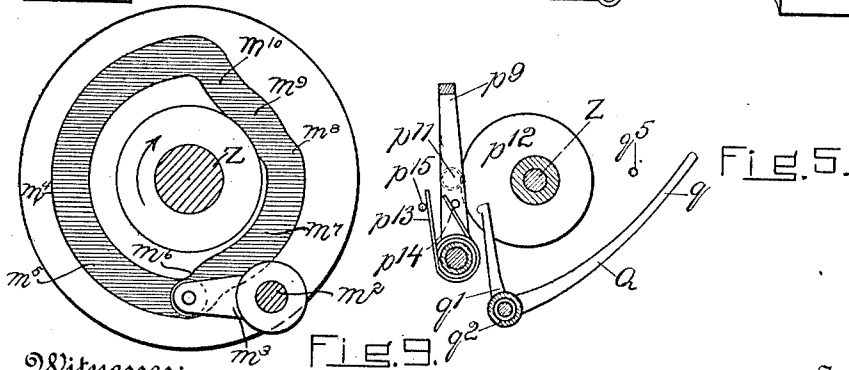
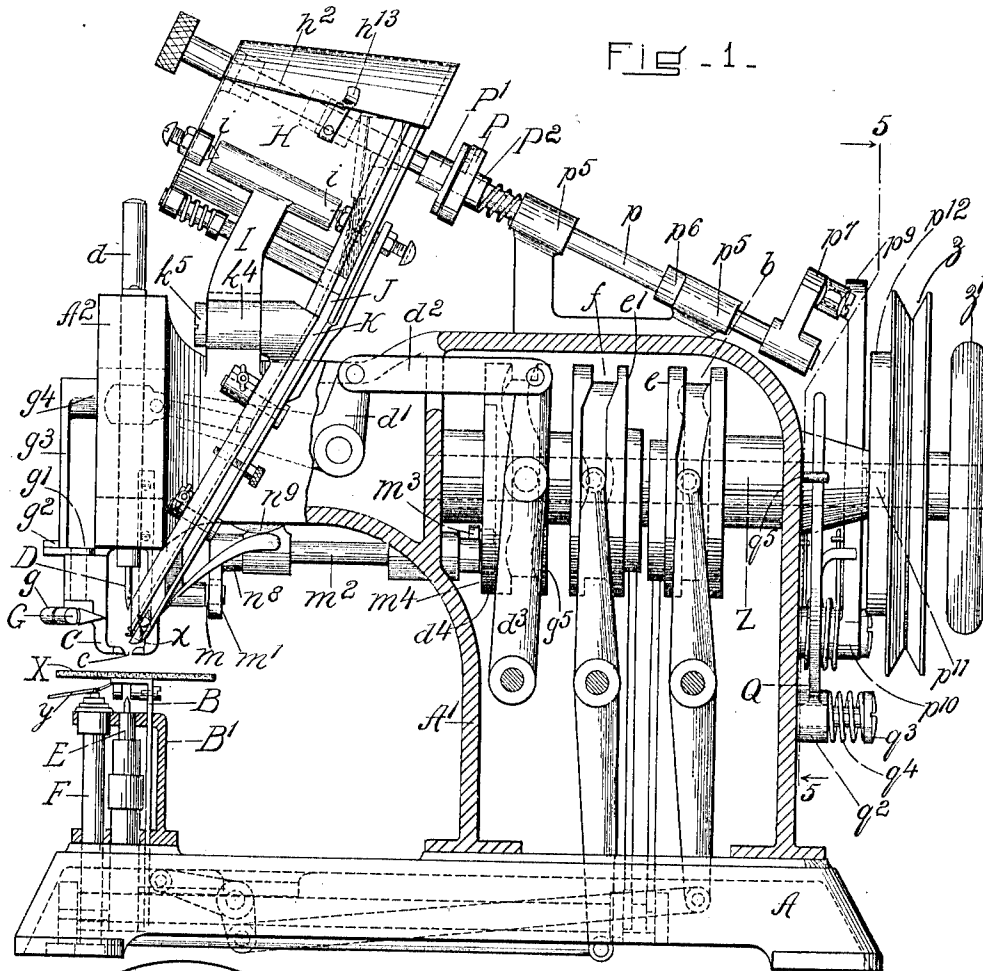


J. KIEWICZ.
 BUTTON ATTACHING MACHINE.
 APPLICATION FILED OCT. 14, 1911.

1,063,885.

Patented June 3, 1913.

