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"LOCKING PIECE FITTER"

This invention relates to a locking piece fitter to be used for bundling or labeling clothing and other fiber products.

Such locking piece fitters are already known through the specification of U.S. Patent No. 3103666 and the Publication of Japanese Utility Model Publication No. 23999/1972.

The locking pieces for bundling clothing or the like or attaching such labels as price tags used in such known fitter are formed as an assembly in which synthetic resin moldings each formed by connecting a head part 1a and a lateral rod 1b through a filament 1c in such locking piece 1 as is shown in Fig. 2 have many lateral rods 1b connected through connecting parts at a proper pitch by one connecting rod performing the function of a feeding guide.

Further, in the one mentioned in the publication of Japanese Patent Laid Open No. 63949/1979, a locking piece assembly by a connection different from the above and a fitter to be used for it are disclosed.

In such fitters, the above mentioned locking piece assembly is inserted and fitted in the fitter and the locking pieces 1 are locked to clothing or the like one by one while cutting off the above mentioned connecting parts.

By the way, the connecting rods and connecting parts so called here indicate such members as the assembling rod 35 and neck 36 in the above mentioned U.S. Patent No. 3103666 and the base plate 9 and connecting part f in the above mentioned Japanese utility model though not shown in Fig. 2. As described later, the present invention is a fitter in which can be used not only the locking piece assembly having such form but also the locking piece assembly 1X of Fig. 2 having no form of the connecting rods and connecting parts.

Now, the pitch between the respective locking pieces of the conventional assembly is not always constant but often varies depending on the manufacturer. In most cases, the locking pieces could not be used in common in the general conventional fitter.

The present invention has it as an object to provide a locking piece fitter wherein, by a simple structure, even if the pitch of the locking piece assembly is irregular or its form is more or less different, the locking pieces will be able to be accurately fitted one by one and the operating efficiency will be able to be improved.

According to the present invention therefore there is provided a pistol type locking piece fitter for sequentially dispensing and positioning a locking

piece having a head portion connected by a filament to a lateral rod from an assembly of interconnected locking pieces, said fitter including a guide needle provided at its operational tip, a push-in rod, a supporting base provided with a supporting groove and a push-in rod guide hole coaxially aligned with said guide needle and push-in rod,

a feed groove for the locking piece assembly, and a reciprocally movable base provided with resilient locking pawls spring biased relatively downwardly and adapted to be reciprocated in association with a push-in rod drive means,

characterised in that the feed groove is formed in a member provided with a cover piece both being disposed relatively upwardly of the supporting base, and wherein resilient pressing pieces integral with said member are adapted to press the lateral rod of the locking piece toward the cover wall, wherein the reciprocally moveable base is located beneath said member and the resilient pawls are capable of engagement with said lateral rod.

Following is a description by way of example only and with reference to the accompanying drawings of methods of carrying the invention into effect.

In the drawings:-

Figure 1 is a side view of an embodiment of the present invention.

Figure 2 is a partial perspective view.

Figure 3 is a detailed assembly view of the vicinity of a feeding groove.

Figures 4 and 5 are sectional partial side views.

Figures 6 to 8 are operation explaining views.

Figure 9 is a partly sectioned plan view.

Figure 10 is a partial side view.

Figure 11 is a view seen in the direction indicated by the arrows A-A in Figure 10.

A body 2 is pistol-shaped and is divided into two parts 2a and 2b near the center in the thickness direction and such respective mechanisms as are illustrated are assembled in one part and are covered with the other part of the body so as to be fixed. A lever 3 is connected so as to be operated in the directions indicated by the arrows with a lever fulcrum 4 as a fulcrum on the front side of a gripped part 2a. An actuating link 6 rocking in association with the lever 3 with a link fulcrum 5 provided in the gripped part 2a of the body 2 as a fulcrum is arranged inside this lever 3. Further, the rear side wall within

the body 2 and the actuating link 6 are connected with each other through a tension spring 7 so that the lever 3 and actuating link 6 may be always held in the solid line positions in Fig. 1 by this spring 7.

