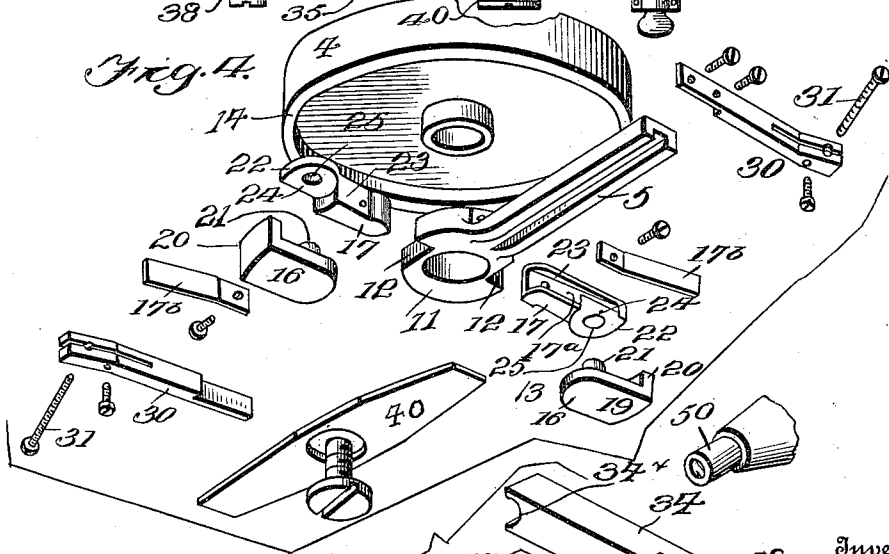
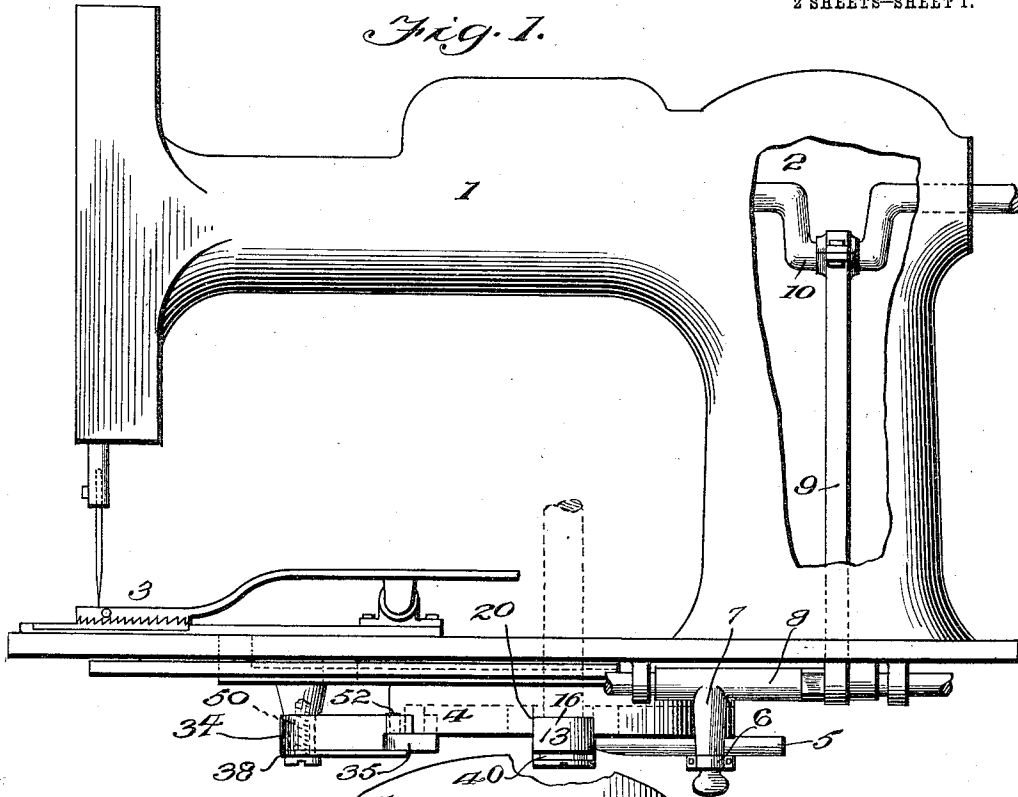


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APPLICATION FILED AUG. 3, 1912.

