

Description

The present invention relates to a machine for assembling a pair of fastener members of a garment fastener, such as a snap fastener, a hook-and-eye fastener, and a button, with a garment fabric disposed between the two fastener members. More particularly, the invention relates to an apparatus for conveying the fastener members to the fastener assembling machine.

In a fastener-assembling machine, a pair of fastener members of a garment fastener is supported on upper and lower units, respectively, of a punch assembly; a punch of the upper unit is moved toward a die of the lower unit to join the two fastener members together. Conventionally, the two kinds of fasteners are supplied to the punch assembly by two separate conveying apparatus, respectively. The conventional conveying apparatus for each kind of fastener members includes a chute defining a first passageway through which the fastener members slides downwardly in succession, and a guide defining a second passageway into which the fastener members are to be received one at a time from the first passageway and into which a reciprocating pusher is inserted to push the individual fastener member toward the punch assembly. Since the chute is connected to the guide in such a manner that the first passageway lies perpendicularly to the second passageway as viewed in plan, the direction of conveying the fastener member is converted by an angle of 90° as it passes the junction of the first and second passageways. A problem with this prior arrangement is that the fastener members tend to be jammed at the junction of the first and second passageways. Further, for removing such jammed fastener members, it is hitherto customary to pivotally move a guide plate of the guide horizontally outwardly by hand to thereby make the second passageway open or exposed, which is laborious and time-consuming. This prior art is exemplified by Japanese Patent Publication No. 59-11681.

The present invention seeks to provide a fastener conveying apparatus, for a fastener assembling machine, in which apparatus jamming of fastener elements scarcely occur and, even if jamming occurred, the jammed fastener member can be removed easily.

According to the present invention, there is provided a fastener conveying apparatus for a fastener assembling machine, comprising: a frame; a sloping chute fixed to said frame and defining a first passageway for guiding therethrough a plurality of fastener members in succession; a guide holder fixed to said frame; a guide mounted on said guide holder and defining a second passageway communicatable with said first passageway for

receiving from said first passageway the fastener members one at a time and for guiding the individual fastener member through said second passageway; and a pusher reciprocable in said second passageway for pushing the individual fastener member out of said second passageway; characterized in that said guide is pivotally mounted by a first pivot remote from a lower end portion of said chute and is releasably held in a horizontal posture so that said guide is pivotally movable substantially vertically away from the lower end of said chute as released.

Many other advantages, features and additional objects of the present invention will become manifest to those versed in the art upon making reference to the detailed description and the accompanying drawings in which a preferred structural embodiment incorporating the principles of the present invention is shown by way of illustrative example.

Figure 1 is a fragmentary perspective view of a fastener conveying apparatus embodying the present invention; and

Figure 2 is a vertical cross-sectional view of the apparatus.

Figures 1 and 2 show an apparatus for conveying fastener members A one at a time to a punch assembly (not shown) of a fastener assembling machine for joining the fastener member A with a companion fastener member (not shown), with a garment fabric (not shown) disposed between the two fastener members.

The apparatus generally comprises a guide holder 11 fixed to a frame (not shown), a sloping chute 4 fixed to the frame for conveying a succession of fastener members A downwardly from a non-illustrated hopper, and a horizontal guide 2 supported by the guide holder 11 for conveying the fastener members A one at a time from the chute 4 toward the non-illustrated punch assembly of the fastener assembling machine.

The chute 4 has a generally C-shaped cross section defining an inclined first passageway 4a through which a succession of fastener members A is slidably received.

The guide 2 includes a guide body 7 having a generally C-shaped cross section defining a normally horizontal second passageway 2a in which a reciprocating elongated pusher 5 is slidably received. As the pusher 5 reciprocates in the second passageway 2a, the fastener elements A are received one at a time from the first passageway 4a into the second passageway 2a and then guided through the second passageway 2a.

The guide body 7 has a pair of upwardly directed side flanges 8, 9 integral with the guide body 7 and pivotally supported on the guide holder 11 by a first pivot 12 remote from a lower end of

the chute 4. Thus the guide 2 is pivotally movable about the first pivot 12. The pivotal movement of the guide 2 is normally prevented by a stop screw 13 that releasably extends through the pair of side flanges 8, 9 and the guide holder 11 at a position between the first pivot 12 and the lower end of the chute 4. The guide 2 has at a rear end portion of the guide body 7 an inclined surface 2c sloping rearwardly. The inclined surface 2c (Figure 2) serves not only to allow downward or counterclockwise movement of the guide 2, but also to restrict such downward or counterclockwise pivotal movement of the guide 2.

