March 10, 1942. M. KIESSLING 2,275,769

MACHINE FOR AFFIXING SLIDE FASTENER ELEMENTS TO TAPES

Filed July 3, 1939 2 Sheets-Sheet 1

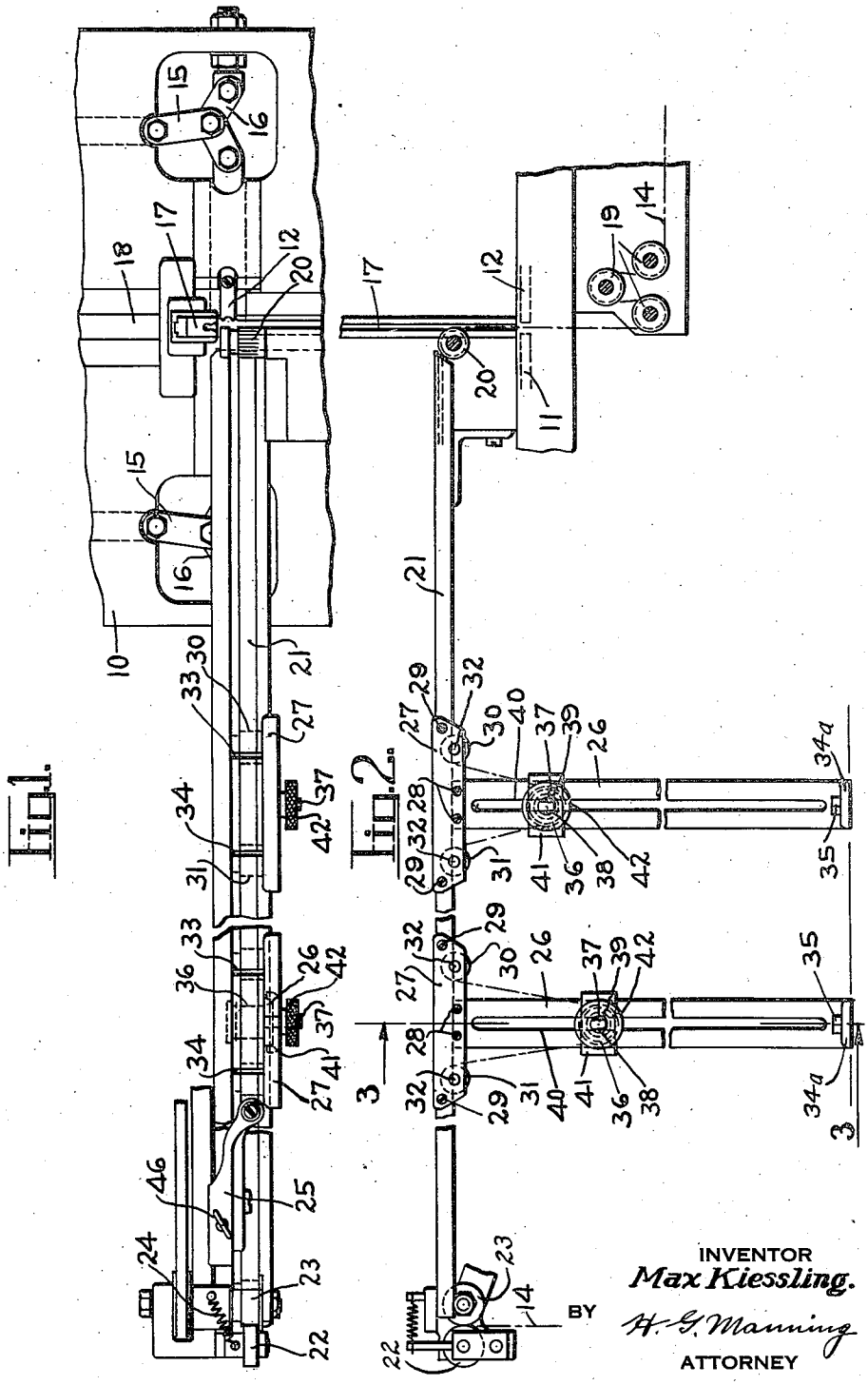


Fig. 1.

