L. R. CARLEY.

BUTTON FEEDING MECHANISM.

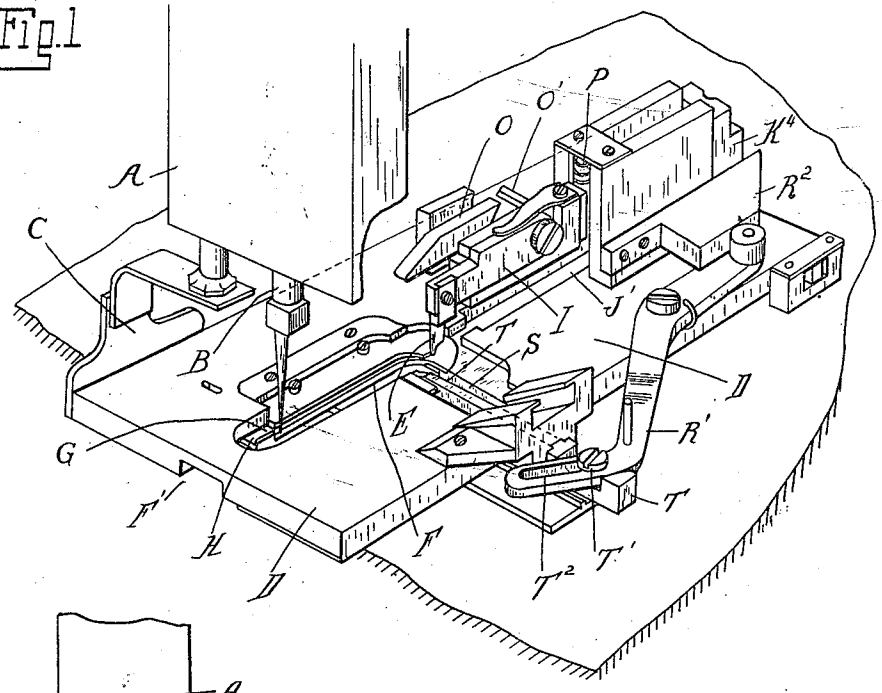
APPLICATION FILED NOV. 16, 1911.

1,230,860.

Patented June 26, 1917.

3 SHEETS—SHEET 1.

Fig. 1



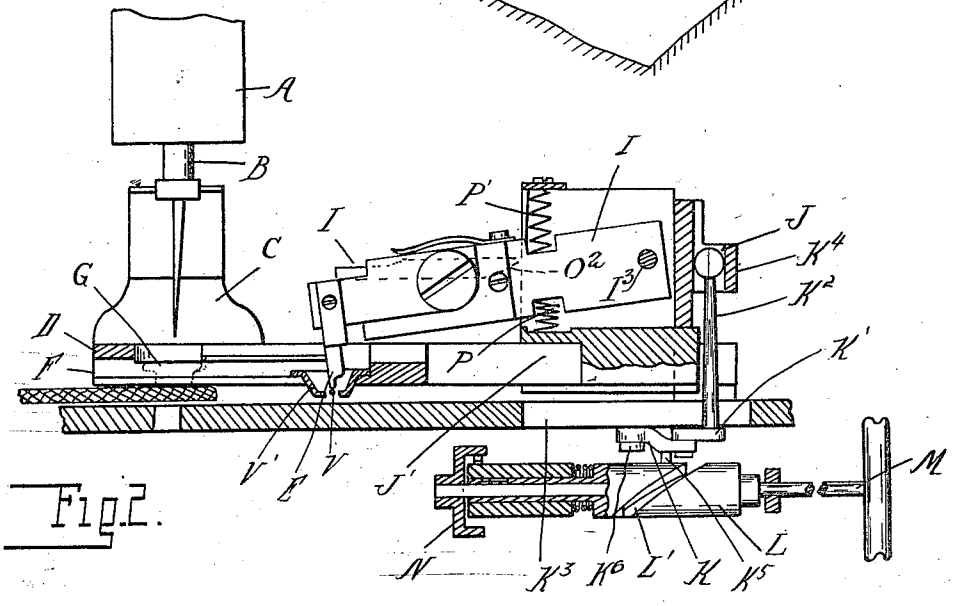


Fig. 2.

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3 SHEETS—SHEET 2.

Fig. 10

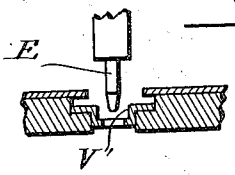


Fig. 7.

