

(No Model.)

2 Sheets—Sheet 2.

M. GARDNER.

BUTTON ATTACHING DEVICE FOR SEWING MACHINES.

No. 400,322.

Patented Mar. 26, 1889.

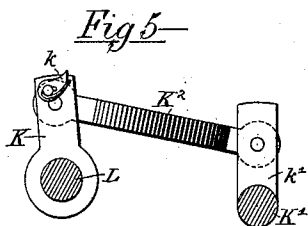
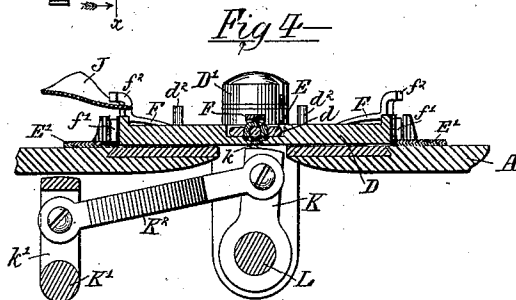
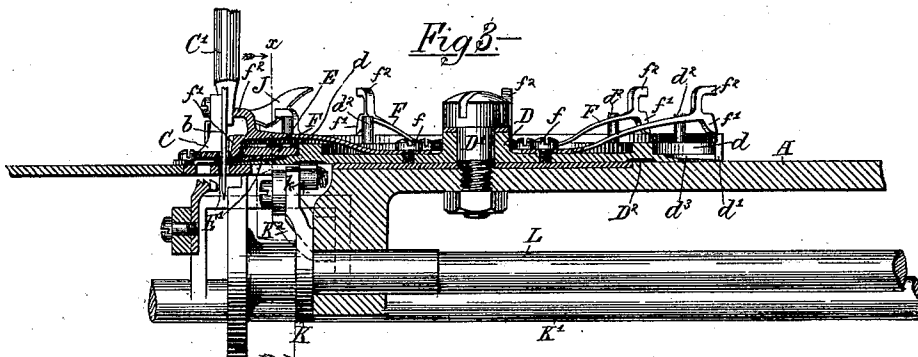
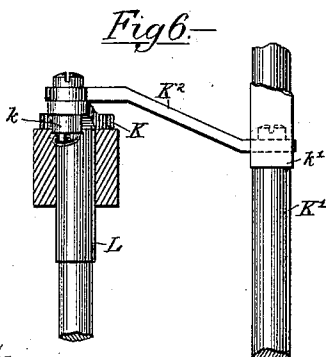
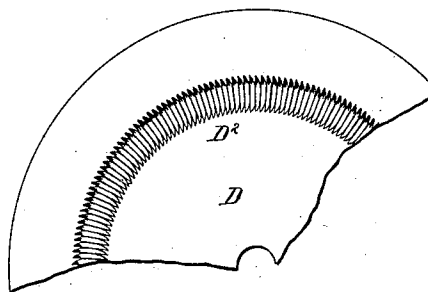


Fig 7.



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by—*Wayton & Poole*
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UNITED STATES PATENT OFFICE.

MARSHALL GARDNER, OF AURORA, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, OF TWO-THIRDS TO ALICE M. BALL, OF SAME PLACE, AND ELIZABETH FLORSHEIM, OF CHICAGO, ILLINOIS.

BUTTON-ATTACHING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 400,322, dated March 26, 1889.

Application filed December 1, 1887. Serial No. 256,594. (No model.)

To all whom it may concern:

Be it known that I, MARSHALL GARDNER, of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Button-Attaching Devices for Sewing-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a novel sewing-machine attachment, forming from a tape or cord upon which a number of buttons are strung a looped strip having a button engaged with each loop and which is adapted for attachment to a garment as a means of sewing the buttons thereto. Said attachment is intended more particularly for use in the manufacture of corsets or waists of that kind having buttons secured thereto by means of cord or tape loops, which are engaged with the eyes of the buttons and are secured by sewing between the layers of fabric composing the corset or waist.

The invention consists in the matters hereinafter described, and pointed out in the appended claims.

