

(No Model.)

5 Sheets—Sheet 1.

E. GOLDMAN.

MACHINE FOR WINDING COTTON WEB OR SIMILAR MATERIAL.

No. 520,420.

Patented May 29, 1894.

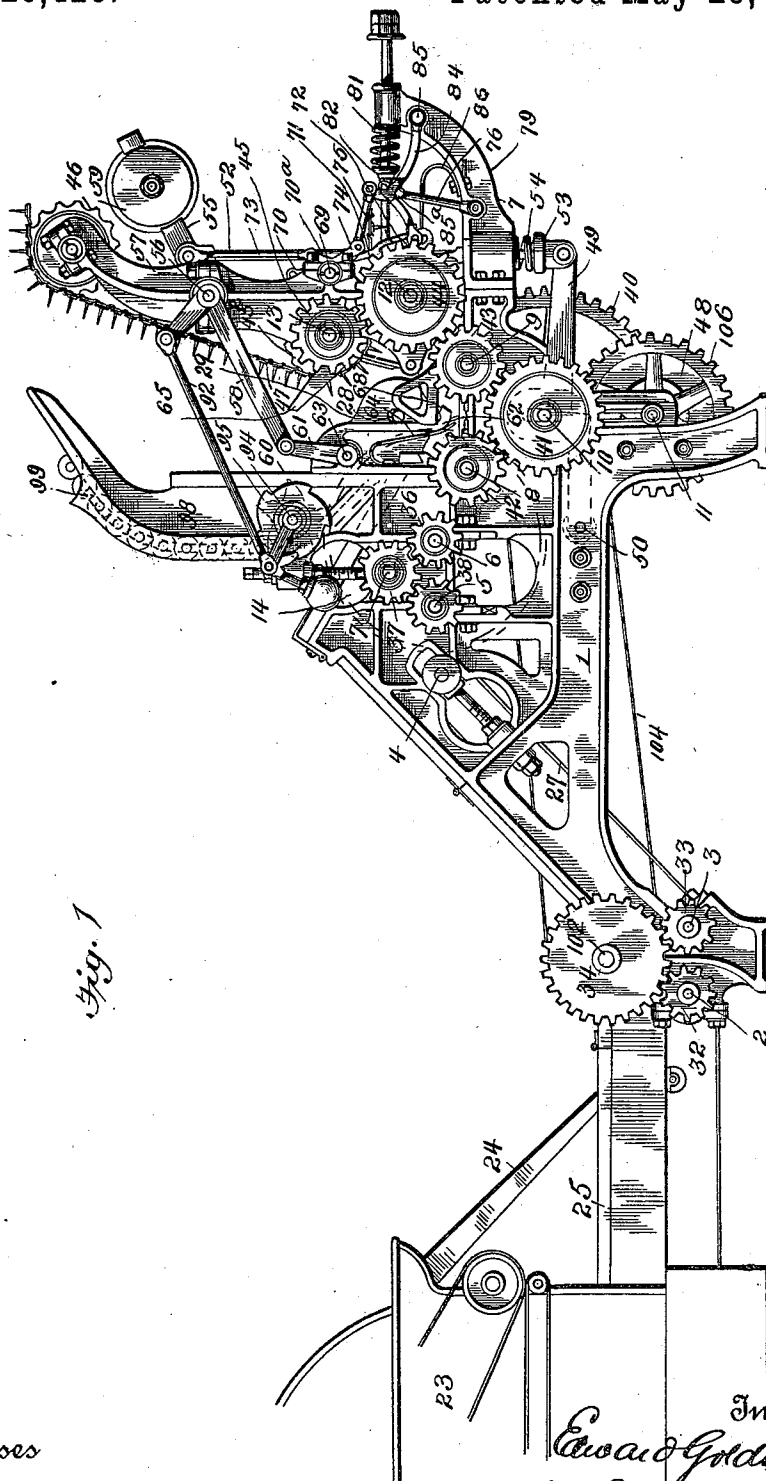


Fig. 1

Witnesses

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(No Model.)