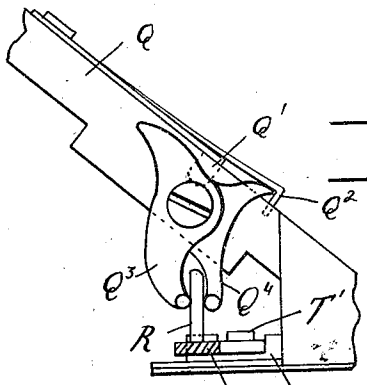
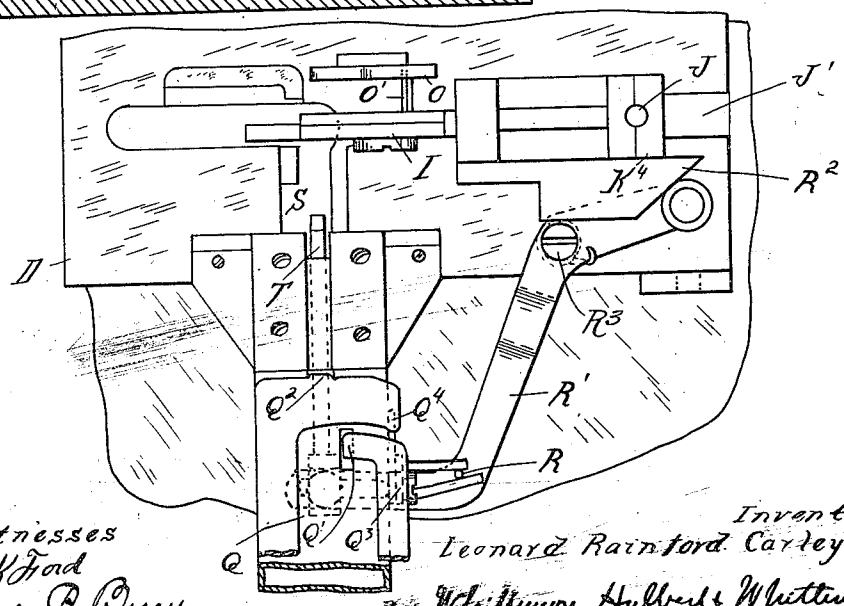


Fig 3.

Fig 4.



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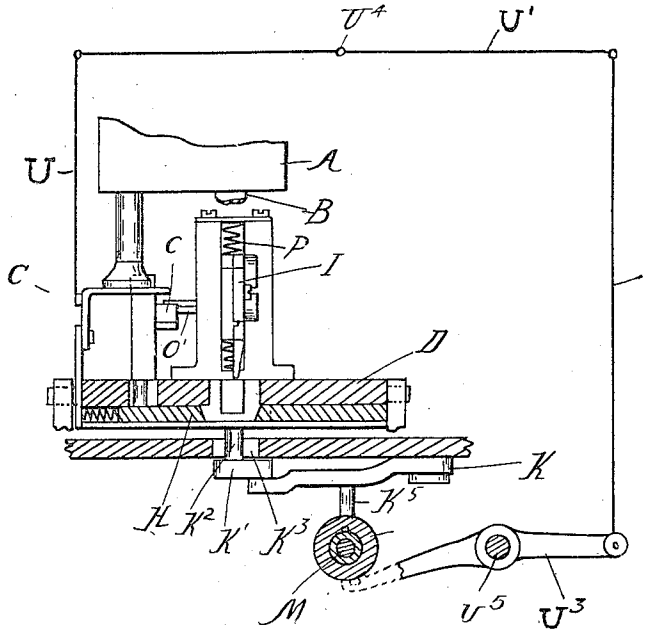
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3 SHEETS—SHEET 3.

Fig. 5.



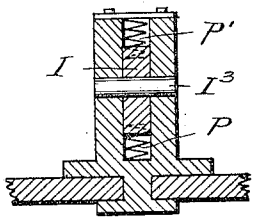


Fig. 11.

Fig. 6.

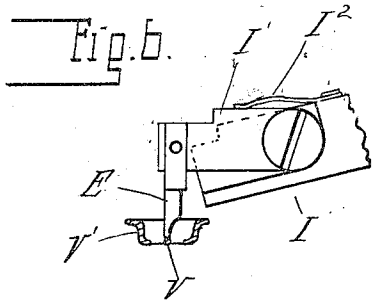


Fig. 7.

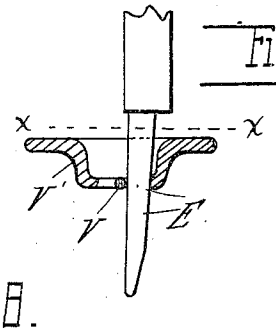
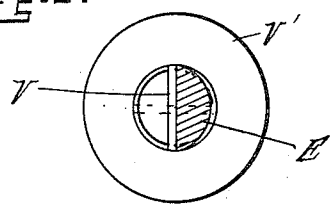


Fig. 8.



