

## [54] SLIDER ASSEMBLING DEVICE FOR SLIDE FASTENER CHAIN

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29/207.5 S, 207.5 DPrimary Examiner—Thomas H. Eager  
Attorney, Agent, or Firm—Bucknam and Archer

[57]

## ABSTRACT

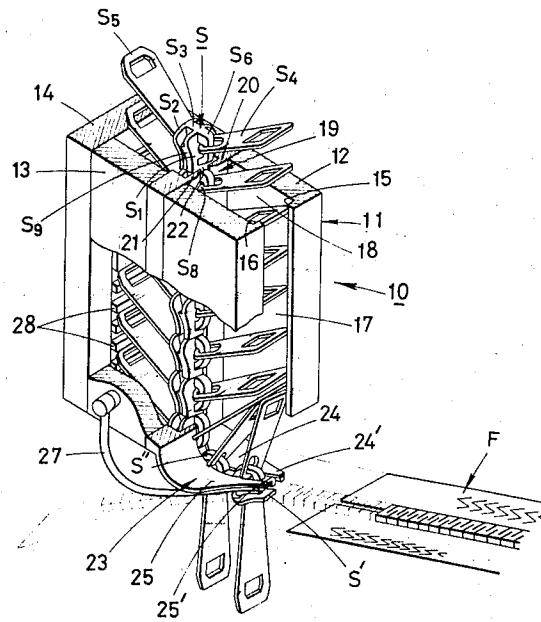
A slider assembling device for slide fastener chain comprises a vertically elongated casing or chute for accommodating therein a series of aligned sliders that are transported by their own gravity along a guiding means, and a holding means integral with the guiding means and holding a slider in position for assembly on the slide fastener chain. Means is also provided for arresting and preventing the series of sliders from moving backward during the assembling operation.