2 SHEETS—SHEET 1.



Witnesses:
 E. B. King
 M. R. Manning

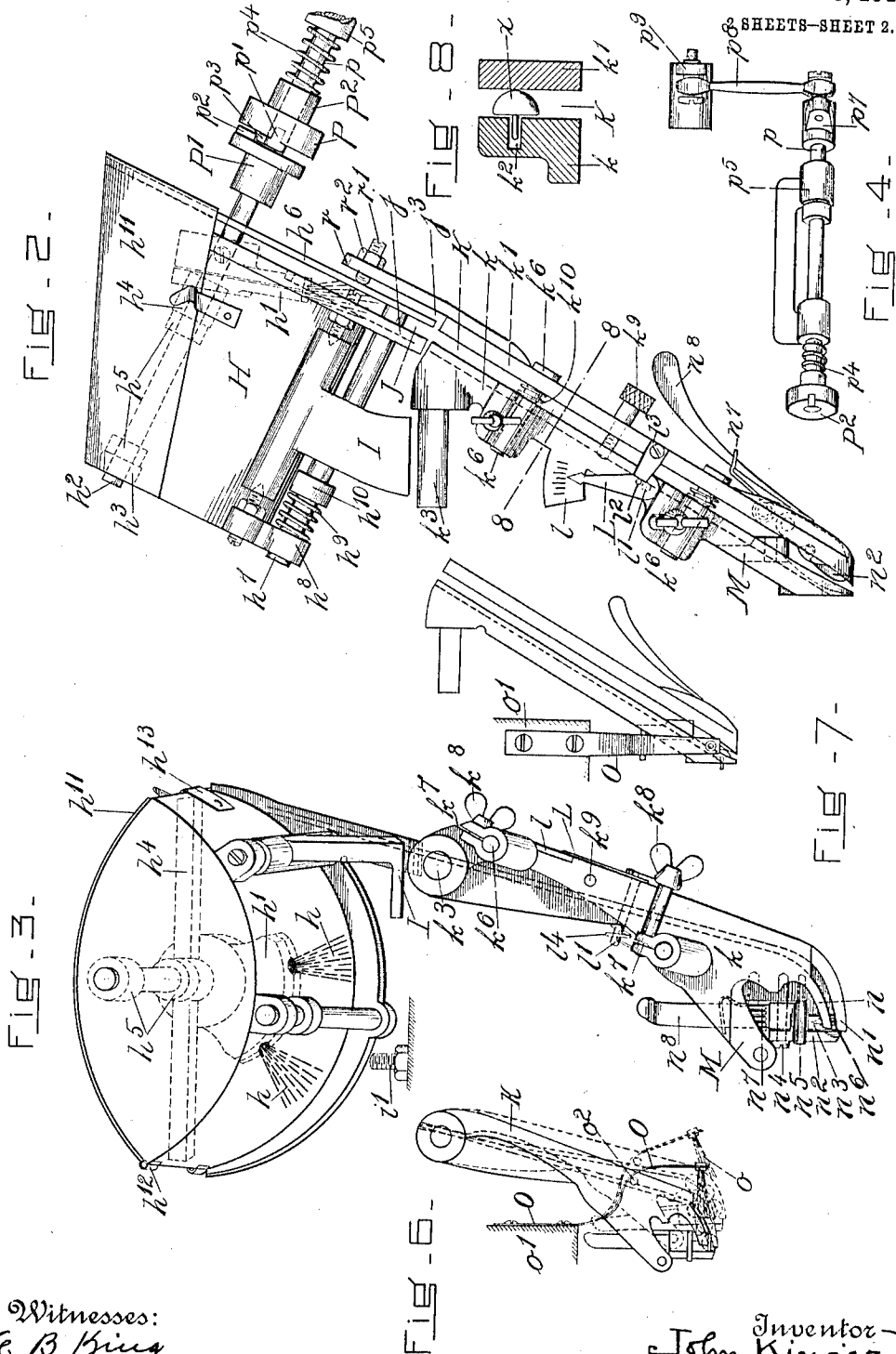
Inventor—
 John Kiewicz,
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UNITED STATES PATENT OFFICE.

JOHN KIEWICZ, OF HYDE PARK, MASSACHUSETTS, ASSIGNOR TO THE REECE BUTTON HOLE MACHINE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MAINE.

BUTTON-ATTACHING MACHINE.

1,063,885.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed October 14, 1911. Serial No. 654,760.

To all whom it may concern:

Be it known that I, JOHN KIEWICZ, a citizen of the United States, residing at Hyde Park, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Button-Attaching Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to button sewing machines and more particularly to that type of button sewing machine wherein a plurality of shank-eyed buttons (such as shoe buttons) are sewed successively and at spaced apart points upon any given article (such as a shoe); a prior example of that type of machine which may be referred to for convenience, being that illustrated in U. S. Patent No. 886,826, patented May 5, 1908.

Among the objects of the present improvements are the production of a novel, simple and direct acting machine, one which may operate at high speed, and will possess great durability and ease and quietness of operation.

Other objects are to enable the ready adjustment of the machine for different sizes of buttons, to adjust the foremost button or insure its proper position in line with the needle, and to enable certain parts of the mechanism to be thrown into and out of operation at will.

Further objects and advantages in the present improvements will be described or will be understood in the following specification.

For convenience I have shown the present improvements as applied to the type of machine illustrated in prior Patent No. 886,826 before referred to, in which type of machine a primary thread loop is first formed and drawn through the eye of the button, followed by the formation of a secondary loop drawn through the fabric adjacent to the first loop and then interlocked with the first loop by being drawn through it, and thereafter spread over the head of the button; the work being automatically fed between the formation of the first and second loop and between the attachment of two successive buttons by a work feeding mechanism fully shown and described in said prior patent and not *per se* forming any part of the present improvements.

I will first describe an embodiment of the present improvements and will thereafter point out the novel features in the claims.

In the accompanying drawings forming a part hereof, Figure 1 is a front elevation partly in section of a button sewing machine embodying my present improvements. Fig. 2 is a separate and enlarged view of the button feeding mechanism detached from the rest of the machine. Fig. 3 is a left end view of the button feeding mechanism shown in Fig. 2. Fig. 4 is a plan view of part of the connections between the button reservoir and operating cam. Fig. 5 is a section taken on the plane 5—5 of Fig. 1, shown in reduced scale. Fig. 6 is a separate view of the mechanism shown in the lower part of Fig. 3 with the button adjusting devices added thereto. Fig. 7 is a front view corresponding to Fig. 6, that is to say showing the lower part of Fig. 2 with the button adjusting devices added thereto. Fig. 8 is a cross-section of the button chute taken on the plane 8—8 of Fig. 2. Fig. 9 is a left-hand face view of the cam m^4 through which the chute's vibration is effected.