As the stop screw 13 is removed, the guide 2 is pivotally moved downwardly or counterclockwise (Figure 2) about first pivot 12 by gravity in such a manner that the second passageway 2a is separated away from the first passageway 4a. As a result, a jammed fastener member A, if any at the junction between the first and second passageways 4a, 2a, is allowed to fall.

As shown in Figure 1, one of the side flanges 9 of the guide body 7 has at its front upper edge a cam surface 9a sloping forwardly and outwardly. A first leaf spring 17 is secured at one (upper) end to an outer surface of the chute 4 by a pin 18 and has at the other (lower) end to an inwardly directed projection 17a projectable into the first passageway 4a through a side slit 2b for preventing the forward motion of the subsequent fastener elements A in the first passageway 4a. While the guide 2 is in a horizontal posture (Figure 1), the lower end of the first leaf spring 17 is in engagement with the cam surface 9a in such a manner that the projection 17a is retracted from the first passageway 4a against the bias of the first leaf spring 17. As the guide 2 is pivotally moved substantially downwardly, the lower end of the first leaf spring 17 is disengaged from the cam surface 9a, thus causing the projection 17a to project into the first passageway 4a under the bias of the first leaf spring 17.

A chute cover 14 is pivotally mounted on the chute 4 by a second pivot 10, covering the lower end portion of the first passageway 4a and extending beyond the distal end thereof. The chute cover 14 is normally urged against the upper surface of the chute 4 by a second leaf spring 16 secured at one end to an upper surface of the chute 4 by a pin 15. As a fastener member A arrives at the junction between the first and second passageways 4a, 2a, the chute cover 14 is pivotally moved slightly away from the upper surface of the chute 4 against the bias of the second leaf spring 16. This chute cover 14 with the second leaf spring 16 serves to assist in preventing the fastener members A from jamming at the junction between the first and second passageways 4a, 2a. The cover 14 is of a generally L-shaped cross section having a

flange 14a through which the second pivot 10 extends into the chute 4.

The front end portion of the second passageway 2a of the guide 2 is covered by an auxiliary cover 19, while the majority of the remaining portion of the second passageway 2a is covered by the guide holder 11.

The first passageway 4a extends in the same direction as the second passageway 2a, as viewed in plan, so that a fastener member A discharged from the chute 4 is conveyed to the punch assembly through the guide 2 by the pusher 5 without the need of correcting the orientation of the fastener member A.

If jamming of a fastener member A at the junction between the first and second passageways 4a, 2a happened to occur, such a jammed fastener element A can be removed in the following manner.

Firstly, the stop screw 13 is removed so as to allow the guide 2 to pivotally move counterclockwise (Figure 2) about the pivot 12 downwardly away from the lower end of the chute 4. This releases the jammed fastener member A to fall. Yet, if the jammed fastener member A cannot be released, the chute cover 14 is pivotally moved by hand upwardly about the pivot 10.

Claims

1. A fastener conveying apparatus for a fastener assembling machine, comprising: a frame; a sloping chute (4) fixed to said frame and defining a first passageway (4a) for guiding therethrough a plurality of fastener members (A) in succession; a guide holder (11) fixed to said frame; a guide (2) pivotally mounted by a first pivot (12) and releasably held in a horizontal posture by holding means (13) on said guide holder (11) and defining a second passageway (2a) communicatable with said first passageway (4a) for receiving from said first passageway (4a) the fastener members (A) one at a time and for guiding the individual fastener member (A) through said second passageway (2a); and a pusher (5) reciprocable in said second passageway (2a) for pushing the individual fastener member (A) out of said second passageway (2a); characterized in that said pivot (12) is remote from a lower end portion of said chute (4) so that said guide is pivotally movable substantially vertically away from the lower end of said chute (4) as released.
2. A fastener conveying apparatus according to claim 1, characterized in that said guide (2) has a pair of side flanges (8), (9), said first



the chute 4. Thus the guide 2 is pivotally movable about the first pivot 12. The pivotal movement of the guide 2 is normally prevented by a stop screw 13 that releasably extends through the pair of side flanges 8, 9 and the guide holder 11 at a position between the first pivot 12 and the lower end of the chute 4. The guide 2 has at a rear end portion of the guide body 7 an inclined surface 2c sloping rearwardly. The inclined surface 2c (Figure 2) serves not only to allow downward or counterclockwise movement of the guide 2, but also to restrict such downward or counterclockwise pivotal movement of the guide 2.