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UNITED STATES PATENT OFFICE.

LEONARD R. CARLEY, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-HALF TO JAMES A. STEWART, OF DETROIT, MICHIGAN.

BUTTON-FEEDING MECHANISM.

1,230,860. Specification of Letters Patent. Patented June 26, 1917.

Application filed November 16, 1911. Serial No. 660,670.

To all whom it may concern:

Be it known that I, LEONARD RAINFORD CARLEY, a subject of the King of Great Britain and Ireland, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Button-Feeding Mechanism, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to machines for fastening buttons to garments, and more particularly to the means employed for feeding and positioning the buttons for attachment.

In the present state of the art, one construction of button which is extensively used upon garments is provided with a central aperture having a cross bar to which is attached the securing thread. This construction is adapted for attachment to a garment by a sewing machine, but it is essential to position the button with the cross bar in proper angular relation to the direction of feed.

The present construction is designed to automatically feed the buttons in proper relation to the garment, and also to rotatably adjust each button with its cross bar at the desired angle. The invention therefore consists in the construction of mechanism as hereinafter set forth.

In the drawings,—

Figure 1 is a perspective view of a button sewing machine to which my improvement is applied;

Fig. 2 is a longitudinal section;

Fig. 3 is a cross section in the plane of the button feed;

Fig. 4 is a plan view;

Fig. 5 is a cross section showing diagrammatically the trip mechanism controlling the operation;

Fig. 6 is a side elevation of the button feeding finger;

Fig. 7 is an enlarged end elevation thereof;

Fig. 8 is a horizontal section on line *x*—*x* Fig. 7;

Fig. 9 is a sectional side elevation of the feed mechanism;

Fig. 10 is a cross-section of the guideway at right angles to said guideway; and

Fig. 11 is a cross-section of the slotted bearing at right angles to the direction of travel of the carrying arm.

A is the head of the sewing machine, B the reciprocatory needle bar, and C is a foot or guide for retaining the work. This foot is provided with an extension D on which the button feeding and positioning mechanism is mounted. Essentially, the button feeding and positioning mechanism comprises a finger E which is adapted to be inserted in the aperture in the button, and which is so fashioned that by depression in said aperture the button will be rotatably adjusted with its cross bar at the desired angle. The finger E not only thus rotatably adjusts the button, but is also employed for transferring the same to the point of attachment to the garment and in proper operative relation to the reciprocatory needle bar.

More in detail, F is a guideway formed in the extension D of the foot, through which the button is transferred to the position G in registration with the needle bar, H is a spring-pressed clamp for holding the button in the position G, I is a carrying arm for the finger E, which extends horizontally and is adapted to be reciprocated longitudinally of the guide F, J is a slide to which the arm I is pivotally connected at I^3 and which is mounted in slotted bearings J′ upon the member D. K is a rock arm pivoted at K^6 beneath the table or bed of the sewing machine which is attached by the link K′ with an upwardly extending post K^2 passing through a slot K^3 in the bed and engaging a bearing K^4 in the slide J. L is a rotary cam having a spiral groove L′ engaging a pin K^5 on the rock arm K operating to impart to said rock arm a reciprocating motion. M is a constantly driven shaft on which the cam L is sleeved, and N is a clutch for intermediately coupling the shaft with the cam L when the latter is to be driven.

The carrying arm I by reason of its pivotal connection with the slide J is free to move vertically during its longitudinal movement. O is a cam adjacent to the arm I over which a laterally projecting pin or lug O′ on said arm travels. The cam O is so fashioned that in the movement of the arm I toward the needle bar the pin O′ will travel beneath said cam and will be gradually lowered by an incline O^2 thereon. At the completion of this inward movement the pin O′ will disengage from the cam O, permitting the arm I to be raised by the pres-

sure of a spring P operating thereon, and during the return movement the pin O′ will travel on the upper face of the cam. At the end of the return movement, the pin O′ will drop beneath the cam, the spring P′ forcing the arm I downward which restores the finger E to its initial position. The clutch N is then automatically released and motion of the cam L arrested, this being effected by any suitable construction of clutch and stop mechanism not shown in detail as for example that disclosed in the U. S. Patent to White #489,279, issued January 3, 1893. Thus the cycle which includes one complete revolution of the cam L will first engage the finger E with the button, then feed the button forward and at the same time respectively adjust it into proper position, then disengage the finger from the button and return it to its initial position.