Fig. 2.

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Fig. 3.

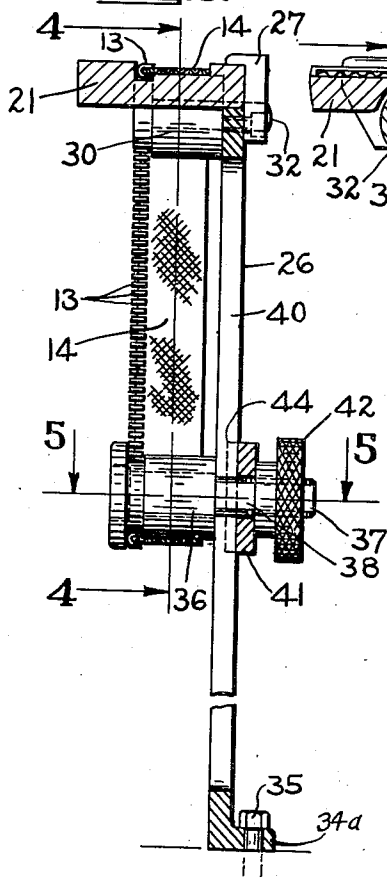


Fig. 4.

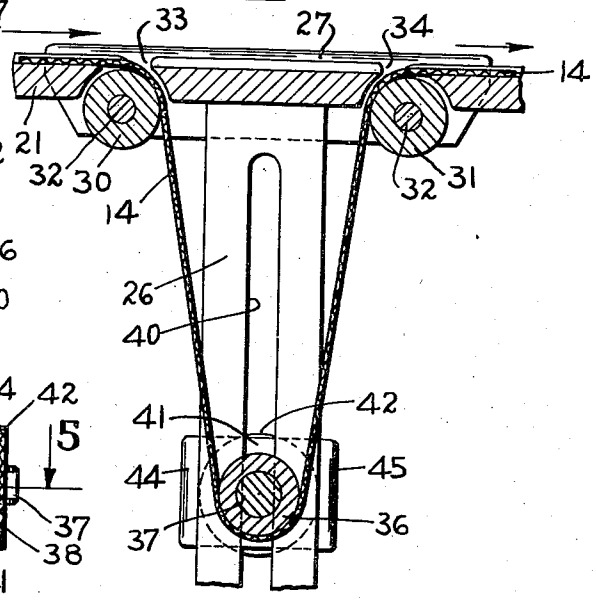
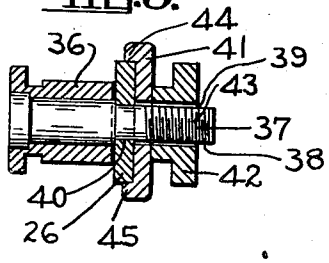


Fig. 5.



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MACHINE FOR AFFIXING SLIDE FASTENER ELEMENTS TO TAPES

Max Kiessling, Waterbury, Conn.

Application July 3, 1939, Serial No. 282,747

3 Claims. (Cl. 153—1)

This invention relates to slide fasteners, and more particularly to a machine for attaching a series of spaced rows of separable slide fastener elements upon a fabric tape or "stringer," and is an improvement of the invention disclosed in Patent No. 1,971,158 issued August 21, 1934, to Max Kiessling, Adolph J. Krieger and John Draher for "Separable fastener attachment machine."

In previous machines of the type referred to above, it was found that when a relatively long row of elements was affixed to a tape, the size of the machine was increased to a prohibitive degree, requiring the use of excessive floor space, and thus limiting the number of machines which could be installed in a given area. By means of the present invention, the above and other disadvantages have been overcome, and provision has been made of a machine of compact size capable of producing slide fastener tapes having rows of fastener elements of any desired length.