As the stop screw 13 is removed, the guide 2 is pivotally moved downwardly or counterclockwise (Figure 2) about first pivot 12 by gravity in such a manner that the second passageway 2a is separated away from the first passageway 4a. As a result, a jammed fastener member A, if any at the junction between the first and second passageways 4a, 2a, is allowed to fall.

As shown in Figure 1, one of the side flanges 9 of the guide body 7 has at its front upper edge a cam surface 9a sloping forwardly and outwardly. A first leaf spring 17 is secured at one (upper) end to an outer surface of the chute 4 by a pin 18 and has at the other (lower) end to an inwardly directed projection 17a projectable into the first passageway 4a through a side slit 2b for preventing the forward motion of the subsequent fastener elements A in the first passageway 4a. While the guide 2 is in a horizontal posture (Figure 1), the lower end of the first leaf spring 17 is in engagement with the cam surface 9a in such a manner that the projection 17a is retracted from the first passageway 4a against the bias of the first leaf spring 17. As the guide 2 is pivotally moved substantially downwardly, the lower end of the first leaf spring 17 is disengaged from the cam surface 9a, thus causing the projection 17a to project into the first passageway 4a under the bias of the first leaf spring 17.

A chute cover 14 is pivotally mounted on the chute 4 by a second pivot 10, covering the lower end portion of the first passageway 4a and extending beyond the distal end thereof. The chute cover 14 is normally urged against the upper surface of the chute 4 by a second leaf spring 16 secured at one end to an upper surface of the chute 4 by a pin 15. As a fastener member A arrives at the junction between the first and second passageways 4a, 2a, the chute cover 14 is pivotally moved slightly away from the upper surface of the chute 4 against the bias of the second leaf spring 16. This chute cover 14 with the second leaf spring 16 serves to assist in preventing the fastener members A from jamming at the junction between the first and second passageways 4a, 2a. The cover 14 is of a generally L-shaped cross section having a

flange 14a through which the second pivot 10 extends into the chute 4.

The front end portion of the second passageway 2a of the guide 2 is covered by an auxiliary cover 19, while the majority of the remaining portion of the second passageway 2a is covered by the guide holder 11.

The first passageway 4a extends in the same direction as the second passageway 2a, as viewed in plan, so that a fastener member A discharged from the chute 4 is conveyed to the punch assembly through the guide 2 by the pusher 5 without the need of correcting the orientation of the fastener member A.

If jamming of a fastener member A at the junction between the first and second passageways 4a, 2a happened to occur, such a jammed fastener element A can be removed in the following manner.

Firstly, the stop screw 13 is removed so as to allow the guide 2 to pivotally move counterclockwise (Figure 2) about the pivot 12 downwardly away from the lower end of the chute 4. This releases the jammed fastener member A to fall. Yet, if the jammed fastener member A cannot be released, the chute cover 14 is pivotally moved by hand upwardly about the pivot 10.

Claims

1. A fastener conveying apparatus for a fastener assembling machine, comprising: a frame; a sloping chute (4) fixed to said frame and defining a first passageway (4a) for guiding therethrough a plurality of fastener members (A) in succession; a guide holder (11) fixed to said frame; a guide (2) pivotally mounted by a first pivot (12) and releasably held in a horizontal posture by holding means (13) on said guide holder (11) and defining a second passageway (2a) communicatable with said first passageway (4a) for receiving from said first passageway (4a) the fastener members (A) one at a time and for guiding the individual fastener member (A) through said second passageway (2a); and a pusher (5) reciprocable in said second passageway (2a) for pushing the individual fastener member (A) out of said second passageway (2a); characterized in that said pivot (12) is remote from a lower end portion of said chute (4) so that said guide is pivotally movable substantially vertically away from the lower end of said chute (4) as released.
2. A fastener conveying apparatus according to claim 1, characterized in that said guide (2) has a pair of side flanges (8), (9), said first



pivot (12) extending through said side flanges (8), (9) and said guide holder (11).