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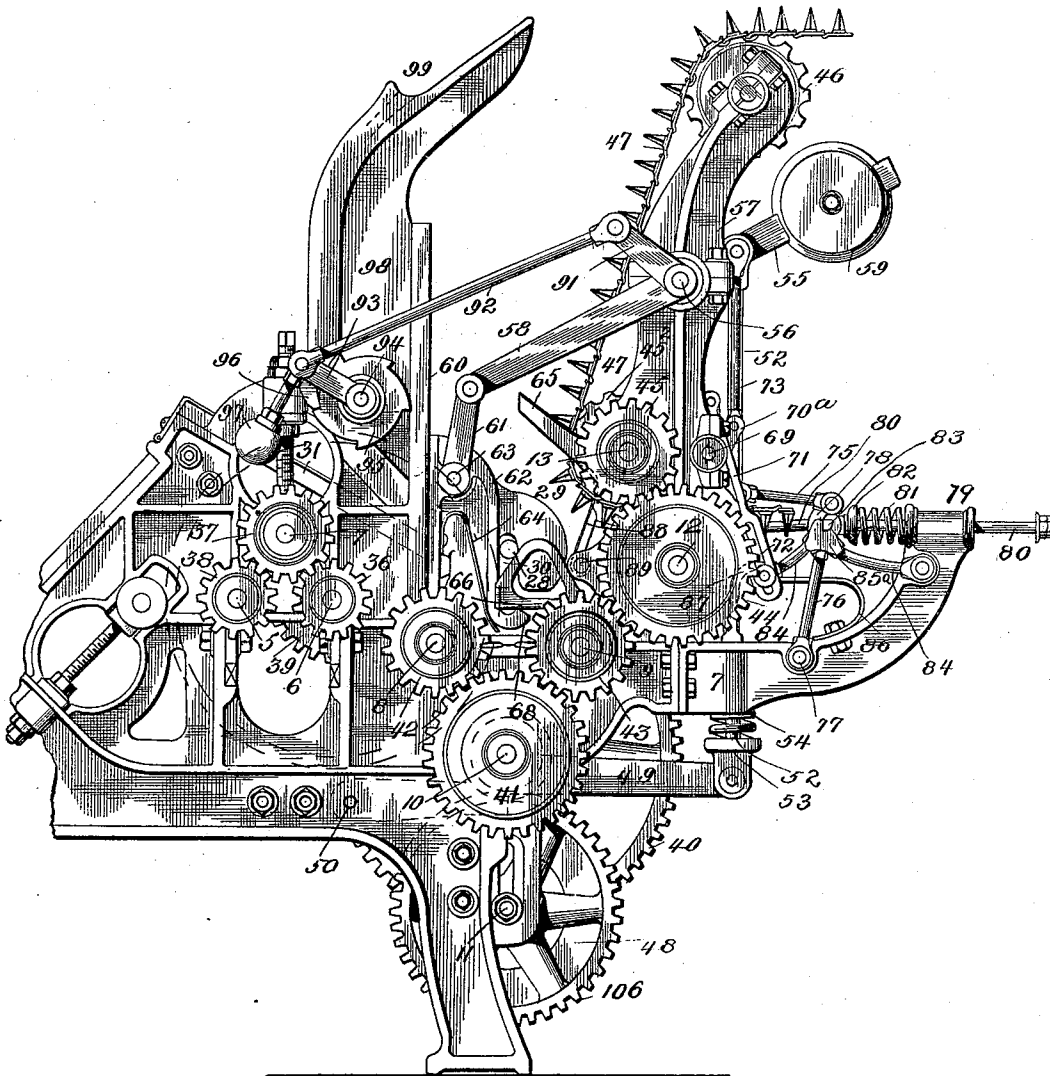
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Fig. 2



