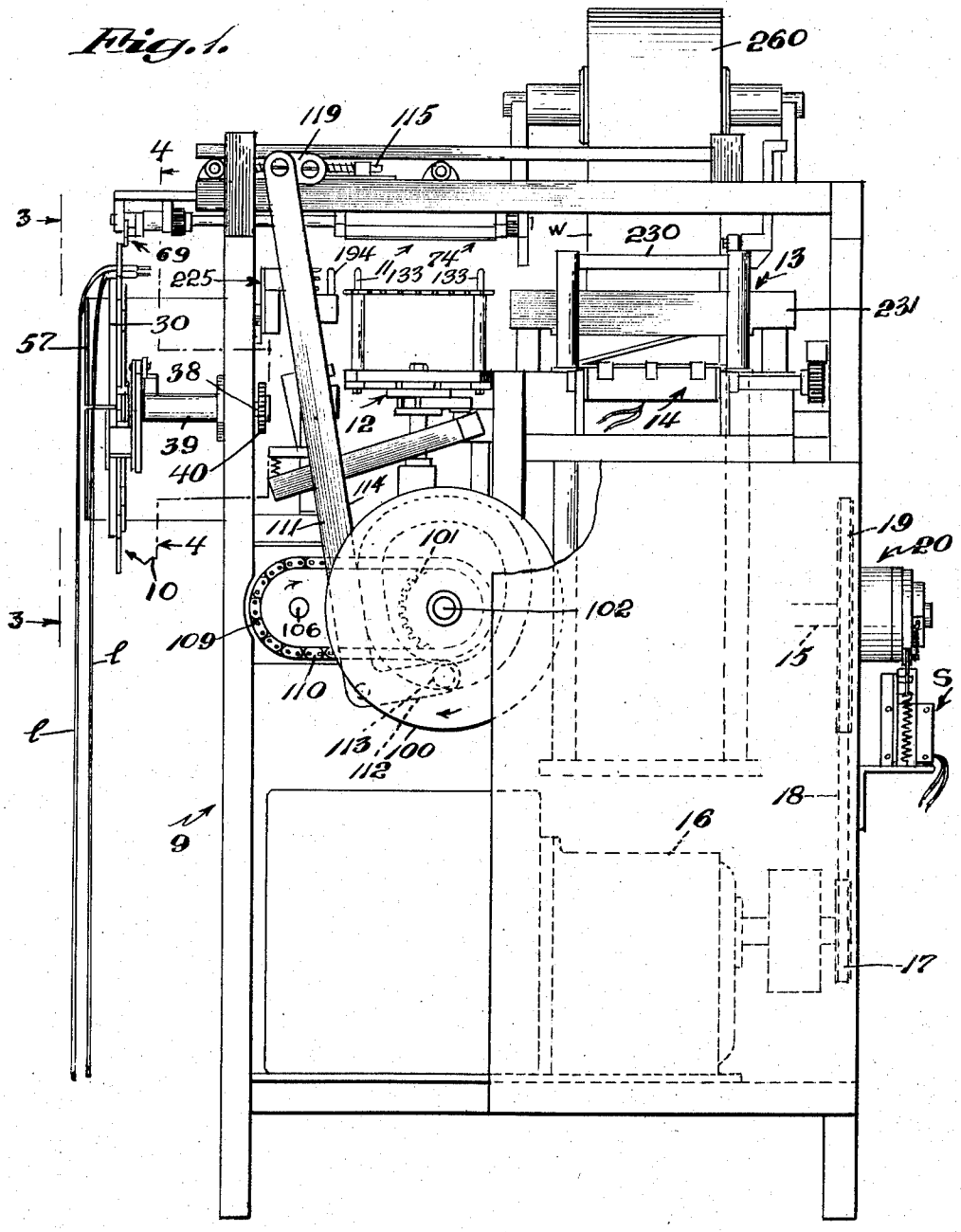
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Fig. 1.



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Fig. 2.

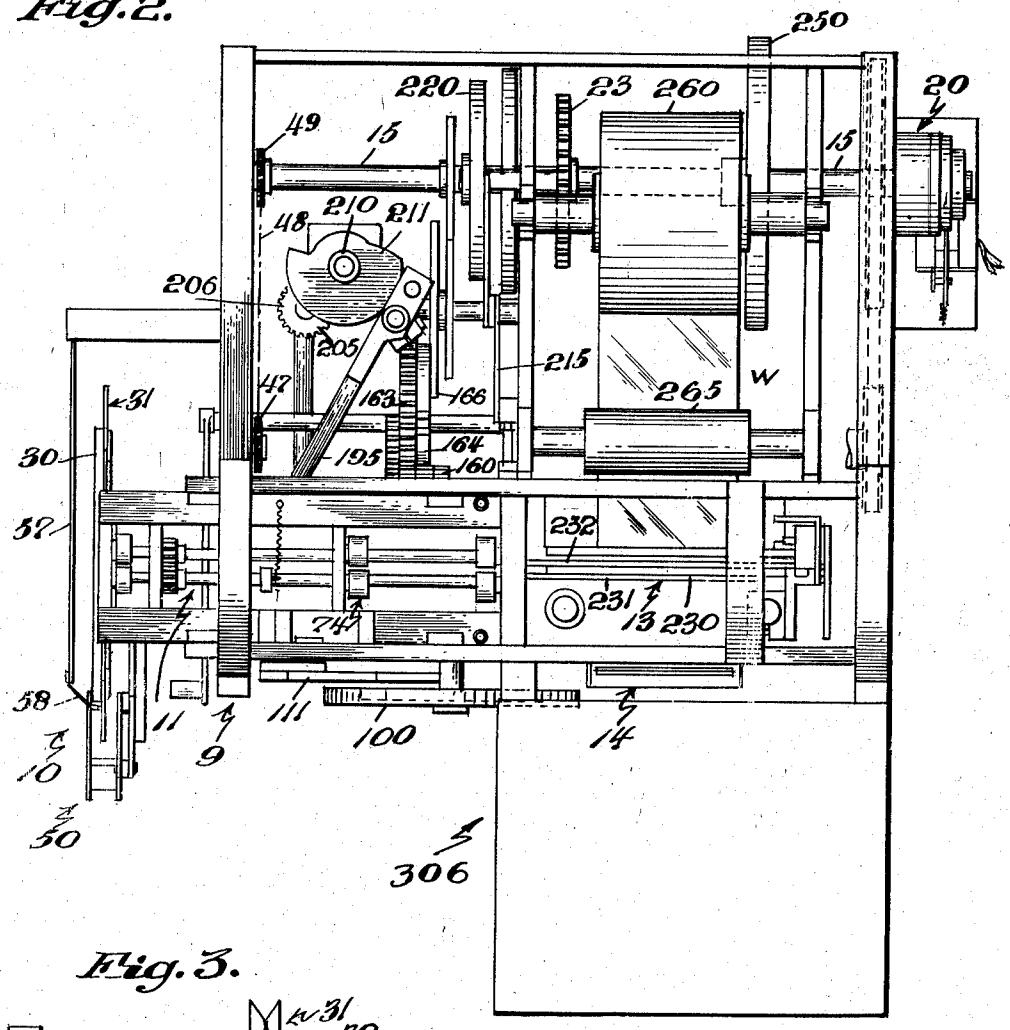
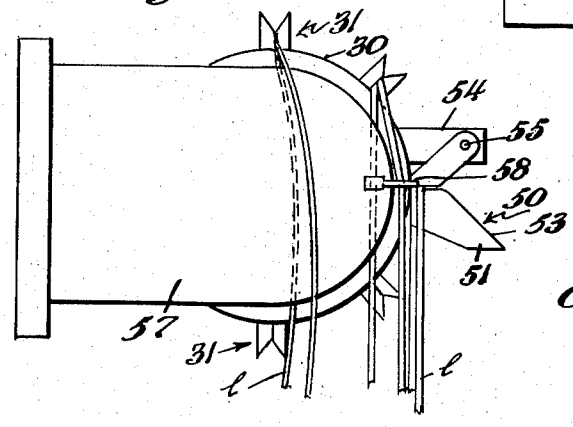


Fig. 3.



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Fig. 4.

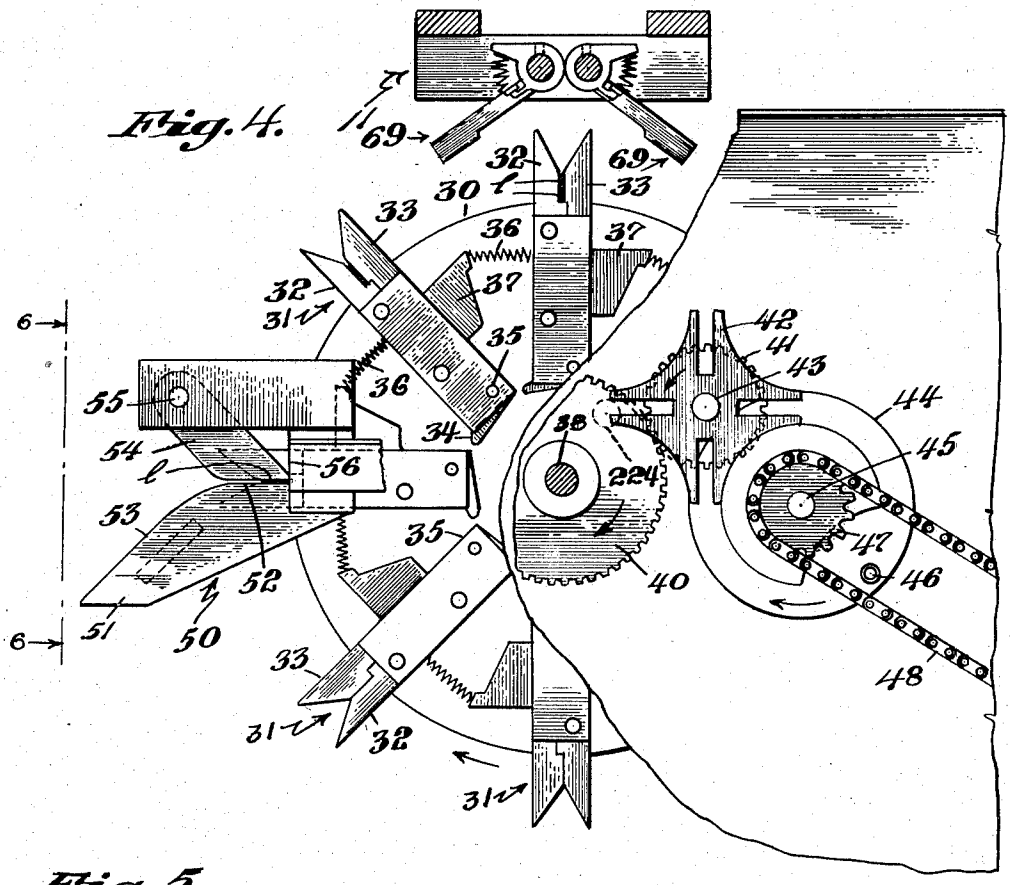


Fig. 5.

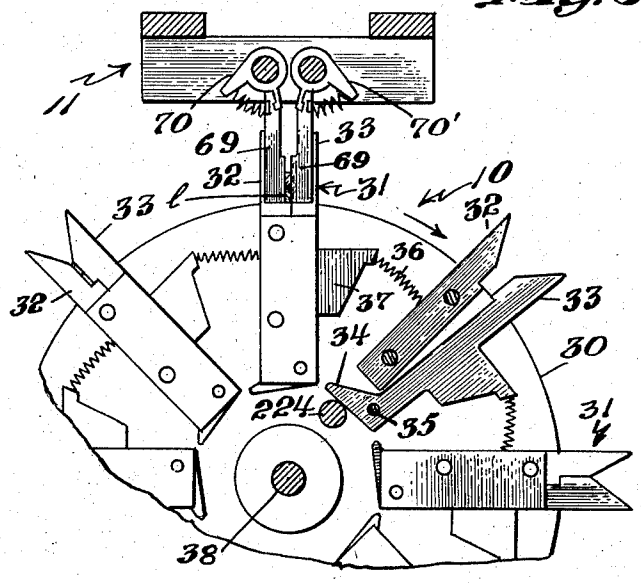
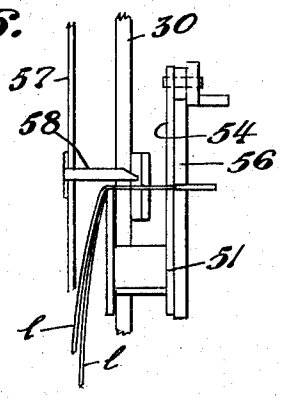


Fig. 6.



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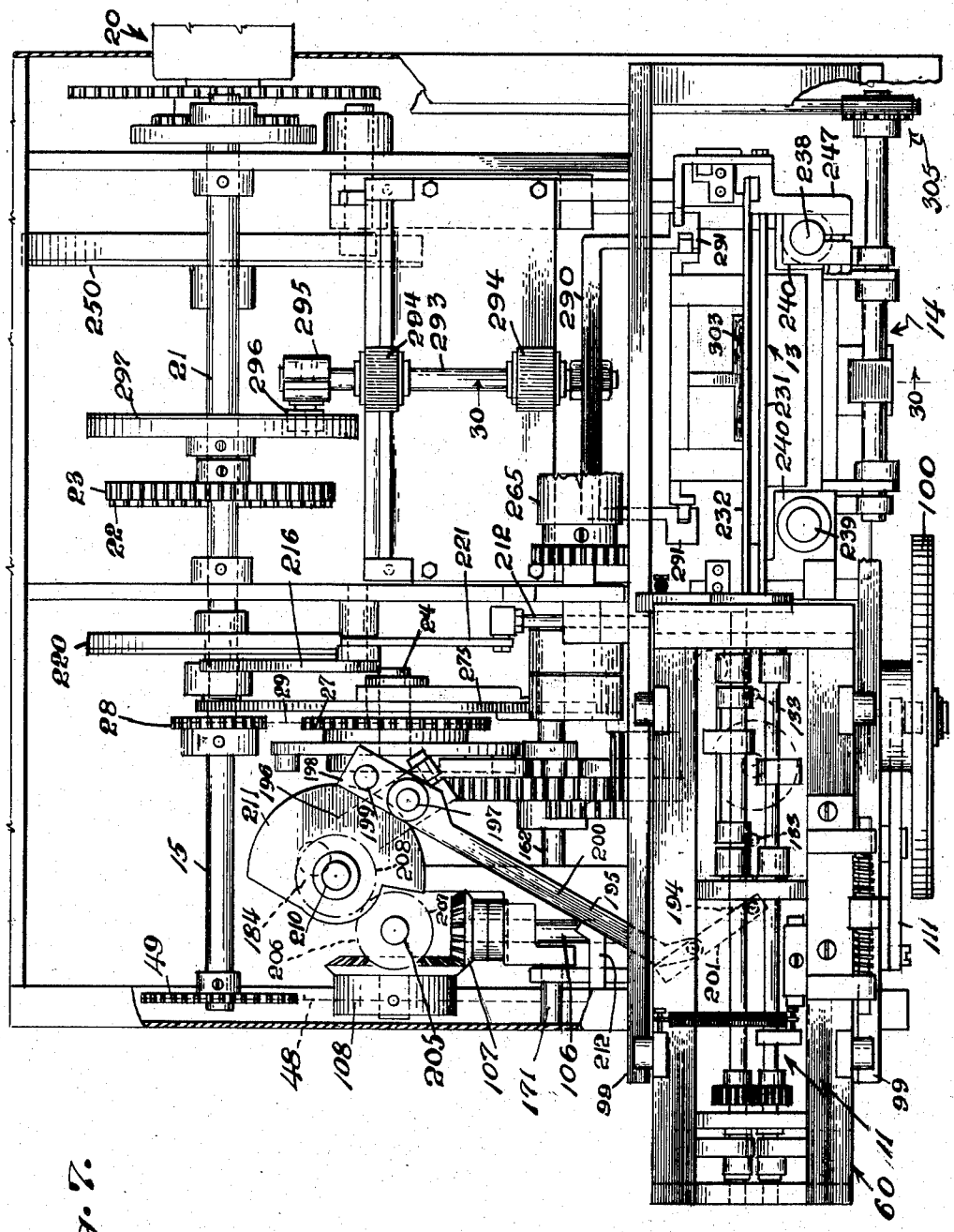


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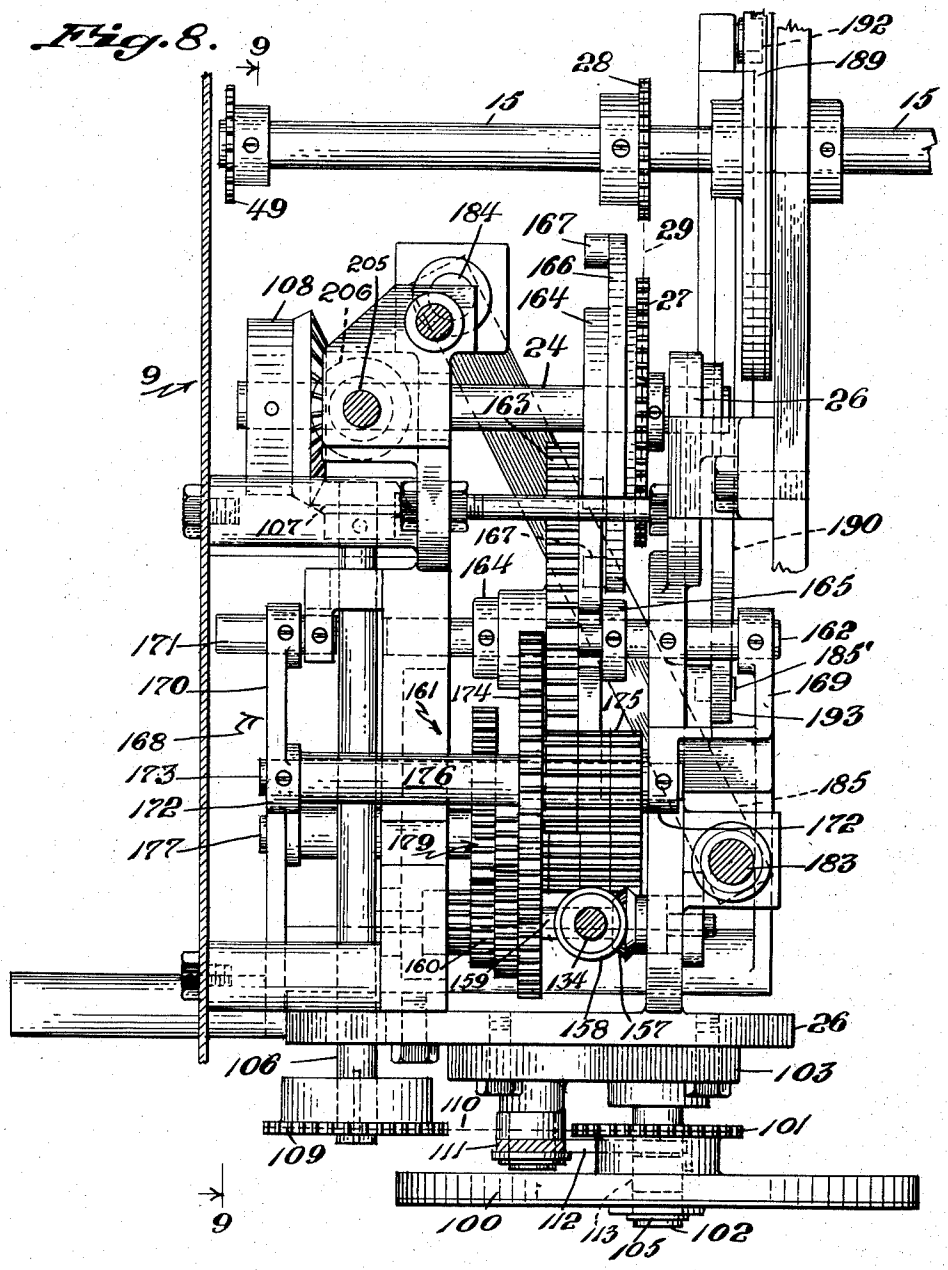
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Fig. 8.