3. A fastener conveying apparatus according to claim 2, characterized in that said holding means includes a stop screw (13) for removably extending through said side flanges (8), (9) and said guide holder (11) at a position between said first pivot (12) and said lower end portion of said chute (4).
4. A fastener conveying apparatus according to claim 1, characterized in that said guide (2) has at its rear end an inclined surface (2c) sloping rearwardly.
5. A fastener conveying apparatus according to claim 2, further including a first leaf spring (17) secured at its upper end to an outer surface of said chute (4) and having at its lower end an inwardly directed projection (17a) normally urged to project through a side slot (2b) in said chute (4) into said first passageway (4a) under the bias of said first leaf spring (17), one of said side flanges (9) of said guide (2) having at its front upper edge a cam surface (9a) sloping forwardly and outwardly, said cam surface (9a) being engageable with said lower end of said first leaf spring (17) so as to prevent said projection from projecting into said first passageway (4) as said guide (2) is in said horizontal posture.
6. A fastener conveying apparatus according to claim 1, further including a chute cover (14) pivotally mounted on said chute (4) by a second pivot (10) and covering the lower end portion of said first passageway (4a) and extending beyond a distal end thereof.
7. A fastener conveying apparatus according to claim 6, wherein said chute cover (14) is normally urged against an upper surface of said chute (4) by a second leaf spring (16).
8. A fastener conveying apparatus according to claim 1, wherein said chute cover (14) has a flange (14a) through which said second pivot (10) extends into said chute (4).
9. A fastener conveying apparatus according to claim 1, wherein said chute (4) and said guide (2) extend in a common direction as viewed in plan.

Revendications

1. Appareil d'alimentation en éléments de ferme-

ture pour une machine d'assemblage d'éléments de fermeture, comprenant : un bâti ; une goulotte inclinée (4) fixée audit bâti et définissant un premier passage (4a) pour guider à travers ce dernier une multiplicité d'éléments de fermeture (A) les uns à la suite des autres ; un porte-guide (11) fixé audit bâti ; un guide (2) articulé à l'aide d'un premier axe d'articulation (12) et maintenu de façon libérable dans une position horizontale sur le porte-guide (11) et définissant un second passage (2a) pouvant être mis en communication avec ledit premier passage (4a) pour recevoir dudit premier passage (4a) les éléments de fermeture (A) un par un et pour guider l'élément de fermeture individuel (A) à travers ledit second passage (2a) ; et un poussoir (5) pouvant effectuer un mouvement de va-et-vient dans ledit second passage (2a) pour pousser l'élément de fermeture individuel (A) hors dudit second passage (2a) ; caractérisé en ce que l'axe d'articulation (12) se trouve à l'opposé de la partie d'extrémité inférieure de la goulotte (4) de sorte que ledit guide peut pivoter de façon sensiblement verticale dans un sens l'éloignant de l'extrémité inférieure de ladite goulotte (4) lorsqu'il est libéré.

2. Appareil d'alimentation en éléments de fermeture selon la revendication 1, caractérisé en ce que le guide (2) comporte une paire d'ailes latérales (8), (9), le premier axe d'articulation (12) s'étendant à travers ces ailes latérales (8), (9) et le porte-guide (11).
3. Appareil d'alimentation en éléments de fermeture selon la revendication 2, caractérisé en ce que ledit moyen de maintien comprend une vis d'arrêt (13) destinée à s'étendre de façon amovible à travers les ailes latérales (8), (9) et le porte-guide (11) à un endroit compris entre le premier axe d'articulation (12) et ladite partie d'extrémité inférieure de la goulotte (4).
4. Appareil d'alimentation en éléments de fermeture selon la revendication 1, caractérisé en ce que le guide (2) comporte à son extrémité arrière une surface inclinée (2c) en pente vers l'arrière.
5. Appareil d'alimentation en éléments de fermeture selon la revendication 2, comprenant, en outre, une première lame de ressort (17) fixée à son extrémité supérieure à la surface supérieure de la goulotte (4) et comportant à son extrémité inférieure une saillie (17a) dirigée vers l'intérieur et poussée normalement de manière à pénétrer par l'intermédiaire d'une



fente latérale (2b) de la goulotte (4) dans le premier passage (4a) sous la force de sollicitation de la première lame de ressort (17), l'une (9) des ailes latérales du guide (2) comportant à son bord supérieur avant une surface formant came (9a) inclinée vers l'avant et vers l'extérieur, ladite surface formant came (9a) pouvant venir porter contre ladite extrémité inférieure de la première lame de ressort (17) afin d'empêcher ladite saillie de pénétrer dans le premier passage (4) lorsque le guide (2) se trouve dans ladite position horizontale.