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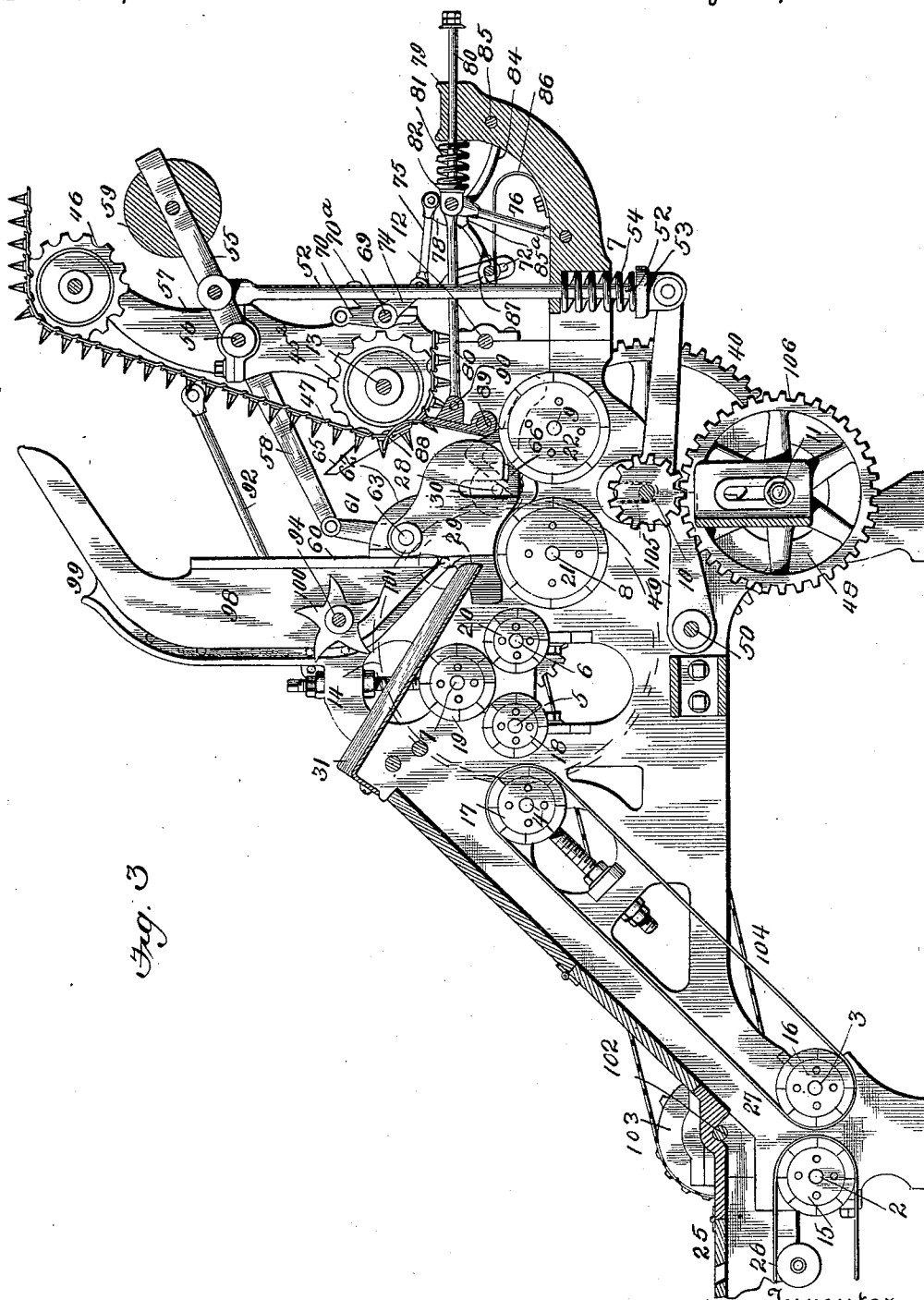