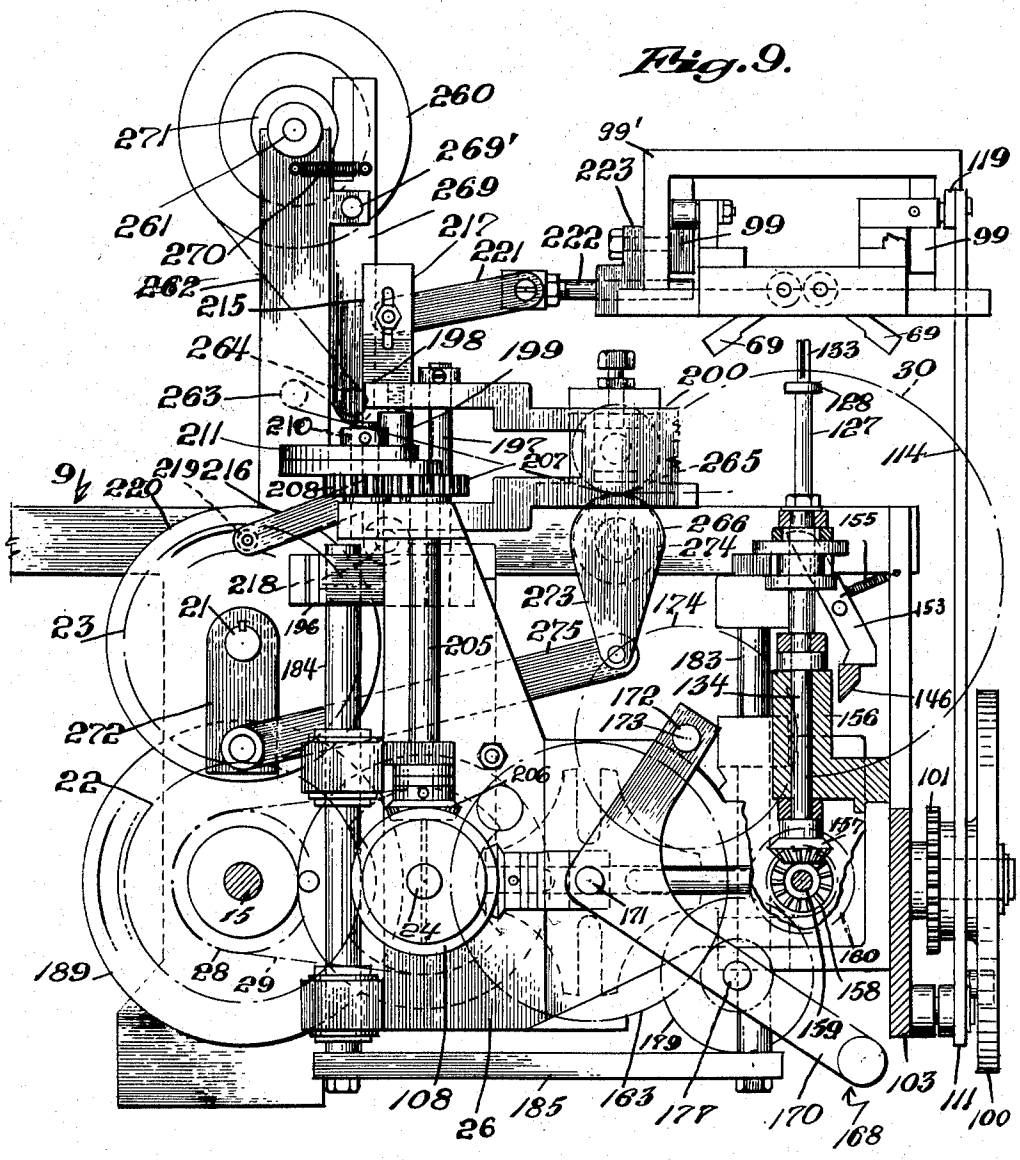
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Fig. 9.



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Fig. 10.

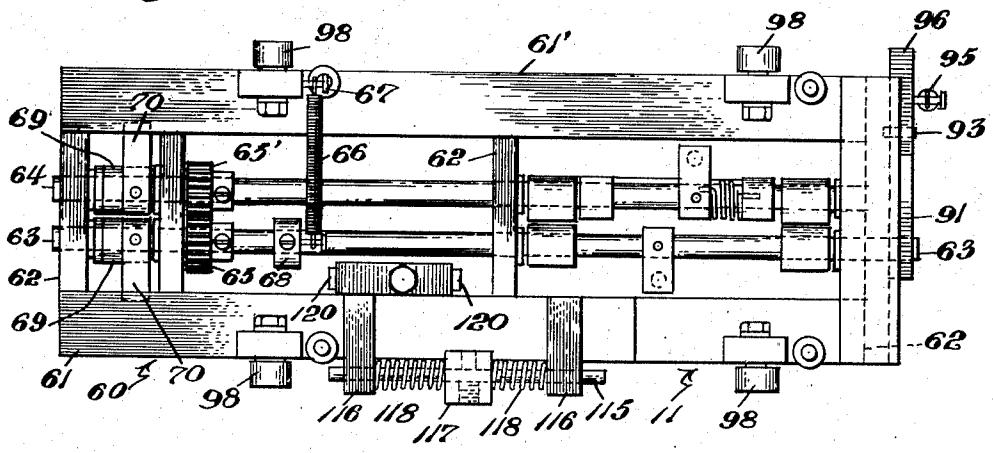


Fig. 11.

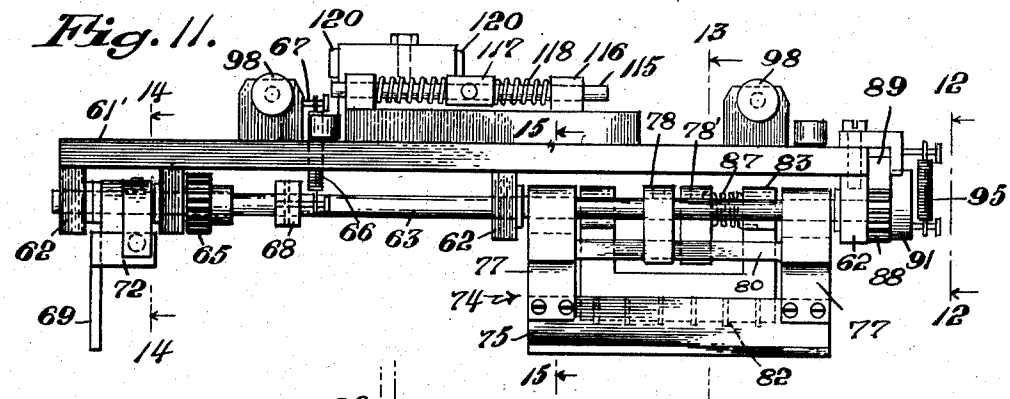


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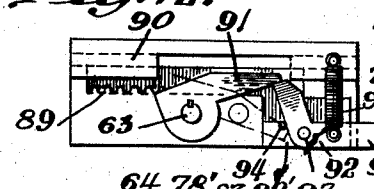


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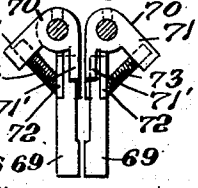
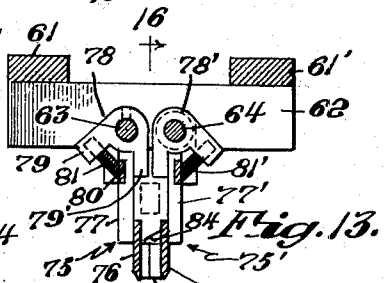


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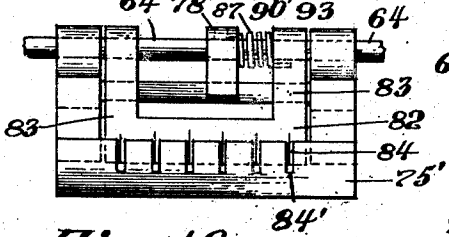


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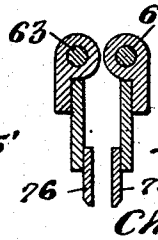


Fig. 15

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Fig. 17.

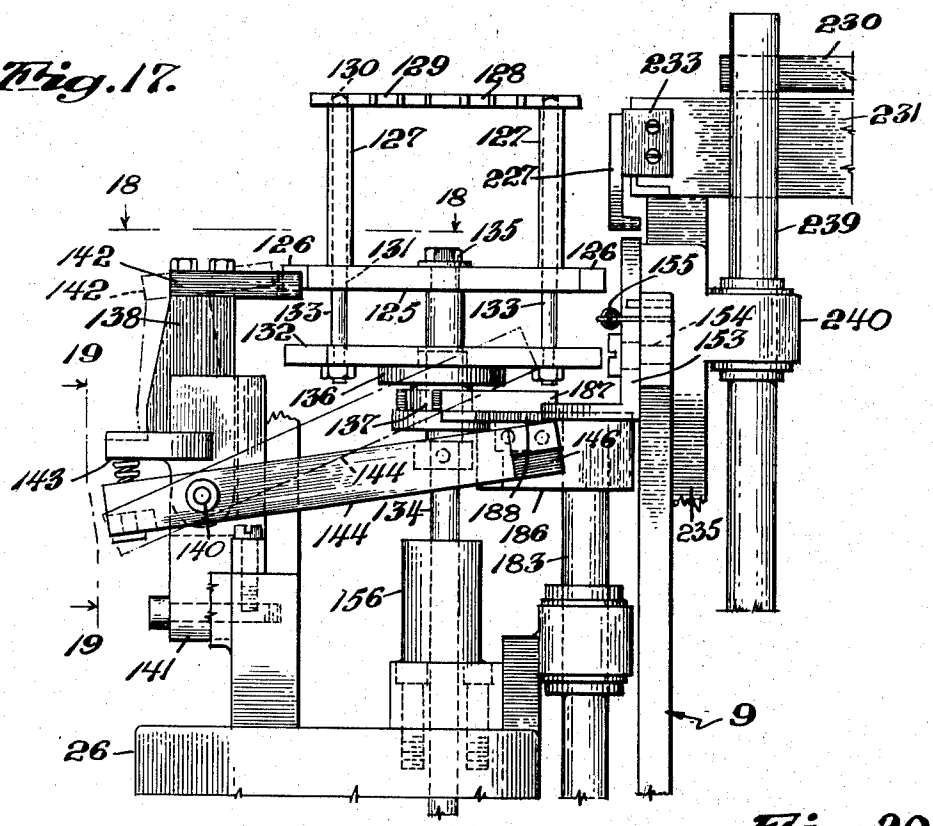


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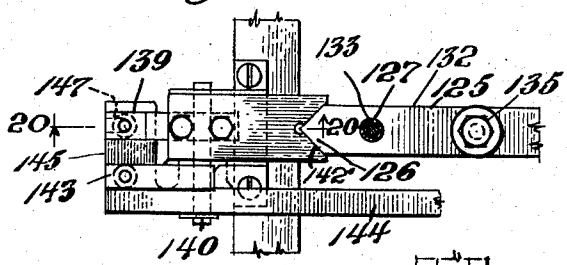


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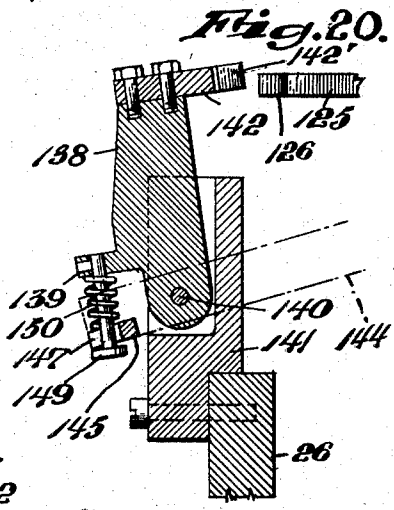
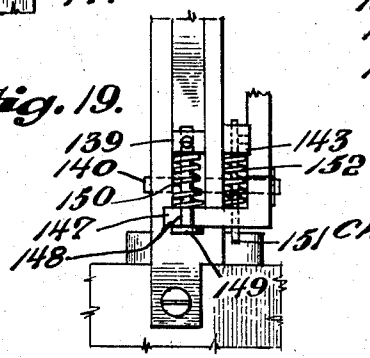


Fig. 19.



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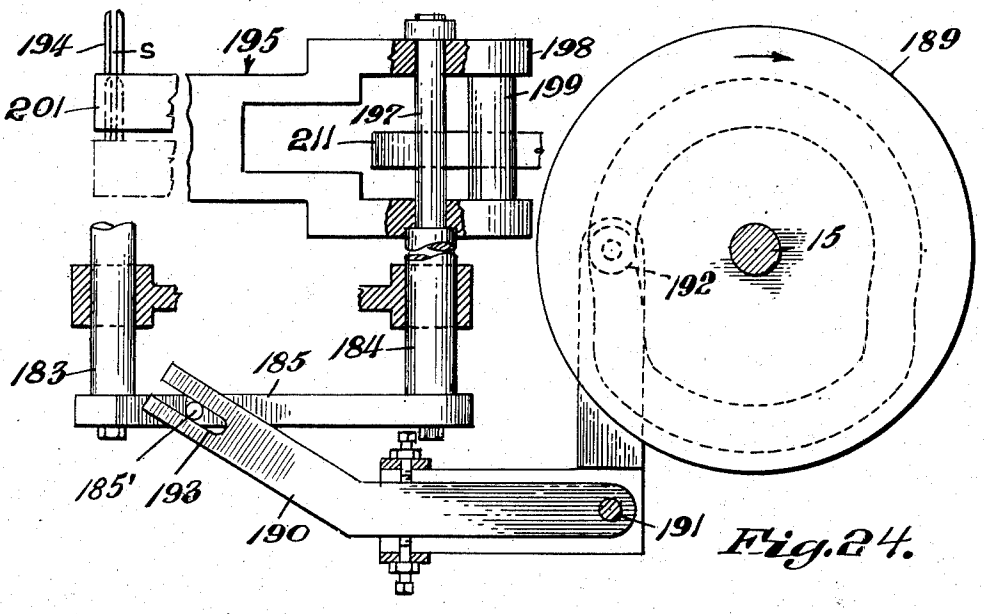


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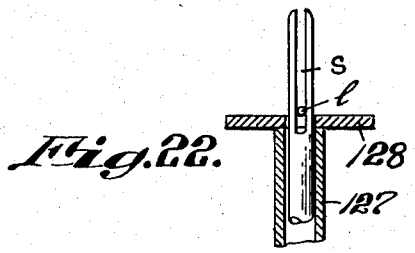


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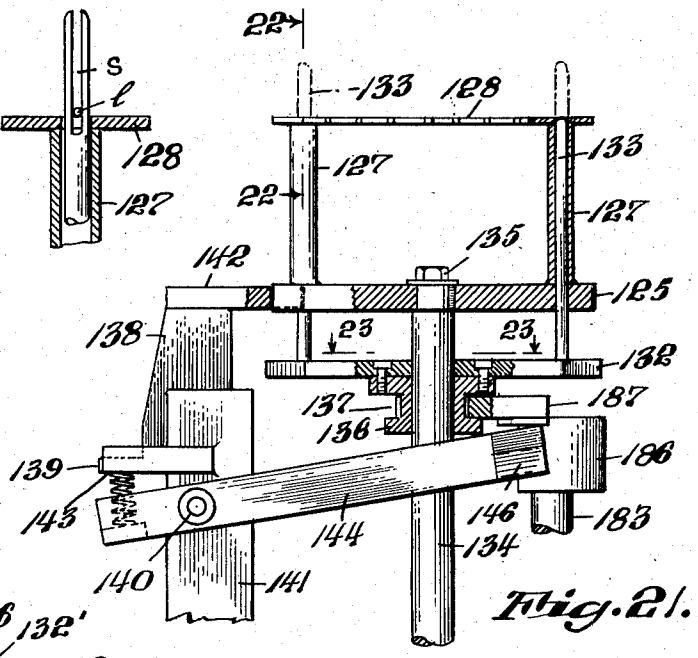


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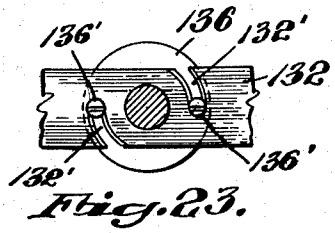


Fig. 23.

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Fig. 25.