A sewing-machine attachment embodying my invention embraces as its main or essential feature a revolving plate having a series of marginal recesses, within which the buttons are placed, and provided with a peripheral surface against which rest those parts of the cord or tape between the buttons. The plate is located close to the needle of the sewing-machine, so that the parts of the cord or tape resting against the edge of the plate will be engaged by the needle as the plate is turned, so as to form a line of stitching longitudinally through the tape, as more fully hereinafter set forth.

The invention may be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of that part of the work-plate of a sewing-machine adjacent to the needle, showing the novel attachment

embodying my invention mounted thereon. Fig. 2 is a side elevation of the parts shown in Fig. 1. Fig. 3 is a central vertical section taken upon line *xx* of Fig. 1. Fig. 4 is a detail section taken upon line *xx* of Fig. 3. Fig. 5 is a view of the reverse side of the parts shown in Fig. 4. Fig. 6 is a plan view of the parts shown in Figs. 4 and 5. Fig. 7 is a fragmentary view showing the under side of the button-carrying plate.

As illustrated in the said drawings, A is the work-plate of a sewing-machine. B is the needle-bar thereof, and *b* is the needle.

C is the presser-foot, and C' the vertically-movable bar sustaining the same.

D is a circular plate mounted on the top surface of the work-plate of the machine and provided with a cylindric peripheral surface located close to the needle. The said plate D is pivoted upon a stud, D', secured in the work-plate A in such manner as to hold the margins of said plate D in close contact with the work-plate.

Around the marginal part of the plate D, in the upper surface thereof, is formed a series of recesses, *d d'*, each of proper size and shape to receive a button, said recesses being located adjacent to the edge of the plate and opening outwardly through the said cylindric peripheral surfaces of the plate by means of notches *d' d'*, formed in the metal of the plate between the said recesses and the exterior cylindric surface thereof.

E E E indicate a number of buttons placed in the said recesses *d*, said buttons being strung upon a cord or tape, E', which latter, when the buttons are inserted in the recesses, rests in its part between the buttons against the cylindric surface of the said plate D, while its parts adjacent to the button extend inwardly through the notches *d' d'*, so as to form a series of loops engaged with the buttons, as clearly shown in the drawings. The buttons and tape or cord are held or clamped within the recesses by suitable clamping devices, one practical form of which is herein shown, and will be hereinafter described.

In the operation of stitching the tape or

cord to the base or foundation strip the plate D, after the buttons have been placed within the recesses and the cord arranged along the periphery of the plate in the manner described, is revolved so as to carry the portion of the tape resting against the said peripheral surface of the plate beneath the presser-foot of the machine and past the needle, whereby a line of stitching is formed passing longitudinally through the portion of the tape thus presented to the needle. Commonly a straight strip of fabric will be passed beneath the presser-foot at the same time, to which strip the cord or tape will be sewed. The said strip thus forms a base or foundation for the looped cord, which base or foundation, together with the cord attached thereto, is in the manufacture of corsets or waists secured to or between the cloth layers of the corset. The employment of the base-strip for the looped cord is not essential, however, and the cord may be looped and afterward attached to the cloth of the garment by sewing through the longitudinal part of the cord or loops, or both. When no base-strip is present, the attachment described will operate to produce a series of loops with a button upon each loop, inasmuch as the line of stitches which extends from one longitudinal part of the cord to the other, across the base of the loops held in the recesses of the plate D, will prevent the loops from straightening out when the cord and buttons are removed from the said plate, and thereby form a permanently-looped strip, which may be handled and used substantially in the same manner as is the similar strip when secured to a fabric base.

In the particular form of fastening devices for holding the buttons in place within the recesses herein shown said devices are made as follows:

F F indicate a series of radially-arranged clamp-arms, which are pivoted at $f f$ to the upper surface of the plate D. The pivoted ends of said arms F are located adjacent to the pivot-stud D' , while the outer ends of said arms are constructed to swing over the button-recesses $d d$. The outer or free ends of the arms are provided with downwardly-extending prongs or fingers $f' f'$, constructed to enter and approximately fit the notches $d' d'$, as more clearly shown in Fig. 2, and the said arms are adapted to be inserted and held within the notches $d' d'$ in such manner as to closely hold or confine looped parts of the tape or cord E' at the points at which they emerge from the notches, so that the said cord shall be held from shifting or displacement during the time the stitching is being accomplished.

