

No. 685,815.

Patented Nov. 5, 1901.

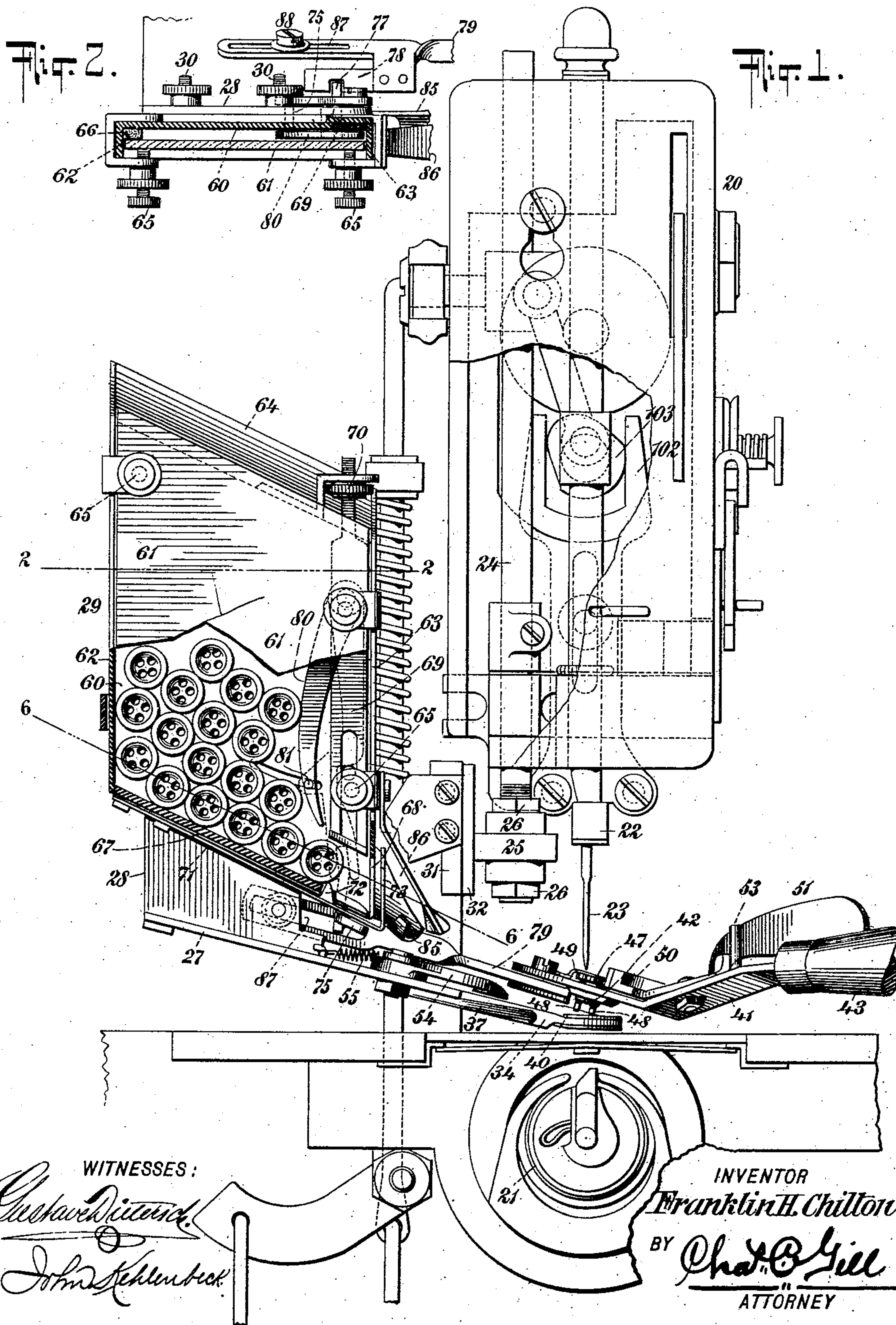
F. H. CHILTON.

ATTACHMENT FOR MACHINES FOR SEWING ON BUTTONS.

(Application filed Dec. 24, 1900.)

(No Model.)