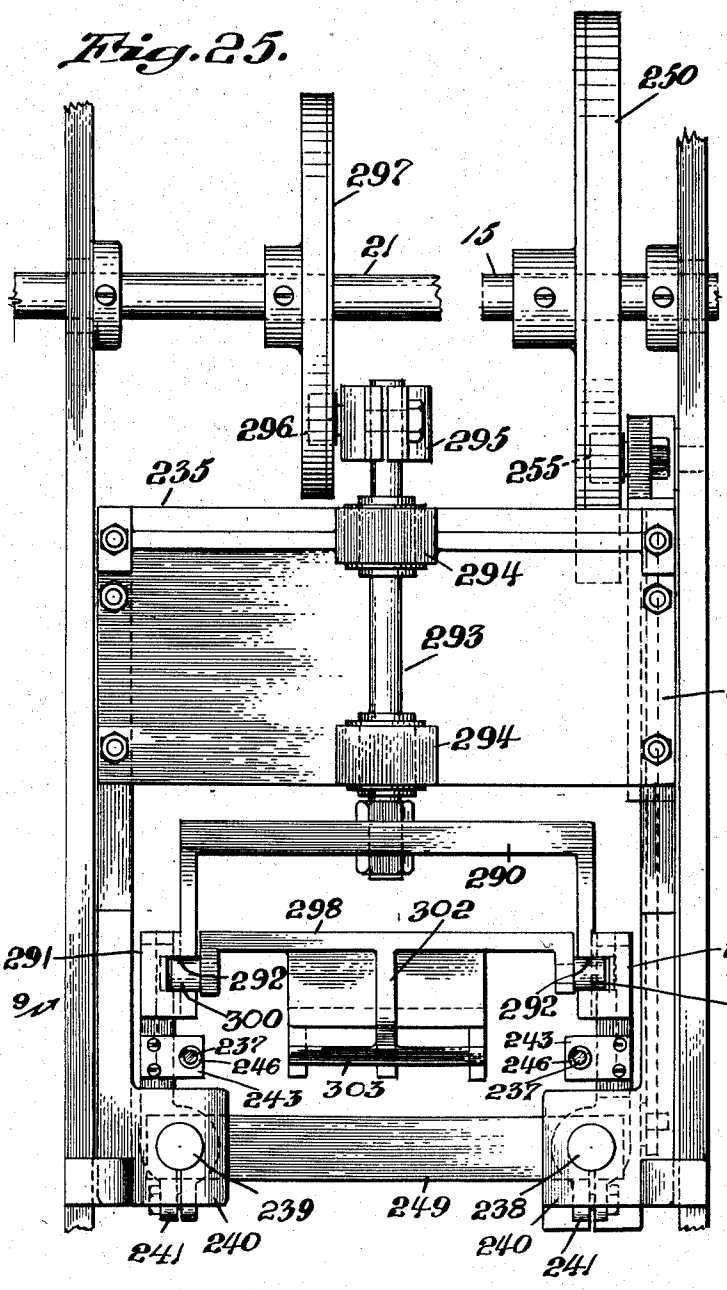
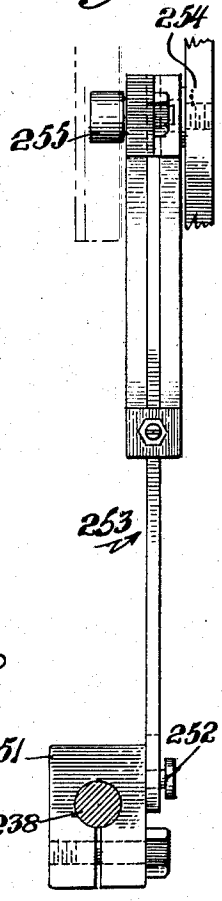


Fig. 26.



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Fig. 27.

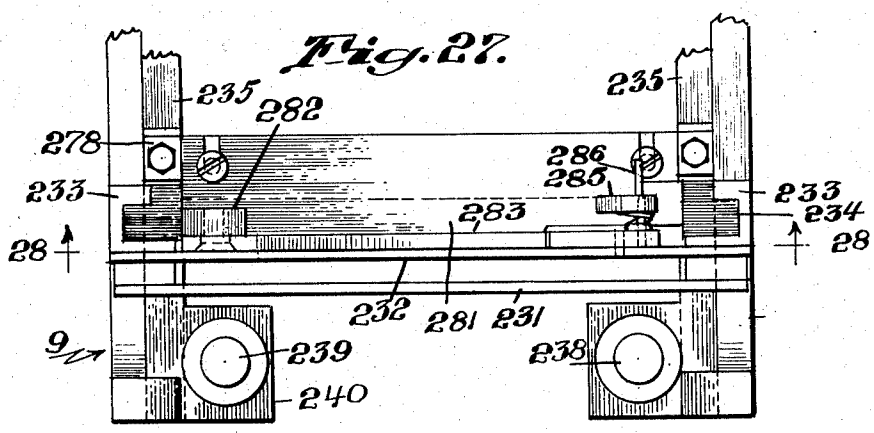
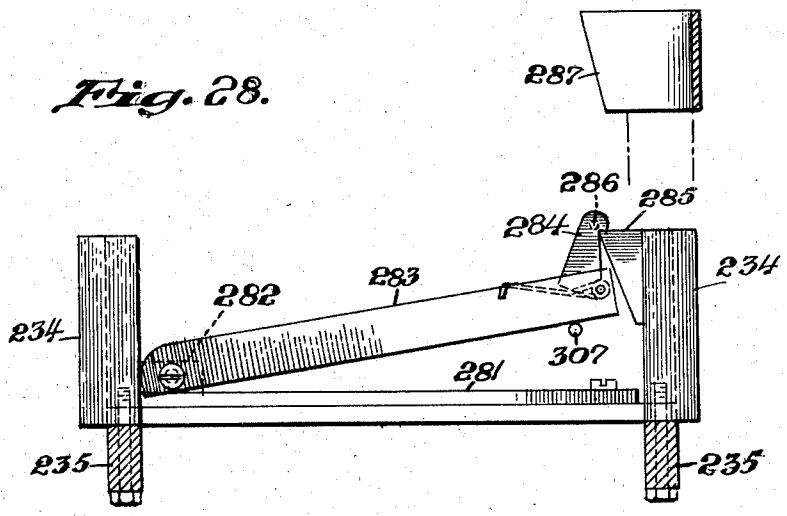


Fig. 28.



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Fig. 29.

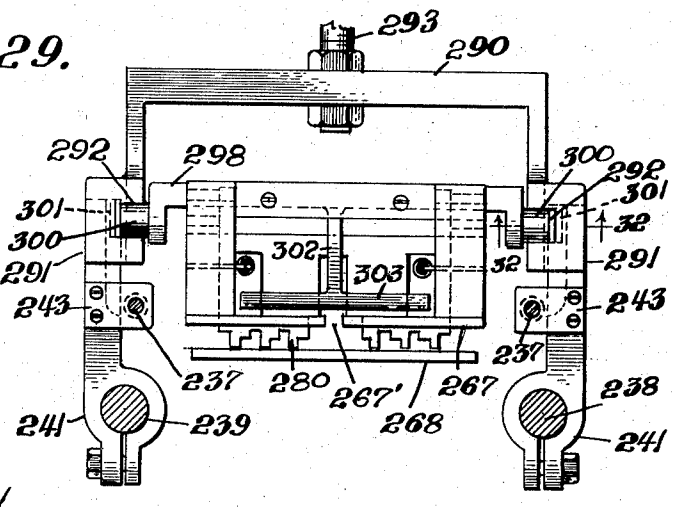


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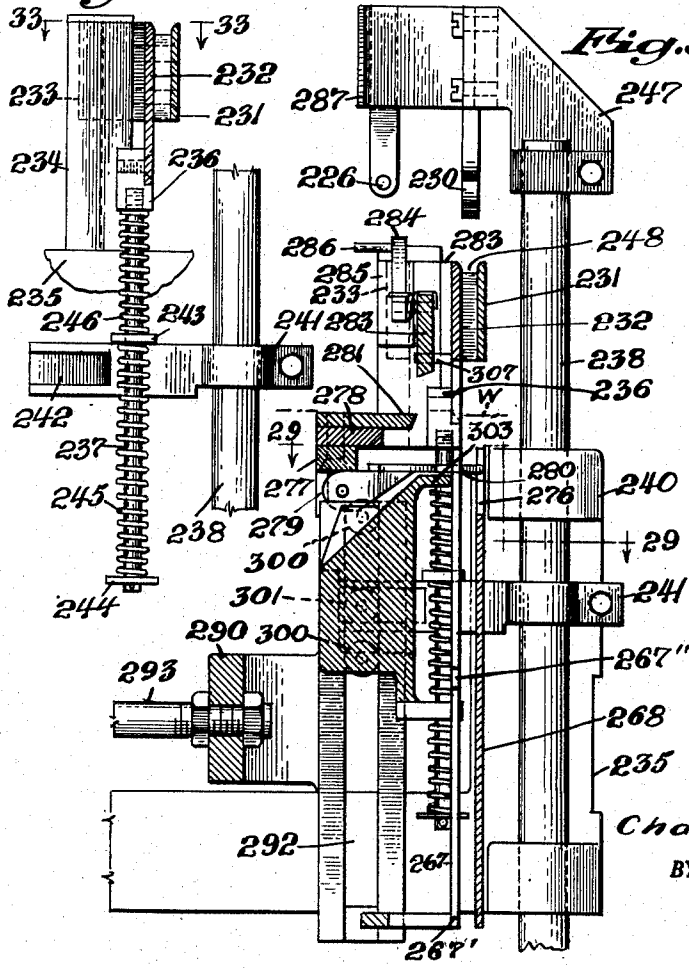


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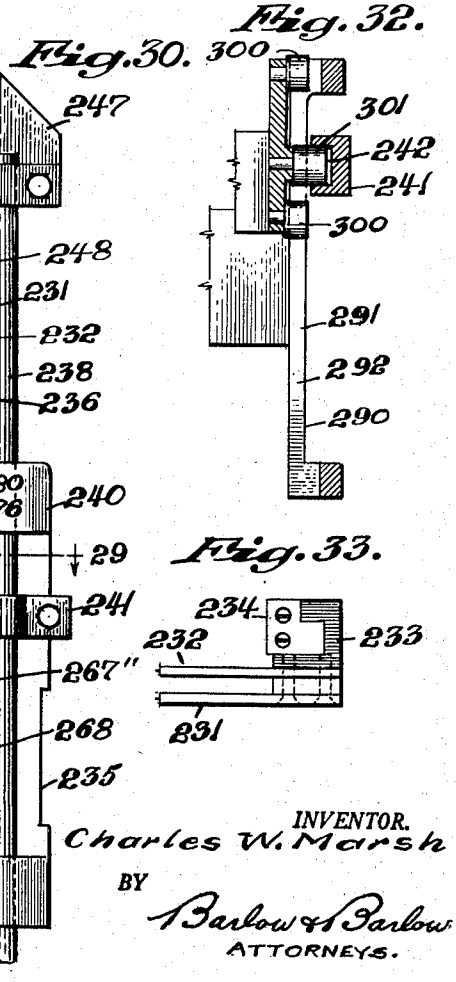


Fig. 32.

Fig. 33.

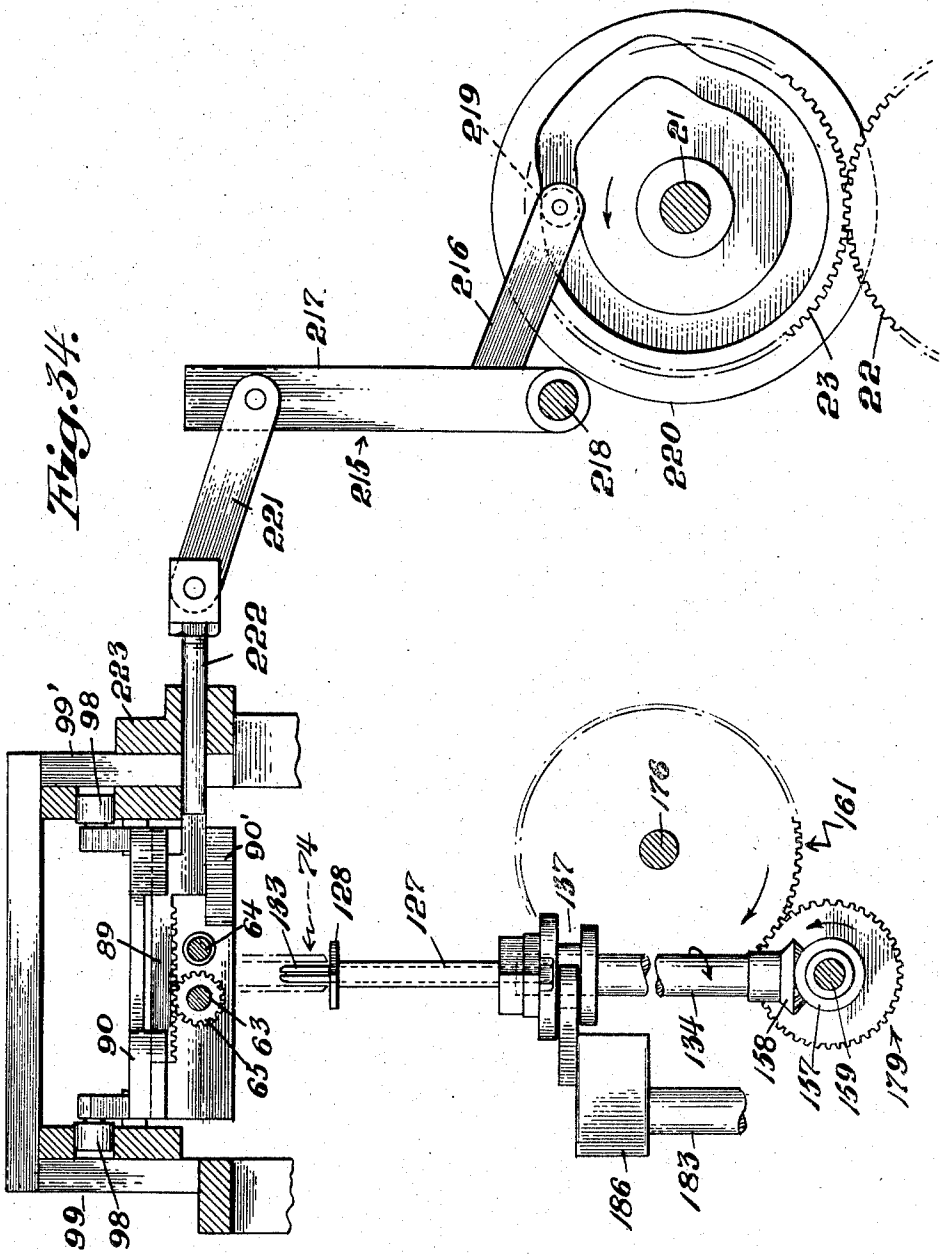
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Fig. 34.



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Fig. 35.

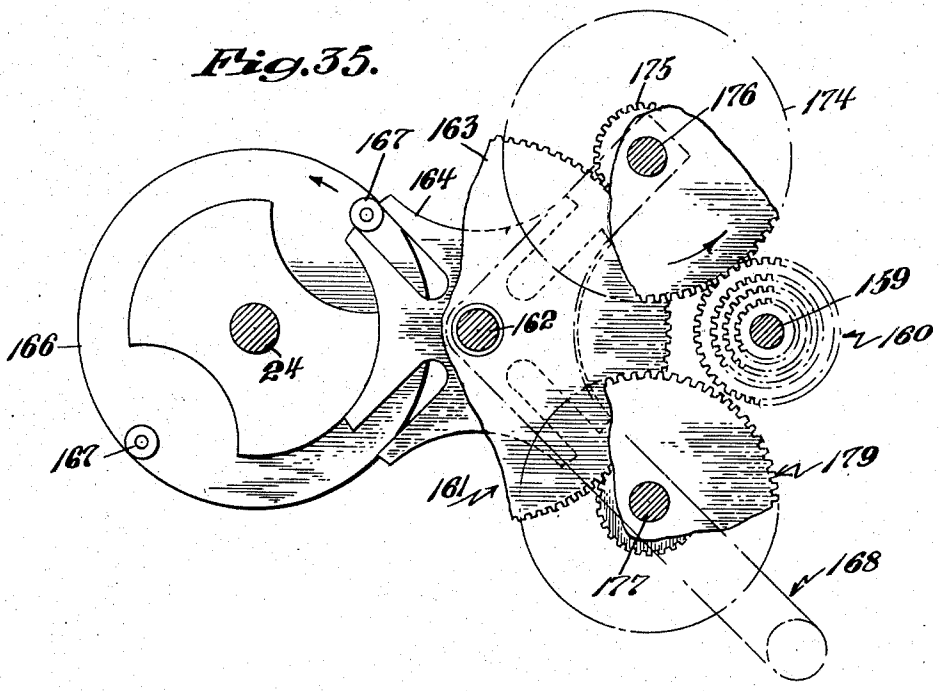
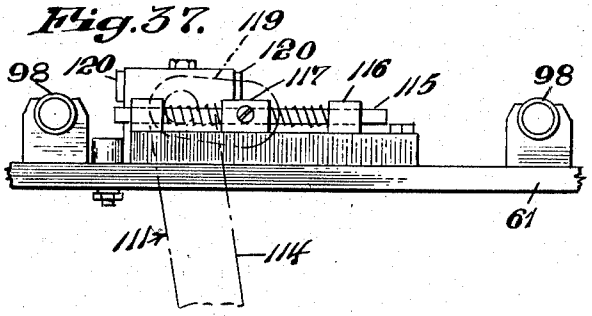


Fig. 37.



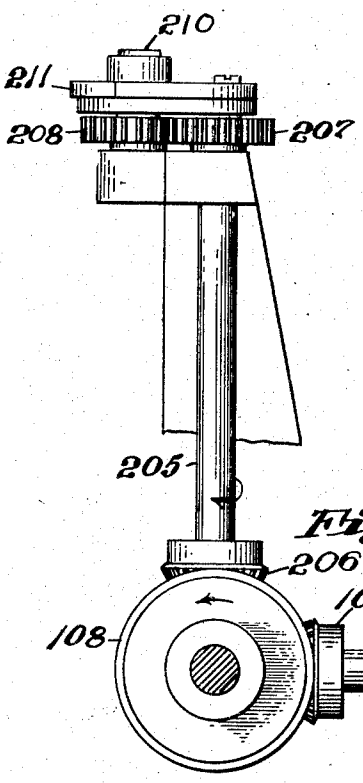
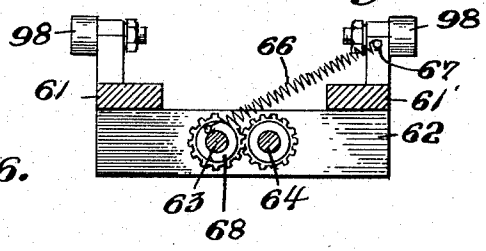


Fig. 36.