Similar letters of reference designate corresponding parts in the several figures of the drawings.

I will first describe some of the general machine parts which are not new herein but are well known in this type of machine. Thus the base A supports a head A' shown as a hollow casting containing cams, etc., the upper portion of said head being formed into a horizontally extending arm A² which overhangs the sewing position.

It should be explained that the work X which may be a piece of leather, is supposed to be fed from the observer in Fig. 1 while the buttons x are sewed thereto by means of the thread y drawn from the usual spool or supply. A work support B mounted for convenience in a housing B' is yieldingly upheld so as to press the work against the presser foot C above the work when the latter is not being fed; and a cam b may be employed for depressing the work support during those periods when the work has to be fed in the process of attaching a row of buttons to the work. The connections between cam b and work support B will not be further described as they *per se* form no part of the present invention and are well

known to and understood by those skilled in the art. A main shaft Z shown in dotted lines in Fig. 1 may be of ordinary arrangement and operation and will have secured upon it substantially all of the operating cams of the machine. At the right hand of main shaft Z will be seen a pulley z loose on the shaft, adapted to be continuously driven when desired by a power belt, also a hand wheel z' to facilitate certain manual operations of the main shaft, as will be well understood. Any ordinary clutch mechanism between driving pulley z and shaft Z may be employed whereby the shaft may be disconnected and the machine remain substantially idle though the pulley be in operation. This, as will hereinafter appear, permits the mechanism in the button reservoir to be kept continually in operation by driving it from the pulley instead of the shaft.

In the machine to which the present improvements are shown as applied, the needle D is of the type having a hook instead of an eye, it passing downwardly through the work from above to where the thread mechanism is located and serving to draw a loop up through the work and through the eye of the button or through the primary loop as the case may be. The needle D is shown secured at the lower end of needle bar d which is fitted to slide vertically in the arm A^2 , and said needle may be reciprocated in any well known manner, as for example through bell crank d' , link d^2 and arm d^3 , the latter having a pin which engages in the cam slot of a cam d^4 mounted on the main shaft Z. It will be understood that the presser foot C is bifurcated, thus providing an aperture at c which permits the passage of the needle therethrough and also permits the line of attached buttons to pass along with the feeding of the work.

For feeding the work any convenient means such for example as the feed prong E, may be employed, said prong having upward and downward movement to enable it to engage in and disengage from the needle holes in the work, and having also horizontal vibration for causing the movements of the work in a direction from the observer in Fig. 1. The mountings of this feed prong and its operative connections need not be described since the same are fully set forth in said prior patent No. 886,826 and form *per se* no part of the present invention, although it may be stated that a cam groove at e operates the connections for raising and lowering the feed prong, while cam groove at e' operates the connections for causing the to-and-fro swinging of the feed prong.

The contour and therefore the timing of all of the cams herein shown and described will be such as to cause the different instrumentalities to harmoniously coöperate for

forming the thread loops and locking them with the buttons into attaching knots.

Sufficient of the thread mechanism is shown for the purposes of illustration, there being a looper bar F carrying a looper at its upper end, through which the thread y passes, said bar adapted to swing the looper at proper times so as to carry the thread into the hook of the needle, whereby the needle may draw the loop upward through the work; and the swinging of the looper may be effected by mechanism actuated by the cam f on the main shaft Z.

A loop spreader G is conventionally shown, it being shown mounted to oscillate about a short horizontal shaft g and also about a vertical shaft g' , the latter being oscillated by means of a link g^2 connecting it with an arm g^3 , in turn oscillated by a horizontal shaft g^4 located at the rear of the machine and extending to the right where it is actuated by a cam groove at g^5 on the main shaft Z.

The ordinary or any suitable cast-off to coöperate with needle D will be understood and is omitted for clearness.

The mechanisms above described are all known in the art and no claim of novelty to them *per se* is made herein.

I will now describe a novel construction and arrangement of button reservoir and chute, and the means to operate the same.

According to the present improvements the reservoir is supported so as to remain stationary during the operation of the machine, that is to say so that it shall not partake in the oscillating movements of the chute, while the chute leading from the reservoir to the sewing position is so pivoted or mounted as to oscillate in the attachment of each button, without affecting or causing movements of the reservoir. By this a great advantage is gained in the reduction of the weight of the oscillating parts, greater simplicity of movement is secured and superior durability and quietness of operation. This severance of the chute from the reservoir may in one sense be considered merely as a division of the button passage or of the chute itself into two parts, the lower of which is pivoted for oscillating movement, while the upper of which including the reservoir is stationary.

The reservoir H, as already stated, is substantially stationary, at least during the button attaching operations. Incidentally the reservoir is so mounted that when button attaching is not proceeding the reservoir may be tipped over or inverted for the purpose of emptying the remaining buttons into the hand or a receptacle. For this purpose a fixed bracket I has the forward side of the reservoir pivoted to it at i , i , the reservoir when in normal position resting upon a fixed stop i' , Fig. 3, conveniently located

in the machine, and being locked in that position by the engagement of the clutch P hereinafter to be referred to.

