

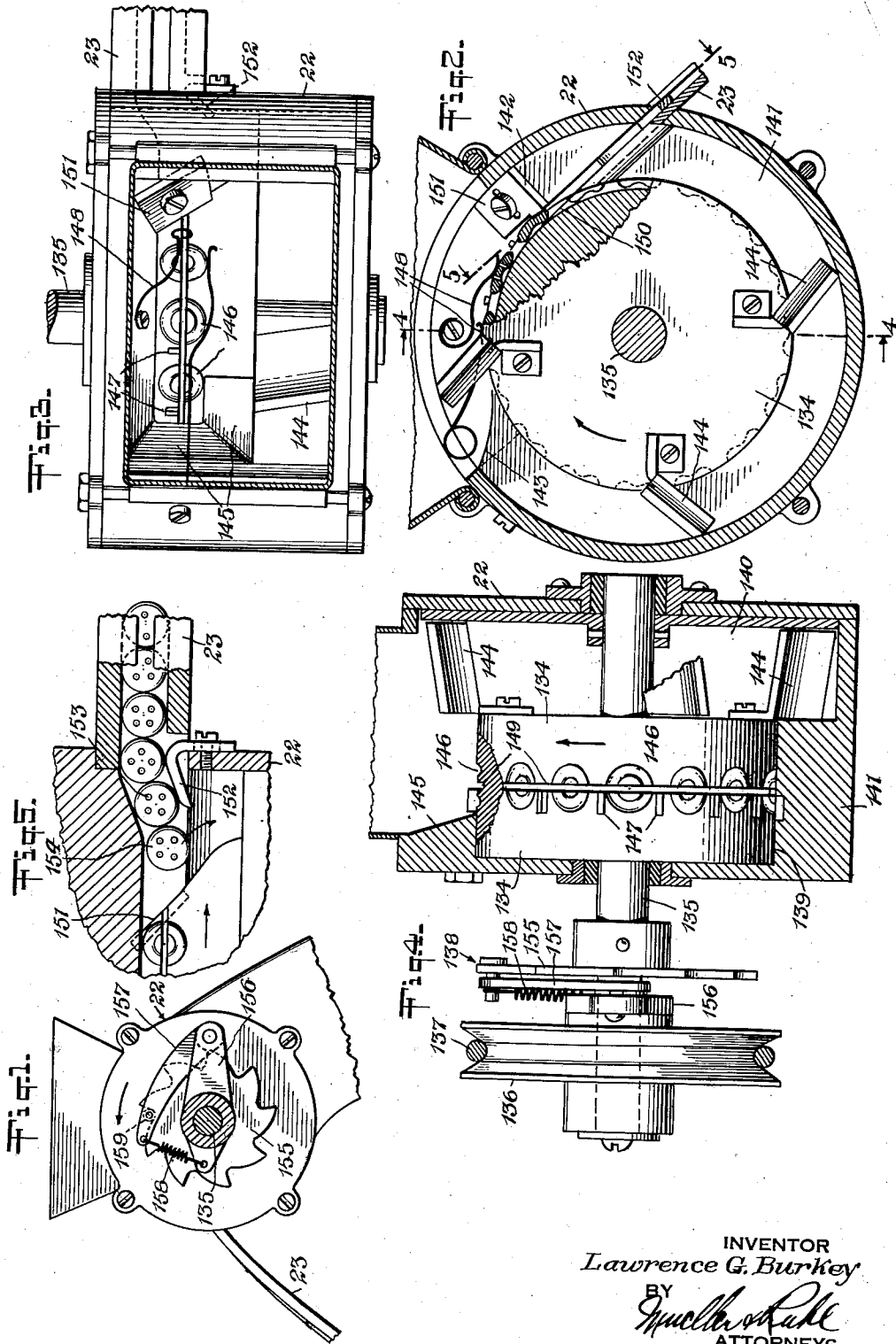
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L. G. BURKEY

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BUTTON FEEDING MECHANISM FOR SEWING MACHINES

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INVENTOR
Lawrence G. Burkey
BY
W. H. H. H. H.
ATTORNEYS

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BUTTON FEEDING MECHANISM FOR
SEWING MACHINES

Lawrence G. Burkey, Cresson, Pa., assignor to S. Liebovitz & Sons, Inc., New York, N. Y., a corporation of New York

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4 Claims. (Cl. 112-113)

This invention relates to improvements in sewing machines and has particular reference to a button feeding mechanism therefor, the present application being a division of my co-pending application Ser. No. 375,484, filed January 22, 1941.