Fig. 3

Witnesses

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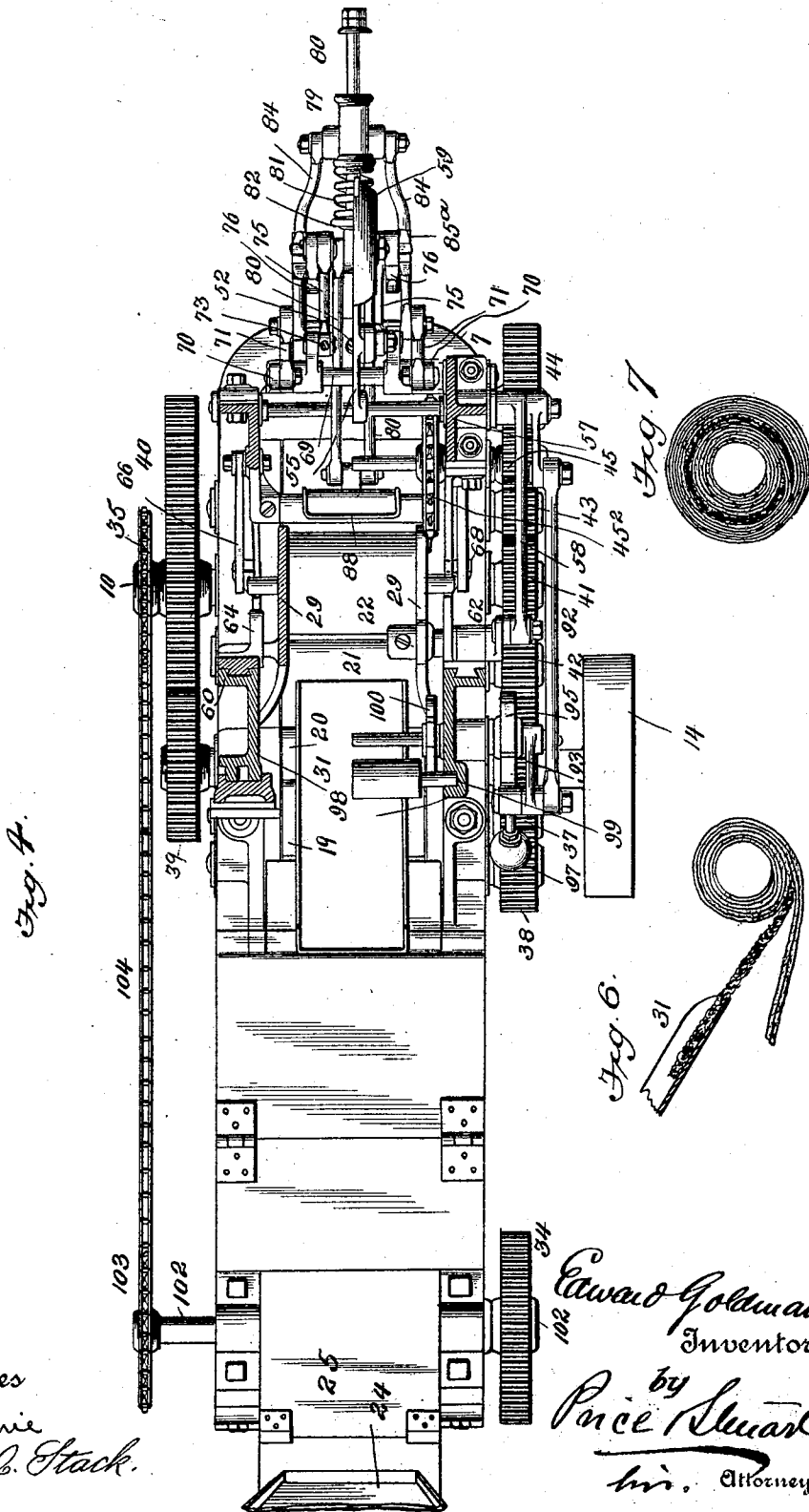
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UNITED STATES PATENT OFFICE.

EDWARD GOLDMAN, OF BALTIMORE, MARYLAND.

MACHINE FOR WINDING COTTON WEB OR SIMILAR MATERIAL.

SPECIFICATION forming part of Letters Patent No. 520,420, dated May 29, 1894.

Application filed August 17, 1893. Serial No. 483,419. (No model.)

To all whom it may concern:

Be it known that I, EDWARD GOLDMAN, a citizen of the United States, and a resident of the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Machines for Winding Cotton Web or other Similar Material, of which the following is a specification.

My invention relates to a machine for winding cotton or other similar material. Among the applications of my machine is its use for the manufacture of muff beds.

Heretofore muffs have as a rule been made by hand of cotton, wool, or other suitable material, but I have devised a machine by means of which they may be made from cotton and hair with uniformity in size and weight and with great rapidity, the muffs being finished and delivered on a conveyer without being handled.

In the drawings Figure 1 represents the side elevation of my machine; Fig. 2 an enlarged view of the same elevation the parts being in the same position. Fig. 3 is a vertical section of the machine, one of the sides being removed and showing the rollers by means of which the web is fed and wound upon the spool in end elevation, also showing some of the interior structure. Fig. 4 is a plan of the machine showing portions in section. Fig. 5 is a side elevation, portions of the frame being removed so as to show the concealed parts, the movable portions of the machine being in an opposite position from those shown in Figs. 1 and 2. Figs. 6 and 7 are side elevations of a muff in process of construction and when completed.