The reservoir containing a loose body of buttons, it will be understood that an agitator is required to cause the continual tumbling of the buttons so as to keep the feed chute J K filled by reason of the entrance into the upper end thereof of those buttons which by chance correctly strike the opening or exit leading to the chute. Generally such an agitator has been well known, consisting of one or more brushes moving in the body of buttons for sweeping or tumbling them in the vicinity of the exit passage. Herein is shown a pair of brushes h , h mounted on a brush stock h' which in turn is mounted on a shaft h^2 shown arranged axially with the reservoir casing and having bearings in a bearing piece h^3 at one end and a cross bar h^4 , the shaft having collars h^5 , h^5 for holding it longitudinally in position. A rotation or oscillation of the shaft h^2 will cause the brushes to sweep through the very lowermost portion of the reservoir's interior, whereby the buttons there located will be moved upwardly to one side into proximity with the exit passage.

For a reason that will hereinafter appear the reservoir H and shaft h^2 are inclined, the incline being in a direction extending downwardly to the right in Figs. 1 and 2.

The lowermost end wall h^6 of the reservoir is movable to a slight extent as a matter of adjustment for a purpose that will hereafter appear, said movement being permitted by a sliding rod h^7 , the lower end of which is secured to the wall h^6 , and the upper end of which slides through a bearing h^8 , there being a spring h^9 confined between said bearing and collar h^{10} on the rod for giving a tendency to force the wall h^6 downwardly or outwardly to keep it in contact with the adjusting member hereinafter to be referred to.

The reservoir is provided with a cover h^{11} hinged at h^{12} at the rear side and yieldingly held by a spring clasp h^{13} at the front so that the reservoir may be easily opened at its upper side either for supplying further buttons thereto or for emptying out the remaining buttons when the reservoir is swung forwardly as has been previously described.

Before describing the manner of actuating the agitator, I will describe the button chute J K and its relation to the reservoir, and its manner of operation and actuation. The button feeding chute has been designated by two reference letters J K because the lower portion K has been rendered entirely separate from or detached from portion J. In one aspect the upper portion J is merely a part of or an extension from the reservoir H. The two sections

J K are shown as each comprising a non-adjustable member j , k , containing a slot or kerf in which the button eyes or shanks travel, and a relatively adjustable member h^6 opposed to member j , and k' opposed to member k . The adjustable member h^6 is the same part that has already been referred to as the lower end wall of the reservoir. The cross-section in Fig. 8 clearly shows the relation of the non-adjustable and adjustable portion and the kerf k^2 , it being understood that the buttons are fed uniformly in procession with their heads confined between members k , k' and guided by the button eye engaging the kerf k^2 . The button exit from the reservoir is similarly constructed and is such that no buttons can pass down the chute save those which shall adjust themselves in the designated position in the chute. At the point of division j^3 between the lower chute member K and the parts above it, a slight space is shown, but this need be only large enough to permit the oscillation of the chute K and may be absent so that the parts are actually in contact if designed for that purpose. It will be understood that for the purposes of the oscillation of chute K the reservoir and the extension J may be considered as stationary. It is preferred that the chute K shall oscillate about an axis or pivot so located and arranged as not to disturb the proper registry of the chute K with the button guiding members j , h^6 above it. For this purpose the oscillation of chute K may be about a horizontal pivot or pin h^3 whose axis is at or substantially near the division point j^3 before referred to. By this arrangement there will be a minimum motion of the chute members k , k' at the point j^3 and thereby the registry of the chute is least disturbed. The pivot pin h^3 may be mounted in a fixed bearing h^4 , Fig. 1, and there held by a suitable retaining collar h^5 . The axis of oscillation of the chute K being horizontal, and the lower end of said chute at the sewing point being substantially beneath said horizontal axis a most advantageous movement of such lower end is attained, it being in the arc of a large circle so that the motion is substantially in a straight line and is moreover practically horizontal and also directly forward and backward to and from the observer in Fig. 1. This motion co-operates in a most advantageous way with the sewing mechanism and at the same time permits the button reservoir to be located as shown at a convenient point well toward the right of the needle bar.

I will now describe the mode of adjusting the chute for different sized buttons and will thereafter explain the mode of actuating the chute to oscillate in harmony with the other mechanisms. The adjustable chute member k' is adapted to move toward and from the non-adjustable member k , this

movement being guided by a pair of headed guide pins k^6 , k^6 passing through the members k' and into recesses in member k , there being slots or kerfs at k' to permit a slight yielding of the metal and set screws k^8 whereby the recesses may be closed for binding and thereby locking the guide pins in any position to which they have been adjusted. When the set screws k^8 are loosened adjustment may be made by moving the member k' toward the member k for smaller sized buttons as follows. An adjusting screw k^9 passes loosely through the member k' about the center of its length and is threaded into a recess in the member k . By turning the adjusting screw in one direction it is caused to force the adjustable member k' toward the member k , upon which the set screws will be tightened. For widening the distance between the members, coil springs k^{10} are interposed, preferably surrounding the guide pins k^6 so as to force the two members apart when the adjusting screw is loosened. As it is a somewhat difficult and time consuming task to determine the precise adjustment which is best for any given sized button, I have provided a means for readily determining this without a test, this means or gage comprising a pointer L whose point or index passes along a scale l which is conveniently graduated for the purpose, and the graduations designated with numbers or other convenient designations. The pointer is pivoted at l' and is provided with a pin l^2 fairly near the pivot so that actuation of the pin will cause magnified movements of the index. The described parts are located on the chute member k , and opposite to them secured upon the chute member k' is an actuating extension l^3 . The extension l^3 may engage in any convenient manner with the pin l^2 and as shown it merely presses upon said pin for moving the pointer to the left, this movement being opposed by a light spring l^4 connected with the pointer tending to move the latter toward the right. Obviously for any given adjustment of the chute member k' the pointer will assume a certain position on the scale l and when once determined for any given sized button, the operator has merely to readjust the parts to bring the pointer to the same designation whenever the machine is again employed for that sized button.