3 Sheets—Sheet 1.



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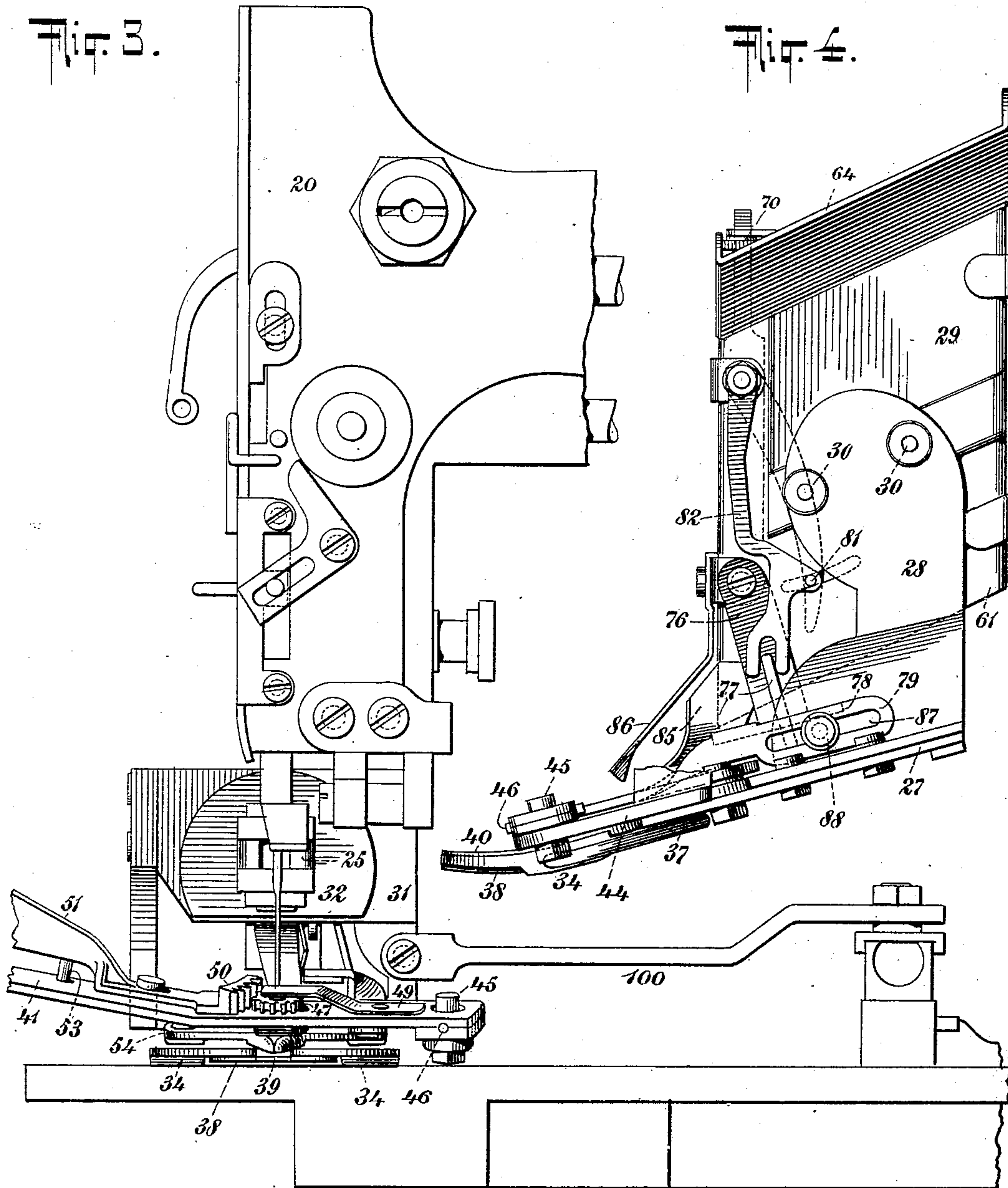
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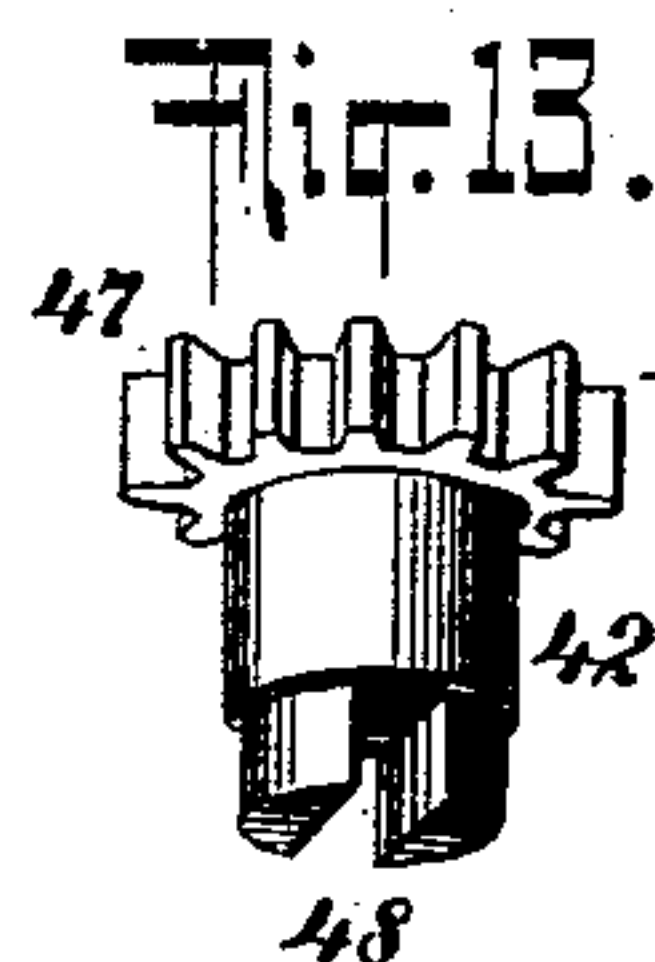
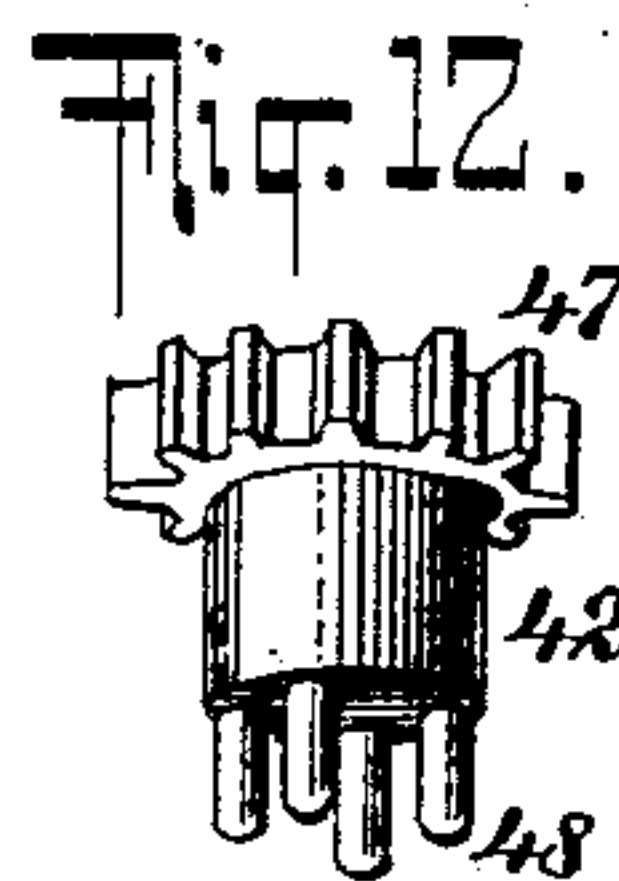
(Application filed Dec. 24, 1900.)

(No Model.)

3 Sheets—Sheet 2.



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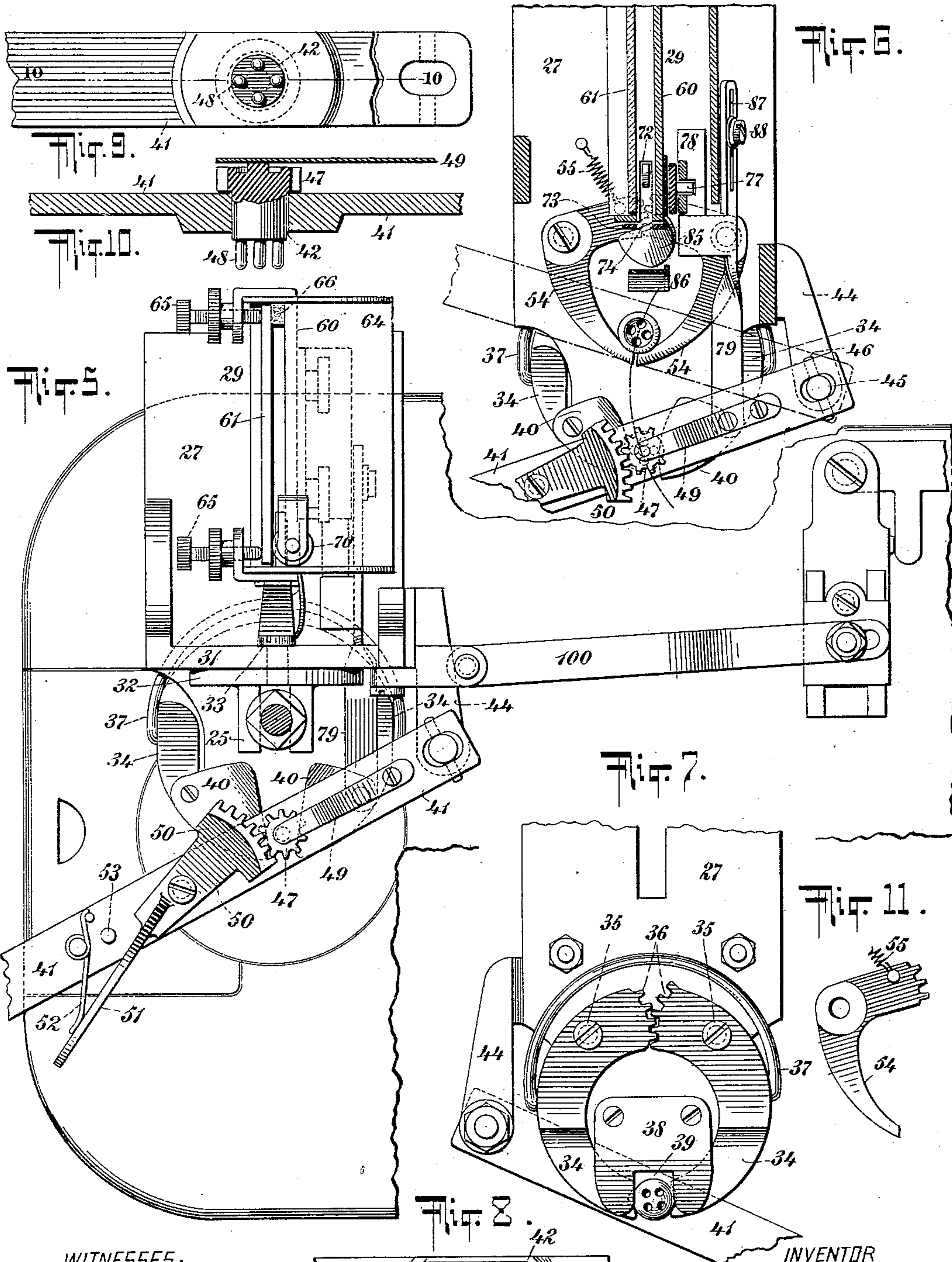
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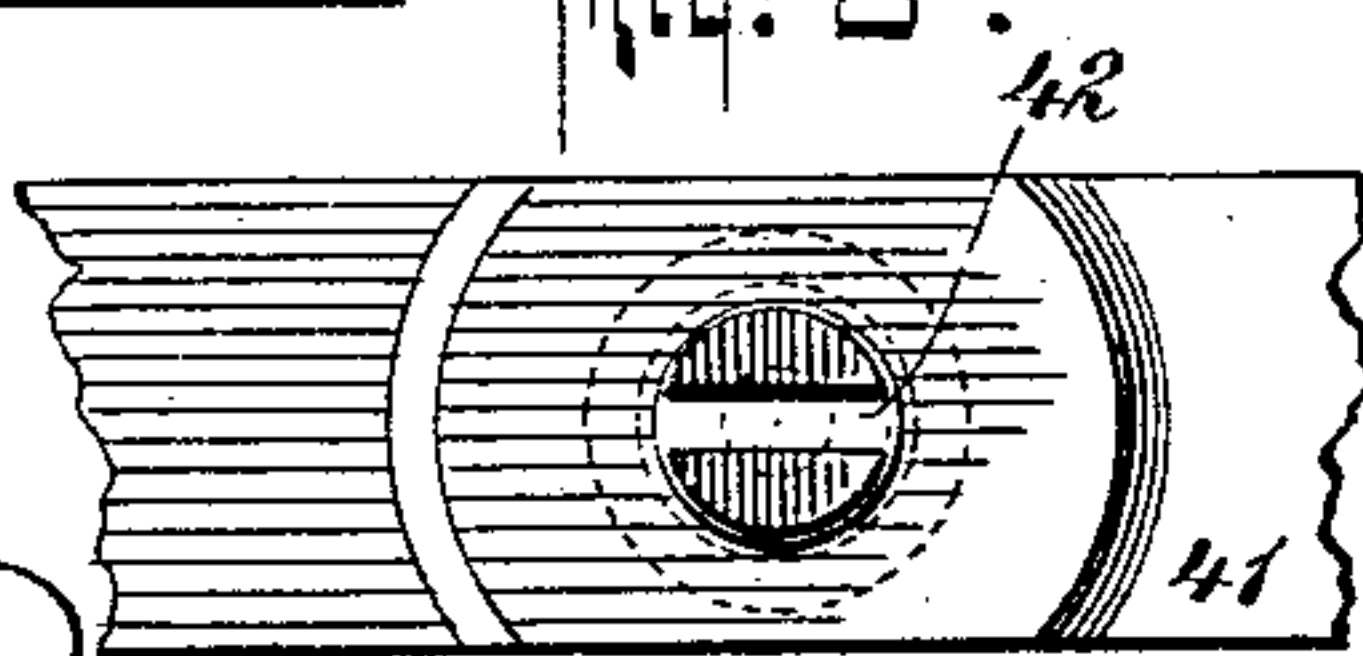
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