Referring now to Fig. 1, 1 is the frame of the machine in which are journaled the shafts 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13. 14 is a pulley keyed upon the shaft 6 and by which power is communicated to the machine.

Referring now to Fig. 3, 15 is a roller keyed upon the shaft 2; 16 is a roller keyed upon the shaft 3; 17 a roller keyed upon shaft 4; 18 a roller keyed upon shaft 5; 19 a roller keyed upon the shaft 6; 20 a roller keyed upon the shaft 7; 21 a roller keyed upon the shaft 8; 22 a roller keyed upon the shaft 9.

Referring to Fig. 1, 23 is a card and 24 a chute in which the carded cotton or wool from the card is collected in the form of a continu-

ous web and fed on to an endless apron which travels upon the roller 15 and one in the rear of it. 25 is another box in which the endless apron 26 travels and which receives another web from a second card. 27 is an apron traveling on the rollers 16 and 17 and conveying the webs up into the machine. From the extremity of this apron the webs of cotton lying one upon the other pass on to the roller 18, under the roller 19, over the roller 20, over the roller 21, to the winding drum 28, which lies between the rollers 21 and 22 and on which the web is wound. 29 is a reciprocating guide for the winding drum by which the web is guided so as to wind straight upon the drum. 30 is a vertical slot in said guide in which the shaft of the drum rises as the web is wound upon it.

The machine which I am about to describe may be used for many purposes.

The primary object for which I intend to use my machine is the manufacture of muff beds for making muffs. These muffs have generally been made by hand but I have designed this machine for the purpose of making them. The muff is wound by a web of carded cotton on a winding drum and when about half finished a section of hair is inserted and the remainder of the allotted quantity of cotton web wound upon the top of the hair so as to give the muff the desired elasticity.

31 is a chute on which is laid either by hand or by some supplemental mechanism a section of curled hair of the width of the desired muff and long enough to encircle the muff once at the time at which it is wound upon the muff. The delivery of the section of curled hair to the muff while winding is illustrated in Fig. 6 and its position to the muff is illustrated in Fig. 7.

Referring to Fig. 1, 32 is a pinion keyed upon the shaft 2 and driving that shaft. 33 is a pinion keyed to the shaft 3 and driving it. 34 is a gear keyed to the shaft 102 and driven by it. On the other end of the shaft 102 is a sprocket wheel 103, (see Fig. 4.) On the shaft 10 is keyed a gear 40 and to the same shaft is keyed a sprocket wheel 35. 104 is a sprocket chain connecting sprocket wheel 103 with sprocket wheel 35 by means of which power is communicated to the shafts

102—2—3, (see Fig. 1.) 36 is a pinion keyed upon the shaft 6 which meshes with another pinion 37 upon the shaft 7 which in its turn meshes with a pinion 38 keyed upon the shaft 5. The pinion 36 turns 37, and 37 turns 38. 39 is a pinion keyed upon the shaft 6 on the other side of the machine which meshes with the gear 40 and turns said gear. Power as before stated is communicated to the machine by the shaft 6 and from that shaft to other parts. The gear 40 is mounted upon the shaft 10 on the other side of the machine. On the near side of the machine on the said shaft 10 is keyed a gear 41 which meshes with the pinions 42—43 upon the shafts 8 and 9 and by which said shafts and the rollers 21 and 22 are turned.

Referring to Fig. 3, 105 is a pinion keyed upon the shaft 10 on the inside of the frame-work of the machine, which meshes with a gear 106 and turns it. Said gear 106 is keyed upon the shaft 11. 44 is a gear keyed upon the shaft 12 which meshes with a pinion 43 and is turned by it. 45 is a gear keyed upon the shaft 13 which is journaled in an upright on the frame of the machine. 45² is a sprocket wheel mounted upon the shaft 13 on the far side of the upright 57. 46 is another sprocket wheel mounted in the upper extremity of the upright 57, and 47 is a sprocket chain having fingers or hooks upon it which is driven by the sprocket wheels 45² and 46. The destination of the sprocket chain is not illustrated in the drawings but is shown broken away. This is in consequence of the fact that several different destinations can be given to that chain according to the desire of the manufacturer to deliver his winding drum to one or more other machines by which they may be treated.