I will now describe the manner of actuating the oscillating chute. For this purpose it has a rear extension M , Figs. 1, 2 and 3, and at the extremity of this extension is a horizontal pin m , Fig. 1, extending to the right where it engages in a radial slot formed in an arm or crank m' mounted to oscillate with a horizontal shaft m^2 having at its right-hand end an arm m^3 which is provided with a pin extending into a

cam or groove formed at m^4 in the side and face of one of the cam members on the main-shaft Z . By this arrangement the main shaft's rotation causes the oscillation of shaft m^2 and thereby the forward and rearward swinging of the button chute.

I will now describe to an extent sufficient for the purposes hereof, the coöperation of the button feeding chute with the button attaching mechanism, referring more particularly to Figs. 2 and 3. It will be seen that the foremost of the procession of buttons has been caused by the pressure of those behind it to sweep around a curve formed in the chute, this expedient having been well known heretofore and it serving to so change the position of the button that its eye will stand in a horizontal plane. Thus in Fig. 3 the button eyes would be pointing toward the observer and passing down the kerf indicated by the two dotted lines. At the foot thereof a button eye comes to view and takes the curve referred to. It is necessary, however, to prevent the button passing out of the chute as it might do if not prevented. At the lower extremity of the chute the kerf is converted into an open slot, thus forming two metal portions, an upper portion n and a lower portion n' which will be comparatively thin so that the button eye standing horizontally between them will extend outwardly sufficiently to enable it to readily receive the needle and thread loop. Near the guide ends n , n' are two movable members n^2 , n^3 , they both being mounted on so as to slightly oscillate about a horizontal pin n^4 fixedly secured in the chute member k . A common stop pin n^5 serves as a stop for both members n^2 , n^3 . Aside, however, from their common pivot pin n^4 and stop pin n^5 , the members n^2 , n^3 are independent in their action. Thus the member n^2 is merely a yielding button stop, it having a beveled face n^6 against which the foremost button head strikes, thus arresting the descent of the buttons, said button stop having a spring n^7 of sufficient strength to keep it firmly pressed against the stop n^5 , said spring being, however, sufficiently light to permit the button when attached to the work being jerked rearwardly from the chute past said yielding button stop n^2 . The function of member n^3 is to serve as a button clamp, it at times pressing toward the observer in Fig. 3 so as to clamp the button head against the guide ends and being released at other times to permit the attached button escaping. In this way the button is held securely in place with the eye projecting its full extent from the guide ends n , n' for coöperation with the loop forming needle. One convenient manner of operating the button clamp n^3 is to rigidly attach to it a stout spring n^8 which normally is pressed toward the left in Fig. 2 by one end of the same

spring n^7 which at its other end presses on the button stop n^2 , so that normally the button clamp n^3 is from the observer in Fig. 3 and therefore out of the way of the descending buttons, so as to permit them freely to feed downward whereby the foremost button may come accurately into position in contact with the button stop n^2 . In button attaching position the spring n^8 is acted upon by a stationary lug or surface n^9 , Fig. 1, formed on the arm A^2 of the machine. The parts are so arranged that the movement of the button chute inward or from the operator causes spring n^8 to contact surface n^9 so as to throw an outward pressure on said spring which in turn throws the button clamp n^3 forcibly toward the observer in Fig. 3, thereby clamping the button as before explained. The foremost button being now held in attaching position, it need not be explained in detail how the needle is driven through the button eye and work to gather a loop which is pulled up through the button eye, following which a slight relative movement occurs, for example of the work and button, preparatory to the descent of the needle a second time through the first loop but outside of the button eye for the purpose of gathering the secondary loop which is pulled up through the primary loop and afterward spread by the spreader G over the button head, the thread being at proper times during this operation drawn up so that in the end a tight knot will be formed securing the button to the work, after which the work shifts the distance between said successive buttons and operations are repeated.

In the form of machine shown, the needle vibrates in a fixed path. Consequently between its first and second descent there must be, as above stated, a slight relative movement, and this movement must include not only the work, but also the button and the button chute, at the mouth of which the button is clamped, although it is not important that the work should be so moved at the same time with, or at a different time from, the movement of the chute carrying the button. In Fig. 9 is seen a left-hand view of the cam m^4 which vibrates the chute, that cam having a groove engaged by a roller on arm m^3 mounted on the oscillating shaft m^2 which is connected with the chute. The cam m^4 has a concentric portion m^5 , and when this is engaged, the chute is in forward position. There is also an eccentric portion m^6 which serves to swing the chute inwardly to button attaching position, carrying the foremost button's eye beneath the needle. Then follows a concentric portion m^7 , during which the first loop is formed. Then follows an eccentric portion m^8 which causes a slight additional inward swinging of the chute for carrying the button eye be-

yond the needle's position as above explained. Then follows a concentric portion m^9 , during which the second loop is formed, after which is the final eccentric m^{10} which serves to swing the chute entirely to its full outward position preparatory to the attachment of the succeeding button.