A guide groove 8 is formed in the horizontal direction indicated by the arrow in the upper part within the body 2. A push-in rod mover 10 provided with a push-in rod 9 at the tip is slidably fitted and inserted in this guide groove 8 and is connected with the above mentioned actuating link 6 and an intermediate link 11 so as to be slid within the guide groove 8 by the actuating link 6 and intermediate link 11 with the operation of the lever 3.

A guide needle 12 is removably inserted and fitted in the tip of the body 2 positioned on the extension of the axis of the push-in rod 9. A supporting base 23 having a groove 21 supporting the lateral rod 1b of the locking piece 1 and a guiding hole 22 for the push-in rod 9 as coaxially aligned with the above mentioned guide needle 12 and push-in rod 9 is provided between this guide needle 12 and push-in rod 9. A feeding groove 13 in which is fitted and inserted a locking piece assembly 1X intersecting substantially at right angles with the axis of the guide needle is formed above the above mentioned supporting groove 21.

As in the embodiment illustrated in Fig. 2, the feeding groove 13 is formed of a part 14 provided with the feeding groove 13 on one side surface and a cover 15.

Flexible locking pawls 16 engaging with the lateral rod 1b of the locking piece 1 are arranged within this feeding groove 13. For example, as in the embodiment illustrated in Fig. 3, the locking pawls 16 may be provided on a rising and falling base 17. Further, flexible pressing pieces 18 molded integrally with the part 14 lightly pressing the lateral rod 1b of the locking piece 1 to the cover 15 side may be present within the feeding groove 13.

By the way, 13a is an auxiliary groove which is formed in the feeding groove 13 and is to be utilized in the case of fitting the conventional locking piece assembly having the connecting part as described above.

The rising and falling base 17 is provided with a spring 19 so as to be always pressed downward and also with a projection 20. These part 14, rising and falling base 17 and supporting base 23 are combined as in the embodiment shown in Fig. 3 so that the rising and falling base 17 may be made to rise and fall through the projection 20 by a slope cam 10a formed on the front part of the mover 10 with the movement of the push-in rod mover 10.

Furthermore, a guide needle 12 inserting depth adjusting member 24 is attached to the tip of the body 2 fitted with the above mentioned guide needle 12. This inserting depth adjusting member 24 is attached to the upper side surface of body 2 as shown in Figs. 9 to 11 and always slightly projected by a spring 25 out of the tip of the

guide needle 12 so as to be placed in a safe state for the needle as shown in Figs. 1, 2, 9 and 10. Semicircular cuts 26 can be made at proper intervals in the base of the inserting depth adjusting member 24 and a stopper 27 disengageable with these cuts 26 can be provided in the body 2.

In Fig. 11, instead of the formation in A, in order to more positively hold the guide needle 12, as in B, the tip position 24a may be formed to be partly cut circular.

Such locking piece assembly 1X as is shown in Fig. 2 is used in the fitter of the present invention. The locking piece assembly 1X is formed to be an assembly wherein synthetic resin moldings each made by connecting the head part 1a and lateral rod 1b of the locking piece 1 through a filament 1c have many lateral rods 1b connected through connecting parts at a proper pitch by one connecting rod performing the function of a feeding guide. However, according to the present invention, not only the above mentioned locking piece assembly 1X is used but also the known conventional locking piece assembly connected to the connecting rod through the connecting parts can be used by utilizing the auxiliary groove 13a.

The above mentioned locking piece assembly 1X is fitted and inserted in the feeding groove 13, the lateral rod 1b of the lowermost locking piece is supported by the groove 21 of the supporting base 23 and the feeding depth adjusting member 24 is contracted as shown by the chain line in Fig. 10, is fitted to the thickness of the clothing

or any other article for the guide needle 12 inserting length and is fixed in the position by the stopper 27.