Any suitable means may be employed for holding the arms in engagement with the cord in the manner described; but as a simple and desirable construction of the parts I have herein shown the arms as made of thin spring metal and as so arranged that the resiliency

of the arms tends to hold the prongs $f' f'$ thereof in the lower parts of the notches d' . The said arms are herein shown as provided with upwardly-projecting parts or prongs $f^2 f^2$, which afford a means of grasping the clamp-arms in inserting the buttons, and which may be engaged with an automatic lifting device for freeing the arms from the tape and releasing the buttons from the recesses, as will herein-after appear.

$d^2 d^2$ indicate a series of pins or stops inserted in the upper surface of the plate D, and serving to limit the movement of the free ends of the clamp-arms F F when the latter are swung away from the button-recesses.

The notches $d' d'$ are shown as extended downwardly nearly to the lower surface of the plate D, so as to leave only a thin wall at these points, and to allow the cord or tape where it emerges from the recesses to come close to the work-plate, as clearly shown in Fig. 3. This construction is obviously desirable in order to allow the tape or cord to pass readily beneath the presser-foot. The bottoms of the recesses are desirably provided with central depressions, $d^3 d^3$, to receive the part of the loops engaged with the buttons, as clearly shown in the drawings, Figs. 1 and 3.

In the operation of the attachment the buttons are inserted into the recesses $d d$ by hand and the arms F F moved by the operator into position to engage the cord or tape and to hold the buttons in place. The plate D is turned or revolved automatically by suitable connection with the operative parts of the machine or otherwise, so as to carry the buttons and tape toward and past the needle at the same rate that the feeding of the base-strip (when the latter is present) is accomplished by the feed devices of the machine. For holding or confining the tape or cord E' at the time the stitching is being accomplished the presser-foot is located in contact with and is preferably curved to fit the cylindric surface of the plate D, so that the tape or cord resting against the said cylindric surface will be depressed against the work-plate and confined in this position while passing beneath the said presser-foot.

If it is found necessary or desirable, a wiper or presser may be applied to act upon the tape or cord, and thereby thrust the latter downwardly toward the work-plate before the presser-foot is reached.

I have herein shown as applied for this purpose a roller, G, which is arranged to revolve on a vertical axis with its flat face in contact with or in close proximity to the cylindric edge of the plate D. The said roller G is herein shown as mounted upon a bracket, G', secured to the top surface of the work-plate. Vertical adjustment of the roller G is conveniently provided for in this construction by making the horizontal part of the bracket G' of spring metal, and by inserting

through the bracket near the roller a set-screw, *g*, constructed to bear upon the top surface of the work-plate.

H indicates a fabric strip or base to which the cord or tape is secured, and *I* a guide upon the work-plate of the machine for holding the said strip *H* from lateral displacement as it passes the needle. The said fabric strip *H* passes beneath the margin of the plate *D* at its part opposite the needle, the work-plate being notched or cut away for this purpose.

The buttons and tape or cord may be released from the recesses by the operator as the plate revolves; but preferably an automatically-acting device is applied to accomplish this purpose. A device for this purpose is herein shown, and consists of a cam-plate, *J*, located adjacent to the edge of the plate *D* at a point somewhat at the rear of the needle. The said cam-plate is constructed to engage the prongs *f*² *f*² of the arms *F F*, and is curved to conform to the circular path of said prongs, and is inclined forwardly and rearwardly in such manner as to lift the free ends of the arms out of the notches *d'* *d'* as the said prongs pass over the said cam-plate in their rearward movement. The said cam-plate also operates to shift or carry the free ends of the arms *F* rearwardly, (referring to the direction of motion of the plate,) so as to move said arms laterally to one side of the button-recesses by reason of the fact that the arms, being pivoted at their inner ends, will be dragged back or retarded as they pass over the cam-plate, so that when they pass from the rear end of the plate they will drop into contact with the top of the plate *D* at the rear of the recesses. The rearward movement of the arms *F*, produced in the manner described, is limited by the stops or pins *d*² *d*², hereinbefore mentioned.