## [56] References Cited

## UNITED STATES PATENTS

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5 Claims, 4 Drawing Figures

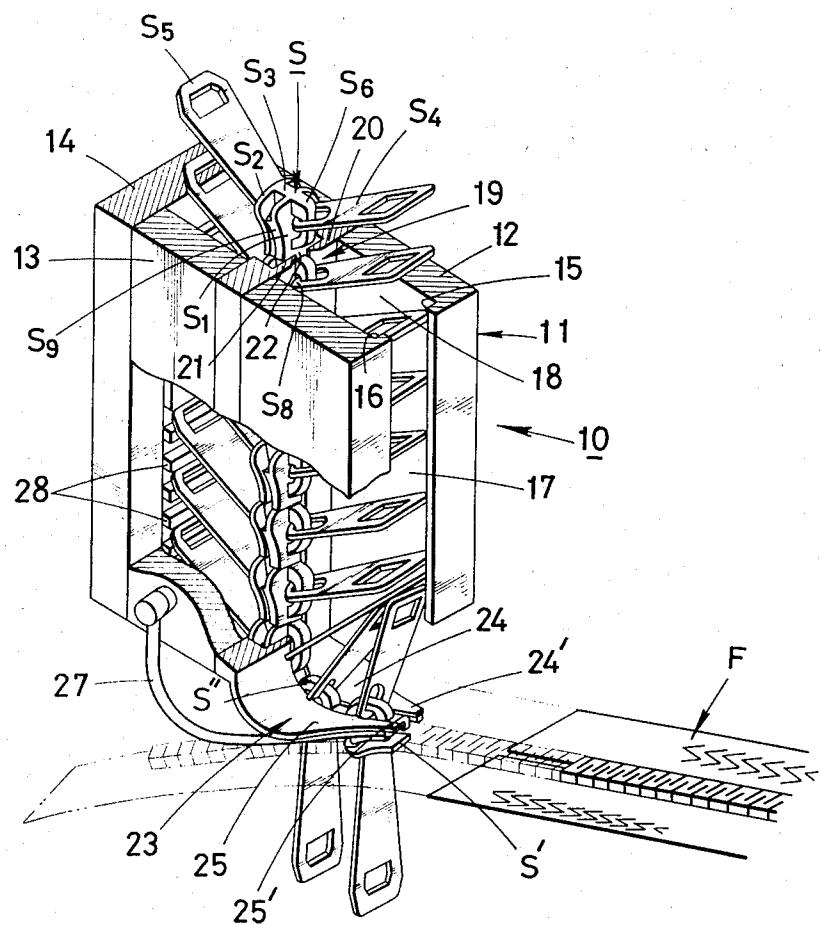


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FIG. 1



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FIG. 2

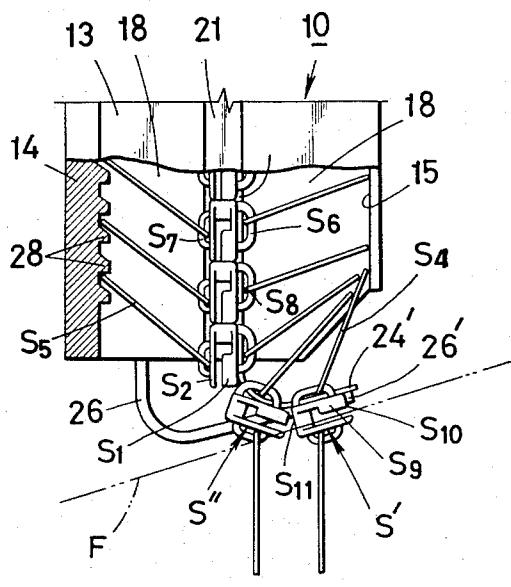


FIG. 4

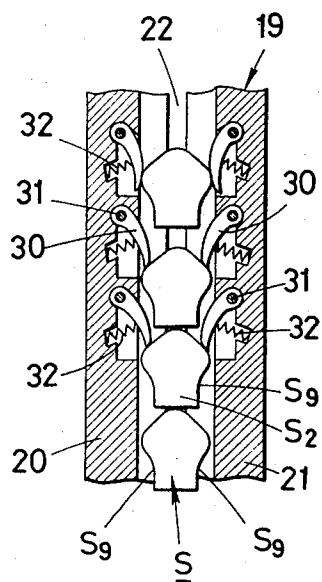
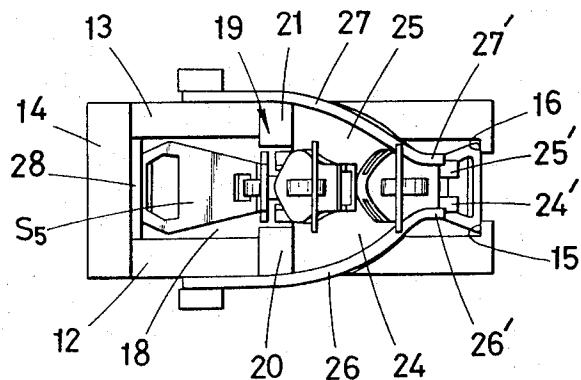


FIG. 3



## SLIDER ASSEMBLING DEVICE FOR SLIDE FASTENER CHAIN

### BACKGROUND OF THE INVENTION

This invention relates to a device for assembling sliders on a slide fastener chain, and has for its object to provide an improved slider assembling device of this character which is capable of mounting sliders in place on a slide fastener chain at increased rate of speed with utmost ease yet without resort to any external driving power to feed the sliders to an assembling position.

### SUMMARY OF THE INVENTION

The above and other objects and features of the present invention will appear clear as the description proceeds with reference to the accompanying drawings illustrating preferred, exemplary embodiments.

A number of slider assembling devices have hitherto been proposed, most of which are in the form of holders designed to put sliders manually one at a time in place thereon. This manual operation prior to assembly of sliders on a fastener chain is not only time-consuming and tedious but also often fails to set the slider in proper position on the slider holder. More advanced prior art devices employ mechanical means actuated by motors for supplying and setting sliders successively in place, but such devices are complicated, space-taking and costly, and hence are not suitable where the assembly of sliders on the fastener chain is performed manually.