Fig. 38.



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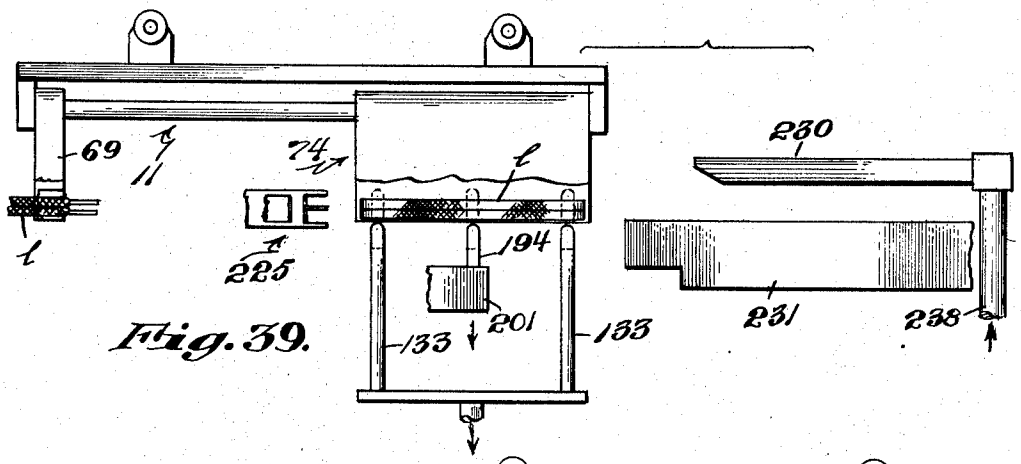


Fig. 39.

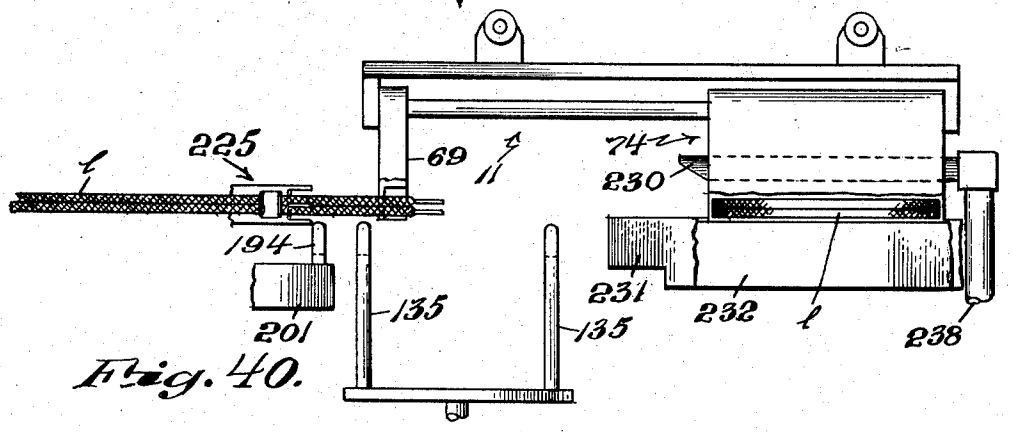


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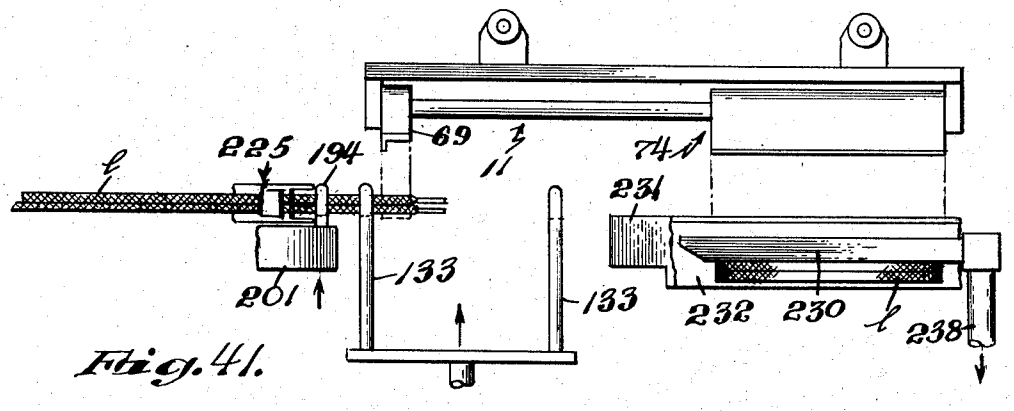


Fig. 41.

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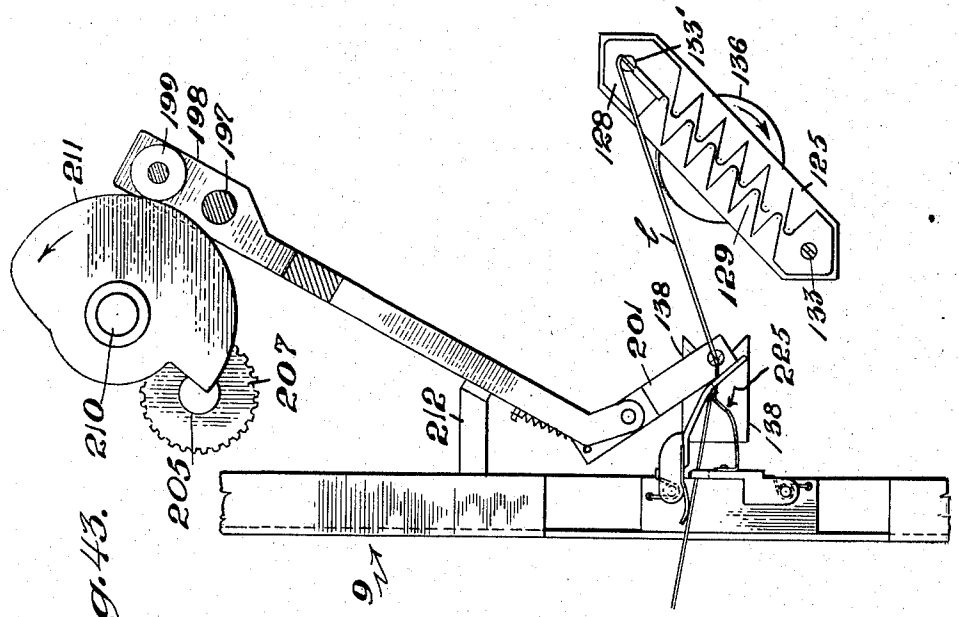


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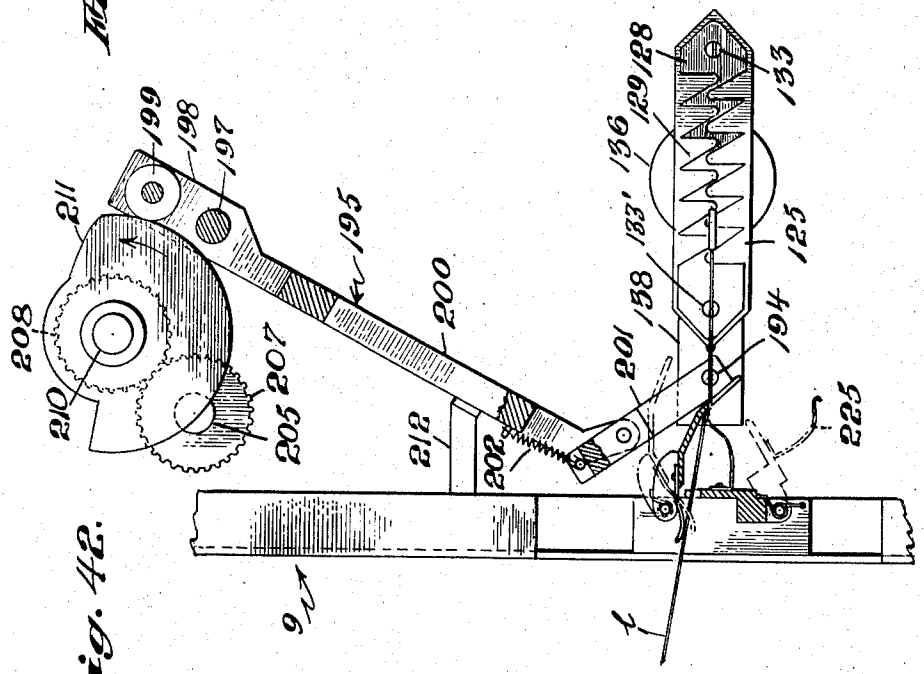


Fig. 42.

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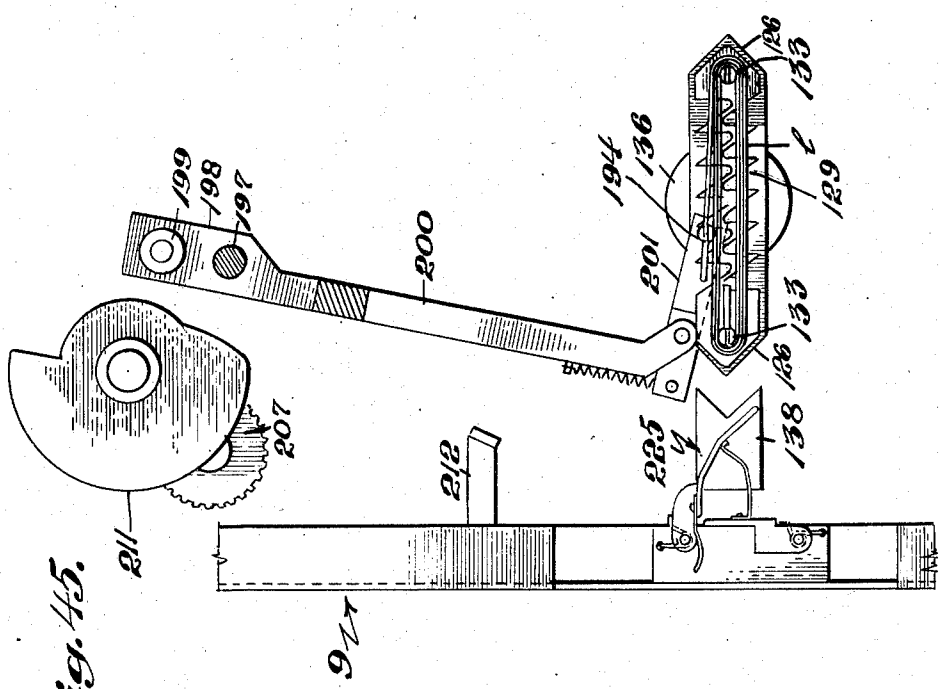


Fig. 17.

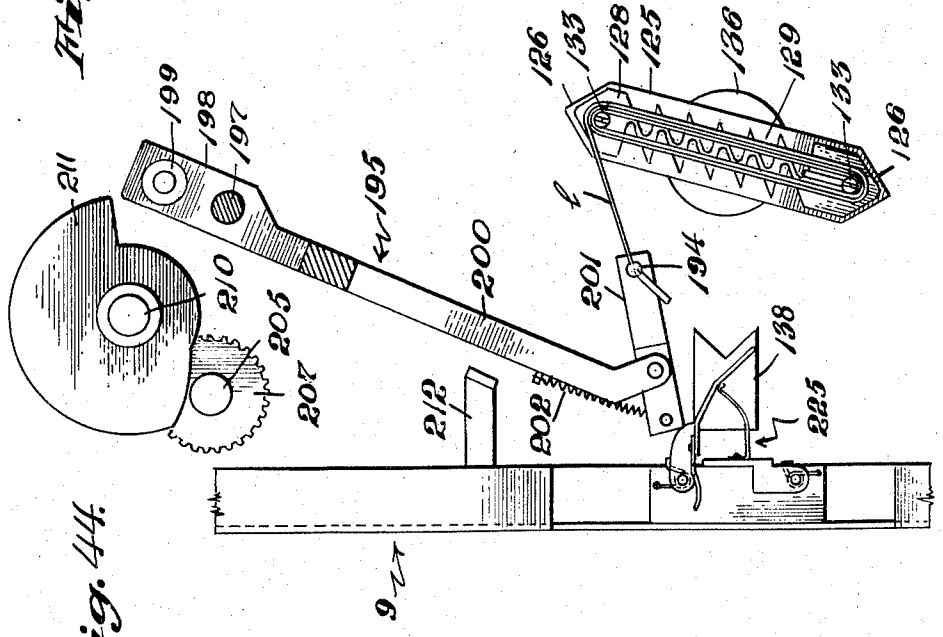


Fig. 17A.

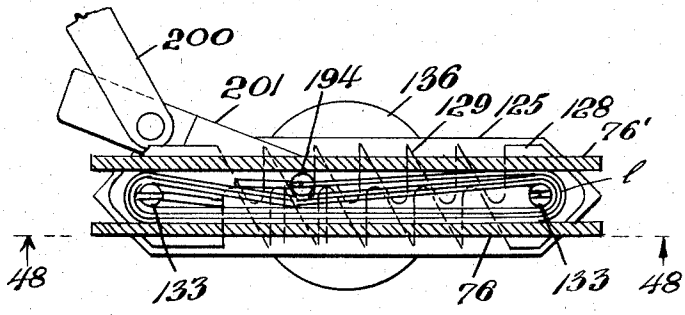
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Fig. 46.



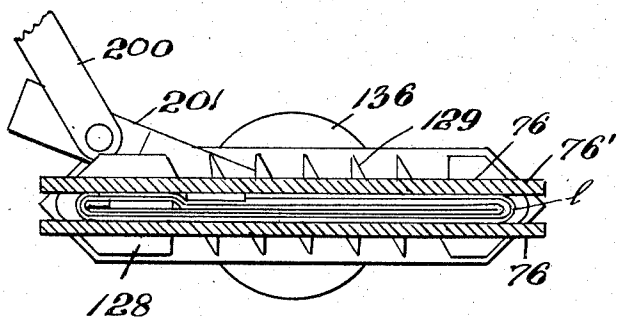
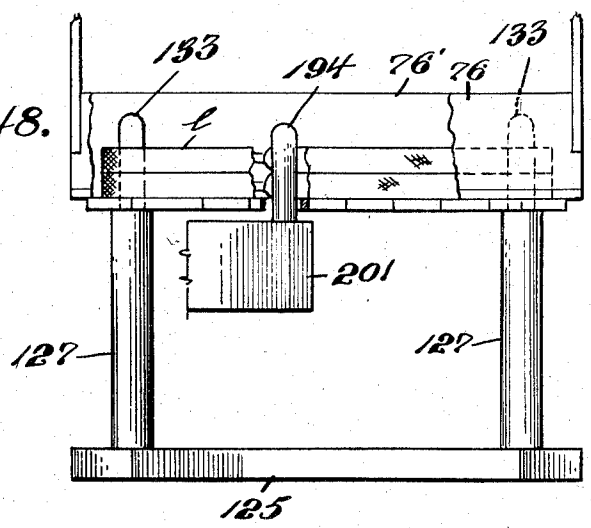


Fig. 47.

Fig. 48.



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Fig. 49.

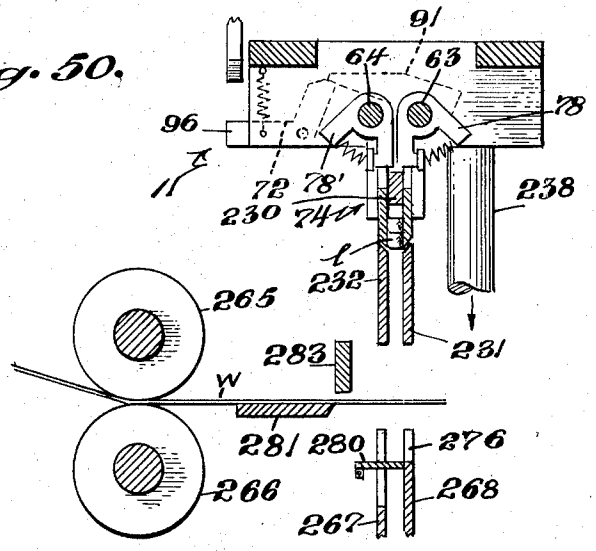


Fig. 50.

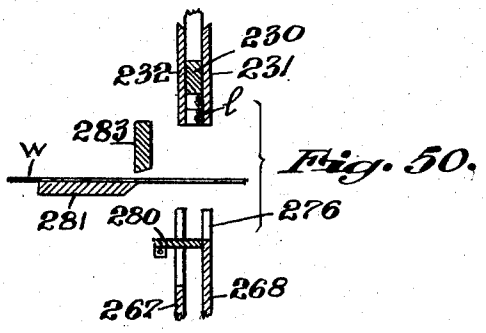


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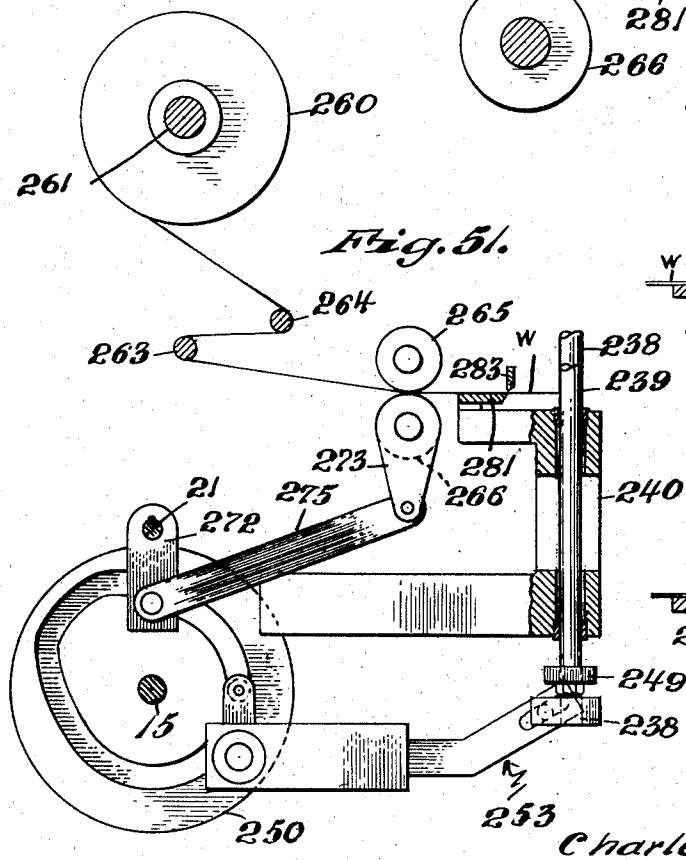


Fig. 52.