FRANKLIN H. CHILTON, OF NEW YORK, N. Y.

ATTACHMENT FOR MACHINES FOR SEWING ON BUTTONS.

SPECIFICATION forming part of Letters Patent No. 685,815, dated November 5, 1901.

Application filed December 24, 1900. Serial No. 40,866. (No model.)

To all whom it may concern:

Be it known that I, FRANKLIN H. CHILTON, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Attachments for Machines for Sewing on Buttons, of which the following is a specification.

The invention relates to improvements in attachments for machines for sewing on buttons; and it consists in the novel features and combinations of parts hereinafter described, and particularly pointed out in the claims.

I have embodied my invention in the attachment hereinafter described and claimed for application to the presser-foot bar of a sewing-machine, the said attachment comprising a base-plate, a magazine for holding a number of the buttons which are to be manually placed therein so that they shall stand on edge with their top sides facing outward, means for permitting the buttons to feed, one after another, outward from said magazine, means for preserving the adjusted position of the buttons while they are carried, one after another, from said magazine, so as to cause them when arriving upon the base-plate of the attachment to present themselves with their top side uppermost, means for feeding said buttons, one after another, to the proper point below the needle of the sewing-machine and compelling said buttons to present their eyes or holes in proper position to receive the sewing-needle, and jaws for holding said buttons during the sewing operation.

The attachment made the subject hereof, in addition to the features hereinbefore mentioned, comprises several cooperating features for giving effect to the main parts of the attachment, and these will be fully described hereinafter in connection with the explanation of the construction and operation of the attachment. The main features of the attachment comprise the receptacle for holding a quantity of the buttons and permitting them to feed outward, one after another, upon the base-plate of the attachment, the means for effecting the delivery of the buttons, one after another, from said base-plate to the point below the needle of the sewing-machine and compelling the holes of the said buttons to present themselves in proper po-

sition to receive the needle of the sewing-machine, and the jaws for holding said buttons until the entire operation of sewing them upon the fabric has been effected.

In presenting the attachment in this application I have illustrated the same as applied to a well-known form and construction of sewing-machine for sewing on buttons, said attachment being connected with the presser-foot bar, so as to be raised and lowered thereby, and also connected with usual means for shifting the attachment laterally, so that after one pair of eyes or holes in the buttons have received the proper number of stitches the said attachment may move laterally, (or lengthwise of the sewing-machine head,) so as to bring the other pair of eyes or holes of the button into proper position to receive their stitches. The presser-foot bar, to which the attachment is applied, has, as usual, a vibratory motion, which moves the attachment back and forth toward and from the operator, so that the needle may pass from one hole or eye into the other hole or eye of the buttons. The vibratory presser-foot bar and the means for moving the button-holding attachment laterally are well known in this art and are in common use on machines for sewing on buttons. It is also customary in the class of machines to which my invention pertains to employ a stop-motion and proper regulating means for automatically stopping the machine after a definite number of stitches have been sewed through the holes in the buttons. It is customary to so regulate the machines that any number of stitches may be sewed through the holes of the buttons before the machine is automatically stopped, and in the present instance I contemplate the sewing of five stitches through each pair of buttonholes preparatory to the automatic stoppage of the machine. In some of the well-known machines for sewing on buttons the needle is caused to vibrate laterally, so as to pass from one hole of the button into the next adjoining hole thereof, and in the machines of this character my attachment would not vibrate laterally but only move toward or from the operator, so that after one pair of holes has received the stitches the other pair of holes can be presented to the needle. In the majority of instances, however, machines for sewing