Referring now to Fig. 5, 48 is a cam wheel keyed upon the shaft 11 and turned by the gear 105. The shaft 11 is mounted in a slotted pendant from the frame of the machine and is secured thereto by bolt and set nuts. This slotted pendant is adapted for the purpose of permitting the application of cams of different sizes to the machine so as to cause the machine to wind a greater or less number of turns of webbing upon the winding drum as may be desired. 48 as before stated is a cam wheel keyed to the shaft 11 and provided with one cam notch 48². 49 is a cam lever pivoted to the frame of the machine at 50 and provided with a lug 51 which fits the cam notch 48² in the cam wheel 48. Said lever is also provided with a slot 107 by means of which it is enabled to move up and down in the path of the shaft 10, said shaft passing through the slot 107. 52 is a vertical rod pivoted to the extremity of the lever 49 and rising upward through the frame of the machine 1 and being connected at its upper end with a lever 55. 53 is a circular head on the lower end of the rod 52 and above its connection to the lever 49. Upon this circular head rests a spiral spring 54 which surrounds the rod 52

and bears between the under side of the frame 1 and the upper side of the head 53. The upward motion of the lever 49 under the influence of the cam 48 will compress this spring and operate the mechanism with which the rod 52 is connected so as to move it from the position of Fig. 5 to the position of Fig. 1. When the lug 51 of the lever 49 falls into the notch 48² of the cam wheel the spring 54 will drive the rod 52 downward and operate the mechanisms with which it is connected in a reverse direction. 55 is one end of a lever which is pivoted to the upright 57 on the shaft 56, the other end of said lever being marked 58. 59 is a weight on the extremity of the lever 55. 60 is a guide on the right side of an upright portion 98 of the frame of the machine, the guide being dovetailed in form, the reciprocating guide 29 engaging and sliding upon it. 61 is a link connecting the reciprocating guide 29 with the lever 58 and by means of which said guide is raised up and down by the lever. 62 is a hook pivoted to the guide 29 on the stud 63 which also forms the pivot of the link 61. 64 is a spring bolted to the guide 29 and bearing against the back of the hook 62 and holding it in a vertical position except when pushed back by the mechanism which will be hereinafter described. 65 is a finger inclined upwardly and bolted to the interior side of the upright 57 and extending into the path of the reciprocating hook 62. As the hook 62 moves up it will strike against the under side of the inclined finger 65 as shown in dotted lines on Fig. 5 and be thereby pushed backward so as to throw the winding drum carrying the muff out of the hook and allow it to roll on to the upperside of the finger 65, down said finger, and on to the conveyor 47. The conveyor chain 47 and the finger 65 and a further device marked 66 which will be hereinafter described are shown in Fig. 5 in side elevation but it will be understood by reference to Fig. 4 that there are two of each of these parts, one provided for each of the extending ends of the shaft of the winding drum. 66 is an arm pivoted to the frame of the machine at 67 and resting by gravity upon the lug 66^a so as to occupy a normal position as shown in Fig. 5. The extremity 68 of the hook 62 is constructed so as to be much wider than the balance of the hook and the arm 66 stands in the path of this side extension 68 of the end of the hook 62. As heretofore described when rising the hook 62 is pushed back as shown in Fig. 5, when descending the extended end 68 of the hook 62 comes in contact with the inclined surface of the arm 66 and is forced backward until said hook passes beyond and below the arm 66, when the extended portion of the hook will stand under the arm 66 and in position to lift said arm when it rises. The arm will thus form no obstacle to the hook when rising but pushes it back far enough to enable the hook to pass the shaft of the winding drum 28 and go under it. The arm 66 is free