I will now describe a button adjusting device forming a part of the present improvements, and which is of great utility and importance in securing the accurate operation of the machine and avoiding omission of buttons. Sometimes it would happen the foremost button in the chute would not take its proper place to receive the loop forming needle, and where that occurred the machine would proceed to form an abortive knot which required that the machine be stopped if the operator was so fortunate as to observe the defect in time, the machine being then reversed if possible to carry it back to the place where the button was omitted for a repetition of operations. In some cases elaborate improvements have been devised to enable the machine to be run backward to supply the omitted button. The present feature of improvement is designed to obviate all such difficulties by insuring that the foremost button takes its proper place. This new feature may be termed a button adjusting device and as will be seen, it may advantageously be employed in cooperation with a button stop, such for example as the yielding button stop n^2 before described. Gravity does not help the forward movement of the buttons lying in the horizontal part of the chute and moreover all buttons are likely to run with difficulty by binding against the sides of the chute or each other, especially when there may be buttons which are defective in construction. Usually no great force would be required to insure the forward movement of the buttons and in fact a light force is essential when a yielding stop is employed so as to prevent buttons being forcibly moved past said stop.

The problem being thus stated, I will proceed to describe my novel button adjusting device. It comprises a part having any desired construction, and which may be termed a brush, adapted to enter into the lower chute part, preferably the horizontal part thereof, and to actually contact one or more of the foremost buttons, lightly forcing them toward button attaching position. Specifically my device comprises such a brush which is fitted to oscillate out of and into the chute at each vibration of the latter so that gravity may have full effect in advancing the buttons as far as it may, the brush then coming into play as described and acting to adjust the foremost buttons as explained, in case they shall not have already taken the required positions. As shown the brush device coöperates both with the vibrating chute

and with a fixed machine part, it being attached to one of them and receiving motion by coöperation with the other. This device is omitted from Figs. 2 and 3 for clearness but is shown in Figs. 6 and 7 as consisting of a light metallic spring O, constituting a brush support with a brush *o* at the extremity thereof. While any swinging member might be used, a spring by its elasticity affords the swinging motion required and at the same time reduces the weight of the parts so that a light and delicate contact with the buttons is assured, the brush's action being non-positive, thus avoiding any over pressure which might force the foremost button beyond the yielding stop. The flexible brush support O is shown secured to a fixed frame part at *o'* and extending downwardly therefrom with a curve to off-set it for securing proper brush position. The brush must not only oscillate but must oscillate relatively to the vibrating button chute and this is secured by a pin *o''* mounted on the button chute and contacting the brush support O at a point intermediate the two ends of the brush support. Fig. 7 shows in front view the relation of the parts, indicating how the brush enters the chute for contacting the buttons. Fig. 6 shows the parts in two positions, namely with the chute swung inwardly to button attaching position in full lines, and outwardly in dotted lines; in the former case the brush *o* having actually entered the chute, its bristles pushing lightly against the buttons, in the latter case the brush having entirely withdrawn from the chute so as not to interfere with the feed by gravity of further buttons.

I will now describe the actuation of the button agitator which operates within the button reservoir in the manner previously described, and will point out the novel features embodied in such mechanism. The shaft *h*² to which the agitator is attached has already been referred to. Instead of continuously rotating that shaft I prefer to oscillate it, for which the following mechanism will serve. In line with shaft *h*² is a shaft *p*. Said two shafts are not connected excepting through a clutch P which comprises clutch member P' on shaft *h*² and member P² on shaft *p*. Fig. 1 shows the clutch engaged, and Fig. 2 shows it disengaged. Such disengagement may be effected by hand by the following simple mechanism. Member P² has a radial slot at *p'* which is adapted to engage, when the clutch is closed, with a radial lug *p*² on member P', and a similar lug *p*³ on member P². Member P² is capable of sliding longitudinally on shaft *p* and is pressed toward the other clutch member by a coil spring *p*⁴ located between member P² and one of the two bearings *p*⁵ which support the shaft *p*. In closed position the slot *p'* engages both lugs *p*², *p*³ and

in this position the oscillation of shaft *p* causes similar operation of shaft *h*². To disengage, the operator merely by hand forces member P² downwardly to the right against resistance of spring *p*⁴, thus disengaging the slot *p'* and by slightly turning member P² to the position shown in Fig. 2, said member can be brought to rest against the back of lug *p*³, in which position it will remain until restored. A valuable coöperation will be seen between this clutch and the type of reservoir which bodily swings forward when desired for emptying the buttons. Thus the clutch when in the closed position serves to lock the reservoir against rattling and against accidental opening during the operation of the machine. On the other hand the opening of the clutch permits the reservoir to be swung forwardly for emptying the buttons. A collar *p*⁶ on shaft *p* holds it against displacement.