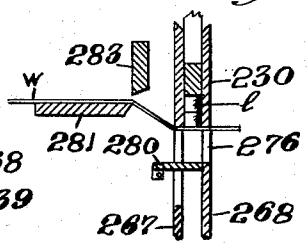
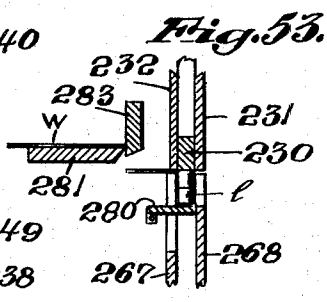


Fig. 53.



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2,896,386

BRAID PACKAGING MACHINE

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Application September 26, 1956, Serial No. 612,276

43 Claims. (Cl. 53—113)

This invention relates to a machine for packaging narrow fabrics either woven or braided such as laces or ribbon and is a continuation in part of application Serial No. 339,346, filed February 27, 1953, now Patent No. 2,851,762.

The object of the present invention is to improve generally on the apparatus disclosed in the above identified application.

A more specific object of the invention is to provide a machine wherein the operation on the work is more simplified and faster.

Another object of the invention is to provide a machine in which a series of operations will occur automatically one from the other.

Another object of the invention is to provide a winding mechanism in which the trailing ends of the work will be tucked into position in the package.

Another object of the invention is to provide a pair of pegs so constructed that the end of the work will become secured thereto for winding a hank.

Another object of the invention is to provide a simplified arrangement for transferring the wound work from one station to another.

Another object of the invention is to provide for a single carrier for transferring the work to a hank winding mechanism and from said winding mechanism to a wrapper applying mechanism.

Another object is to provide a transfer means for the work which will act simultaneously to grip the work to be wound and to grip and hold a previously wound hank during the release of the hank from the winding mechanism.

Another object of the invention is to provide a small hank of work to be banded.

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:

Figure 1 is an elevational view of a machine embodying my invention for winding and wrapping laces;

Figure 2 is a top plan view of the machine shown in Figure 1;

Figure 3 is an elevational view of a fragmentary portion of the machine looking thereat in the direction of the arrows at line 3—3 of Figure 1;

Figure 4 is a section view taken substantially along line 4—4 of Figure 1 looking in the direction of the arrows;

Figure 5 is a view similar to Figure 4 of a fragmentary portion of the structure shown in Figure 1 and showing certain of the parts in a different relation to each other;

Figure 6 is an elevational view of a fragmentary portion of the magazine mechanism looking thereat in the direction of the arrows at line 6—6 of Figure 4;

Figure 7 is a top plan view partially in section of a fragmentary portion of the machine shown in greater detail than that shown in Figure 2 and drawn on a larger scale;

Figure 8 is a top plan view of the left end portion shown in Figure 7 with certain of the parts being sectioned and others broken away in order to show certain of the interior construction.

Figure 9 is a side elevational view partially in section looking at the machine from the front thereof substantially along line 9—9 of Figure 8;

Figure 10 is a top plan view of the conveyor unit;

Figure 11 is a side elevation thereof;

Figure 12 is an end view of the conveyor of Figure 10, looking thereat in the direction of the arrows on line 12—12 of Figure 11;

Figure 13 is a section view taken substantially along line 13—13 of Figure 11;

Figure 14 is a section view taken substantially along line 14—14 of Figure 11;

Figure 15 is a section view taken substantially along line 15—15 of Figure 11;

Figure 16 is a section view taken substantially along line 16—16 of Figure 13;

Figure 17 is an elevational view of a fragmentary portion of the lace winding unit,

Figure 18 is a top plan view of a fragmentary portion of the structure of Figure 17, looking in the direction of the arrows on line 18—18 of Figure 17;

Figure 19 is an end view looking in the direction of the arrows on line 19—19 of Figure 17;

Figure 20 is a section view taken along line 20—20 of Figure 18 and showing the latch mechanism in a different relation;

Figure 21 is a view of part of the winding unit shown in Figure 17 shown partially in section and with certain parts omitted;

Figure 22 is a section view taken along line 22—22 of Figure 21;

Figure 23 is a section view taken along line 23—23 of Figure 21, showing a structural detail;

Figure 24 is an elevation view, more or less schematic, looking from the right end of the machine showing related structure and the actuating mechanism therefor.

Figure 25 is a top plan view of related parts of the lace banding unit.

Figure 26 is a top plan view partially in sections of a fragmentary portion of the assembly of Figure 25;

Figure 27 is a top plan view of the wrapper severing mechanism;

Figure 28 is a section taken substantially along line 28—28 of Figure 23;

Figure 29 is a plan view of the front portion of the assembly of Figure 25 and showing additional details of construction;

Figure 30 is a section view taken along line 30—30 of Figure 7 with certain parts omitted in order to more clearly show certain structure;

Figure 31 is a view partially in section of certain parts shown in Figure 30;

Figure 32 is a section view taken substantially along line 32—32 of Figure 29;

Figure 33 is a top plan view looking in the direction of the arrows on line 33—33 of Figure 31;

Figure 34 is an end elevation, more or less schematically, view illustrating certain parts of the actuating mechanism for the conveyor and winder units;

Figure 35 is an end view looking from the front of the machine illustrating the change gear mechanism of the machine;

Figure 36 is an elevation view illustrating a drive connection for right angularly extending shafts of the machine;

Figure 37 is a side elevation of a fragmentary portion of the carriage of the conveyor mechanism;

Figure 38 is a section taken transversely of the conveyor carriage;

Figures 39 and 40 are views illustrating schematically various motions in conveying a pair of laces to the winding mechanism and from the winding mechanism to the banding mechanism;

Figures 41 to 53 are views illustrating sequential motions of the lace winding mechanism.

The machine illustrated comprises an open frame designated generally 9 which may be conveniently made of uprights and transverse members which may be secured to each other in known manner so as to form a rigid support on which are mounted the various working elements of the machine. Preferably certain parts of the mechanism are made in sections to be attached and removed as units and to be interchangeable with similar units. These have interconnecting parts which operate to trigger some action in adjacent units as will hereinafter appear. There is a magazine unit **10** which operates to advance the laces *l* in pairs to a location to be picked up by the mechanism of a conveyor **11** which carries the laces to a second location to be engaged by a winding unit **12** which is operable to wind the laces into a hank.

The conveyor is also provided with a mechanism which operates to pick up the wound laces and convey the same to a third location or station **13** to have a wrapper *w* placed thereon. A sealing unit **14** is provided for sealing the wrapper in place. The movement of the laces from the magazine to the wrapping station is in a linear path and the arrangement is such that the motion of the conveyor in one direction operates to pick up simultaneously or nearly so, a pair of laces from the magazine and a previously wound pair of laces to carry the unwound laces to the winder and the wound laces to the wrapping station.

The order of operation is such that during the winding of the laces into a hank, the conveyor or carriage is moving into position to receive a pair of laces from the magazine and to be in position to engage and hold a hank at the end of the winding operation. The carriage then moves to transfer the unwound laces held thereby to a position in line with the winding mechanism and to transfer the wound hank to a position in line with the wrapping mechanism. Thus, the over-all operation of the machine is broken up into steps which can be carried on simultaneously or nearly so which result in a speed-up in the over-all process of winding, wrapping, and sealing a package of laces.

The machine has a main power shaft **15** (see Figure 1) which is rotated from a suitable power source such as an electric motor **16**, having a sprocket wheel **17** secured to the shaft thereof and which is connected through a sprocket chain **18** to a sprocket wheel **19** of a clutch mechanism **20** connected to said main shaft **15**. The clutch **20** is of such a construction as to cause one revolution of the shaft **15** and then to be automatically disconnected from the shaft. The clutch **20** may be actuated by an electric solenoid S which may be energized so as to hold the clutch **20** in driving engagement with the shaft **15** and then be deenergized upon one complete revolution and become disengaged. Thus, the machine will always come to rest at the initial position or the beginning of a new cycle of operation.

A second rotatable shaft **21** (see Figures 7 and 9) is located above the main shaft **15** and is driven therefrom by means of gear wheels **22**, **23** mounted on said shafts respectively. A third shaft **24** (see Figures 7 and 8), which is mounted on a secondary frame **26**, is driven from the main shaft **15** by a sprocket chain drive including a sprocket wheel **27** on shaft **24**, a sprocket wheel **28** on shaft **15** and sprocket chain **29** trained over said sprocket wheels. The drive ratio between the shafts **15** and **24** is made two to one for a reason as will hereinafter appear. Power sources for the various actions of the machine are taken from the above three shafts **15**, **21**, and **24**. The left end of the machine as viewed in Figure 1 will be considered the front end of the machine.

The magazine

The magazine **10** (see Figures 2 to 6) comprises a rotatable disk **30**, which carries a plurality of pairs of gripping fingers **31** on the inner side thereof which are equally spaced angularly from each other. In the present instance eight pairs of fingers are provided. Each pair is similar and has a stationary finger **32** and a movable finger **33** which has a foot or cam portion **34**. The finger **33** is pivotally mounted on disk **30** as at **35** and is urged into gripping relation by means of a coil compression spring **36** which is arranged to abut at one end thereof against a projection **37** on finger **33**, the other end of the spring being conveniently engaged against the stationary held finger **32** of an adjacent pair of fingers **31**. Thus, each pair of fingers or jaws **31** are normally resiliently held in lace gripping relation. Each pair of jaws project at equal distances beyond the periphery of disk **30** and their inner edge portions at their outer ends are tapered inwardly so as to form a wide entrance leading to the lace gripping edge portions thereof.

The disk **30** is mounted on a stub shaft **38** which is journalled in a bearing **39** (see Figure 1) which projects outwards from the front side of frame **9**.

A gear wheel **40** (see Figure 4) is secured on the inner end of shaft **38** and projects into engagement with a free rotating gear wheel **41** which forms part of a Geneva mechanism of a known construction including the star or slotted driven member **42** fixed to rotate with gear **41** about stud shaft **43**. The driver member **44** is mounted for rotation on a second stud shaft **45** and has a roller **46** which engages in the slots of member **42** to turn the same one quarter revolution for each revolution of member **44** and then hold member **42** against rotation for 270° of rotation of member **44**, all in the usual manner. The member **44** is in turn driven by means of a sprocket wheel **47** secured to the member **44** so as to rotate therewith. A sprocket chain **48** is trained over wheel **47** and sprocket wheel **49** mounted on main shaft **15** (see Figures 2 and 7). Thus, the disk **30** is rotated in an intermittent fashion.

There is mounted at the front of the machine a lace tip positioning mechanism (see Figures 3 and 4), designated **50** which comprises a thin arm or plate **51** which is held stationary at a location spaced inwardly of the disk **30** (see Figure 6). The plate **51** projects outwardly a substantial distance beyond the outer ends of the jaws **31** (Figures 3 and 4) and is provided with a horizontal extending edge **52** (Figure 4) which terminates in a downward slope **53**. An upper finger **54** is freely pivotally mounted as at **55** and depends on an inward slant from the pivot **55** and is moved by gravity into engagement with the plate **51** at the horizontal edge **52**. The lace tip positioning mechanism above described is positioned at a location to be in line with the horizontal axis of disk **30** which may be referred to as the loading position in front of which the operator may sit to load magazine **10**. In each cycle of operation of the machine a pair of jaws **31** will be positioned opposite to the plate **51** with the meeting edges of the jaws in line with the edge **52**.

The operator picks up two laces from a supply (not shown) and inserts the laces edge to edge, guided by plate **51** and finger **54**, and between the jaws **31** aligned with edge **52** of said plate **51**, a stop **56** being provided against which the laces may be engaged to assure the proper position of the laces between the plate **51** and finger **54** to be hereinafter referred as the feeder jaws. The operator thereafter pulls or draws the laces toward the left to engage the tips thereof against the sides of feeder jaws **50**. Thus, the laces are aligned one with the other and held between a pair of jaws **31** at a loca-

tion spaced from the tips. The relative sizes of jaws 30 and the slope of the edges provide a guide for the easy insertion of the laces.

A separator plate 57 (see Figures 2 and 6) is attached to the front of the machine and projects in front of disk 30 in spaced relation therewith. A finger 58 extends from the plate 57 to be in position to guide the inner of the pair of laces to the inner side of the separator plate 57 and to guide the outer of said pair of laces to the outer side of said plate during the rotation of the disk 30. Any tangled end or twist present in the pair of laces will be taken out as the laces are pulled along each side of the plate 57. At each cycle of the machine the disk 30 is revolved one-eighth turn or 45° counterclockwise as viewed from the front of the machine as previously described, consequently clockwise as seen in Figures 4 and 5. This positions a pair of laces at the upper edge of the disk to be at a location to be engaged by the conveyor mechanism 11.

The conveyor

The conveyor 11 (see Figures 10 and 11) comprises a carriage 60 which is an open frame composed of oppositely disposed horizontally extending members 61, 61' which are secured to each other by cross tie members 62 which additionally provide bearings in which there is journalled a pair of parallel shafts 63 and 64. These are arranged to be rotated in opposite directions by means of a pair of meshing gear pinions 65, 65' which are mounted on said shafts. A coil spring 66 has one end thereof anchored to a stationary held pin 67 and the other end of the spring is attached to a collar 68 which is secured on shaft 63 for rotation therewith (see also Figure 38). Thus, the shafts 63, 64 are resiliently biased for opposite rotational movement. A pair of jaws 69 are mounted for free rotation on the shafts 63, 64 at the left end portion thereof (Figure 10) and these are adapted to be moved toward each other in lace gripping relation. Jaw actuating members 70 (see Figure 14) having a pair of depending arms 71, 71' which are angularly spaced from each other, are mounted on shafts 63 and 64 for rotation therewith. Each jaw 69 has a tab like portion 72 which extends therefrom to between said arms 71, 71'. A coil compression spring 73 is arranged between the arm 71 and the tab 72 so as to apply a resilient force on the jaws tending to move the same toward each other. Thus, the jaws are resiliently biased toward lace gripping relation.

A second pair of jaws indicated generally 74, which hereinafter will be referred to as a mechanical hand, is mounted on shafts 63 and 64 at the right end portion thereof. The jaws are similar, one being a right jaw and the other being a left jaw, thus, only one need be described, like parts in the other being indicated by similar but prime numerals. The left hand jaw 75 as seen in Figures 11 and 13, comprises an outer plate 76 secured to a pair of arms 77 which are mounted in axially spaced relation for free swinging about shaft 63. A jaw actuating member 78 is mounted on shaft 63 in the space between the arms 77 and is provided with a pair of angularly spaced fingers 79, 79'. A bar 80 which is secured to arms 77, extends in the space between fingers 79, 79' and a coil compression spring 81 is arranged between the finger 79 and the bar 80 tending to urge the said jaw 75 to swing in a counter clockwise direction as seen in Figure 13. It will be apparent that the jaws of hand 74 are resilient urged or biased for movement toward each other in gripping relation.

The mechanical hand also includes a generally U-shape plate 82 (see Figure 16) having a pair of spaced arms 83 which are mounted for free movement about shaft 64. The lower end portion of plate 82 is provided with a plurality of equally spaced projecting fins 84 which extends through complemental slots 84' formed in the plate 76' and extend a distance short of the plate 76 when

the hand 74 is in lace gripping relation. A torsion coil spring 87 surounds shaft 64 and has one end anchored to the member 78'. The other end of the spring is secured to the adjacent arm 83. The spring is of such resilience as to secure the plate 82 to rotate with member 78' but permit rotation relative thereto. The function of the plate will hereinafter appear.

The shaft 63 is longer than and extends beyond shaft 64 at the right end thereof (Figure 11). A gear pinion 88 is secured on the projecting end of shaft 63 and is engaged by a rack 89 which is reciprocated within guides 90, 90' (see Figure 12). A latch 91 is mounted on shaft 63 adjacent to pinion 88 and rotates therewith. The latch 91 extends into engagement with a trigger 92 which is pivoted as at 93 and is urged to be moved in one direction against a stop pin 94 by means of a pull spring 95. The trigger has an arm 96 which is engaged to trip or swing the trigger 92 in a clockwise direction as viewed in Figure 12 so as to release the latch 91. It will be apparent from the above that movement of the gear rack 89 toward the left in Figure 12 will through pinion gear 88 rotate shaft 63 in a counter clockwise direction against the pull or spring 66 (see Figure 38). The motion of shaft 63 will be transmitted through pinions 65, 65' to shaft 64 to rotate the same a like angular distance but in the opposite or clockwise direction. The jaw actuating members 70, 78 and 78' will rotate with shafts 63 and 64 which through the compression spring connections with their respective jaw will move the same to the closed or lace gripping relation. The latch 91 will be moved from the broken line position as seen in Figure 12 past the trigger 92 to the full line position shown, the trigger yielding against the pull of spring 95. The latch 91 will ride slightly beyond the trigger 92 so as to permit the trigger under pull of spring 95 to return to latch holding relation. Thus, the jaws will be held locked in the closed position thereof against the bias of spring 66. Upon tripping of the trigger 92 so as to release latch 91, shafts 63, 64 and jaw actuating members 70 and 78, 78' will be rotated, that is, turned in the opposite direction and the arms 71' of members 70 will engage the tabs 72 and swing the jaws 69 to open position. The fingers 79 of the members 78, 78' will engage the bar 80 of their respective jaws and likewise move the jaws of the hand to open position.