An object of the invention is to provide an improved button feeding device of simple and practical construction which will enable buttons to be fed to a delivery position of said device in such manner that each button will reach said position for proper application to a garment or other fabric to which the button is to be attached.

Another object is to provide improved means for feeding buttons from a hopper into a delivery chute only when the buttons are in proper position for a sewing operation, and for preventing entrance of any buttons from said hopper into said chute when the latter is filled.

A further object is to feed buttons onto the surface of a rotatable drum having recesses each adapted to receive a button to be fed to a delivery chute, and to provide a finger that engages in a groove passing through the bottom of said recesses so that the buttons in the latter will be dislodged therefrom as they are about to enter said chute.

The above and other objects will appear more clearly from the following detailed description when taken in connection with the accompanying drawing which illustrates a preferred embodiment of the inventive idea.

In the drawing:

Fig. 1 is a fragmentary side elevation of the button feeding device, partly in section.

Fig. 2 is an elevation of the button feeding mechanism with the hopper casing in section.

Fig. 3 is a top plan view thereof.

Fig. 4 is a section on the line 4-4 of Fig. 2, and

Fig. 5 is a detailed sectional view of a portion of the feeding mechanism taken on the line 5-5 of Fig. 2.

The button feeding device of the present invention is capable of use in conjunction with a sewing machine such as disclosed in the above identified application wherein means are provided for transferring buttons in succession and at proper intervals from the feeding device to a button clamp on the machine where said buttons are stitched onto a garment or the like.

Said device, as shown in its preferred form, comprises a hopper 22 from which the buttons are fed into a chute 23 and from thence transferred to the proper position for the sewing operation. Within said hopper 22 is located a rotatable drum 134 fixed upon a shaft 135 extend-

ing through the hopper, and said shaft is driven at a slow speed from a separate source of power such as an electric motor (not shown) through the medium of a pulley 136 loosely mounted on said shaft and operated by the drive belt 137; a clutch mechanism, generally indicated by the numeral 138, being utilized to drive the shaft from said pulley.

The hopper 22 is formed therein at one side thereof with a recess or compartment 139 in which the drum 134 revolves, and the remaining space within said hopper constitutes a button chamber 140 into which buttons are deposited through the open upper end of said hopper. Said recess 139 is formed within the hopper by an enlargement 141 which extends (see Fig. 2) from the point 142 adjacent the chute 23 downwardly around the wall of the hopper and upwardly to the point 143, and the space between said two points exposes the periphery of the drum 134 as it is rotated, and it is in this space that the buttons from the bottom of the chamber 140 are fed onto the periphery of the drum preparatory to being discharged into the chute 23. In order to convey the buttons from the bottom of the hopper upwardly towards said space, the side of the drum adjacent the chamber 140 has secured thereto a plurality of conveyor elements 144 in the form of diagonally disposed plates each of which will pick up one or more buttons as the drum is rotated and convey the same upwardly towards the point 143. At this point, the portion 141 is provided with inclined surfaces, as indicated at 145, upon which the buttons will be discharged from each conveyor 144 due to the inclination of the latter. The surfaces 145 tend to center the buttons upon the surface of the drum so that each button will come to rest thereon adjacent one of a plurality of button receiving recesses 146 formed in the periphery of the drum. Each recess 146 has its bottom conforming substantially in shape to that of the normal upper surface of the button so that if the latter, when deposited upon the drum, is in an upside down position it will become seated in one of the recesses, as illustrated in Fig. 2. Should, however, a button be right side up on the drum, it will not enter a recess and will be ejected from the surface of the drum, as will later appear, before reaching the chute 23. In other words, only those buttons which become seated in a recess in an upside down position will be fed from the hopper into the chute so that when the button reaches the delivery position for transfer to the button clamp of the sewing

machine, said button will be in the right side up position.

To aid in guiding a button into one of the recesses as it is deposited upon the drum, the latter carries on its periphery between adjacent recesses small follower lugs 147 which engage a button as the drum rotates. After a button has been seated in a recess and travels toward the delivery chute 23, it is retained in its recess by passing under small leaf springs 148 secured to an adjacent side wall of the hopper 22. The periphery of the drum has formed therein an annular groove 149 which extends centrally through the bottom of the recesses 146, and at the upper entrance of the chute 23 there is disposed a finger 150 which engages in said groove and beneath a button in one of the recesses 146 so that as the latter is about to be discharged into said chute, said finger will lift the button from its recess so as to facilitate its discharge into said chute.