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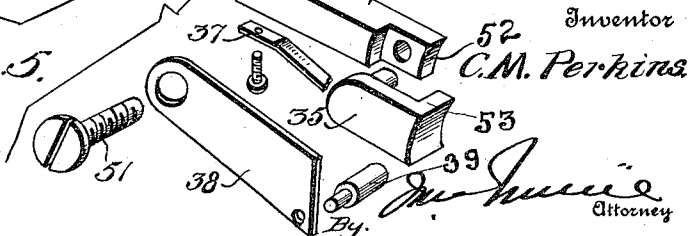
Patented June 10, 1913.

2 SHEETS-SHEET 1.



Witnesses
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Fig. 5.



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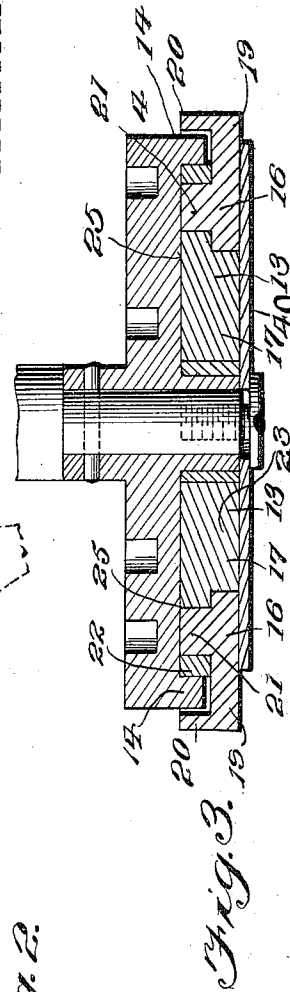
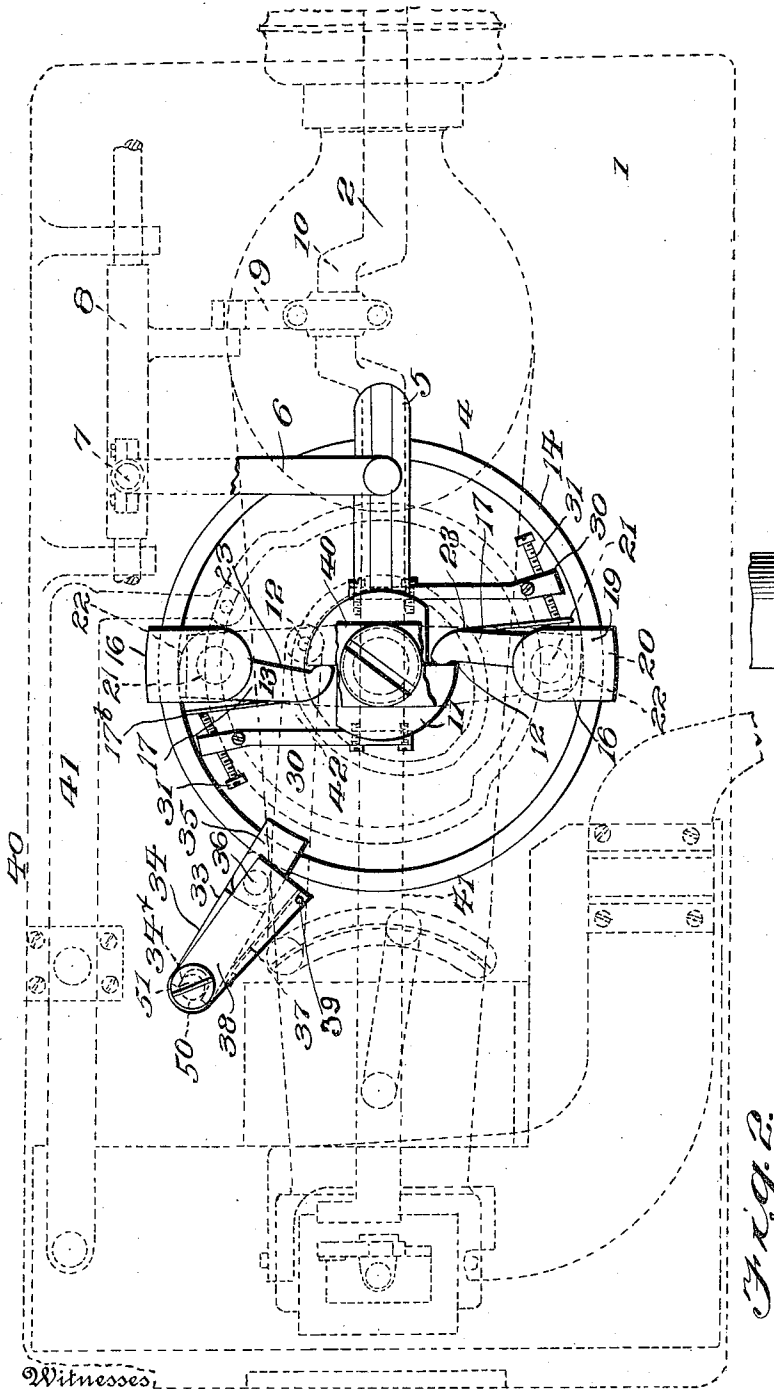