6. Appareil d'alimentation en éléments de fermeture selon la revendication 1, comprenant en outre un couvercle (14) de goulotte articulé sur la goulotte (4) à l'aide d'un second axe d'articulation (10) et recouvrant la partie d'extrémité inférieure du premier passage (4a) et s'étendant au-delà de l'extrémité distale de ce dernier.
7. Appareil d'alimentation en éléments de fermeture selon la revendication 6, dans lequel le couvercle (14) de goulotte est poussé normalement contre la surface supérieure de la goulotte (4) par une seconde lame de ressort (16).
8. Appareil d'alimentation en éléments de fermeture selon la revendication 1, dans lequel le couvercle (14) de goulotte comporte une aile (14a) à travers laquelle le second axe d'articulation (10) s'étend jusque dans la goulotte (4).
9. Appareil d'alimentation en éléments de fermeture selon la revendication 1, dans lequel la goulotte (4) et le guide (2), vus en plan, s'étendent dans une direction commune.

Patentansprüche

1. Vorrichtung zum Zuführen von Verschlusselementen für eine Ansetzmaschine, umfassend einen Rahmen; eine Rutsche (4), die an dem Rahmen befestigt ist und einen ersten Kanal (4a) zum aufeinanderfolgenden Hindurchführen einer Vielzahl von Verschlusselementen (A) begrenzt; eine an dem Rahmen befestigte Rutschenhalterung (11); eine Führung (2), die an der Rutschenhalterung (11) mit einem ersten Gelenkbolzen (12) schwenkbar gelagert und in einer horizontalen Anordnung lösbar gehalten ist und die einen zweiten Kanal (2a) begrenzt, der mit dem ersten Kanal (4a) verbindbar ist, um von dem ersten Kanal (4a) jeweils ein Verschlusselement (A) zu empfangen, und um das einzelne Verschlusselement (A) durch den

zweiten Kanal (2a) zu leiten; und einen Schieber (5), der in dem zweiten Kanal (2a) hin- und herbewegbar ist, um das einzelne Verschlusselement (A) aus dem zweiten Kanal (2a) auszu stoßen; dadurch gekennzeichnet, daß der Gelenkbolzen (12) von einem unteren Endbereich der Rutsche (4) beabstandet ist, so daß die besagte Führung vom unteren Ende der Rutsche (4) im wesentlichen vertikal weg verschwenkbar ist, wenn sie freigegeben ist.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Führung (2) ein Paar Seitenflansche (8,9) aufweist, wobei sich der erste Gelenkzapfen (12) durch diese Seitenflansche (8,9) und durch die Führungshalterung (11) erstreckt.
3. Vorrichtung nach Anspruch 2, dadurch gekennzeichnet, daß die Haltemittel eine Anschlagsschraube (13) umfassen, die sich an einer Stelle zwischen dem ersten Gelenkbolzen (12) und dem unteren Endbereich der Rutsche lösbar durch die Seitenflansche (8,9) und durch die Führungshalterung (11) erstreckt.
4. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß die Führung (2) an ihrem hinteren Ende eine nach hinten abfallende geneigte Fläche (2c) aufweist.
5. Vorrichtung nach Anspruch 2, ferner umfassend eine erste Blattfeder (17), deren oberes Ende an einer Außenfläche der Rutsche (4) befestigt ist und die an ihrem unteren Ende einen nach innen gerichteten Vorsprung (17a) aufweist, der unter der Vorspannkraft dieser ersten Blattfeder (17) durch einen seitlichen Schlitz (2b) der Rutsche (4) in den ersten Kanal (4a) hineinragt, wobei ein Seitenflansch (9) der Führung (2) an seinem vorderen oberen Rand eine nach vorne und nach außen abfallende Steuerfläche (9a) aufweist, die mit dem besagten unteren Ende der ersten Blattfeder (17) in Eingriff bringbar ist, um zu verhindern, daß letztere in den Kanal (4a) hineinragt, wenn sich die Führung (2) in der horizontalen Lage befindet.
6. Vorrichtung nach Anspruch 1, ferner umfassend eine Rutschenabdeckung (14), die mit einem zweiten Gelenkzapfen (10) an der Rutsche (4) schwenkbar gelagert ist und die den unteren Endbereich des ersten Kanals (4a) bedeckt und sich über ein abliegendes Ende desselben hinaus erstreckt.
7. Vorrichtung nach Anspruch 6, wobei die Rut-

schenabdeckung (14) von einer zweiten Blattfeder (16) gegen eine Oberseite der Rutsche (4) vorgespannt ist.

8. Vorrichtung nach Anspruch 1, wobei die Rutschenabdeckung (14) einen Flansch (14a) aufweist, durch den sich der zweite Gelenkzapfen (10) in die Rutsche (4) hinein erstreckt.
9. Vorrichtung nach Anspruch 1, wobei sich die Rutsche (4) und die Führung (2) in der Draufsicht in einer gemeinsamen Richtung erstrecken.

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