on buttons have needles which do not have any vibratory motion, and in such machines it is necessary to vibrate the attachment, so that the holes of the button may be delivered to the needle. I illustrate in the accompanying drawings a portion of one of the latter character of machines in which the needle has no vibratory motion, but is employed in connection with a rotary shuttle and means for moving the attachment both laterally and toward and from the operator, so that said attachment may present the holes of the button to the needle.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a front end elevation, partly broken away and partly in section, of a usual type of sewing-machine for sewing on buttons with my attachment applied to the presser-foot bar thereof, and in this figure the attachment comprising my invention is shown with the means which feed the buttons to the sewing position below the needle and rotate the button to compel the latter to present its holes in proper position as having been moved toward the operator. Fig. 2 is a horizontal section through a portion of the attachment on the dotted line 2 2 of Fig. 1. Fig. 3 is a front side elevation of a portion of the sewing-machine with my attachment applied thereto. Fig. 4 is a detached side elevation, partly broken away, of the attachment, this figure showing one side of the attachment, while the other side thereof is illustrated in Fig. 1. Fig. 5 is a top view of a portion of the sewing-machine with my attachment applied thereto, the presser-foot bar of the sewing-machine being in section. Fig. 6 is a sectional view through the attachment on the dotted line 6 6 of Fig. 1. Fig. 7 is a bottom view of a portion of the attachment and shows the jaws holding the button in position to be sewed upon the fabric. Fig. 8 is a bottom view of a portion of the lever and rotary chuck by which the buttons are caused to be moved to the point of sewing and their eyes or holes placed in proper position to receive the needle, the chuck in this instance being shown as having two studs for engaging the holes in the bar-button—that is, a button having a bar at its center and one large hole on each side of said bar. Fig. 9 is a like view of same, but showing the chuck as having four studs to enter the four holes of the usual four-hole button, such as shown in Fig. 1. Fig. 10 is a longitudinal section of same on the dotted line 10 10 of Fig. 9. Fig. 11 is a detached top view of one of the jaws which engage the buttons as they pass to the bed-plate from the magazine or button-holder and retain the same preparatory to the removal of the buttons to the point of sewing. Fig. 12 is a detached perspective view of the chuck having the four studs on its lower end to engage the four eyes or holes

of the button, and Fig. 13 is a like view of the chuck shown as having two studs on its lower end to engage the two holes of a bar-button.

In the drawings, 20 denotes the head of a sewing-machine for sewing on buttons, said machine having the usual rotary shuttle 21, needle-bar 22, needle 23, and presser-foot bar 24, to which bar 24 the attachment comprising the present invention is secured by means of a lug 25, connected with the frame of the attachment and held upon said bar 24 between the nuts 26 26, as shown in Fig. 1, said lug 25 being bifurcated, as shown in Fig. 5, to pass upon said bar 24.

The general frame of the attachment comprises the base-plate 27, supporting all of the operative parts, the bracket 28, Figs. 1 and 4, secured to the upper surface and toward one edge of the base-plate 27, the button-holder or magazine 29, which is secured to the bracket 28 by means of the screws 30, Fig. 4, and the front plate 31, to which is pivoted the plate 32, carrying the lug 25, above referred to, said plate 32 being pivotally secured upon the screw 33, Fig. 5, so as to permit the attachment to yield or turn to a limited extent under and during the lateral movement imparted thereto when it is desired to shift one pair of the holes of the button from under the needle-bar and move the other pair of holes of said button into position below said bar for sewing.

The clamping-jaws for holding the individual buttons in position below the needle-bar are designated by the numerals 34 34, which correspond with one another and are pivotally secured to the lower surface of the base-plate 27 by means of the screws 35 35, Fig. 7, and the said jaws 34 34 at the inner or shank ends are formed with the rack-teeth 36 36, whereby said jaws 34 34, being in mesh with each other through the medium of the said rack-teeth 36, are compelled to have a uniform and simultaneous motion. The jaws 34 34 are given a normal spring tension toward one another at their outer or front ends by means of a spring 37, as shown in Fig. 7, said spring engaging both of the jaws 34 and pressing their outer or front ends toward one another. While the inner or shank ends of the jaws 34 are secured to the lower side of the base-plate 27, the outer or front portions of said jaws, which extend frontward beyond the front edge of the base-plate 27, are above a thin yielding metal plate 38, which is secured to the lower surface of the base-plate 27 and extends frontward beyond the front edge of the said plate 27, where said plate 38 is formed with the recess 39, over which the button to be operated on by the sewing-needle is held, as shown in Fig. 7. The upper surfaces of the front ends of the jaws 34 have secured upon them the metal plates 40 40, Fig. 6, corresponding with each other and lapping inward over a part of the upper front surfaces of the base-plate 27. The adjoining surfaces of the

plates 40 40 are curved upwardly, so as to permit a button to pass below them and be moved frontward to a position between the front ends of the jaws 34 34 and directly over the recess 39 in the plate 38. At their front ends the plates 40 40 normally overlap the edges of the button, which may be held between the front ends of the jaws 34 34, so as to hold the button flat upon the fabric and prevent the operation of the sewing-needle from pulling the button upward, as well as to prevent any accidental displacement of the button, the button being held upon the fabric and within the recess 39 of the plate 38 by means of the jaws 34 34 and the plates 40 40. The front ends of the jaws 34 34 engage the opposite edges of the button and hold the same upon the thin yielding spring-metal plate 38, so that while the main body of the button shall be exposed through the recess 39 of said plate 38 the opposite side edges of the button will rest upon the upper surface of the plate 38 at the opposite edges of the said recess 39. The facing front edges of the plates 40 40 overlap the opposite edges of the button held between the jaws 34, and thus the plates 40, together with the jaws 34 and plate 38, effectually hold the button during the sewing operation. Since, however, the jaws 34 are pivoted and have a spring tension toward one another, and since the recess 39 of the plate 38 is open at its front side, the button, after having been sewed upon the fabric, may by pulling on the fabric be withdrawn from between the jaws 34. The base-plate 27 has an inclined position, as shown in Fig. 1; but the front portions of the jaws 34 and plate 38 have substantially a horizontal position, so that the button held by said jaws and below the needle-bar may take a substantially flat or horizontal position upon the fabric. The plate 38 is of thin yielding metal, so that its front portion may yield to the irregularities of the buttons and also to the irregularities of the fabric to be fed to the machine, thereby the more assuredly to effect the proper relation of the button to the fabric.

The jaws 34 are opened to receive the button between their front or outer ends simply by the pressure effected by the side edges of the button when it is moved frontward to position between the front ends of said jaws. The means for moving the buttons frontward to position between the front ends of the jaws 34 are the lever 41 and chuck 42, the lever 41 being provided at one end with the handle 43 and at its other end having a universal-joint connection with an arm 44, Fig. 5, extending outward from the body of the attachment, said universal-joint connection consisting of the vertical pivot 45, carried by the arm 44, and the horizontal pin 46, which passes through the lever 41 and pin 45. The pivot-pin 45 enables the operator to impart to the lever 41 an oscillatory motion in a horizontal direction, and the pin 46 enables the operator to impart an up-and-down motion to the

handle end of said lever 41. The chuck 42, carried by the lever 41, is shown in detail in Figs. 12 and 13, and consists of a body portion set within an aperture in the lever 41 and having at its upper end a pinion-wheel 47 and at its lower end the proper number of studs 48 to engage the eyes of the button. The studs 48 project downward below the lower surface of the lever 41, as shown in Fig. 10, and the pinion-wheel 47 bears upon the upper surface of said lever 41 and prevents the chuck from passing unduly downward through said lever. The chuck 42 is yieldingly held within its aperture in the lever 41 by means of a leaf-spring 49, which is fastened at one end to the lever 41 and at its other end bears upon the small stud at the center of the upper surface of the pinion-wheel 47, as clearly illustrated in Figs. 5 and 10. The spring 49 exerts a constant tension downward on the chuck 42; but it is to be observed that said spring will yield upward with the chuck 42 when during the feeding of the buttons said upward yielding of the chuck becomes necessary, as hereinafter explained. The chuck 42 has two functions to perform, one being to engage the eyes of the button when the button is in the exposed position illustrated in Fig. 6 and move the button on the path of the dotted line shown in Fig. 6 to a position below the needle-bar, in which position the chuck 42 is shown in Fig. 6, and the second function being when it has engaged the button to perform a rotary motion, so as to compel the eyes of the button to be properly presented for the reception of the stitches. The lever 41 will be moved by hand, as hereinafter explained, for the purpose of causing the studs 48 of the chuck 42 to engage the eyes of the button resting on the base-plate 27, as shown in Fig. 6, and compelling the travel of the button to its position for sewing below the needle-bar of the machine, and the rotary motion of the chuck 42 for securing the proper alinement of the eyes of the button for the sewing will be effected manually by the operator. The fact that the end of the lever 41 has a universal-joint connection with the arm 44, as above described, enables the operator to move the said lever from its extreme front position (shown in Fig. 6 by full lines) to its extreme rear position, (shown in Fig. 6 by dotted lines,) so that the chuck 42 may pass rearward to engage the holes in the button then resting on the base-plate 27, and during this rearward motion of the lever 41 to the position in which it is illustrated by dotted lines in Fig. 6 the lever 41 will be turned upward slightly, so that the lower ends of the studs 48 of the chuck 42 may be lowered directly upon the upper surface of the button. The horizontal movement to be imparted to the lever 41 by the operator is, in part, to enable the chuck 42 to reach the button then exposed on the base-plate 27 and move the button to its position for sewing below the needle-bar, and