The carriage is provided with pairs of wheels or rollers 98 which extend at the slide of the carriage and into engagement with spaced tracks 99 (see Figures 7 and 9) along which the said carriage travels from one station to another. The carriage is cam actuated and to this end (see Figures 1 and 8) a cam 100 having a sprocket wheel 101 secured thereto is mounted for rotation on a stud 102 which extends from a bracket 103 secured to the sub frame support 26. It may be here mentioned that the frame support 26 is part of a unit which may be removed bodily with all the parts attached thereto. The cam 100 is held to the stud as by means of a split ring 105 engaged in a groove at the end of the stud projecting beyond the cam. The cam 100 is driven from the shaft 24 (see Figure 8) through a laterally extending shaft 106 which has a bevel gear pinion 107 engaging a bevel gear 108 on shaft 24. A sprocket wheel 109 is carried at the outer end of shaft 106 and a sprocket chain 110 is trained over sprocket wheels 101 and 109.

A bell crank lever 111 (see Figures 1 and 9), is pivotally mounted on the bracket 103 (Figure 8) and has an arm 112 which carries a cam follower 113 which engages in the cam groove of cam 100. The other arm 114 of the lever extends in a generally vertical direction and is connected to an over ride mechanism which comprises a rod 115 (see Figures 10, 11, and 37) which is slidably mounted on spaced blocks 116 carried by the carriage 60. A collar like member 117 is fixed to the rod substantial at the middle thereof in the space between blocks 116.

Compression springs **118** of substantially equal weight surrounds the rod **115** on each side of the member **117**. A link **119** (see Figures 1, 9, and 37) connects the arm **114** to the member **117**. The carriage has a pair of buffers **120** (see Figure 10) which engage against adjustable stops (not shown) at the ends of travel of the carriage in either direction.

From the above it will be apparent the cam **100** will rock the lever **111** about its pivot and oscillate arm **114** which will travel the carriage **60** to and fro along tracks **99**. It will also be apparent should there be an excess swing of arm **114**, the excess motion will be absorbed by springs **118**.

The winding mechanism

The winding mechanism (see Figures 17 to 22) comprises an elongated bar **125** (see Figure 17) both ends of which are tapered as at **126** (see Figure 18) and has a pair of vertical upstanding tubular posts **127** to the upper end extremity of which is secured a stripper plate **128**. A plurality of equally spaced tapered slots **129** (see Figures 42 to 43) extends inwardly from the opposite longitudinal edges of the plate. The bar **125** has openings **131** therethrough and the plate **128** has openings **130** there through which extend in continuation of the bore of posts **127**. A third bar **132** is provided with a pair of upstanding pins or pegs **133** the upper end portions of which are each slotted inwardly as at S (see Figure 22), the slots being of a width slightly less than the diameter of the lace tips. The pegs extend upwardly through the posts **127** and may be withdrawn to position the upper end extremity thereof just below the upper side of the stripper plate as seen in Figures 17 and 21. The bar **125** is centrally mounted at the upper end of a vertical shaft **134** and is splined thereto and secured in place by a clamp nut **135**. The third bar **132** is slidably mounted on shaft **134** at a location beneath bar **125** and rotates therewith by reasons of being tied thereto by the pegs **133** extending through the bar **125** as above described. A collar **136** having an annular groove or recess **137**, surrounds shaft **134** and is firmly secured to the under side of plate **132**. The connection may be made or shown in Figure 23 so as to provide for interchangeability of bars **132**. There is provided for this purpose annular slots **132'** which open at opposite sides of bar **132** which receive screws **136'** projecting upwardly from collar **136** in bayonet fashion.

It is desirable to provide some positive means for assuring the proper alignment of the pegs **133** for receiving the laces. To this end a latch **138** which has a shoulder **139** (see Figure 20) is pivotally mounted as at **140** on a bracket **141** which is secured to the sub frame **26**. The latch extends upwardly and is provided with a plate **142** which has a V-cut **142'** (see Figures 18) extending inwardly at the inner side thereof and which is complemental to the tapered end **126** of bar **125** and is adapted to receive therein either of said ends **126** as the case may be. The bracket **141** has a shoulder **143** (Figure 17) which extends outwardly in the direction of shoulder **139** (see Figure 18). A lever **144** has a foot portion **145** which extends beneath shoulders **139** and **143**, and is mounted for rocking motion on the pivot **140**. The other end of lever **144** terminates in a knife edge formation **146** (see Figure 9). The foot **145** is provided with a slotted opening **147** therethrough which extends into registry with shoulder **139**. A pin **148** depends from the shoulder **139** through the opening **147** and is provided with a head **149** which is adapted to be engaged by the underside of said foot **145**. A coil compression spring **150** surrounds the pin **148** in the space between the shoulder **139** and foot **145**, the ends of the spring bearing against said shoulder and foot. A second pin **151** (see Figure 19) is secured to the shoulder **143** and depends therefrom to extend through said foot **145** in sliding relation therewith. A coil spring **152** surrounds the pin **151** and the ends thereof abut against said shoulder **143** and foot **145**. During the lace winding operation, the latch **138** is held at the position shown in full lines in Figure **20** and the lever **144** is held in the position shown in broken lines in Figure 17.

Upon swinging the lever **144** downwardly from the broken line position shown to that of the full line position, the foot **145** will be swung upwardly against springs **150** and **152** compressing the same and thus free the head **149** from the foot **145**. The pressure of spring **150** on shoulder 139 will swing the latch **138** to the full line position shown in Figure 17 to position the V-notch **142'** to receive the pointed end **126** of bar **125** and hold the same centrally in line with the jaws **69** of carriage **60**. A second latch **153** (see Figure 17) is provided for locking the lever **144** in the downward position thereof. This latch is pivotally mounted on the frame **9** as at **154** and is normally held in the path of movement of the knife edge portion **146** by means of a pull spring **155**. Upon the downward swing of lever **144**, the edge **146** will engage and move the latch **153** and pass thereby. Upon the lever **144** passing said latch **153**, the spring **155** will return the latch **153** into position to block the return movement of said lever **144**. Upon the latch being tripped as will hereinafter be described, the force of the compressed spring **152** will swing the lever **144** in the opposite direction moving the foot **145** to engage the head **149** to return latch **138** to the neutral position.

The shaft **134** is journalled in bearings **156** (see Figure 9) carried on support **26** and is rotated through bevel gear pinion **157** which is secured to the lower end of shaft **134** (see also Figure 8) and engages a similar bevel gear **158** which is mounted on a horizontal sub shaft **159** journalled in support **26**. The shaft **159** carries a cluster of spur gears **160** (see Figure 8) of different diameters and forms part of a change gear transmission indicated generally **161** (see Figures 8 and 35). Upon rotation of shaft **159** motion therefrom will be transmitted to bar **125** to revolve the same.

The shaft **159** is rotated in an intermittent fashion from the shaft **24** as shown in Figure 35.

A shaft **162** (Figure 8) is mounted on the support **26** to be held stationary therein. A gear wheel **163** which has the slotted or star member **164** of a conventional Geneva motion device secured thereto is rotatably mounted on shaft **162** and is held against axial movement by collars **164**, **165** (see Figure 8) fixedly secured to the shaft **162**. The driver member **166** of the said Geneva mechanism is mounted on shaft **24** and is secured to sprocket wheel **27** so as to rotate therewith. Thus, gear wheel **163** will be rotated intermittently from shaft **15**. As previously described, the ratio between shafts **15** and **24** is two to one. Thus, shaft **24** is rotated at one half the speed of shaft **15**. The driver member **166** has two driving rolls **167** which are disposed diametrically opposite each other. One of these will engage the member **164** each cycle or one revolution of main shaft **15**. Therefore, there being two rolls **167** the gear **163** will be rotated intermittently at the same speed as the main shaft **15**.

A generally U-shape cradle **168** (see Figure 8) is provided with arms **169** and **170**. The arm **169** is mounted on the inner end portion of shaft **162** and the arm **170** is mounted on a stud **171** which extends in continuation and is concentric to the shaft **162**. The cradle **168** is swingable about the axis of shaft **162** and is slidable axial thereof. Each arm has an upper bearing **172** which bearings are in line with each other to receive and have secured therein a nonrotatable shaft **173**. A cluster of spur gears which comprise a drive spur gear **174** and plurality of smaller gear pinions **175** which in effect provide a wide face pinion, are rotatably mounted on shaft **173** and held against axial movement by a spacer sleeve **176**. The pinion **175** is adapted to be placed in engagement with the gear wheel **163** to be driven thereby and the spur gear

174 is adapted to engage with any of the gears of cluster 160. This is accomplished by sliding the cradle along shaft 162 and stud 171. The arms 170 carry a second stationary held shaft 177 on which is mounted a second cluster of spur gears 179 which are similar to those above described but of different diameter and engageable with gear 163 to be driven therefrom and in turn engage and drive the cluster 160 so as to provide additional changes in the rotation of shaft 134. It will be understood that the clusters of gear wheels carried by the shafts 173 and 177 are of different sizes as is usual and that when the cluster carried on shaft 173 is engaged with drive gear wheel 163, the gear pinions of the cluster on shaft 177 will be out of engagement with gear wheel 163. It will also be understood that the cradle 168 is slidable axially to position the drive gear of the clusters carried thereby into engagement with any of the gears of cluster 160. Thus, it will be seen that the machine is adapted to package laces of different lengths which may require different number of turns of the winding mechanism at each cycle of the machine to place the lace in hank form.

As previously described, the pegs 133 are mounted for movement in and out of lace winding relation. Accordingly (see Figures 8, 9, and 24) a pair of posts 183 and 184 are slidably mounted in suitable bearings provided in sub frame 26. The posts are connected at their lower end extremities by a traverse bar 185 so as to be moved in unison. The upper end of post 183 (see Figure 17) has a block 186 attached thereto for movement therewith and carries a plate 187 at the upper side thereof which has a bifurcated end portion which extends into the recess 137 of collar 136 for engagement with the walls thereof. A second plate 188 is also attached to the upper side of block 186 and extends therefrom to be engaged by the end 146 of lever 144. The posts 183 and 184 are raised by means of a cam 189 (see Figures 8 and 24) which is mounted on the main shaft 15 and connected through an L-shaped lever 190 to bar 185. The lever 190 is pivoted at the juncture of its right angular arms as at 191 and has a cam follower 192 engaged by the cam 189. The lever has a slotted end 193 which engages a pin 185' projecting from the bar 185. Thus, as the cam rotates the lever will be swung about the pivot 191 and raise or lower said posts 183 and 184 as the case may be.

A third peg 194 (see Figures 1, 7, and 24) is provided for tucking in and holding the trailing ends of the laces in proper position against the hank at the end of the winding operation. The peg 194 is substantially similar to pegs 133, has a slot S, and is carried by a lever 195. A block or strap 196 (see Figures 7 and 9) is fastened to the upper end portion of post 184 and carries a vertical spindle 197 which projects upwardly therefrom. The lever 195 is pivotally mounted on said spindle 197 and has an arm 198 which extends on one side of said pivot 197 and carries a cam follower 199 to be hereinafter referred to. The other arm 200 (Figures 7, 42, 43, 45, and 44) extends generally toward the pegs 133 and carries a secondary arm 201 which is pivotally mounted for movement relative to arm 200. The arm 201 is, however, yieldingly held to move with arm 200 by means of a pull spring 202 although it may move relative thereto. The third peg 194 is mounted in fixed relation on said arm 201. A vertical shaft 205 (see Figures 7 and 9) is journalled in a bearing carried by sub frame 26 and has a bevel pinion 206 secured thereto at the lower end thereof and which extends into engagement with the bevel gear wheel 108 to be driven thereby. A spur gear 207 (see Figures 9 and 36) is secured at the upper end of shaft 205 and extends into engagement with a spur gear 208 secured to a vertical stub shaft 210. An edge cam 211 is mounted on shaft 210 and rotates therewith. The cam follower 199 is engaged by the cam 211 to hold the arm against a stop 212 which positions the third peg 194 in direct line with the pegs 133 at the start of a cycle of the machine with the slot S thereof aligned with the slots S of pegs 133. A light pull spring may be arranged to maintain the lever 195 engaged with cam 211 but this is not necessary as will appear in further description of the machine.

From the foregoing it will be apparent that the peg 194 and pegs 133 will be raised and lowered in unison since the lever 195 is secured to move with post 184 and in turn post 184 is connected by bar or strap 185 to post 183.

At the start of a cycle of operation the three pegs are directly in line with each other with the slots "S" thereof in line centrally of the jaws 69 of the carriage which is at the extreme left position thereof. The jaws 69 of the carriage are in open relation directly above and in line with the ends of the paired laces protruding from the uppermost pair of gripping fingers 31. The hand 74 is also in open position and directly above the pegs 133. The rack 89 will be moved toward the right side of the machine to turn pinion 88 to close the jaws 69 to grip the said protruding end of the laces. The gear rack 89 is cam actuated (see Figures 9 and 34). To this end a bell crank-like lever 215 having a pair of angularly disposed opposite arms 216 and 217 is pivoted as at 218 at a convenient location on the frame 10. The arm 216 carries a cam follower 219 which extends into engagement with a cam 220 which is mounted on shaft 21. The arm 217 extends generally upright and has a link 221 which is adjustably secured thereto. The link extends toward the tracks of the carriage 60 and is pivoted to plunger 222 which is slidably received in a bearing 223 secured to the supporting structure 99' of track 99. At the extreme left end position of the carriage, the gear rack 89 (Figure 34) is positioned in register with the plunger 222. Upon rocking of arm 217 counter clockwise as seen in this Figure 34, the plunger 222 will be moved to push the rack 89 toward the left so as to rotate shaft 63 and 64 to close the jaws 69 and the jaws of hand 74 as previously described. Upon the jaws 69, 74 closing on the laces (see Figure 39) and the jaws locked in the closed postion by the action of the latch 92, the lever 215 is rocked in the other direction to withdraw the plunger 222 from the path of the carriage. The laces are held clamped between the jaws 69 and the carriage now travels to its extreme right end position as seen in Figure 40. At this location of the carriage, the jaws 69 will be at a location slightly beyond the vertical path of the peg 133 adjacent to the peg 194. Prior to the carriage being moved toward the right and subsequent to the gripping of the laces by jaws 69, the disk 30 will be indexed and during this motion the foot 34 of finger 33 will move into engagement with a pin 224 (see Figure 5) projecting from the frame 10. This will move the finger 33 to open position which will act as a guide for the easy pulling of the laces thereover. A tension device indicated generally 225 (see Figure 1) is positioned in line with jaws 69 which passes the laces therethrough so as to apply tension on the laces as pulled by the winding mechanism. As the carriage comes to rest at the right end position thereof, the posts 183 and 184 are raised and the pegs 133 and 194 will rise therewith (see Figure 41) and receive in the slots S thereof the lace portion in line therewith. The latch 153 is in the blocking position holding lever 144 against upward movement. The hand 74 will be positioned directly above the wrapper applying mechanism 14 to be hereinafter described. The trigger 92 carried by carriage 11 will be at a position to be engaged by a pin 226 carried by and operable in conjunction with the said wrapping mechanism (see Figure 30). The mechanism also carries a latch releasing member 227 (see Figure 17) which is operable to release latch 153 from the blocking position. Upon the winding pegs 133 having been raised to their upper position, the wrapping mechanism will have been set into action as will hereinafter be described, which will have caused member 227 to have moved to engage and release latch 153 from blocking

position so as to free lever **144** to be returned to engage against plate **188** and latch **138** to return to neutral at the position shown in Figure 20 so as to free the winding mechanism.

During the release of latch **153**, the pin **226** will have also been moved to trip trigger **92** to free latch **91** for the return of jaws **69** and hand **74** to open position. This will free the winding mechanism which will be rotated as previously described to wind the pair of laces in a hank about the pegs **133**. At the start of the winding (see Figures 42 and 43) the laces will slip through the slot of the peg indicated **133'** until the tips of the laces engage with the edge of the slot S thereof. This will secure the laces to said peg **133'**. During the initial winding of the laces, the arm **200** of lever **195** will be held against the stop **212** by the cam **211** engaging against follower **199**. Just prior to the tips of the trailing ends of the laces engaging the sides of the third peg **194** (see Figures 44 and 45) the cam **211** will have moved out of contact with lever **195** and the same will be free to move under the pull of the laces on arm extension **201**. The arm **200** will follow the pull of the laces thereon and just prior to the end of the last revolution of pegs **133** the third peg **194** will have been carried within one of the slots **129** (see Figure 45) of the stripper plate **128** so as to position and hold the trailing ends of the laces against the adjacent sides of the wound laces. During the winding cycle above described, the disk **30** has been indexed to position a pair of laces in line to be next picked up and the carriage with the jaws **69** and hand **74** open is returned to the extreme left. The hand **74** is now directly over the winding pegs and the machine is in condition for a next cycle of operation upon the finish of the winding cycle. At the next cycle which, as previously mentioned, is continuous at the will of the operator, the jaws **69** close upon the next pair of laces to be packaged, simultaneously, the jaws of the hand **74** close on the laces wound about the pegs **133**. It will be seen that the plates of hand **74** extend at least the full length of the hank, so that upon closing on said hank the sides of the hank will be entirely confined between the ends of the plates **76** of the said hand. As the plates close upon the hank, the fins **84** of plate **82** are moved into engagement with the upper side of the hank (see Figure 13). Thus, the hank is firmly held on three sides thereof which prevents any tendency of disarrangement in the coils of the hank. Cam **189** through the linkage previously described operates to lower posts **183**, **184** carrying downwardly therewith the pegs **133** and **194** to beneath the stripper plate **128** so as to free the laces from said pegs. During the downwardly movement of the posts, the plate **188**, moving with the posts, will swing lever **144** past the latch **153** as previously described. This will cause latch **138** to move into engagement with the bar **125** to hold the same against movement and hold the pegs **133** in line with the jaws **69**. The action of the cam **211** will have returned lever **195** to the initial position thereof against stop **212**, thus completing one phase of the cycle of the machine.

The jaws of hand **74** will engage the hank at the pegs **133** as seen in Figure 46. Upon the withdrawal of the pegs, the jaws being resiliently urged toward each other will squeeze the coils of the hank toward each other in a very compact package (see Figure 47), the fins **84** extending along the upper side of the hank, see Figure 13. Thus, the hank is firmly held in a very compact form while being transferred to the wrapping mechanism **14** which has a bar **230** (see Figures 39–41) extending above the wrapping mechanism and of a thickness slightly less than the distance of the spacing between the jaws of hand **74**. During the travel of the carriage **60** toward the right, the jaws of the hand will straddle the bar **230** which is operable to push the hank out from between the jaws of hand **74** to be received by the said wrapping mechanism.