to rise under the influence of the hook 62 and fall by gravity. 69 is a shaft journaled in the bearing on the right side of the upright 57 of the frame of the machine, on which is pivoted a bell-crank lever having three arms 70—70^a—74. To the upper arm 70 of the bell-crank is connected a rod 71 which is provided at its lower end with a loop in the form of a slot 72. The arm 70^a is connected to a rod 73 which rises above it and is connected to the lever 55 on the same stud by which the rod 52 is connected to said lever. 74 has connected upon its end a rod 75 which is horizontal in position and is connected at its extremity with a vertical rod 76 pivoted to the frame of the machine at 77. 78 is a fork on the upper end of the rod 76 and through which passes a rod 80. 79 is an extension of the frame of the machine on the right side. 80 is a rod which passes through the end of the extension 79 in a horizontal position and is surrounded by a spiral spring 81. 82 is a circular washer or head upon the rod 80 against which the spring 81 bears at one end, the other end bearing against the upper end of the extension 79 of the frame. 83 is a cross pin passing through the rod 80 just beyond the spring and to the right of the fork 78. The sides of the fork 78 bear against this cross-pin and when the shaft 69 is rotated the arm 74 of the bell-crank lever will force the rod 80 backward and compress the spring 81. 84 is a lever pivoted at 85 on the extension 79 and the extremity of which engages by means of a stud the slot 72 in the lever 71. 85^a is an elbow in said lever 84 which forms a trigger for the cross bar 83. 86 is a spring by means of which said lever 84 is held in an elevated position and 87 is a hook by which its motion is limited. 88 is a cutter by means of which the web of cotton after a muff is completed is severed and the free end tucked in below a fresh muff spool which in the meantime has fallen into position to receive it. The cutter 88 is pivoted in the frame of the machine at 89 and is connected to the rod 80 by a joint 90. 91 is a lever keyed to the shaft 56 or rigidly secured to the lever 58 so as to move with it. 92 is a pitman rod connecting the lever 91 with the link 93. 93 is a link which is pivotally connected to the pitman rod 92 at its extremity and also to the shaft 94 upon which is mounted a five pointed ratchet wheel 95. The shaft 94 is pivoted in the upright portions of the frame of the machine 98—98 and extends through from side to side. 96 is a pawl pivoted upon the joint between the link 93 and the pitman rod 92 and provided with a weight 97 by which it is held in engagement with the ratchet wheel 95.

Referring to Fig. 3, 99—99 are two grooves on the interior faces of the upright portions of the frame 98—98 and in which are charged a number of winding-drums, the ends of the shafts of the winding drums traveling in the grooves 99—99 which guide the winding

drums to the destinations. The shaft 94 a before stated passes through from side to side of the frame of the machine and carries upon it, on the interior of the frame one on each side against the interior walls of the uprights 98—98, two star shaped wheels 100—100, the arms of which pass over the grooves 99—99 and serve to prevent the winding drums from falling down into the machine except upon a one-fifth revolution of the shaft 94, when one drum, as 101 in Fig. 3, will be allowed to pass the star-shaped wheels 100—100 and fall down into the position shown in Fig. 3, when on the elevation of the guides 29—29 said drum will fall into position upon the web as shown in Fig. 5.

The operation of the device is as follows: The webs of cotton being fed over the rollers are wound upon the drum as 28, the section of hair being delivered to the muff at the proper time either by hand or by some supplemental mechanism of any desired size so as to wind upon the winding spool any desired number of revolutions of cotton web and thus give it any desired size. It will be seen that when the cam wheel 48 has turned sufficiently to force the notch 48² past the lug 51 and the lug 51 is resting upon the periphery of the wheel 48, the parts of the mechanism will be in the position shown in Figs. 1, 2, and 3, and the web will be winding upon the winding drum. When the wheel 48 has made one revolution and the wound web has received the desired number of layers of the web the lug 51 drops into the notch 48² and the spring 54 will at once force the rod 52 downward, being assisted by the weight 59 upon the extremity of the lever 55, and will raise the end 58 of said lever to its position of highest elevation as rapidly as the friction and retardation of the devices will permit. The elevation of the lever 58 will lift the guides 29—29 and with them the hooks 62—62 and the winding drum 28. As the extended ends of the hooks strike upon the under side of the arms 66—66 they will raise said arms and pass them when the arms will fall back to their normal position. When the hooks 62—62 strike the inclined under side of the fingers 65—65 they will be forced backward in the position shown in Fig. 5 when the winding drum bearing the wound web will roll down the inclined surface of the upper side of the finger 65—65 and lodge upon the conveyer 47—47 and be carried away by them. This cannot occur, however, until the web which is wound upon the winding drum, as shown in dotted lines in Fig. 5, is severed. The severing is accomplished in the following manner: As soon as the guide 29 has risen beyond the position occupied by the winding drum 101 in Fig. 3, said spool will drop on to the web in the position shown in Fig. 5 and hold the web by its weight in the position shown in dotted lines in said figure. When the cam wheel 48 in a previous operation was forcing the lug