Fig. 2.

Fig. 3.

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FEEDING MECHANISM FOR BUTTONHOLE-MACHINES.

1,064,533.

Specification of Letters Patent.

Patented June 10, 1913.

Application filed August 3, 1912. Serial No. 713,187.

To all whom it may concern:

Be it known that I, CHARLES M. PERKINS, a citizen of the United States, residing at Cohoes, in the county of Albany and State of New York, have invented certain new and useful Improvements in Feeding Mechanism for Buttonhole-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in feeding mechanism for buttonhole machines.

Heretofore the dogs employed for gripping the feed cam which imparts the intermittent movement to the feeding means have been set so that when tilted by the operating lever the edges of the dogs would engage the feed wheel by what has been termed "cramping." That is to say the operative surfaces of the dogs frictionally engage the feed wheel with the result that the feeding mechanism fails at times to operate properly. In the practical operation of buttonhole machines it has been found that the "cramping" action of the dogs is ineffective and wholly unreliable. When grease or dirt accumulates on the surfaces of the feed wheel the dogs will invariably slip, consequently causing inferior stitching. Then again, when the edges of the dogs begin to wear, they fail to take hold of the feed wheel, particularly when the surfaces are oiled.

According to my invention, I provide the dogs with means for positively clamping the feed cam, so that even if the surfaces should wear or be oiled, the effectiveness of the dogs cannot be impaired.

My invention therefore relates particularly to means for insuring of the feed wheel being intermittently moved uniformly the same distance every time the dogs are operated so as to insure absolutely of the proper timing of the movement of the feeding clamp.

The invention also comprehends improvements in the details of construction and the arrangement of parts which will be hereinafter described and particularly pointed out in the claims.

In the drawings: Figure 1 is an eleva-

tion of a button hole sewing machine, illustrating the application of my invention, the sewing machine being conventionally shown. Fig. 2 is a bottom plan view, the sewing machine being indicated in dotted lines. Fig. 3 is a detail transverse section taken through the feed wheel. Fig. 4 is a perspective view of the feed wheel and the parts forming the dogs, separated. Fig. 5 is a detail perspective view, parts separated, of the holding dog.

1 indicates a button hole sewing machine of any appropriate type; 2, the power shaft thereof; 3, the work clamp; and 4, the feed cam. The feed cam is mounted on a shaft in the usual manner, and to the hub is secured a lever 5, connected by a link 6, with a depending lug 7, on a rock shaft 8. The rock shaft is operated by a pitman 9, mounted on a crank 10, on the power shaft 2. The end of the lever 5, which fits over the hub of the cam wheel is formed with an enlarged head 11, formed on its periphery with two abutments 12—12, which operate dogs 13—13.