The above noted disadvantages of the prior art will be overcome by the improved device of the invention which will now be described in detail, reference being made to the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the slider assembling device with parts cut away for a better understanding of the invention;

FIG. 2 is a side elevational view, partly broken away, of the device shown in FIG. 1;

FIG. 3 is a bottom plan view of the same; and

FIG. 4 is a longitudinal cross-sectional view of a modification according to the invention.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings and FIG. 1 in particular, there is shown a slider assembling device 10 according to a preferred embodiment of the invention, which device essentially comprises a vertically elongated, rectangular casing 11 which functions as a chute for a supply of sliders and which consists of opposed, spaced parallel side walls or panels 12,13 interconnected at their one or rear longitudinal edges by a rear wall member 14 extending to the full length of the casing 11. The side panels 12,13 are provided at the other or opposite longitudinal edges with integral inwardly directed protuberances 15,16 which are spaced apart by a slit 17 extending through the length of the casing 11 opposite to the rear wall member 14.

There is provided interiorly of the casing or chute 11 a longitudinally extending, substantially rectangular opening 18 formed by the side walls 12,13 and rear wall 14, which opening is adapted to accommodate a series of sliders S transported by gravity from a suitable slider

supply source (not shown) and which is subdivided by a guiding means later described.

Each of the sliders S illustrated in FIGS. 1, 2 and 3 has a top wing S<sub>1</sub> and a bottom wing S<sub>2</sub> interconnected at one end by a neck S<sub>3</sub>, and two pull tabs S<sub>4</sub>, S<sub>5</sub> pivotally connected to their respective supporting lugs S<sub>6</sub>, S<sub>7</sub> projecting from the top and bottom wings S<sub>1</sub>, S<sub>2</sub>, respectively.

In order to effect the transport of a series of these sliders S by their own gravity in a neatly aligned fashion, there is provided a guiding means 19 extending longitudinally of the chute 11 and positioned midpart of the opposed side panels 12,13. The guiding means 19 consists of a pair of spaced apart rails 20,21 projecting transversely into the opening 18 and defining therebetween a longitudinally extending guide slit 22. This slit 22 has a width large enough to accept the lug S<sub>6</sub> (or S<sub>7</sub>) of the slider S movably therein. The rails 20,21 each have a thickness substantially corresponding to the spacing between the top wing S<sub>1</sub> and the pivotal end S<sub>8</sub> of the pull tab S<sub>4</sub> such that these parts of the slider S ride astride of the opposed rails 20,21 during the sliding gravity movement of the sliders S therealong, as shown in FIG. 1.

There is provided a slider holding means 23 formed integrally with and extending from the lower end of the guiding means 19 for holding the sliders S in position during the assembling thereof on a slide fastener chain F. The holding means 23 assumes the form of a rake consisting of a pair of tongues 24,25 tapering off along their outer edges towards their free ends as shown. The holding means 23 is deflected slightly arcuately with a minimum radius of curvature and has its free end curved slightly upwardly beyond a horizontal path of the slide fastener chain F. The holding means 23, which is an extension of the guiding means 19, can be so formed by virtue of the arrangement in which the series of sliders S are supported in their gravity movement by the guide rails 20,21 which project into the spacing between the top wing S<sub>1</sub> and the pivotal end S<sub>8</sub> of the sliders S as previously described. As the leading slider S' in the train of sliders S advanced by gravity along the guide rails 20,21 arrives at the holding means 23 adjacent to the free end thereof, it is resiliently retained in place thereat by spring members 26,27 attached at their one ends to the side panels 12,13, respectively. More specifically, the spring members 26,27 extend beneath the tongues 24,25 and have their free end portions 26',27' normally biased inwardly towards each other. These end portions 26',27' are arranged to be parallel with the upwardly curved end portions 24',25' of the tongues 24,25 and configured to conform to the peripheral contour of the side flanges S<sub>9</sub> of the slider S, so that the spring members 26,27 can snugly fit with the slider S when retaining the latter in position during the threading thereof through the fastener chain F.