51 out of its notch and on to its periphery the rod 52 was forced upward and with it the rod 73 which caused the rod 71 to ascend and the rod 75 to move horizontally to the right; this being continued caused the cutter 88 to assume the position shown in dotted lines in Fig. 5 and pressed the spring 81 by means of the fork 78 and cross-pin 83 until the cross-pin 83 was engaged by the trigger 85^a by which it was held. When now the motion is reversed as shown in Fig. 5 and the guide 29 ascends the rod 52 will descend. The rod 71 will also descend but will not move the lever 84 until the extremity of said lever comes in contact with the top of the slot 72 when the lever 84 will be moved down far enough to release the cross pin 83 and allow the spring 81 to act and push the rod 80 and the cutter 88 suddenly forward. This action will take place when the spool and its web are in the position shown in dotted lines in Fig. 5 before said spool has reached its point of highest elevation. The motion of the cutter therefore will be suddenly forward until it assumes the position shown in the second dotted line in Fig. 5 about three-quarters of its throw when the cross-pin 83 will again come in contact with the fork 78 and be allowed to move forward only so fast as the other portions of the mechanism are moving. The guide 29 will continue to rise at its uniform rate of speed until it reaches its point of highest elevation, and the rod 75 will continue to move to the left at the same uniform speed until the cutter shall have reached the position shown in full lines in Fig. 5 when the extremity of the web severed from the completed spool will be tucked in below the winding drum 28 and the winding will begin again to form another spool.

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

1. In a machine for winding cotton web or other suitable material the combination of mechanism for forming and feeding a sliver to a winding drum, mechanism for turning the drum to wind the sliver upon it, means for lifting the drum from its turning devices when full, a knife and operating mechanism for the same for severing the sliver from the wound drum, and a conveyer upon which the wound drum is received and conveyed away from the winding devices.

2. In a machine for winding cotton web or other suitable material the combination of mechanism for forming and feeding a sliver to a winding drum, mechanism for turning the drum to wind the sliver upon it, means for lifting the drum from its turning devices when full, a knife and operating mechanism for the same for severing the sliver from the wound drum, a conveyer upon which the wound drum is received and conveyed away from the winding devices, and means for releasing the wound drum from its lifting de-

vices and delivering it upon the conveyer, substantially as described.

3. In a machine for winding cotton web or other similar material the combination of mechanism for forming and feeding a sliver to a winding drum, mechanism for turning the drum to wind the sliver upon it, a cam, and a cam lever co-operating with said cam, mechanism for removing the drum when a desired quantity of sliver is wound upon it, and mechanism for severing the sliver connected thereto both operated by the same cam and cam lever.

4. In a machine for winding cotton web or other similar material the combination of mechanism for forming and feeding a sliver to a winding drum, mechanism for turning the drum to wind the sliver upon it, a cam and a cam lever co-operating with said cam, mechanism for lifting the drum from its winding devices when a desired quantity of the sliver is wound upon it, and mechanism for severing the sliver connected thereto, both operated by the same cam and cam lever, and means for resetting the cutter operated by the drum lifting mechanism as it returns to its normal position.

5. In a machine for winding cotton web or other suitable material the combination of a winding drum upon which a continuous web of carded cotton is wound, an elevating device for the same consisting of a pair of hooks standing below the axis of the drum, with means for elevating the same when the drum is wound, and means for withdrawing said hooks and delivering the drum to a conveyer, substantially as described.

6. In a machine for winding a cotton web or other suitable material the combination of a winding drum upon which a continuous web of carded cotton is wound, a pair of hooks for lifting the same, a reciprocating guide with which said hooks are connected and a pair of inclined fingers with which the lifting hooks contact in their upward motion and by which they are caused to release the drum and permit the same to roll on to and down the upper surface of said fingers by gravity and a conveyer by which said drum is carried away from the machine.

7. In a machine for winding a cotton web or other suitable material the combination of a reciprocating carrier for a winding drum provided with a pair of hooks hinged thereto and two arms having inclined ends which stand in the path of said hooks and by which they are pressed backward so as to escape and pass below the spindle of the winding drum while descending.

Signed at Baltimore city, in the State of Maryland, this 28th day of July, A. D. 1893.

EDWARD GOLDMAN.

Witnesses:

JOHN L. HEBB,
WM. A. BEACHAMP.