The feed cam is provided with the usual depending flange, indicated at 14, on which the dogs 13—13 operate. There are two dogs, but as they are exactly alike, a description of one will be sufficient. Each dog 13, comprises two members 16 and 17, pivoted one on the other. The member 16 comprises a base 19, and a lip or flange 20, the latter engaging the periphery of the flange 14. The member 16, is also formed with a stud 21, to form the pivotal connection between the members. The member 17, comprises a head 22 and an extension 23. The head is reduced in thickness to form a seat 24, to receive the member 16, and this reduced portion is formed with an opening 25, in which fits the stud 21, whereby to complete the pivotal connection between the two members. In one face of the member 17, is a depression 17^a, to receive a leaf spring 17^b, the free end of which overlaps the member 16 but normally stands out from the same as shown in the drawings. The head 22 lies adjacent the inner surface of the flange 14 while the lip or flange 20, holds a similar relation to the outer surface of said flange, whereby when the dog is operated both surfaces of the flange are clamped, as will be described. The inner end of the extension 23 is arranged against one of the abutments 12, so that upon move-

ment of the lever 5, the dog will be operated.

Secured to the head 11, of lever 5, are two arms 30—30, one for each dog 13. In each arm 30, is an adjustable screw 31, which bears against the leaf spring 17^b. These screws 31, serve to reset the dogs to normal position. When the lever 5, is returned after operation of the cam wheel this operation is substantially the same as that practised in machines of this type now in use.

A cover plate 40, is screwed to the shaft of the feed wheel and extends over the dogs, so as to protect them and hold them in their relative position between the head 11 of lever 5 and the flange 14 of the feed wheel.

To insure of the cam imparting the proper intermittent movement, that is to prevent it tending to move back while the feed dogs are returning to normal position, I may employ a holding dog, indicated at 33, similar in construction to the dogs 13. The dog 33 comprises two members 34 and 35, pivotally connected to each other at 36 and provided with a leaf spring 37 and a protecting plate 38. This dog is located intermediate the dogs 13, as clearly shown in Fig. 2. The outer end of the member 34, is formed with a groove 34^x, which engages a stud 50, on the bed plate of the machine. The inner end of the member 34, forms a shoe 52, which bears against the periphery of the flange 14. The member 35, overlies the flange 14, and is formed with a flange 53, which engages the inner surface of flange 14, which with the shoe 52, tightly clamp the flange 14, when the feed cam tends to reverse its movement. The spring 37, is fastened to the member 34, and its free end engages a pin 39 secured to the plate 38. Plate 38, is secured to the stud 50, by a set screw 51. By adjusting the plate 38, and set screw 51, the tension of the spring 37, can be regulated.

In operation, as the power shaft 2 revolves the lever 5 will be horizontally oscillated, consequently the abutments 12—12 will contact with the ends of the extensions 23—23 of the dogs 13. The partial rotation of the members 17 will cause the heads 22—22 to clamp against the inner surface of the flange 14 and will at the same time, by reason of the location of the pivots 21, cause the lips or flanges 20—20 to be drawn against the periphery of the flange 14 and clamp same. Hence the flange 14 is tightly clamped at two points between the heads 22 and the lips 20, and as lever 5 continues to move, the cam wheel is partially rotated and motion is imparted through levers 40 and 41 to the clamp and feeding mechanism in the usual manner. Upon the return stroke of lever 5, pressure of the abutments is removed from the extensions 23 of the dogs.

The leaf springs 17^b immediately reset the members of the dogs, and break the clamping action and by reason of the location of the screws 31, the dogs are returned to their normal position for the next clamping operation. When the dogs 13, are released, and should the feed wheel tend to move with them toward the normal position, the shoe 52, which is gently pressed against the flange 14, will be slightly rocked, and through the pivotal connection 36, member 35 will be rocked, and thereby the flange will be tightly clamped and held against movement in the reverse direction. Of course, when the dogs 13, are returned to normal position and start to move the cam wheel to operate the feeding mechanism, the members 34, and 35, are separated from the flange 14.

The plate 38, is designed to perform a dual function. It holds the members 34 and 35 in position between flange 14, and the stud 51, and it also serves to adjust the spring 37.