In order to deflect those buttons from the drum which are not in proper position and seated in a recess, there is provided adjacent the entrance to the chute a diagonally disposed deflector plate or baffle 151 arranged in the path of movement of the buttons on the drum and having its lower edge spaced sufficiently from the periphery of the drum to permit those buttons within the recesses 146 to pass beneath the deflector or baffle and thus enter the chute to be fed downwardly therethrough by gravity. However, those buttons which have not assumed an inverted position and become seated in the recesses 146 will strike against the baffle 151 and thus be deflected thereby back into the button chamber 140.

After a button has passed beneath the baffle 151, it comes in contact with a guide plate 152 (see Fig. 5) and the button is conveyed diagonally from this point to the entrance of the chute 23. This guide plate 152, by causing the buttons to move in a diagonal direction, provides a means for preventing an excessive number of buttons from entering the chute. In other words, should said chute become completely filled, as indicated in Fig. 5, the last button 153 to enter into the channel formed by the guide plate 152 will form an abutment for the next succeeding button 154 which is carried beneath the baffle 151, and the latter button striking against the button 153 in an off-center position relative thereto, will be deflected from the drum and will fall down into the chamber 140.

As previously stated, the drum 134 is continuously driven from the pulley 136 by a clutch mechanism 138. This mechanism comprises a ratchet 155 fixed upon the shaft 135, and further includes an arm 156 secured to the pulley 136. Pivoted to the outer end of the arm 156 is a pawl 157 having its free end connected to the other extremity of said arm by a coil spring 158 which is of sufficient tension to normally maintain a pin 159 on the pawl 157 in engagement with the ratchet between two of the teeth thereof so that as the pawl is driven by the rotation of the pulley, it will rotate the ratchet and thus revolve the drum. However, should a button become temporarily lodged beneath the baffle plate

151, it becomes necessary to dislodge said button so that the drum can continue to rotate and feed other buttons to the chute. Should such a contingency arise, the pulley 136 continues to drive the pawl 157, but the pin 159 will now ride over the teeth of the ratchet 155 and, in so doing, each time said pin is snapped into a recess between two adjacent teeth of the ratchet by the action of the coil spring 158, sufficient vibration will be imparted to the drum 134 to dislodge the jammed button which will then either pass beneath the baffle 151 or be deflected back into the button chamber.

What is claimed is:

1. In a button feeding device for a sewing machine, a hopper for containing buttons, a rotatable drum positioned within and to one side of said hopper and having button-receiving recesses in the periphery thereof, a chute extending from said hopper into which buttons are fed from said drum, button pick-up elements projecting from the side of said drum and operable to convey buttons from said hopper onto the periphery of said drum, means to guide buttons to said recesses, and means adjacent said chute to eject such buttons which fail to become seated in said recesses.

2. In a button feeding device for a sewing machine, a hopper for containing buttons, a rotatable drum positioned within and to one side of said hopper and having button-receiving recesses in the periphery thereof, a chute extending from said hopper into which buttons are fed from said drum, button pick-up elements projecting from the side of said drum and operable to convey buttons from said hopper onto the periphery of said drum, means to guide said buttons to said recesses, means adjacent said chute to eject such buttons which fail to become seated in said recesses, and further means to prevent entrance into said chute of buttons in said recesses when said chute is filled.

3. In a button feeding device for a sewing machine, a hopper in which buttons are contained, a drum rotatable in said hopper and having button-receiving recesses therein, a chute extending from said hopper into which buttons are fed from said drum, means carried by said drum operable as the latter rotates to convey buttons onto said drum, means to guide said buttons into said recesses, a baffle positioned at the entrance to said chute to deflect from said drum those buttons which are not seated in said recesses, and means to vibrate said drum should a button seated in one of said recesses fail to pass said baffle and enter said chute.

4. In a button feeding device for a sewing machine, a button hopper, a rotatable drum having recesses for receiving buttons from said hopper, a chute into which buttons are fed from the recesses in said drum, a baffle positioned at the entrance to said chute to deflect from said drum those buttons which are not seated in said recesses, and means to vibrate said drum should a button seated in one of said recesses fail to pass said baffle.

LAWRENCE G. BURKEY.