the up-and-down motion which the lever 41 is permitted to have is to enable the studs 48 of the chuck 42 to in an unobstructed manner be placed directly upon the upper surface of the said exposed button preparatory to engaging the eyes or holes of the latter, and thereby grip the same so that during the forward movement of the lever 41 it will move the button to its front position below the needle-bar. The engagement of the studs 48 of the chuck 42 with the eyes or holes of the exposed button on the base-plate 27, Fig. 6, constitutes the hold which the lever 41 has upon the button to compel the forward movement of the latter to position between the front ends of the jaws 34, said button when passing between the front ends of the jaws 34 moving the latter outward from one another against the stress of the spring 37, and when the button is first engaged by the studs 48 it is given a rotary motion to effect the proper alinement of its holes or eyes by means of the chuck 42 and segment 50, which segment is pivoted upon the upper surface of the lever 41 and engages the pinion-wheel 47 on the upper end of the chuck 42. The segment 50 is provided with a thumb-piece or handle 51 for the convenient manual operation of the segment, and the handle or thumb-piece 51 has flexed against it a spring 52, which imparts to the segment 50 its normal position, (shown in Fig. 5,) one end of the segment being in engagement with the pinion-wheel 47, leaving the remainder of the segment 50 to be moved against the pinion-wheel 47 for the purpose of rotating the chuck 42 and through the studs 48 the button held by said chuck. If the buttons when they are one after another exposed upon the base-plate 27, as shown in Fig. 6, would always present their eyes or holes in proper position for sewing and in proper position to be engaged by the studs 48, it would not be necessary to provide means for rotating the chuck 42; but since the buttons will present themselves with their eyes or holes in various positions it is necessary that the chuck 42 be made capable of rotation, and hence I provide the segment 50 and handle 51, so that the operator may rotate the chuck 42 to effect the engagement of the studs 48 with the eyes or holes of the button and compel the rotation of the button in order to bring the holes or eyes of the latter into proper position with respect to the sewing-machine needle. The studs 48 will correspond in number with the eyes or holes in the button, and they will be of a diameter permitting them to enter the holes or eyes of the button, and the timing and position of the chuck 42 are such that when the handle portion 51 of the segment 50 is pressed against the stress of the spring 52 and reaches the stop 53 on the lever 41 the chuck 42 will have been turned to just the proper extent for its studs 48 and the eyes of the button held thereby to reach the correct position for the needle 23 to enter the eyes of the button after

the movement frontward of the lever 41 and the then upward and rearward movement of the lever 41 from the button. After the operator when the lever 41 is in its rear position (shown by dotted lines in Fig. 6) has moved the segment 50 so as to secure the proper position of the eyes or holes of the button she will continue the pressure of her thumb upon the handle 51 of the segment 50 until after she has moved the lever 41 and button to their front position below the needle-bar and has lifted the lever 41 and studs 48 from the button, and thereupon she will release the segment 50, so that the spring 52 may move the same to its normal position, (shown in Fig. 5,) the operator simultaneously with the releasing of the segment 50 moving the lever 41 rearward to the position in which it is shown by dotted lines in Fig. 6, so that it may be out of the way of the needle 23 and be put into position to engage the next button exposed upon the base-plate 27.

With each frontward movement of the lever 41 from the position in which it is shown by dotted lines in Fig. 6 to the position in which it is shown by full lines in Fig. 6 one button will be allowed to pass from the magazine or holder 29 to the position upon the base-plate 27 in which it is shown in Fig. 6, and with each frontward movement of the lever 41 from the position in which it is shown by dotted lines in Fig. 6 to the position in which it is shown by full lines in Fig. 6 the chuck 42 will carry a button from the position in which the button is shown in Fig. 6 to the point of sewing, and the means for permitting the feed of the buttons from the magazine or holder 29 with each front movement of the lever 41 are actuated from said lever, and said means will presently be described. At this place it seems appropriate to refer to the lever-arms 54 54, (shown in Fig. 6,) since said arms catch the button as it falls upon the base-plate 27 and retain the same in position for it to be engaged by the chuck 42 when the lever 41 is moved rearward. The lever-arms 54 54 are pivotally secured upon the upper surface of the base-plate 27 and at their shank ends are formed with gear-teeth, Fig. 11, and are in mesh with one another, so as to compel said arms to have a uniform and simultaneous motion. One of the arms 54 is shown in a detached view in Fig. 11. The arms 54 54 are caused to normally close together at their front ends, as shown in Fig. 6, by means of a spring 55, which by pulling on one of the arms 54 effects the closing movement of the said arms, this being due to the fact that the shank ends of said arms are toothed and in mesh with each other. The arms 54 54 when closed together, as shown in Fig. 6, merely define a space within which the button may fall upon the base-plate 27 and be held preparatory to its removal by the chuck 42, carried by the lever 41. The inner or facing edges of the lever-arms 54 54 constitute converging guiding-surfaces to direct the button to the posi-

tion in which it is shown in Fig. 6, where it will be seen that the button is at the point of juncture between the front ends of said arm 54. When the chuck 42 engages the button and moves forward with the lever 41, the pressing of the button against the converging ends of the lever-arms 54 54 will cause said arms to open outward and permit the escape of the button between said ends, said button taking the path indicated by the curved dotted line in Fig. 6. The lever-arms 54 54 are not connected with any of the moving parts of the attachment, but are simply pivoted to the base-plate 27, and are given a normal closed position (shown in Fig. 6) by means of the spring 55.

The buttons to be sewed upon the fabric are held within the button holder or magazine 29 and are one after another permitted to escape from said holder or magazine 29 with each movement to the front of the lever 41. The button holder or magazine 29 is comprised in the main of the vertical sides 60 61, the latter being preferably of glass or transparent material and the former being of metal and having vertical edge flanges 62 63, Fig. 2, to form the ends of the magazine or holder. At its upper edge the plate 60, forming one side of the magazine or holder 29, is extended laterally on an inclined line, as shown in Figs. 1 and 4, to form a chute 64, which inclines downward to a point slightly below the upper edge of the glass or transparent side plate 61, and the buttons to be fed to the magazine or holder 29 are placed upon the chute 64 with their top surface uppermost and allowed to slide down the same and into the space between the sides 60 61 of the said holder, so that said buttons may reach the position in which they are illustrated in Fig. 1. The space between the plates 60 61 should be so regulated as to simply freely receive the buttons without permitting the buttons to get into tilted positions or overlap one another at their edges, it being my purpose that all of the buttons within the holder or magazine 29 shall stand on edge in a single layer and be incapable of overlapping one another at their edges. I prefer that the side plate 61 be transparent in order that the operator may observe the buttons and know when the magazine or holder requires refilling. In order to adjust the side plate 61 in accordance with the thickness of the buttons, I provide the adjusting-screws 65, which bear against the plate 61 and may be employed for moving the plate 61 inward against the felt packing-strip 66, Fig. 2, although I do not regard the employment of the screws 65 as important, since various usual mechanical means will suggest themselves for regulating the width of the space between the plates 60 61 of the magazine 29. The magazine or holder 29 is open at its upper end to receive the buttons and at its lower end is closed by a bottom plate 67. The rear end of the magazine 29 is entirely closed by the flange