After the guide needle 12 is inserted into the article, when the lever 3 is operated as gripped, the push-in rod mover 10 will be moved leftward in Fig. 1 by the actuating link 6 and intermediate link 11, the push-in rod 9 will pass through the guide hole 22, will contact and push the lateral rod of the locking piece supported on the supporting base, will cut and separate it from the assembly, will guide it into the guide needle 12 and will pass it through the article so that the locking piece 1 may be locked with the article.

In the case of the present invention, the separating operation can be smoothly made without requiring to provide such cutter mechanism as in the conventional fitter. Now, simultaneously with the above mentioned operation, as shown in Fig. 5, the slope cam 10a part of the push-in rod mover 10 will push up the projection 20 of the rising and falling base 17 and the base 17 will rise. When the lever 3 is then released, contrary to the above, the push-in rod mover 10 will be retreated by the resiliency of the spring 7, the rising and falling base 17 will fall, therefore the locking pawls 16 will engage with another locking piece and will lower it and the lateral rod of the lowermost locking piece will be supported on the supporting base 23. That is to say, as in Fig. 6A, first the locking piece assembly will

be fitted and inserted in the feeding groove 13, the lowermost lateral rod will be supported by the supporting base 23 and will be guided into the guide needle 12 by the push-in rod 9 and, at the same time, with the movement of the push-in rod mover 10, the rising and falling base 17 will rise through the projection 20 as its variation is shown in Figs. 6B to 6C. At this time, the locking pawls 16 will also rise substantially without such resistance to the locking piece. However, when the fitting of one locking piece ends and the push-in rod mover 10 retreats as mentioned above, the rising and falling base 17 will fall, the locking pawls 16 will fall as engaged with the lateral rod and therefore the lowermost lateral rod will be supported on the supporting base 23 so as to be ready for the next fitting.

Thus, thereafter, the repeated operations of Figs. 6C and 6D will be made (See Fig. 6E) and the locking pieces will be fitted to the articles in turn. However, as the locking pawls 16 are flexible, as shown in Fig. 7, when not required, the locking piece assembly can be simply pulled off with fingers in the direction indicated by the arrow to be arranged and stored. Further, if the pressing pieces 18 of the part 14 are present in the feeding groove 13, as shown in Fig. 8, the lateral rods of the locking piece assembly will be able to be positively held in a line and the work will be able to be carried out efficiently and pleasantly without any mis-operation in fitting the locking piece.

As described above, the present invention has such many practically advantageous effects that, even if the locking piece assembly is irregular in the pitch or more or less different in the connecting system, the locking pieces will be able to be accurately fitted one by one, the locking piece assembly will be able to be easily inserted into or removed out of the feeding groove, the guide needle inserting length will be able to be adjusted in response to the thickness of the article and the safety measures for the guide needle when not used need not be considered.



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CLAIMS:

1. A pistol type locking piece fitter for sequentially dispensing and positioning a locking piece having a head portion connected by a filament to a lateral rod from an assembly of interconnected locking pieces, said fitter including a guide needle provided at its operational tip, a push-in rod, a supporting base provided with a supporting groove and a push-in rod guide hole coaxially aligned with said guide needle and push-in rod,

a feed groove for the locking piece assembly, and a reciprocally movable base provided with resilient locking pawls spring biased relatively downwardly and adapted to be reciprocated in association with a push-in rod drive means,

characterised in that the feed groove is formed in a member provided with a cover piece both being disposed relatively upwardly of the supporting base, and wherein resilient pressing pieces integral with said member are adapted to press the lateral rod of the locking piece toward the cover wall, wherein the reciprocally moveable base is located beneath said member and the resilient pawls are capable of engagement with said lateral rod.



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2. A locking piece fitter according to claim 1 further comprising a guide needle inserting depth member removably attached at the forward portion of said pistol-shaped body to adjust the length of insertion of said guide needle into an article.

3. A locking piece fitter as claimed in Claim 1 and substantially as herein described with reference to the accompanying drawings.

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