To feed the buttons successively in position for engagement with the finger E a suitable feed mechanism is provided such as illustrated in Fig. 3 and in which Q is the feed chute receiving a series of buttons from a hopper (not shown). Q′ and Q^2 are fingers for engaging the buttons and which are alternately released to permit the disengagement of one button from the column at each operation. These fingers are operated through the medium of lever arms Q^3 and Q^4 which are actuated by a pin R upon a lever R′ fulcrumed at R^3 upon the member D and operated by a cam R^2 on the slide J, the arrangement being such that with each reciprocation of the slide one button is released from the chute Q and permitted to drop into a cross guideway S in the member D. This cross guideway S intersects with the guideway F and the button is fed into the latter by the reciprocation of a pusher T actuated by a lever R′ through the medium of a pin T′ engaging a slot T^2 in said lever.

With the construction as thus far described in operation the garment to which the button is to be attached is placed upon the bed of the machine beneath the presser foot C, which necessitates the lifting and lowering of said foot. This operation of raising and lowering the foot I utilize for controlling the operation of the button feeding mechanism, and as shown diagrammatically in Fig. 5 the foot C is connected by a link U with a lever U′, the opposite end of which is connected by a link U^2 with a lever U^3 controlling the operation of a clutch N. The lever U′ is pivoted at U^4 and when the link U is lowered, together with the foot C, the lever U′ will be rocked about the pivot U^4 and the link U^2 raised. This will result in rocking the lever U^3 about the pivot U^5, and inasmuch as the outer end of the lever U^3 is raised, the inner end will be lowered. The inner end of the lever U^3 operates in the usual manner to lock the clutch, whereby the cam L is coupled to the rotating shaft M, effecting one complete revolution, whereupon the clutch is released and the motion of the cam arrested. Thus by the time that the garment is clamped in position beneath the presser foot, the feed mechanism will have completed its operation, the arm I moving forward and engaging a button carrying it into registration with the needle bar and respectively adjusting it as has been previously described. The operator then starts the sewing machine, the needle bar B performing the usual oscillatory movement by which the thread is thrown over the cross bar of the button. Upon the completion of the operation the foot C is again raised to release the garment, which permits the attached button to be drawn out from the open end F′ of the guideway F, after which the garment is positioned for the attachment of another button and the foot lowered, causing a repetition of the operation of the button feeding mechanism previously described.

To avoid the catching of the finger E upon the cross bar V of the button V′, said finger is attached to the arm I through the medium of a yieldable rock arm I′ held normally in fixed relation to the arm I by the tension of the spring I^2. Thus the arms I and I′ will remain in fixed relation ordinarily, but in case the finger should catch on the cross bar the arm I′ will yield sufficiently to effect a disengagement.

While I have described my improvement as particularly adapted for use on button sewing machines, it is obvious that the same construction could be applied to a button stapling or in fact to a machine having any suitable means for attaching the button, and where there is a necessity for adjusting the button to a desired position.

What I claim as my invention is:—

1. In a button feeding mechanism, the combination of means engageable with a button in variable positions of rotative adjustment of the button for transferring the button to the point of attachment, and means for rotatably adjusting said button during transfer, to a predetermined position.

2. In button feeding machines, the combination of button transfer mechanism engageable with a button in variable positions of rotative adjustment of the button, means for rotatably adjusting said button during transfer, and retaining means for the button in its position of adjustment.

3. In button feeding mechanism, the combination with a guide along which the button is transferred, of a fashioned finger for engaging the button eye in variable positions of rotative adjustment of the button,

and means for moving said finger to simultaneously longitudinally and rotatably adjust the button.

4. In a button attaching mechanism, the combination with a needle bar and a work clamping member, of a button engaging member, actuable from a button engaging position to a position beneath the needle bar, and means actuated by a movement of the work clamping member for successively engaging the button engaging member with a button, displacing said member and button to a position beneath the needle bar, disengaging said member and button and returning said member to its initial position.

5. In a button feeding mechanism, means for rotatively adjusting the button, comprising a finger adapted to engage the button in variable positions of rotative adjustment of the button, said finger being shaped to effect a rotative adjustment during the insertion of the finger into the eye of the button, means for inserting and withdrawing said finger into and out of the button eye, and clamping means for retaining the button in one position of adjustment.

6. In a button feeding mechanism, the combination with a guide along which the button is transferred, of means for longitudinally and rotatively adjusting said button, comprising a finger fashioned to rotatively adjust the button during the insertion of the finger into engagement with the eye of the button, means for inserting the finger into the eye of the button in variable positions of rotative adjustment of the button and for adjusting the finger longitudinally of the guide.