62, and the front end of the magazine 29 is entirely closed by the flange 63, with the exception of the vertically-elongated opening 68, formed in said flange 63 at the lower front end of the said magazine, as shown in Fig. 1. Above the elongated opening 68, through which the buttons at the proper time escape, is provided an adjustable guard 69, which defines a space at the front lower end of the magazine 29 for the reception of an individual button, said guard 69 being made adjustable by means of the nut 70, so as to enable the varying of said space in accordance with the diameter of the button. To the lower surface of the bottom 67 of the magazine 29 is secured the leaf-spring 71, carrying at its front portion a tooth 72, adapted to be moved upward or downward within a slot provided to receive it at the front end of the bottom plate 67 of the magazine 29. The front end of the spring 71 turns upward, as shown in Fig. 1, to form an arm 73, disposed in the front of the elongated opening 68, through which the buttons escape from the magazine 29. This arm 73 contains an elongated opening corresponding with the opening 68, and when said arm 73 is in its upper position (shown in Fig. 1) the button then below the guard 69 may freely pass outward through the said elongated opening in the arm 73 and find its way to the base-plate 27 in the position in which the exposed button is shown in Fig. 6. It is to be observed, however, that when the arm 73 is in its upper position (shown in Fig. 1) the tooth 72, connected with the spring 71, is also in its upper position, engaging the next button to the one which has escaped and operating to prevent any of the buttons from following down the bottom plate 67 to the elongated exit-opening 68. When the front portion of the spring 71 is allowed to lower from the position in which it is shown in Fig. 1, the tooth 72 is relieved from the buttons, and the arm 73 carries its elongated opening from a position in alignment with the opening 68, and hence at such time another button may pass down the inclined bottom 67 of the magazine 29 and find its position below the guard 69 and at the entrance to the exit-aperture 68, said button being prevented from passing through the exit-aperture 68 by reason of the fact that a solid portion of the arm 73 partly closes the elongated opening 68. Thus the arm 73 when in its lower position prevents the escape of the buttons through the exit-opening 68 and when in its upper position does permit the escape of a button through the opening 68 and the opening in itself, (said arm 73,) while at the same time when the arm 73 is in its upper position the tooth 72 is also in its upper position, and said tooth prevents the escape of more than one button through said exit-opening 68 and the corresponding opening in said arm 73. The opening in the arm 73 is numbered 74 and is shown in Fig. 6. The means for acting upon the spring 71 to

compel it to move in its upper position (shown in Fig. 1) consists simply of an arm 75, which extends horizontally below the said spring 71 from the lower end of the pivoted arm 76, Fig. 4, which arm 76 has adjacent to its lower end the vertical blade 77, in engagement at its lower end with an arm 78, Fig. 2, carried by the rod 79, whose front end is pivotally secured to the lever 41, so as to be reciprocated by said lever 41 during the forward and rearward motions of the latter. When the lever 41 is in its front position, (shown by full lines in Figs. 5 and 6,) the horizontal arm 75, connected with the pivoted arm 76, will be in the position in which it is shown in Fig. 1, holding the spring 71 up against the bottom plate 67 of the magazine or holder 29, and when the lever 41 is pushed to its position shown by dotted lines in Fig. 6 the rod 79 and its arm 78 will by acting on the blade 77 move the lower end of the arm 76, together with the horizontal arm 75, rearward, so as to free said arm 75 from acting against the spring 71 and permit the said spring of its own tension to turn downward for the purpose of carrying the tooth 72 from contact with the buttons and lowering the arm 73, so that it may obstruct the exit-opening 68. Thus during the rearward motion of the lever 41 the button previously held by the tooth 72, as shown in Fig. 1, is freed to pass below the guard 69 and to the exit-opening 68, but is prevented from escaping through said opening 68 by reason of the obstruction furnished by the vertical arm 73. When the lever 41 is moved to its front position, (shown by full lines in Fig. 6,) it, acting through the rod 79, arm 78, blade 77, and pivot-arm 76, will pull the horizontal arm 75 forward against the spring 71 and cause said spring to move to its upper position, (shown in Fig. 1,) whereby the tooth 72 will be caused to check any movement of the second button to the lower end in the magazine 29, and the vertical arm 73 will permit the escape of the last button in the magazine 29, said button of its own gravity passing through the elongated opening 68 and the corresponding elongated opening 74 in said arm 73. It will thus be observed that with each forward motion of the lever 41 a button is permitted to escape from the magazine 29 and finds its way to the position in which the exposed button is shown in Fig. 6 and that during each rearward motion of the lever 41 the tooth 72 and arm 73 are permitted to lower, so that another button may find its position below the guard 69 preparatory to escaping on the subsequent forward motion of the lever 41. It will be understood that with each forward movement of the lever 41 the button exposed on the base-plate 27 will be carried forward to the sewing position. The movement of the lever 41, therefore, controls the feed of the buttons from the magazine or holder 29.

In order to prevent any clogging within the magazine or holder 29, I provide within

the magazine the pivoted arm 80, (shown in Fig. 1,) which is pivotally secured at its upper end and at its lower portion is connected with a pin 81, Fig. 4, connected with the pivoted lever-arm 82, the latter being bifurcated at its lower end and in engagement with the blade 77 of the lever 76. With each movement of the lever 41 the arm 76 is caused to have a swinging motion on its pivot, due to the engagement of the blade 77 of the said arm 76 with the arm 78, connected with the rod 79, and with each movement of the arm 76 the upper end of the blade 77 carried thereby will operate to move the lower end of the lever-arm 82, whereby said lever-arm 82, with its pin 81, is enabled to impart a swinging or oscillatory motion to the agitator-arm 80. The side plate 60 of the magazine or holder 29 is provided with a segmental slot, as shown in Fig. 1, to receive the pin 81 and permit of the movement of the said pin with the arm 80. The arm 80 is employed simply to prevent the clogging of the buttons and to render it certain that the buttons will feed downward automatically toward the exit-opening 68.

It is desirable that the buttons as they escape one after another through the exit-opening 68 preparatory to taking their place upon the base-plate 27, on which the exposed button is shown in Fig. 6, shall have their upper side turned uppermost, so that when the button is applied upon the fabric its top side will be exposed, and to this end I provide upon the lower front end of the magazine 29 a curved trough 85 and also a guard-plate 86. The buttons as they escape from the opening 68 pass upon the curved trough 85 and against the guard-plate 86, and the curvature of the trough is such that when the buttons contact with the guard-plate 86 they are caused to turn laterally on the trough with their top side turned uppermost, and when in this or substantially in this position they fall from the end of the trough 85 upon the base-plate 27. The trough 85 is the more essential factor in compelling the buttons to turn laterally; but the guard-plate 86 aids in this operation, since it prevents the buttons from rapidly rolling down the trough 85. The guard-plate 86 also serves to check any impetus that the escaping button may attain and compels said button to fall upon the base-plate 27 with a limited degree of force, whereby said button is enabled to pass to its position between the arms 54 54. In the absence of some checking means for the buttons they might not remain between the arms 54 54 in the position shown in Fig. 6; but with the employment of the trough 85 and guard 86 the buttons will pass to their position upon the plate 27 and with their top side uppermost.