The wrapping mechanism

The laces held by the hand **74** are discharged in the space between two plates **231** and **232** (see Figures 30, 31, and 33) which are spaced apart a distance substantially equal to the thickness of the wound laces. These plates extend longitudinally of the machine and are secured at each end portion thereof on blocks **233** (Figure 27) which are vertically slidable in bearings **234** which are fixedly mounted on a sub frame **235**. The plate **232** has downwardly extending spaced lugs **236** to each of which there is secured a rod **237** arranged to depend therefrom. A pair of vertically extending posts **238** and **239** (see also Figure 7) are slidably mounted on the frame **235** as at **240** and a bracket **241** is adjustably secured on each of said post for movement therewith. Each bracket is similar and has a cam groove **242** (Figures 31, 32) and a right angularly projecting lug **243** (Figures 29, 31) through which said rods **237** extend in sliding relation therewith. An abutting washer or the like **244** is secured to the lower end of each rod and a coil compression spring **245** surrounds the rods between the lug **243** and washer **244**, the ends of the spring bearing against said lug and washer. A similar spring **246** surrounds the upper portion of said rods and the ends thereof engage against the lugs **236**, **243**. It will be apparent that the initial downwardly movement of the bracket **241** will be absorbed by springs **245** until a balanced condition of forces is had and then the plates **231**, **232** will move downwardly in unison with the bracket **241**. A bracket **247** (Figure 30) is adjustably secured to post **238** and the bar **230** is secured thereto and extends longitudinally of the machine in direct line with the slot **248** formed by the space between the plates **231** and **232**.

The lower ends of the posts **238**, **239** (see Figure 25) are connected to each other by a strap **249** (Figure 25, 11) so as to be traveled in unison by means of a cam **250** (Figure 5) which is secured to shaft **15** for rotation therewith. Accordingly, a block **251** (Figure 26) provided with a pin **252** projecting therefrom, is adjustably secured to post **238**. A linkage **253** pivoted as at **254** is provided with a cam follower **255** which extends into engagement with the cam **250**. The linkage extends into engagement with pin **252**, thus connecting the post **238** to said cam to be raised and lowered thereby. It may be here mentioned that pin **226** previously described is carried by the bracket **247** (see Figure 30).

Prior to the posts **238**, **239** being moved downwardly, a wrapper W is fed into position to receive the wound laces. The wrapper (see Figures 49 and 51), is advanced from a supply roll **260** which is mounted for rotation on a shaft **261** journalled in bearing support **262** of the frame **10** (Figure 9). The wrapper is led from the roll to pass about tensioning rollers **264**, **263**, and thence to between the bite of feed rolls **265**, **266** which are gear driven one from the other. From the feed rolls the wrapper extends to be advanced into position over a secondary longitudinal slot formed by plates **267** and **268** (see Figures 30, 49 and 50). Referring back to Figure 9, it will be seen that the roller **264** is mounted on a brake lever **269** which is pivotally mounted on the support **262** as at **269'** and urged by means of a pull spring **270**, into engagement with a brake collar **271** of shaft **261**. As the wrapper material is withdrawn from roll **260**, roller **264** will tend to swing brake lever **269** in clockwise direction and release the brake. Upon stopping the feed, the lever **269** under urge of spring **270** will return into engagement with the brake collar **271** so as to prevent free rotation of roll **260**. The feed roll **265**, **266** are actuated in an intermittent fashion by means of a crank **272**, which is splined to shaft **21**. A second crank **273** is secured to a clutch device **274** which is connected to roller **266**. The device may be of known construction operable to be positively connected to the roller in one direction of swing of crank **273** and movable relative to the roller when the crank is moved in the other direction thereof.

A link 275 connects the cranks to each other and transmits motion from the crank 272 to crank 273. Thus, as the crank 273 is moved in the clockwise direction, the feed rollers will be turned to advance a length of wrapper. On the return stroke of the crank 273, the clutch 274 will be rotated relative to said feed roll.

Again referring to Figures 30, 49 and 50, it will be seen that the length of wrapper W has been advanced some distance beyond the front plate 268. The upper edge portion of plate 268 is provided with a plurality of inwardly extending slots 276 and is mounted to be held stationary. The plate 267 (Figure 30) has rearwardly extending arms 277 which are attached to a stationary held bar 278. An arm 279 is pivotally secured to each of arms 277 and has a plurality of fingers 280 which project in the space between plates 267, 268. The arms 279 are resiliently mounted and the fingers provide abutments for a purpose which will hereinafter appear. There is also attached to the bar 278 (see Figures 27 and 28) a knife blade 281 which is provided with a boss 282 to which is pivotally mounted a second blade 283. A latch 284 is pivotally mounted at the free end of blade 283 and is spring urged into engagement with a catch 285 secured to the adjacent bearing block 234, a pin 286 extends from latch 284 into the path of a latch releasing plate 287 which is secured to the bracket 247 to move therewith. Referring to Figure 50 it will be seen wrapper W passes over in contact with the blade 281. Upon latch 284 being released, the blade 283 will drop under action of gravity and sever the wrapper from the supply.

As previously mentioned, the carriage in moving to the extreme right has positioned the hand over and in line with plates 231 and 232 (see Figure 49). The posts 238 and 239 lower as above described and the bar 230 engages and transfers the laces from between the jaws of hand 74 to between the plates 231 and 232 (see Figure 50). During the above action, the pegs 133 and 194 have moved upwardly to receive in the slots thereof, the laces held by the jaws 69 all as previously described. The pin 226 (Figure 11) has lowered a sufficient distance to engage and trip trigger 96 to release the jaws 69 and hand 74 which move to open position. The carriage 60 is now free to be returned to the extreme left. The bar 125 of the winding mechanism is still held by the latch 138. During the action of transferring the laces from the hand to between the plates 231, 232, the springs 245 (Figure 31) have been compressed sufficiently to exert a force on rods 237 to cause plates 231 and 232 to now move downwardly in unison with bar 230.

The bar 230 and plates 231, 232 will continue the downward movement in unison until the said plates engage the upper edges of plates 267, 268, to prevent further movement thereof, the springs 245 absorbing the force tending to cause further downwardly movement of plates 231, 232. The bar 230 will continue its downwardly movement to transfer the laces from between plates 231, 232 to between plates 267, 268 and against the resiliently yielding fingers 280 (see Figure 53). In the transfer of the laces, the wrapper W still unsevered will be carried to between the last mentioned plates into a U-form with the side of the wrapper adjacent plate 268 extending substantially in line with the upper edge thereof. Prior to the complete transfer of the hank to between the plates 267, 268, the plate or trigger 287 will have moved into engagement with pin 286 to swing latch 284 out of engagement with catch 285 so as to release blade 283 which will drop by action of gravity to sever the wrapper W from the parent stock. The several side of the wrapper will extend above the upper edge of plate 267 to be folded along the upper side of said hank. As the above actions take place, member 227 which is attached to slide 233 at the left of plates 231, 232 (see Figure 17) has been moved downwardly a distance sufficient to engage and trip latch 153 to free lever 144 and latch 138 operated thereby. This will free the winding mechanism for the rotating cycle thereof, all in the manner previously described.

In order to fold the severed end of the wrapper over the laces and to discharge the packaged hank from the machine, there is provided a generally U-shape member 290 (see Figure 25, 29, 30, and 32) having arms 291 in each of which there is provided a guide groove 292 therethrough. A shaft 293 (see Figure 25) is slidable in bearings 294 on frame 235 and has one end thereof secured to member 290. A block 295 is adjustably secured at the other end of the shaft 293 and carries a cam follower 296 which engages a cam 297 secured on the shaft 21 to rotate therewith. Thus, member 290 is movable toward and from the plate 267 (Figure 29). A folding and ejector member 298 is provided at each end thereof with a pair of rollers 300 (see Figure 32) which extend into the guide grooves 292. Each of said ends also carries a third roller 301 which extends through said grooves 292 and engages into the cam recess 242 in the bracket 241. A finger 302 (see Figure 29) extends toward plate 267 and carries a bar 303 which extends parallel with plate 267. The bar 303 is of a width slightly less than the spacing between plates 267, 268. Member 290 and posts 238, 239 move at the same time; thus a compound movement will be had in member 298. The movement is as follows: During the upward movement of bracket 241, the bar 303 will be carried upwardly to engage the wrapper W and clear the upper edge of plate 267. Upon the forward movement of member 290, bar 303 will be moved forwardly over the upper edge of plate 267 and fold the wrapper W over the upper side of the hank held against fingers 280. Member 290 will now come to rest and the wrapper will be sealed by the sealing mechanism 14 which may be of any known conventional structure. It is here shown as cam operated through means of a rack and pinion connection indicated generally 305 (see Figure 7). During the subsequent downwardly movement of bracket 241, the bar 303 will be moved downwardly between plates 267 and 268 advancing the previously sealed package, central slot 267′ in plate 267′ being provided as a passageway for finger 302, the fingers 280 yielding and being moved from beneath the plates by the advancing package. The bar 303 upon reaching the end of its downward movement will be in register with a longitudinal slot 267′ in plate 267 and the action of member 290 will cause the bar 303 to be withdrawn from between said plates. The upward movement of bracket 241 will return the bar 303 to the initial position thereof for the next cycle of operation. The previously packaged laces will be advanced to the lower end of plates and transferred to a boxing section indicated generally 306 (see Figure 2). Plate 232 carries a pin 307 (Figure 30) which engages the under side of blade 283 and upon upward movement of said plate said blade will be swung upwardly for the latch 284 to engage latch 285.

I claim:

1. In a narrow fabric packaging machine, a magazine for holding a plurality of units of work in spaced relation, a winding mechanism for receiving and winding a unit of work into a hank, a wrapping mechanism for applying a wrapper onto said hank, said magazine, winding mechanism and wrapping mechanism being in line with each other, and a conveyor having a straight line movement for simultaneously transferring a unit of work from said magazine to said winding mechanism and a wound unit from said winding mechanism to said wrapping mechanism.

2. In a narrow fabric packaging machine, a magazine for holding a plurality of units of work in spaced relation, a winding mechanism for receiving and winding a unit of work into a hank, a wrapping mechanism for applying a wrapper onto said hank, and a conveyor for simultaneously transferring a unit of work from said

magazine to said winding mechanism and for transferring a hank from said winding mechanism to said wrapping mechanism, said conveyor having two pairs of jaws, movably mounted for simultaneously closing about said unit of work and said hank.

3. In a machine for packaging narrow fabric, a rotary magazine having a plurality of pairs of work gripping jaws movable toward and from each other in a plane at right angles to the axis of rotation of said magazine, a winding mechanism, a conveyor movable axially of said magazine for transferring the work from said magazine to said winding mechanism by pulling the work through said jaws, said conveyor having holding means movable to engage the work held by the jaws of said magazine, and means engagable by the said gripping jaws to move the same to open position subsequent to the holding of said work by the jaws of said conveyer, whereby said open jaws provide a guide for said work as pulled thereover.

4. In a machine for packaging narrow fabrics a magazine having work holding means, a winding mechanism for receiving and winding the work into a hank, a carriage mounted for linear travel toward and from said magazine for transferring the work from said magazine to said winding mechanism, a pair of jaws carried by said carriage and pivoted on an axis parallel to the path of travel of the carriage for gripping and holding said work during the travel of said carriage from said magazine to said winding mechanism, means for moving the carriage jaws to close about said work at one end of travel of said carriage, said jaws being automatically locked upon being moved to closed position, and means operable to cause said jaws to be moved to open position when said carriage is at the other end of the path of travel thereof.

5. In a machine for packaging narrow fabric comprising a magazine for holding a plurality of units of said fabric, a winding mechanism for winding said units into hanks, a wrapping mechanism for positioning a wrapper about the hanks, a carriage mounted for reciprocal movement along a linear path and having a first pair of jaws for gripping a unit from said magazine and a second pair of jaws for gripping a hank while held by the winding mechanism, said winding mechanism being operable to engage the said unit held in the said first pair of jaws when said carriage is at one end of the path of travel and means operable when said carriage is at said one end of its path to engage and transfer to the said wrapping mechanism the hank held by said second pair of jaws during the operation of the winding mechanism.

6. In a machine for winding and wrapping narrow fabric, winding means to wind the work into a hank, a wrapping mechanism having a slot in which a hank is received to have a wrapper positioned thereon, a carriage having a pair of jaws movable to grip the opposite side portions of the hank while held by said winding means, means for moving said carriage to position said hank in line with said slot, a bar movable toward said slot, said jaws straddling said bar, means for moving said bar toward said slot to transfer said hank therein, and means actuated during the said movement of said bar, to release said jaws and permit them to move to open position upon said hank being free of said jaws and prior to the complete movement of said bar in the direction to transfer said hank into said slot.

7. In a machine for winding and wrapping narrow fabric, winding means to wind the work into a hank, a wrapping mechanism having a pair of spaced plates providing a slot in which a hank is received to have a wrapper positioned thereon, a second pair of spaced plates extending in line with said first plates and spaced therefrom, said second plates being movable toward the first said plates, a carriage having a pair of jaws movable to grip the opposite side portions of the hank while held by said winding means, means for moving said carriage to carry said hank in line with the first said plates, a bar movable toward said slot, said jaws straddling said bar, means for moving said bar to engage said hank to transfer the same to between said second plates, and means for moving said bar and said second plates in unison upon said hank being free of said jaws to transfer said hank from between said second pair of plates into said first slot.

8. In a machine for winding and wrapping narrow fabric, winding means, a wrapping mechanism having a pair of spaced plates providing a slot in which a hank is received to have a wrapper positioned thereon, a second pair of spaced plates extending in line with said first plates and spaced therefrom, said second plates being movable toward the first said plates, a carriage having a pair of jaws movable to grip the opposite side portions of the hank while held on said pegs, means for moving said carriage to carry said hank in line with the first said plates, a bar movable toward said slot, said jaws straddling said bar, means for moving said bar to engage said hank to transfer the same to between said second plates, and means for moving said bar and said second plates in unison upon said hank being free of said jaws to transfer said hank from between said second pair of plates into said first slot, and means operable upon the said hank being free of said jaws to release said jaws to open relation.

9. In a machine for winding and wrapping narrow fabric, winding means, a wrapping mechanism having a first pair of spaced plates providing a slot therebetween for receiving said hank for applying a wrapper thereon, a second pair of spaced plates extending in line with the first said plates and spaced therefrom, said second plates being movable toward the first said plates, a pair of jaws movable to grip the opposite side portion of the hank while held by said winding means, means for moving said jaws to position said hank in line with said first plates, a bar extending between said jaws and movable to engage and transfer said hank from said jaws to between the said second plates, means for moving said bar and second plates in unison upon said hank being free of said jaws and means actuated during the transfer of said hank from said jaws, operable upon said hank being free of said jaws to release the same to open position.

10. In a machine for packaging narrow fabric, a magazine for holding a plurality of units of work, a winding mechanism for winding a unit of said work into a hank, said mechanism including a pair of winding pegs revolvable about a common axis, tensioning means for the work, and a carriage movable along a linear track for transferring unit of work from said magazine through the tensioning means to be engaged by said pegs.

11. In a machine for packaging narrow fabric, a magazine for holding a plurality of units of work, a winding mechanism for winding a unit of said work into a hank, a wrapping mechanism for applying a wrapper about said hank, said winding mechanism and wrapping mechanism being located in a straight line with said magazine, a track extending in a straight line from said magazine along said mechanisms, and a conveyor movable along said track for simultaneously transferring the work from said magazine to said winding mechanism and for transferring a hank from said winding mechanism to said wrapping mechanism.

12. In a machine for packaging narrow fabric, a winding mechanism for winding a unit of work into a hank, said mechanism including a pair of winding pegs revolvable about a common axis and movable axially of said axis to position said pegs into and out of winding position, one of said pegs having a slot extending inwardly from the upper edge thereof into which the leading end of said laces are received and secured, a third peg for manipulating the trailing end of the work mounted for movement axially of said axis and having a slot through which said work passes to said one peg, and means for simultaneously moving said pegs into and out of winding position.

13. In a machine for packaging narrow fabric into a hank form, a pair of winding pegs rotatable about a common axis and movable axially of said axis to position said pegs into and out of winding position, work tensioning means, means for advancing the work along a linear path through said tensioning means to said winding pegs, and means actuated by the movement of said pegs out of winding position to hold said pegs in aligned position with said work during the movement of said pegs to engage said work.

14. In a narrow fabric packaging machine, a rotatable plate, a pair of winding pegs extending through said plate and rotatable therewith, said pegs being movable axially of the axis of rotation of said plate to position said pegs into and out of winding position, work tensioning means, means for advancing the work along a linear path through said tensioning means to said winding pegs, and means actuated by the movement of said pegs out of winding position to engage and hold said plate to position said pegs in aligned relation with said work during the movement of said pegs to engage said work.

15. In a narrow fabric packaging machine, a rotatable plate, a pair of winding pegs extending through said plate and rotatable therewith, said pegs being movable axially of the axis of rotation of said plate to position said pegs into and out of winding position, work tensioning means, means for advancing the work along a linear path through said tensioning means to said winding pegs and a latch pivotally mounted for movement toward and from said plate, and means actuated by the movement of said pegs out of winding position to move said latch to engage said plate to position said pegs in aligned relation with said work during the movement of said pegs to engage said work.

16. In a narrow fabric packaging machine, a rotatable plate, a pair of winding pegs extending through said plate and rotatable therewith, said pegs being movable axially of the axis of rotation of said plate to position said pegs into and out of winding position, work tensioning means, means for advancing the work along a linear path through said tensioning means to said winding pegs, and a latch pivotally mounted for movement toward and from said plate, means actuated by the movement of said pegs out of winding position to move said latch to engage said plate to position said pegs in aligned relation with said work during the movement of said pegs to engage said work, and means for tripping said latch upon said pegs engaging said work.

17. In a lace packaging machine, a magazine for holding a plurality of pairs of laces, a pair of winding pegs, revolvable about a common axis and movable axially of said axis to position said pegs into and out of winding position, means for advancing a pair of laces in a straight line from said magazine to said winding pegs, said pair of laces extending from said magazine to said pegs in a straight line, one of said pegs having a slot in which the leading ends of said laces are received and secured during the winding operation, and means actuated by the movement of said pegs out of winding position to hold said pegs to align said slot with the path of travel of the laces during the movement thereof from said magazine to said winding pegs.