One object of this invention is to provide a machine of the above nature provided with means to adjust the length of the rows of fastener elements.

A further object of this invention is to provide a machine of the above nature which will be relatively inexpensive to manufacture, simple in construction, and very efficient and durable in use.

With these and other objects in view, which will appear as the description proceeds, there has been illustrated in the accompanying drawings one form in which the invention may be conveniently embodied in practice.

In the drawings:

Fig. 1 is a broken plan view of a machine for affixing fastener elements to a tape embodying the principles and features of this invention.

Fig. 2 is a broken side view of the same.

Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 2, looking in the direction of the arrows.

Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3.

Fig. 5 is a sectional view of the vertically adjustable pulley taken on the line 5—5 of Fig. 3.

Referring now to the drawings wherein like reference numerals designate like parts throughout the several views, the numeral 10 denotes the frame, or bed, of a fastener affixing machine such as is shown and described in the patent above referred to. A pair of reciprocating fastener element clinching dies 11 and 12 are oppositely arranged to slide in the bed 10 and are adapted to successively clamp the fastener elements 13 to an elongated fabric tape 14 (see Fig. 3). The dies 11 and 12 are adapted to be moved toward each other into operative position to squeeze an element 13 between them by a pair of power driven reciprocating bars 15 which actuate a pair of toggle linkages 16, which in turn serve to reciprocate the dies 11 and 12 as described above.

The elements 13 are fed into affixing position from a vertical upstanding magazine 17 by means of a reciprocable feed slide 18. The tape 14 is fed from any suitable source of supply about three triangularly arranged guiding rollers 19, and is caused to pass vertically upward between the dies 11 and 12, and thence around a grooved feed roller 20. From the feed roller 20, the tape 14 is fed along the entire length of a horizontal grooved tape-guiding and supporting bar 21 at the end of which the tape 14 is gripped by a pair of tape pulling rollers 22 and 23, the roller 23 being power-driven and the roller 22 being biased toward the driven roller 23 by a coiled spring 24. As fully described in the above mentioned patent, the reciprocation of the element feeding slide 18 is controlled electrically by means not shown herein, and which is in turn controlled by an element-operated electrical switch device 25. The switch device 25 is slidably mounted on the tape guiding bar 21 and serves to start and stop the feeding of the elements by the slide 18 in accordance with the desired length of the row of elements to be affixed to the tape 14.

In order to apply to said tape a row of fastener elements longer than the normal machine capacity, which is represented by the distance between the roller 21 and the control switch device 25, when it is in its extreme position at the left in Fig. 1 adjacent the gripping rollers 22 and 23, it would be necessary in the previous type of machine to lengthen the bar 21 which would require a prohibitive amount of floor space.

In the present invention, however, instead of lengthening the tape supporting bar 21, one side of said bar is split into two or more sections, and provision is made of one or more vertically disposed slotted frames 26 which are secured at their upper ends to a like number of horizontal top brackets 27, as by screws 28, the brackets 27 in turn being secured to the other side edge of the tape guiding bar 21 by screws 29. Provision is also made in each bracket 27 of a pair of horizontal rollers 30 and 31 spaced apart horizontally with respect to the bar 21, and being rotatably mounted on horizontal spindles 32 ex-

tending from the bracket 27, said rollers 30 and 31 being disposed just below the bar 21 so as to guide the tape 14 down through a pair of cross-slots 33 and 34 provided in the bar 21 in alinement with said rollers 30 and 31, respectively. The lower end of the frame 26 is preferably bent laterally to form a foot 34a which is adapted to be bolted to the floor beneath the bar 21 by a bolt 35.