The rod 79, connected with the lever 41, is slotted at its rear end, as shown in Fig. 2, so that the rear end of said rod 79 may be guided, and the rear end of the slot (numbered 87) may be employed as a stop in connection with the screw 88 for preventing the lever 41 from

being drawn unduly frontward, and the purpose of the stopping of the lever 41 at the end of its frontward movement being to prevent the operator from drawing the button held by the chuck 42 entirely through the space between the front ends of the clamping-jaws 34 instead of allowing the button to remain between said clamping-jaws until properly sewed upon the fabric.

The operation of employing the attachment hereinbefore described will in large measure be understood from the explanation already given. The attachment will be secured in the machine presented to the presser-foot bar 24, and in the usual manner said bar 24 will be raised and lowered by a foot-treadle (not shown) in order that the fabric or work may be inserted and removed from below it at will. It may be assumed for purposes of explanation that the fabric has been placed below the attachment and that the presser-foot bar 24, carrying the attachment, has been lowered upon said fabric. The operator will then take hold of the handle 43 of the lever 41 and move the same frontward to effect the elevation of the spring 71 and the escape of a button from the holder or magazine 29, the button passing through the elongated opening 68 and the opening 74 in the arm 73 of said spring 71. The button escaping from the magazine or holder 29 will pass upon the trough 85 and against the guard-plate 86 and then fall upon the base-plate 27 with its top side uppermost, as shown in Fig. 6, the said button being confined within the space outlined by the lever-arms 54 54. Thereupon the operator will raise the handle end of the lever 41 slightly and move said lever to its rear position (shown by dotted lines in Fig. 6) and lower the lever 41, so that the studs 48 of the chuck 42 may pass directly upon the then exposed button on the base-plate 27. As soon as the lower ends of the studs 48 have entered the eyes of the button or have come to a position upon the top of said button, not having entered the eyes thereof, the operator will by pressing on the handle 51 of the segment 50 cause said handle and said segment to move until said handle reaches the stop 53, the purpose of moving said segment 50 being to effect the rotation of the chuck 42 and the button, so that the holes of the eyes of the button may be given a proper predetermined position. If when the lever 41 is moved rearward the studs 48 of the chuck 42 at once enter the eyes or holes of the button, the said button and chuck will nevertheless be rotated by means of the segment 50, so as to bring the holes or eyes of the button into the proper predetermined position. If, however, when the lever 41 is moved rearward the studs 48 of the chuck 42 should simply press upon the upper surface of the button without at once entering the eyes thereof, the chuck 42 will be at once rotated by means of the segment 50, as above described, and this rotation of the chuck will

cause the lower ends of the studs 48 to find and enter the eyes or holes of the button. Since it will frequently happen that the lower ends of the studs 48 will not when the lever 41 is moved rearward at once enter the eyes or holes of the button, I have provided the spring 49, which yieldingly presses upon the upper end of the chuck 42, and this spring is an important feature in the successful operation of the attachment, since owing to the upward yielding of the chuck 42 when the studs 48 strike the upper surface of the button the force exerted by the operator on the lever 41 is relieved from the button and the latter will not be so rigidly gripped between the lower ends of the studs 48 and the upper surface of the base-plate 27 to rotate, but will remain substantially stationary while the chuck 42 rotates and until the studs 48 enter the eyes or holes of the button, whereupon the button will rotate with the chuck until the chuck has been given the full limit of its movement. In the absence of the yielding part 49 pressing on the chuck 42 the button would be gripped between the then rigid studs 48 and base-plate 27 and under the pressure of the operator's hand on the lever 41 might rotate with the chuck without the studs 48 entering the eyes or holes of the button, and under this condition the eyes or holes of the button will not have been given by means of the chuck the proper predetermined position for the sewing operation, nor would the studs 48 have entered the eyes or holes of the button. I therefore regard the yielding chuck 42 as of importance in carrying out in the most successful way the purposes of the invention. After the studs 48 have entered the eyes or holes of the button and the chuck has been rotated to the full limit of its movement (determined by the contact of the handle 51 with the stop 53) the operator will retain her finger upon the handle 51, so that there may be no reverse motion in the chuck 42, and move the lever 41 to its front position, (shown in Fig. 6,) this frontward movement of the lever 41 compelling the button held by the chuck 42 to open the arms 54 and causing the button to pass between the front ends of the jaws 34 34 and directly over the recess 39 in the yielding plate 38, located at the front end of the base-plate 27. When the button has reached this position between the jaws 34 34, the operator, still pressing with her thumb against the handle 51 of the segment 50, will raise the lever 41, so that the studs 48 of the chuck 42 will leave the button, and thereupon she will release the handle 51 and move the lever rearward to engage the next button exposed on the base-plate 27. The button having been left by the lever 41 between the jaws 34 34 in position to be sewed upon the fabric, the operator will then by pressing on the proper foot-treadle (not shown) set the machine in motion. The machine having been set in motion, the needle will then operate to

sew through one pair of holes or eyes of the button in a well-known manner, the presser-foot bar 24 and the button-holder attachment in its entirety being vibrated in the usual manner with this class of machines, so that the needle will first descend through one of the said holes and then through the other thereof and then down through the first hole until the proper number of stitches have been formed, whereupon the attachment will be moved laterally of itself, but longitudinally of the base-plate of the sewing-machine, so as to bring the other pair of holes of the button into position to be sewed through by the needle, the attachment and presser-foot bar again vibrating, so that the needle may, as before, pass from one hole to another until the proper number of stitches have been formed. After the stitches have been formed in the requisite number the machine will automatically stop, and the operator, raising the presser-foot bar, will, by pulling on the fabric to which the button has been sewed, pull the button from the clamping-jaws 34 and move the fabric along to the next point at which a button is to be sewed. The operator will then repeat the above-described operation, lowering the attachment upon the fabric or work and by means of the lever 41 drawing another button to the point of sewing between the jaws 34, whereupon the machine will be again set in motion for sewing on the additional button. This operation will be continued until all of the buttons in the holder or magazine 29 have been sewed upon the fabric, whereupon the said holder or magazine 29 will be refilled by placing the buttons upon the inclined chute 64 and allowing the same to slide down into the said holder or magazine, the work of sewing on the buttons then being continued. It will be seen that the fingers of the operator are not required for adjusting or holding the buttons, the mechanism described rendering it entirely convenient to move and properly align the buttons one after another by means of the lever 41, said lever with each movement thereof to the front carrying the button with its holes or eyes in proper sewing position to the point of sewing between the jaws 34, which hold the button during the sewing operation. The means for effecting the lateral vibration of the attachment, so that when one pair of holes in the button have been sewed the other pair may be presented to the needle, are well known in this art, and in Figs. 3 and 5 I illustrate the usual connecting-rod 100, through which a vibratory motion is communicated to the attachment, said rod 100 being pivotally secured to the attachment at one end and at the other end being connected with the usual mechanism of sewing-machines for moving it after the correct number of stitches have been sewed through one pair of the holes of the button.

The sewing-machine illustrated is a well-known type of machine both as to its vibra-

tory presser-foot bar 24 and vibratory connection 100. The attachment is not, however, limited to the character of machine shown, since in machines in which the needle has a vibratory motion for moving from one hole of the button to the other hole thereof the attachment holding the button will not have to vibrate back and forth for each pair of holes of the button, but will simply move laterally after one pair of the holes or eyes of the button have been sewed in order to present the other pair of eyes or holes of the button to the needle. In the event of the buttons only having two holes and the sewing-machine having a vibratory needle it will not be necessary that the attachment have any vibratory motion either laterally or longitudinally, since in that event the vibratory needle will pass through the two eyes of the stationary button, the latter being held by the clamping-jaws 34. Thus it will be seen that the invention is not confined to any special type of machine for sewing on buttons, but is meant for application to any machine for sewing on buttons, the purpose of the attachment being to properly feed the buttons to the sewing-point with their holes or eyes in a proper predetermined position and there securely hold the buttons during the sewing operation. One of the most important objects attained is the proper supplying of the buttons to the clamping-jaws 34 in a manner to insure the holes or eyes of the buttons coming into proper position to receive the needle.