The particular means herein shown for giving rotative motion to the plate *D* is as follows: Upon the under surface of the plate *D* is formed a series of fine ratchet-teeth, *D*², arranged concentrically thereon.

K is a vertically-arranged pawl-arm pivotally supported at its lower end upon the machine-frame and movable horizontally at its free or upper end. Upon the upper end of said arm is pivoted a spring-pawl, *k*, arranged to engage the ratchet-teeth *D*². In the particular construction illustrated the pawl-arm *K* is mounted to rotate upon the drive-shaft *L*, by which motion is given to the revolving shuttle of the machine.

K' is a rock-shaft, which, in the machine shown, actuates the feeding devices. Said rock-shaft is provided with a vertical arm, *k'*, the upper end of which is connected by means of a rod, *K*², with the pawl-arm *K*. The rock-shaft *K'* is oscillated continually during the operation of the machine, thereby transmitting oscillatory motion to the pawl-arm and pawl and giving rotative motion to the plate *D*. The said driving devices are preferably

so arranged as to move the periphery of the plate at approximately the same speed as the base or fabric strip is fed forward by the feed-dog.

The finished strip and buttons may be released from the revolving plate *D*, after the arms *F F* have been moved in the manner described, either by the attendant or by an automatically-acting device. Such device may consist, for instance, of a reel, upon which the finished button-strip is wound, said reel being located considerably above the level of the revolving plate *D*, so that as it is turned or driven to wind the strip thereon the buttons will be lifted out of and disengaged from the button-recesses.

I claim as my invention—

1. The combination, with the stitch-forming devices of a sewing-machine, of a revolving plate provided with a cylindric peripheral surface and with button-recesses near its margin, and notches extending therefrom outwardly through said cylindric surface, and independent clamps provided with prongs entering the notches for engaging and holding the tape or cord loops resting therein, substantially as described.

2. The combination, with the revolving plate *D*, provided with button-recesses near its periphery and notches extending therefrom outwardly through the peripheral surface of the plate, of independent spring clamp-arms *F F*, pivoted to the plate and provided with prongs *f' f'*, entering said notches, substantially as described.

3. The combination, with the work-plate and needle of a sewing-machine, of a revolving plate provided with a cylindric peripheral surface and with button-recesses opening outwardly through the cylindric surface of the plate, said plate being mounted upon the work-plate with its margin in contact with said work-plate, and a presser in contact with the cylindric peripheral surface of the plate acting on the tape to force and hold the latter downwardly against the work-plate in passing the needle, substantially as described.

4. The combination, with the work-plate, needle, and presser-foot of a sewing-machine, of a revolving plate provided with a cylindric peripheral surface located adjacent to the needle and in contact with the presser-foot, said plate being provided with peripheral button-recesses opening outwardly through the said cylindric surface of the plate, and a roller, *G*, acting to press toward the work-plate the tape or cord placed about the said peripheral surface of the plate, substantially as described.

5. The combination, with the revolving plate *D*, provided with peripheral notches, as *d'*, and with spring clamp-arms *F*, engaging the notches, of a stationary cam-plate located in position to engage said clamp-arms, substantially as described.

6. The combination, with the plate D, provided with button-recesses and with notches $d' d'$, of spring clamp-arms F F, provided with prongs $f' f'$, entering said notches $d' d'$,
5 and with prongs $f^2 f^2$, and a stationary cam-plate engaging said prongs $f^2 f^2$, substantially as described.

In testimony that I claim the foregoing as my invention I affix my signature in presence of two witnesses.

MARSHALL GARDNER.

Witnesses:

WM. WILSON,

CHARLES H. SCHOPBACH.