The leading slider S' to be assembled on the fastener chain F is thus retained resiliently in place by the spring members 26,27 and disposed with its exit end S<sub>10</sub> upwardly inclined so that the operator can see clearly through the guide channel of the slider S' when passing the fastener chain F therethrough. The next following slider S'' is so guided along the curved plane of the holding means 23 that its exit end S<sub>10</sub> is conversely tilted downwardly to avoid interference with the path of movement the fastener chain F that has been

threaded through the preceding or leading slider S' as better depicted in FIG. 2.

While, in the illustrated embodiment, the sliders S are arranged to be mounted on the fastener chain F through their exit end S<sub>10</sub>, it is of course possible to change their feeding position such that the fastener chain F is introduced through the entrance end S<sub>11</sub> of the slider S with similar results.

As shown in FIG. 1 and better seen in FIG. 2, the rear wall member 14 is provided with a series of spaced inwardly projecting ledges 28 in the form of a ladder for holding the sliders S against the backward movement thereof which would otherwise take place under the influence of pressure exerted when drawing the fastener chain F through the leading slider S'. More specifically, the pull tab S<sub>5</sub> on the bottom wing S<sub>2</sub> of the slider S is arrested between adjacent ledges 28 of the rear wall member 14 during the assembling operation.

The pull tabs S<sub>4</sub> on the front wings S<sub>1</sub> are held simply in sliding relation to the protuberances 15,16 of the side panels 12,13 during the transport of the sliders S along the guide rails 20,21.

In operation, the leading slider S' after being assembled is simply pulled together with the fastener chain F against tension of the spring members 26,27 and thus removed, whereupon the ensuing slider S'' is advanced automatically by aggregated gravity of the train of sliders S to the assembling position. This operation is repeated to effect the assembly of sliders S in immediate succession.

Either or both of the side panels 12,13 may be conveniently made of a transparent material such that the condition of the array of sliders S can be monitored.

Referring to FIG. 4, there is shown a modification of the guiding means 19 according to the invention. This modification is characterized by the provision of a plurality of spaced retaining elements 30 on each of the guide rails 24,25 for preventing the backward movement of the sliders S during the assembly thereof on the fastener chain. Each retaining element 30 is pivotally connected at one end to the guide rail 24,(25) as by a pin 31 and normally urged towards the slider S by a spring 32, the arrangement being that a series of these spaced elements 30 are held resiliently in sliding engagement with the side flanges of the sliders S during the transport thereof along the guide rails 20,21, but

are held in abutting relation to the slider body to arrest the sliders S while the leading one of them in being assembled on the fastener chain F.

Having thus described the invention, it is to be understood that various changes or substitutions may be made in the specific form and construction herein described and illustrated in the accompanying drawings, without departing from the scope of the appended claims. As for an example, the slider S which can be handled by the device of the invention may be of the type having a single pull tab and may be effectively transported and assembled without substantial changes in the principles of this invention.

What is claimed is:

1. A device for assembling on a slide fastener chain sliders of the type including a pivotally supported pull tab, which device comprises a vertically elongated casing having an opening therein for accommodating a series of sliders that are transported by their own gravity, a guiding means disposed in said opening and guiding the movement of said series of sliders, a holding means integral with said guiding means and holding a leading one of said sliders in position for assembly on the slide fastener chain, a spring member for releasably holding said leading slider, and means for arresting and preventing said series of sliders from moving backward during the assembling operation.

2. A device as defined in claim 1 wherein said holding means has its free end curved slightly upwardly beyond a horizontal path of the fastener chain.

3. A device as defined in claim 1 wherein said guiding means consists of spaced parallel rails extending longitudinally of said casing and defining therebetween a guide slit adapted to fit with the spacing between a slider body and the pivotal end of the pull tab.

4. A device as defined in claim 1 wherein said arresting means consists of a series of spaced ledges provided internally of said casing and projecting into said opening to arrest the pull tab during the assembling operation.

5. A device as defined in claim 1 wherein said arresting means consists of a series of spaced, pivotal elements arranged to arrest the slider body during the assembling operation.

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