The holder or magazine of the construction illustrated is of the greatest advantage in attachments of the character to which my invention relates, since by reason thereof the buttons are so held and controlled that only one button at a time leaves the holder or magazine, and the holder or magazine may be quickly recharged with buttons. The placing of the buttons on the chute 64 is a very simple matter, and when the buttons have been placed on the chute 64 with their topside uppermost the buttons will automatically slide down said chute and find their proper position within said holder or magazine 29.

A very important feature of the invention resides in the fact that the studs 48 are at the lower side of the rotary chuck 42 and engage the holes of the button from the upper side of the latter when the button is resting flat upon the upper surface of the base-plate 27, whereby the button while in process of being engaged by the chuck has a solid surface against which it may bear. The chuck 42 is vertically yielding to a limited extent; but the button to be engaged by the chuck is upon the unyielding flat base-plate 27. A further important feature enhancing the value and success of the machine is that the base-plate 27 serves as a slideway or race-way for the button from the point at which the chuck 42 engages the button to the point

at which the chuck leaves the button between the clamping-jaws 34, there being no possibility under such arrangement for the button to escape from the chuck until after the button reaches its final position and the chuck is directly lifted therefrom. It is of the utmost importance that the button should be held flat against the base-plate 27 and moved along and in contact with said base-plate by the chuck 42 during the employment of the latter in transferring the button from its first position on the base-plate to its final position between the clamping-jaws 34.

In the machine shown the means for operating the presser-foot bar 24 to vibrate the attachment comprises a pivoted forked lever 102, Fig. 1, which at its lower end is connected with said bar 24 and at its upper end receives and is oscillated by the cam 103.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An attachment for machines for sewing on buttons, said attachment comprising a button holder or magazine for holding the buttons, and means for effecting the feeding of the buttons one after another from said holder or magazine, combined with the base-plate upon which the buttons pass after leaving the said magazine or holder, the yielding arms which catch and retain the buttons on said base-plate, means for engaging the eyes of the buttons from the upper side of the buttons when they are on said plate and rotating the buttons to bring their holes or eyes into a proper predetermined position, means for moving the buttons to position for sewing, and jaws for holding the buttons during the sewing operation; substantially as set forth.

2. The base-plate, means for receiving the button at one side of the point of sewing, and means for holding the button at the point of sewing during the sewing operation, combined with the rotary chuck having the pinion on its upper end and the studs on its lower end to enter the holes or eyes of the button, the segment in engagement with said pinion for rotating said chuck to enable it to rotate the button, the thumb-piece connected with said segment for pressing the latter in one direction, the spring for normally pressing said segment in the opposite direction, and the lever carrying said chuck and segment for moving said chuck to cause it to move the button from the point at which it engages the button to the point at which the button is held during the sewing operation, said lever having the handle at one end and being pivotally held at the other end; substantially as set forth.

3. The plate for receiving the button at one side of the point of sewing, and means for holding the button at the point of sewing during the sewing operation, combined with the rotary chuck having the pinion on its upper end and the studs on its lower end to enter the holes or eyes of the button from the upper side of the latter, the segment in engage-

ment with said pinion for rotating said chuck to enable it to rotate the button, the spring yieldingly pressing on said chuck so that said chuck may have an upwardly-yielding initial contact with the button, and means carrying said chuck and segment and for moving said chuck to cause it to slide the button along and against said plate to the point at which the button is held during the sewing operation; substantially as set forth.

4. The base-plate, means for receiving the button at one side of the point of sewing, and means for holding the button at the point of sewing during the sewing operation, combined with the rotary chuck having the pinion on its upper end and the studs on its lower end to enter the holes or eyes of the button, the segment in engagement with said pinion for rotating said chuck to enable it to rotate the button, the spring yieldingly pressing on said chuck so that said chuck may have a yielding initial contact with the button, the thumb-piece connected with said segment for pressing the latter in one direction, the spring for normally pressing said segment in the opposite direction, and the lever carrying said chuck and segment for moving said chuck to cause it to move the button from the point at which it engages the button to the point at which the button is held during the sewing operation, said lever having the handle at one end and being pivotally held at the other end; substantially as set forth.

5. The base-plate, means for moving the individual buttons from a point at one side of the position for sewing to the sewing position, and means for holding the buttons during the sewing operation, combined with the magazine or holder for holding a quantity of the buttons, and means for effecting the feeding of the buttons one after another from said magazine, said magazine being of a width to compel the buttons to stand on edge therein; and having the inclined feeding-chute 64 on which the buttons may be placed and allowed to slide downward into said magazine; substantially as set forth.

6. The base-plate, the magazine for holding the buttons, mechanism for effecting the feeding of the buttons, one at a time, from said magazine to a flat position on said plate, and means for receiving and controlling the location of the buttons as they leave said magazine and arrive on said plate, combined with the button-holding jaws at the point for sewing, the pivoted lever 41 adapted to be moved intermediate the exposed button and said jaws, the rotary chuck carried by said lever to engage said exposed button from the upper side of the latter and compel it to slide along said plate and pass to and between said jaws, and means for rotating said chuck to thereby effect the rotation of said button and bring its eyes into proper position to receive the sewing-needle; substantially as set forth.

7. The base-plate, the magazine for holding the buttons, mechanism for effecting the feed-

ing of the buttons, one at a time, from said magazine to a flat position on said plate, and means for receiving and controlling the location of the buttons as they leave said magazine and arrive on said plate, combined with the button-holding jaws at the point for sewing, the pivoted lever 41 adapted to be moved intermediate the exposed button and said jaws, the rotary chuck carried by said lever to engage, from its upper side, said exposed button and compel it to slide along said plate and pass to and between said jaws, and means for rotating said chuck to thereby effect the rotation of said button and bring its eyes into proper position to receive the sewing-needle, said needle being connected with said means for effecting the feeding of the buttons and so timed with respect thereto that the buttons can only escape from the magazine during the movements of said lever toward said magazine; substantially as set forth.

8. The plate for receiving the individual buttons and forming a slideway therefor from their initial position at one side of the point of sewing to their position for sewing, and the pivoted spring-arms 54 forming an inclosure to receive the individual buttons and locate them in proper predetermined position on said plate, said arms 54 being adapted to separate at their meeting ends when a button is forcibly moved against them on its way to the position for sewing, combined with a rotary chuck having studs at its lower side to

enter the holes or eyes of the button, from the upper side of the latter, means for rotating said chuck to enable it to rotate the button, and means for moving said chuck to cause it to slide the button along and against said plate to the point at which the button is held during the sewing operation; substantially as set forth.

9. The base-plate, means for moving the individual buttons from a point at one side of the position for sewing to the sewing position, and means for holding the buttons during the sewing operation, combined with the magazine or holder for holding a quantity of the buttons on edge and having the inclined bottom leading to the exit-opening for the individual buttons, the spring 71 having the tooth 72 and apertured arm 73 for controlling the feed of the buttons from said magazine through said exit-opening, and means for engaging said spring to hold the same in a position to permit the escape of a button from said magazine and then releasing said spring to withdraw said tooth from the magazine and cause said arm 73 to obstruct the exit from said magazine; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 22d day of December, A. D. 1900.

FRANKLIN H. CHILTON.

Witnesses:

CHAS. C. GILL,
GUNDER GUNDERSON.