For oscillating the shaft *p* the following connections at its lower end may conveniently be provided, the same being shown in front view in Fig. 1 and in top view in Fig. 4. Secured to shaft *p* by a collar is an arm *p*⁷, to the end of which a link *p*⁸ is pivotally connected, said link at its rear end being in turn connected to the upper end of a substantially upright arm *p*⁹ extending downwardly to where at *p*¹⁰ it is pivoted to a fixed part of the machine. Referring to Figs. 1 and 5, the arm *p*⁹ is shown to have provided a cam pin *p*¹¹ indicated in dotted lines in both figures, which bears on the surface of a cam or eccentric *p*¹² formed or secured on the side of the driving pulley *z* which it will be remembered is loosely mounted on the main shaft Z. To keep the cam pin *p*¹¹ constantly pressed against the cam *p*¹², a spring *p*¹³ is employed, it pressing at one end upon pin *p*¹⁴ on the arm *p*⁹ and at the other end against a pin *p*¹⁵ fixed to the head A' of the machine.

By the described arrangement the rotation of the driving pulley *z* and the cam *p*¹² causes the inward and outward oscillation of the cam pin *p*¹¹ which through the arm *p*⁹ and link *p*⁸ effects the oscillation of arm *p*⁷ and the shafts *p* and *h*². Moreover it will be seen that even when the main clutch of the machine is thrown out so that the button attaching mechanism is not in operation, the pulley *z* will nevertheless through its rotation cause the continued operation of the agitators *h*, which is desirable so that a partly filled chute will continue to have buttons fed to it though the operator may have for some purpose stopped attaching buttons.

Since it might be that during working hours the machine may be left unused for a time, an expedient is desirable for throwing not only the driving shaft but also the agi-

tators out of operation when desired, thus saving the wear and tear upon the agitators and their actuating mechanism. To this end a hand operated throw-out lever Q is provided, Figs. 1 and 5, it having two arms, namely arm q within reach of the operator, and arm q' , the two meeting in an integral member or sleeve q^2 mounted to oscillate about a pin q^3 with a spring q^4 interposed between the sleeve q^2 and the pin head. Normally the throw-out lever is in the position shown in Fig. 5 and the agitators are in operation, but when it is desired to throw the agitators out of operation the lever Q will be thrown to the position of Fig. 1 in which the arm q is brought to rest above a fixed stop pin q^5 . In this position the other arm q' of the throw-out lever is pressed against the upright arm p^3 before referred to so as to hold said arm and the cam pin p^{11} so far from the eccentric p^{12} as not to be contacted thereby during the rotation of driving pulley z . Thus the agitator mechanism is rendered idle. Moreover this throwing out of the agitator mechanism may be performed independently of the operation of the main shaft, as for example when the operator perceives that enough buttons are in the chute to complete the day's work.

On the movable chute member h' is seen an extension r projecting upwardly to a position behind the movable wall h^6 before referred to. This extension in a screw threaded recess has provided a threaded stop r' adjustable by reason of the screw threads and capable of being locked in any adjustment by the lock nut r^2 . This adjustable stop will be set as shown in Fig. 2 so that the movable wall h^6 being pressed downwardly and outwardly by the spring h^9 will bear against the stop and stand in alinement or registry with the movable wall h' of the chute. In this way the portion of the button passage which is in the reservoir is maintained in exact registry with the passage in the chute. This, it will be understood, is necessary to insure the free and unimpeded travel of the buttons.

The operation of the machine as a whole will be sufficiently understood from the above description and from the prior patent herein referred to.

It will be seen that by reason of the construction above shown and described a button machine is provided which answers the objects and affords the advantages of the invention as hereinbefore set forth; and other advantages will be apparent to those skilled in the art.

It is to be understood that the present invention in its broader aspects is not limited to the precise construction shown nor to any particular construction by which the invention has been or may be carried into effect, since many changes may be made in the de-

tails of the parts without departing from the main principles of the invention and without sacrificing its chief advantages.

While termed a button attaching or sewing machine, it will be understood that the present invention in its principles might be employed with articles other than buttons but analogous thereto, and the description and claims hereof are to be construed accordingly.

I do not limit myself to the precise expedient shown for maintaining the registry of the different sections of the button passage, since other expedients might be employed, as for example in cases where the vibration of the button chute is of a different character from the swinging vibration shown and described; and in some cases certain features of the present invention might be embodied though the continuity of the button passage were not maintained throughout the machine's operation.

The device hereinabove termed a brush which lightly brushes the foremost buttons into attaching position, might take any physical form and the word brush is used in a broad sense to include all devices capable of exerting a pressure for insuring the feeding of the foremost buttons into proper position.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A button attaching machine comprising in combination, a horizontal work plate, a button reservoir having a stationary button outlet, a vibratable slotted feed chute for conducting shank-eyed buttons downwardly from said outlet to the attaching mechanism and shaped to conduct the foremost button's eye into an exposed horizontal position over the work on said work plate, a vertically reciprocating needle mounted above the work plate, mechanism for actuating the needle in the attachment of each button, mechanism for feeding the work rearwardly over said work plate, and means for mounting and actuating said feed chute to vibrate relatively to the reservoir, needle and work plate first rearwardly to bring the foremost button to attaching position between the needle and the work and afterward forwardly to disengage the button and enable a thread loop to be passed over its head, said means comprising a horizontal lateral bearing or pivot located above the attaching position and in line with the point of union of said outlet and chute whereby the chute terminus has its motion in a plane parallel with both the direction of work feed and the direction of needle reciprocation.