From the foregoing description it is evident I have provided a simple and economical means for positively clamping the feed cam which will under the most unfavorable circumstances insure of the proper movement being imparted to the feeding mechanism. The construction and arrangement of the parts forming the dogs constitute toggles, consequently the greater the resistance exerted by the abutments, the more effective will be the clamping action.

What I claim is:—

1. In a sewing machine, the combination of stitch forming mechanism, a relatively movable work holder, a feed wheel for producing the relative movements between the work holder and the stitch forming mechanism, a dog cooperating with the feed wheel, comprising two members pivoted together on the same pivot adapted to form clamping jaws which engage the feed wheel, means for operating the two members to turn them on their pivot to cause them to clamp the feed wheel, and for reversely operating said members to destroy the clamping action of said members.

2. In a sewing machine the combination of stitch forming mechanism, a relatively movable work holder, a feed wheel for producing the relative movements between the work holder and the stitch forming mechanism, said feed wheel having a flange, an oscillating lever having two abutments and operating over the feed wheel, dogs on the feed wheel, each dog comprising two members pivoted together and lying adjacent opposite sides of the flange, one of the members having an extension, the extensions of the members being in the path of movement of the abutments, whereby when the oscillating lever is operated in one direction the members of the dogs will be partially

rotated to clamp the flange and move the feed wheel, and means controlled by the oscillating lever to release the members from the flange when the oscillating lever is returned to normal position.

3. In a sewing machine the combination of stitch forming mechanism, a relatively movable work holder, a feed wheel for producing the relative movements between the work holder and the stitch forming mechanism, said feed wheel having a flange, an oscillating lever having two abutments and operating over the feed wheel, dogs on the feed wheel, each dog comprising two members pivoted together and lying adjacent opposite sides of the flange, one of the members having an extension, the extensions of the members being in the path of movement of the abutments, whereby when the oscillating lever is operated in one direction the members of the dogs will be partially rotated to clamp the flange and move the feed wheel, a leaf spring secured to the inner member of each dog, the outer end of the spring overlapping both members of the dog, arms projecting from the oscillating lever, screws extending from the arms and bearing on the leaf springs to release the members from the flange when the oscillating lever is returned to normal position.

4. In a sewing machine, the combination of stitch forming mechanism, feeding mechanism including a feed wheel with a flange, an oscillating lever, a dog including two members pivoted together on the same pivot and adapted to engage the flange, one of said members being in the path of movement of the oscillating lever, whereby to partially rotate both members to clamp the opposite sides of the flange when said lever is moved in one direction, and means controlled by the oscillating lever to release the clamping action of the pivoted members when said lever is moved in the opposite direction.

5. In a sewing machine, the combination of stitch forming mechanism, feeding mechanism including a feed wheel provided with a flange, dogs cooperating with the flange, each dog comprising an outer mem-

ber having a lip to engage the periphery of the flange and an inner member having a seat for the outer member and an eccentric head to engage with the inner surface of the flange, the inner member having an extension and a leaf spring secured thereto, the outer end of the spring overlapping both the inner and outer members, means for pivotally connecting the two members of each dog, an oscillating lever having abutments which contact with the extensions and partially rotate the members of the dogs to clamp the flange, arms extending from the oscillating lever, adjusting devices carried by the arms to engage with the leaf springs to disengage the members from the flange when the oscillating lever is returned to its normal position.

6. In a sewing machine the combination of stitch forming mechanism, feeding mechanism including a feed wheel having a flange, an oscillating lever, dogs operated by the oscillating lever to clamp the flange to operate the feeding mechanism, and a holding dog including two pivoted members for clamping the flange to prevent backward movement of the feed wheel when the oscillating lever is returned to normal position.

7. In a sewing machine, the combination of stitch forming mechanism, feeding mechanism including a feed wheel having a flange, an oscillating lever, dogs operated by the oscillating lever to clamp the flange to operate the feeding mechanism, and a holding dog including two members pivoted together and engaging opposite sides of the flange, a spring on one of the members, a plate for retaining the members in position, a lug extending from the plate and engaging the spring, and means for adjusting the plate to regulate the tension of the spring.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES MARTIN PERKINS.

Witnesses:

HENRY A. STRONG,
GEO. W. ANDREW.