7. In a button attaching machine, the combination with a reciprocatory needle bar, of a guide for transferring the button in registration with said needle bar, a finger for engaging the eye of the button, and means for pressing said finger into the button eye in variable positions of rotative adjustment of the button and for moving the same longitudinally of the guide to transfer and rotatively adjust the button into registration with the needle bar, said finger being fashioned to effect a rotative adjustment of the button during the insertion of the finger into the button eye.

8. In a button attaching machine, the combination with a reciprocatory needle bar, of a guide for feeding the button into registration with said bar, a finger for insertion into the eye of the button in variable positions of rotative adjustment of the button, a carrying arm to which said finger is attached, means for imparting a longitudinal and transverse movement to said carrying arm whereby said finger is engaged with the button eye and the button is transferred along said guide, said finger being fashioned to effect a rotative adjustment of the button during the insertion of the finger into the eye thereof.

9. In a button feeding machine, the combination of means for feeding a series of buttons, means for successively releasing a single button from the series, and means for engaging the released button in variable positions of rotative adjustment thereof and simultaneously rotatively adjusting and transferring the same into a position for attachment.

10. In a button attaching machine, the combination with a work holding clamp, of mechanism for engaging a button irrespective of its position of rotative adjustment and for positioning the button in relation to the work clamp, and a drop mechanism controlling the operation of said button positioning means controlled by the operation of said clamp.

11. In a button attaching machine, the combination with a garment holding clamp, of means for engaging a button in variable positions of rotative adjustment of the button, for feeding a button longitudinally and rotatively into a predetermined relation to said clamp, and actuating means for said button feeding mechanism controlled by the operation of said clamp.

12. The combination with button attaching means, of a garment clamp, means for engaging a button in variable positions of rotative adjustment of the button, for longitudinally and rotatively adjusting a button into operative relation to said clamp, and actuating means for said button feeding means controlled by the operation of the clamp.

13. The combination with button attaching means, a presser foot for clamping the garment, a button feeding guide in said presser foot, and mechanism adapted to engage a button in variable positions of rotative adjustment thereof and for feeding the button along said guide controlled by the operation of said clamping foot.

14. The combination with button attaching means, of a garment clamping foot having a button feeding guideway therein, means mounted on said foot for engaging a button in variable positions of rotative adjustment thereof and for feeding the button along said guideway and simultaneously rotatively adjusting the same, and actuating mechanism for said feed means controlled by the operation of said foot.

15. The combination with button attaching means, of a garment clamping foot having inclined longitudinal and transverse button guideways therein, a reciprocatory finger for engaging the button in variable positions of rotative adjustment thereof and feeding the same along the longitudinal guideway into registration with the button attaching means, a reciprocatory member

for feeding the button along the transverse guideway into position for engagement by said finger, and means for operating said reciprocatory members.

16. In a button feeding mechanism, means for transferring a button to the point of attachment including non-rotative means for positively adjusting the button rotatively.

17. In a button attaching mechanism, the combination with a reciprocatory needle bar and a work clamping member, of a holder for a plurality of buttons, a button engaging member, and means actuated by displacement of the work clamping member for actuating discharge of a button from said holder, engagement of the discharged button by the button engaging member, displacement of said member and button to a position beneath the needle bar, disengagement of said member and button, and a return of said member to its initial position.

18. In a button attaching mechanism, the combination with a reciprocatory needle bar and a work clamping member, of a holder for a plurality of buttons, and means for effecting the discharge of a button from said holder by a displacement of the work clamping member.

19. In a machine of the class described, a link, a finger pivoted on said link, a spring engaging said finger, and means for causing said finger to shift a button about its axis.

20. In a machine of the class described, a link, a finger pivoted on said link, a spring engaging said finger, means for causing said finger to shift a button about its axis, and means for guiding said link.

21. In a machine of the class described, a link, a finger pivoted on said link, a spring engaging said finger, means for causing said finger to shift a button about its axis, and means for pivoting said link.

22. In a machine of the class described, a link, a finger pivoted on said link, a spring engaging said finger, means for causing said finger to shift a button about its axis, and means for raising said link at its front end.

23. In a machine of the class described, a link, a finger pivoted on said link, a spring engaging said finger, means for causing said finger to shift a button about its axis, means for guiding, means for raising, and means for pivoting said link.

24. In a button feeding mechanism, the combination with means for transferring a button to the point of attachment, of a finger for engaging an eye of the button fashioned to adjust the same rotatively during insertion in said eye, and means carrying the finger allowing it a limited transverse play in engaging the button.

In testimony whereof I affix my signature in presence of two witnesses.

LEONARD R. CARLEY.

Witnesses:

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C. B. BELKNAP.