2. A button attaching machine comprising in combination, a horizontal work plate, a button reservoir having a stationary but-

ton outlet, a vibratable slotted feed chute for conducting shank-eyed buttons downwardly from said outlet to the attaching mechanism and shaped to conduct the foremost button's eye into an exposed horizontal position over the work on said work plate, a vertically reciprocating needle mounted above the work plate, mechanism for actuating the needle to descend and rise twice in the attachment of each button for forming first a loop through the button eye and second a loop outside the button eye and through the first loop, mechanism for feeding the work rearwardly over said work plate between the attachment of two successive buttons and for giving the work a short movement between the formation of the first and second loops for each button, and means for mounting and actuating said feed chute to vibrate relatively to the reservoir, needle and work plate first rearwardly to bring the foremost button to attaching position between the needle and the work, then with the work in the aforesaid short movement thereof between loops, and afterward forwardly to disengage the button and enable the second thread loop to be passed over its head, said means comprising a horizontal lateral bearing or pivot located above the attaching position and in line with the point of union of said outlet and chute whereby the chute terminus has its motion in a plane parallel with both the direction of work feed and the direction of needle reciprocation.

3. A button attaching machine comprising in combination a button reservoir, a feed chute for conducting the buttons from said reservoir to the attaching mechanism, said chute comprising two members with a button passage between them, means for adjusting one member toward or from the other to accommodate varying buttons, and a gage for indicating the adjustment thereof, said gage comprising a revolving pointer mounted on one of said members, and means whereby said pointer is actuated from the other member.

4. A button attaching machine comprising in combination a button reservoir, a feed chute for conducting buttons from said reservoir to the attaching mechanism, said chute comprising two members with a button passage between them, means for adjusting one member toward or from the other to accommodate varying buttons, and a gage for indicating the adjustment thereof, said gage consisting of a spring pressed pointer on one member actuated by the other member.

5. A button attaching machine comprising in combination, a button reservoir, a feed chute for conducting the buttons from said reservoir to the attaching mechanism, said chute comprising two members with a

button passage between them, means for adjusting one member toward or from the other to accommodate varying buttons, and a gage for indicating the adjustment thereof, said gage comprising an index mounted on one of said members, and a contrivance for actuating said index from the other member to move said index with an adjustment-indicating motion which is a multiplied motion as compared with the adjusting motion between said members.

6. A button attaching machine comprising in combination a vibrating chute having a button passage arranged to conduct buttons successively to button attaching position, and a movable device located near the exit of said chute adapted to act upon the foremost of the buttons within said passage for pressing buttons toward attaching position, said device having means for vibrating it.

7. A button attaching machine comprising in combination a vibrating chute having a button passage arranged to conduct buttons successively to button attaching position, and a vibrating brush device located near the exit of said chute adapted to enter said passage and brush or lightly press the foremost button intermittently toward attaching position, said brush device being resilient or yielding whereby excessive pressure upon the buttons is avoided.

8. A button attaching machine comprising in combination a vibrating button chute, a brush device adapted to intermittently press the foremost button toward attaching position, and means for vibrating said brush device relatively to said chute.

9. A button attaching machine comprising in combination a vibrating button chute, a vibrating brush device for acting upon the buttons within the chute, and means operated by the chute's vibration for causing the brush's vibration.

10. A button attaching machine comprising in combination a vibrating button chute, a button brush, a swinging brush carrier mounted at one point, and means carried by the chute acting on another point on said carrier for causing the brush to vibrate.

11. A button attaching machine comprising in combination a vibrating button chute, a button brush, a swinging brush carrier mounted at its upper end, and means carried by the chute acting on an intermediate point on said carrier for causing the brush to vibrate in the same direction but at greater speed than the chute, whereby it may intermittently enter the chute and act upon the buttons therein.

12. A button attaching machine comprising in combination a vibrating button chute, a button brush, a spring carrier therefor, and means carried by the chute for flexing said carrier for vibrating the brush.

13. A button attaching machine comprising in combination a button chute, a relatively movable button clamp near the chute exit, a yielding button stop beyond said clamp, means to cause the clamp to open and close intermittently and means for causing a light pressure on the foremost button when the clamp is open to insure said button being positioned in contact with said stop.

14. A button attaching machine comprising in combination a button chute, a movable button stop near the chute exit, means for causing the foremost button to move into position in contact with said stop, and a button clamp for clamping the button while in contact with said stop, said chute having means for vibrating it and said clamp being carried by said chute.

15. A button attaching machine comprising in combination a button chute, a movable button stop near the chute exit, means for causing the foremost button to move into position in contact with said stop, and a button clamp for clamping the button while in contact with said stop, said chute having means for vibrating it and said stop and clamp being carried by said chute.

16. A button attaching machine comprising in combination a button chute, a movable button stop near the chute exit, and means for causing the foremost button to

move into position in contact with said stop, a button clamp and means for opening said clamp while the button moves to the stop and then closing it to clamp the button.

17. A button attaching machine comprising in combination a machine head, button attaching means at one end of said head, a driving shaft extending to the opposite end of said head and there provided with a cam, a button reservoir above said head, a chute leading from said reservoir to said attaching means, and a shaft-actuated agitator within said reservoir, the axis of said reservoir and shaft extending downward on an incline toward said cam, and connections whereby said cam actuates said shaft.

18. A button attaching machine comprising in combination a hinged button reservoir, a button agitator therein, an agitator shaft, connections for automatically operating said shaft, and a clutch in said shaft which when closed locks the reservoir in normal position, but may be opened to permit the reservoir being swung about said hinge.

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

JOHN KIEWICZ.

Witnesses:

CHRISTIAN H. T. HAGELSTEIN,
THOMAS J. CARTY.