18. In a machine for winding and wrapping narrow fabric, winding pegs revolvable about a common axis to wind the work into a hank and movable in the direction of said axis to position said pegs into and out of winding position, a wrapping mechanism having a slot in which a hank is received to have a wrapper positioned thereon, a carriage having a pair of jaws movable to grip the opposite side portions of the hank while held by said pegs, means operable for retracting said pegs from said hank while held in said jaws, means for moving said carriage to position said hank in line with said slot, a bar movable toward said slot, said jaws straddling said bar, means for moving said bar relative to said jaws toward said slot to transfer said hank therein, and means actuated during the said movement of said bar, to release said jaws and permit them to move to open position upon said hank being free of said jaws and prior to the complete movement of said bar in the direction to transfer said hank into said slot.

19. In a machine for winding and wrapping narrow fabric, winding pegs revolvable about a common axis to wind the work into a hank and movable in the direction of said axis to position said pegs into and out of winding position, a wrapping mechanism having a pair of spaced plates providing a slot in which a hank is received to have a wrapper positioned thereon, a second pair of spaced plates extending in line with said first plates and spaced therefrom, said second plates being movable toward the first said plates, a carriage having a pair of jaws movable to grip the opposite side portions of the hank while held on said pegs, means for retracting said pegs to free said hank therefrom, means for moving said carriage to carry said hank in line with the first said plates, a bar movable toward said slot, said jaws straddling said bar, means for moving said bar to engage said hank to transfer the same to between said second plates, and means for moving said bar and said second plates in unison upon said hank being free of said jaws to transfer said hank from between said second pair of plates into said first slot.

20. In a machine for winding and wrapping narrow fabric, winding pegs revolvable about a common axis to wind the work into a hank and movable in the direction of said axis to position said pegs into and out of winding position, a wrapping mechanism having a pair of spaced plates providing a slot in which a hank is received to have a wrapper positioned thereon, a second pair of spaced plates extending in line with said first plates and spaced therefrom, said second plates being movable toward the first said plates, a carriage having a pair of jaws movable to grip the opposite side portions of the hank while held on said pegs, means for retracting said pegs to free said hank therefrom, means for moving said carriage to carry said hank in line with the first said plates, a bar movable toward said slot, said jaws straddling said bar, means for moving said bar to engage said hank to transfer the same to between said second plates, and means for moving said bar and said second plates in unison upon said hank being free of said jaws to transfer said hank from between said second pair of plates into said first slot, and means operable upon the said hank being free of said jaws to release said jaws to open relation.

21. In a machine for winding and wrapping narrow fabric, winding pegs for winding the work into a hank, a wrapping mechanism having a first pair of spaced plates providing a slot therebetween for receiving said hank for applying a wrapper thereon, a second pair of spaced plates extending in line with the first said plates and spaced therefrom, said second plates being movable toward the first said plates, a pair of jaws movable to grip the opposite side portions of the hank while held on said pegs, means retracting said pegs to free said hank therefrom, means for moving said jaws to position said hank in line with said first plates, a bar extending between said jaws and movable to engage and transfer said hank from said jaws to between the said second plates, means for moving said bar and second plates in unison upon said hank being free of said jaws and means actuated during the transfer of said hank from said jaws, operable upon said hank being free of said jaws to release the same to open position.

22. In a machine for packaging narrow fabric, a winding means including spaced pegs about which the work is wound into a hank, means for holding and gripping said hank while being freed of said pegs, said last mentioned means including a pair of jaws of a size to engage opposite sides of said hank for the entire length thereof, said jaws being resiliently urged for movement toward each

other whereby upon release of said hank from said pegs, said jaws will further close upon said hank to move the coils thereof into tight engagement with each other.

23. In a machine for packaging narrow fabric, a winding means including spaced pegs about which the work is wound into a hank, means for applying a wrapper about said hank, means for holding and gripping said hank while being freed of said pegs, said last mentioned means including a pair of jaws of a size to engage opposite sides of said hank along the entire length thereof, said jaws being resiliently urged for movement toward each other, whereby upon release of said hank from said pegs, said jaws will further close upon said hank to move the coils thereof into tight engagement with each other, and means for traveling said jaws to position the hank held therein in line with said wrapping means.

24. In a machine for packaging laces having tipped ends, a magazine having a plurality of pairs of spaced gripping jaws for receiving pairs of laces, a pair of guiding jaws positioned adjacent said magazine, means for moving said magazine to position a pair of said gripping jaws in line with said guiding jaws, whereby a pair of laces may be inserted side by side into said aligned pairs of jaws with the tipped end of said laces engaging against the side of said guiding jaws distal from said gripping jaws so as to align said laces with each other and to project a predetermined distance from the gripping jaws of said magazine upon being free of said guiding jaws.

25. In a machine for packaging laces having tipped ends, a magazine having a plurality of pairs of spaced gripping jaws for receiving pairs of laces, a pair of guiding jaws positioned adjacent said magazine, means for moving said magazine to position a pair of gripping jaws in line with said guiding jaws, whereby a pair of laces may be inserted side by side into said aligned pairs of jaws with the tipped end of said laces engaging against the side of said guiding jaws distant from the gripping jaws to align said laces with each other and to project a predetermined distance from the gripping jaws of said magazine upon being free of said guiding jaws, said guiding jaws being moved to open position by the pull of the laces therein when indexing said magazine.

26. In a machine for packaging narrow fabric having tipped ends, a winding mechanism for winding a unit of work into a hank, said mechanism including a pair of winding pegs revolvable about a common axis and movable axially of said axis to position said pegs into and out of winding position, one of said pegs having a slot extending inwardly from the upper edge thereof into which the leading end of said laces are received and secured, a third peg mounted for movement axially of said axis and having a slot of a width less than the thickness of the tip of the fabric through which said work passes to said one peg, and means for simultaneously moving said pegs into and out of winding position.

27. In a lace packaging machine for laces having tips at their ends, a pair of winding pegs revolvable about a common axis and movable axially of said axis to position said pegs into and out of winding position, one of said pegs having a slot for receiving the leading ends of said laces, a third peg having a slot therein through which said laces pass to said one peg, said third peg moving axially with the first of said pegs to and from winding position, and means for holding said third peg stationary relative to said pair of pegs for a predetermined number of revolutions thereof, and means to free said third peg so as to permit the third peg to be drawn towards said pair of pegs by the pull of said laces upon being engaged by the tips of the trailing ends of said pair of laces.

28. In a lace packaging machine for laces having tips at their ends, a pair of winding pegs revolvable about a common axis and movable axially of said axis to position said pegs into and out of winding position, one of said pegs having a slot for receiving the leading ends of said laces, a third peg having a slot therein through which said laces pass to said one peg, said third peg moving axially with the first of said pegs to and from winding position, and means for holding said third peg stationary relative to said pair of pegs for a predetermined number of revolutions thereof, and means to permit the third peg to be moved toward said pair of pegs by the pull of said laces upon being engaged by the tips of the trailing ends of said pair of laces.

29. In a lace packaging machine for laces having tip ends, winding pegs, means for mounting said winding pegs for rotational movement about a common axis and for movement in the direction of said axis into and out of winding position, one of said pegs having a slot for receiving a pair of laces, a magazine for holding a plurality of pairs of laces, means for indexing said magazine to position a pair of laces side by side in definite predetermined relation, a tension means for the laces, a carriage movable along a linear path, a pair of jaws carried by said carriage, means for moving said carriage with said jaws in open relation to position the same in line with said pair of laces in said predetermined relation, means for closing said jaws on said laces, means for moving said carriage to draw the laces through said tension means to position said pair of laces in taut relation adjacent to said one peg, and means for moving said pegs to cause said pair of laces to enter said slot.

30. In a machine for packaging laces having enlarged tips, a hank winding means having spaced pegs at least one of which has a diametrical slot extending inwardly from its end and of a width slightly less than the thickness of the lace tips, means for mounting said pegs for rotation about a common axis and for movement in the direction of said axis, a pair of jaws for receiving a pair of laces edge to edge and with the tips thereof aligned with each other, a tensioning means for the laces, means for advancing said laces while held in said jaws through the tensioning means to a position in the path of axial movement of said slotted pegs, said pegs during the advance of said laces being withdrawn from winding position and out of the path of said laces, means for axially moving said pegs for said laces to engage the taut laces inwardly of the tips thereof in the slot of said one pegs whereby upon the rotation of said pegs, said laces will be drawn through said slot to engage the tips thereof with the edges of said slot for holding said laces in said peg during the winding of said laces into a hank about said pegs.

31. In a braid winding machine: tensioning means for applying a tension on the braid; spaced winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; means operable when said pegs are out of said winding position for feeding braid to a position opposite one of said pegs comprising a first pair of jaws for gripping the braid; means for moving said jaws to advance said braid toward said axis at a location inwardly of the path of rotation of said pegs; means actuating said shifting means to move said pegs into said winding position following said positioning of said braid; means operable during the movement of said pegs into winding position for holding said one peg in registry with the portion of the braid extending between said jaws and said tensioning means; braid engaging means on said one peg operable when said pegs are moved into said winding position for engaging said braid; means for rotating said pegs about said axis to wind the braid thereon as a hank; a mechanical hand operable following predetermined rotation of said pegs, to engage opposite sides of the hank wound thereon; and means actuating said shifting means to move said pegs out of said winding position while said hank is engaged by said hand.

32. In a braid winding machine: tensioning means for applying a tension on the braid; spaced winding pegs;

means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; means operable when said pegs are out of said winding position for feeding a length of braid to a position opposite one of said pegs comprising a pair of jaws for gripping the braid, means for moving said jaws to advance said braid toward said common axis to position and hold the leading end of said braid inwardly of the path of rotation of said pegs about said common axis; means actuating said shifting means to move said pegs into said winding position following said positioning of said length of said braid; braid engaging means on said one peg operable when said pegs are moved into said winding position for engaging said length of said braid; means operable for holding said one peg in registery with the portion of the braid extending between said jaws and the said tensioning means during the movement of said pegs to winding position; means for rotating said pegs about said axis to wind the braid thereon as a hank; a mechanical hand operable following predetermined rotation of said pegs, to engage opposite sides of the hank wound thereon along the entire length of said hank; means actuating said shifting means to move said pegs out of said winding position while said hank is engaged by said hand; and means from which said pegs project when in said winding position, operable to restrain movement of said hank with said pegs upon said movement of said pegs out of said winding position.

33. In a braid winding machine: opposed winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; means operable when said pegs are out of said winding position for feeding a portion of a length of braid to a position opposite one of said pegs; means actuating said shifting means to move said pegs into said winding position following said positioning of said portion of said braid; braid engaging means on said one peg operable when said pegs are moved into said winding position for engaging said portion of said braid; means for rotating said pegs about said axis to wind the braid thereon as a hank; a mechanical hand operable following predetermined rotation of said pegs to engage the outer sides of the hank between said pegs; means actuating said shifting means to move said pegs relative to said hank out of said winding position while said hank is engaged by said hand; and means for moving said hand with said hank therein in a direction away from said pegs.

34. In a braid winding machine: opposed winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; means operable when said pegs are out of said winding position for feeding a portion of a length of said braid to a position opposite one of said pegs; means actuating said shifting means to move said pegs into said winding position following said positioning of said portion of said braid; braid engaging means on said one peg operable when said pegs are moved into said winding position for engaging said portion of said braid; means for rotating said pegs about said axis to wind the braid thereon as a hank; a mechanical hand operable following predetermined rotating of said pegs, to engage opposite sides of the hank wound thereon; means actuating said shifting means to move said pegs out of said winding position while said hank is engaged by said hand; means from which said pegs project when in said winding position operable to restrain movement of said hank with said pegs upon said movement of said pegs out of said winding position; means for moving said hand to transport said hank to a wrapping station; means actuating said feeding means to position a portion of another length of braid opposite said one peg during said transporting movement of said hand.

35. In a braid winding machine: opposed winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; braid feeding means operable when said pegs are out of said winding position for positioning a portion of a length of braid opposite one of said pegs; said one peg having a slot therein to receive and hold said portion of said braid upon movement of said pegs into said winding position; means for rotating said pegs about said common axis while the braid is held on said one peg, to wind braid thereon in the form of a hank; a mechanical hand operable to engage the opposite outer sides of the hank between said pegs; means actuating said shifting means to move said pegs out of said winding position while said hank is engaged by said hand; and means from which said pegs extend when in said winding position, operable to restrain movement of said hank with said pegs upon said movement of said pegs out of said winding position.

36. In a braid winding machine: spaced winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; braid feeding means operable when said pegs are out of said winding position for positioning a free end of a length of braid opposite one of said pegs; said one peg having a slot to receive and hold said braid at a point spaced from said free end upon movement of said pegs into said winding position; means for rotating said pegs about said common axis while the braid is held on said one peg, to wind braid on said pegs in the form of a hank, a mechanical hand operable to engage opposite outer sides of the hank between said pegs; means actuating said shifting means to move said pegs out of said winding position while said hank is engaged by said hand; means from which said pegs extend when in said winding position operable to restrain movement of said hank with said pegs upon said movement of said pegs out of said winding position; and means for moving said hand with the hank therein away from said pegs.

37. In a braid winding machine: opposed winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; braid feeding means operable when said pegs are out of said winding position for positioning a portion of a length of braid opposite one of said pegs; said one peg having means thereon to receive and hold said portion of said braid upon movement of said pegs into said winding position; means for rotating said pegs about said common axis while the braid is held on said one peg, to wind braid on said pegs in the form of a hank; a mechanical hand operable to engage the outer sides of the hank between said pegs; means actuating said shifting means to move said pegs out of said winding position while said hank is engaged by said hand; means from which said pegs extend when in said winding position, operable to restrain movement of said hank with said pegs upon said movement of said pegs out of said winding position; means for moving said hand with said hank away from said pegs; and means operable during said movement of said hand away from said pegs, to actuate said feeding means for positioning a portion of another length of braid opposite said one peg.

38. In a braid winding machine: opposed winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; braid feeding means operable when said pegs are out of said winding position for positioning a portion of a length of braid opposite one of said pegs; said one peg having means thereon to receive and hold said portion of said braid upon movement of said pegs into said winding position; means for rotating said pegs about

said common axis while the braid is held on said one peg to wind braid on said pegs in the form of a hank; a mechanical hand operable to engage the outer sides of the hank between said pegs; means actuating said shifting means to move said pegs out of said winding position while said hank is engaged by said hand; and means from which said pegs extend when in said winding position, operable to restrain movement of said hank with said pegs upon said movement of said pegs out of said winding position; said feeding means and said pegs when the latter are in said winding position, providing for the feeding of said braid in a straight line to said pegs as well as for winding of the braid on the pegs with the hank disposed in a plane parallel with the straight line; the hank being disposed in said parallel plane when engaged by said hand.

39. In a braid winding machine: opposed winding pegs; means mounting said pegs for rotation about a common axis; means operable for shifting said pegs in the direction of said axis into and out of a winding position; braid feeding means operable when said pegs are out of said winding position for positioning a portion of a length of braid opposite one of said pegs; said one peg having means thereon to receive and hold said portion of said braid upon movement of said pegs into said winding position; means for rotating said pegs about said common axis while the braid is held on said one peg, to wind braid on said pegs in the form of a hank; means for removing the hank after it is wound on said pegs; said removing means including a pair of opposed members movable to engage the hank along the outer sides thereof between said pegs; means for so moving said opposed members; means for actuating said shifting means to move said pegs relative to said hank out of said winding position while said opposed members engage said hank; means associated with said pegs for restraining movement of said hank while said pegs are moved out of said winding position; and means operating said removing means to move said hank in a direction away from said retracted pegs.

40. In a machine for forming hanks of pairs of flexible elements: a winding member mounted to rotate about an axis; said member having openings therein on opposite sides of said axis; winding pegs axially movable in said openings into and out of a winding position; means for feeding lengths of flexible elements in a side-by-side relation toward said winding member to dispose corresponding free end portions thereof, adjacent one of said pegs while said pegs are retracted; means on said one peg operable to engage said portions of said elements at points spaced from the free ends, whereby on rotation of said member said elements will be wound as a hank on said pegs; means for retracting said pegs when said hank is formed thereon; means operable for removing said hank; said removing means including opposed members movable toward one another to grip opposite sides of the hank between said pegs; means for so moving said opposed members while said hank remains on said pegs; and means for moving said members away from said rotary member to transport the hank from said rotary member.

41. In a machine for winding flexible elements into hanks; means for winding said elements into hanks including opposed rotatable pegs on which said elements are wound; and a mechanical hand for gripping and moving said hanks from position in which they are wound on said pegs; said hand including a pair of opposed members movable toward one another for gripping the outer sides of the hanks between said pegs while the hanks remain on the pegs; means for withdrawing said pegs from said hanks while said hank-gripping members engage said hanks; and means for moving said hand in a direction away from said pegs.

42. In a machine for winding flexible elements into hanks; means for winding said elements into hanks including spaced rotatable pegs on which said elements are wound, means for intermittently feeding lengths of said flexible element to said winding means with said lengths held under tension in a straight line for engagement by said winding means and during the winding of the lengths on said pegs; and a mechanical hand for gripping and moving said hanks from position in which they are wound on said pegs; said hand including a pair of opposed members movable toward one another for gripping sides of the hanks between said pegs while the hanks remain on the pegs; means for withdrawing said pegs from said hanks while said hank-gripping members engage said hanks; and means for moving said hand in a direction away from said pegs.

43. In a machine for winding and wrapping hanks of a flexible element; winding means including rotatable pegs on which said hanks are wound; means for feeding the flexible element to the winding means; a wrapping station including means providing a slot formed to receive the hank and to permit of the application there around of a wrapper which is of greater or lesser length than the hank whereby the hank may be partially or completely covered by a wrapper; a mechanical hand for moving the hank into said slot; said hand including opposed members movable to grip the opposite sides of the portions of the hank between said pegs while the hank remains on said pegs; means for retracting said pegs after being gripped by said hand; means for moving said hand toward said slot to position the hand over said slot; means associated with said hand to move said hank from said hand into said slot; and means operable during said movement of said hand toward said slot for actuating said feeding means to engage a length of said flexible element with said winding means.

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