In order to adjustably guide the loop of fastener tape depending below each pair of rollers 30 and 31, provision is made of a grooved loop-guiding pulley 36 which is rotatably mounted on a vertically adjustable horizontal spindle 37, which is flattened at its sides 38 and 39 to slidably fit in the slot 40 of the frame 26. The spindle 37 passes freely through the slotted frame 26 and also through a clamp plate 41 on the front of said frame, and a knurled hand-operated locking nut 42 is screwed upon threads 43 provided on the outer end of said spindle 37. Each clamp plate 41 extends across its corresponding slotted frame 26 and has its side edges 44 and 45 bent over the sides of this frame 26, whereby said plate 41 is vertically slidable on said frame without turning. By means of this construction, it will be seen that by loosening the locking nut 42, the loop-guiding roller 36 may be moved to any desired adjustable vertical position on the slotted frame 26 according to the length of the row of elements to be attached to the tape 14. The tape will then be led along the bar 21, down through the slot 33, over the roller 30, downwardly about the loop-guiding pulley 36, upwardly over the roller 31, through the cross-slot 34, and then again along the bar 21 to the gripping rollers 22 and 23. When exceptionally long tapes 14 are required, a plurality of such frames 26 with their associated rollers 30, 31, and pulley 36 may be provided—two of such frames being indicated in Figs. 1 and 2.

Operation

In operation, when it is desired to attach a row of fastener elements 13 to a predetermined length of tape 14, the electrical switch control device 25 will first be moved to the proper position on the bar 21 and clamped thereto by a thumb screw 46. The tape 14 will pass along the upper surface of the bar 21 from the feed roller 20 to the pulling rollers 22 and 23. When a tape 14 having a row of elements longer than the length of the tape supporting bar 21 is required, the free end of the tape 14 will be threaded downwardly through the cross-slot 33, and passed down over the roller 30, about the loop-guiding pulley 36, upwardly over the roller 31 and then through the cross-slot 34. The loop-guiding roller 36 will then be adjusted vertically in the slotted frame 26 in accordance with the length of tape required. Should the required length of tape be longer than can be taken care of by the use of one frame 26 and roller 36, it will be understood that another frame 26 may be employed as shown in Figs. 1 and 2.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent, is:

1. In a machine for affixing rows of fastener elements upon a tape, a guide bar over which said tape travels, means to feed said tape to one end of said bar, means to take up said tape at the other end of said bar, element attaching means adjacent said feed means, element operated means adjacent said take up means to control the attachment of said fastener elements to said tape, and means intermediate said feed means and said control means to continuously pass said tape away from said bar in a loop and then return it back to said bar, whereby a longer row of elements may be attached to said tape between said feed means and said control means than would otherwise be possible.

2. In a machine for affixing fastener elements to a tape, a guide bar for said tape, means to feed tape to one end of said bar, element attaching means adjacent said feed means, means to withdraw said tape from the other end of said bar, means located adjacent said withdrawing means responsive to the elements on said tape to control the attachment of elements to said tape, said guide bar having a pair of spaced-apart cross-slots, a pair of rollers below and in alinement with each of said cross-slots respectively, a slotted frame extending downwardly from said bar between said rollers, a spindle slidable up and down in the slot of said frame, a pulley rotatably mounted on said spindle, said pulley being adapted to receive a loop of said tape threaded downwardly through said cross-slots, and means to clamp said spindle to said frame in any desired vertical adjusted position thereon whereby the length of said tape may be varied.

3. In a machine for affixing fastener elements to a tape, a guide bar for said tape, means to feed said tape to one end of said guide bar, means to take up said tape from the other end of said bar, element attaching means adjacent said feed means, element-operated means adjacent said take up means to control the attachment of elements to said tape, a pair of upper rollers mounted in said guide bar, a slotted frame extending downwardly from said bar between said rollers, a spindle slidable up and down in the slot of said frame, a lower pulley rotatably mounted on said spindle, said pulley being adapted to receive a loop of said tape threaded downwardly through said cross-slots, means to clamp said spindle to said frame in any desired vertical adjusted position thereon whereby the length of said tape may be varied, and means on said frame for supporting it upon the floor beneath it.

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