UNIVERSAL LOCKSEAMER MECHANISM

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ABSTRACT

A lockseamer mechanism for trimming the free edge of cloth is disclosed, whereby a composite of knitted or woven cloth for men and women can now be easily fabricated at a high speed without requiring the full time attendance of a shopworker. A lockseamer generally employs three independent threads which are supplied to conventional sewing machine needles. Cloth to be lockseamed along a lengthwise edge is fed to an initial guide gauge having a guiding edge and made of stainless steel sheet. Adjacent thereto a principal guide gauge is provided and has a guide edge adapted to handle any type of curve, including outside curve and inside curve, as well as straight edges. A pair of high pressure jet nozzles are provided to press the cloth sideways against the guide edges. Electric eyes, responsive to the incoming cloth, actuate a third nozzle to advance the cloth towards the sewing machine needle. When lockseaming of the cloth is completed, the thread is automatically cut off and the cloth is moved and then removed from the edge of the sewing table.

1 Claim, 9 Drawing Figures
FIG. 9
UNIVERSAL LOCKSEAMER MECHANISM

BACKGROUND OF THE INVENTION

This invention relates to a mechanism for effecting lockseaming or knitted and woven clothes or any other sheets on their trimming edges, and more particularly to an improved type of lockseamer mechanism universally adaptable to any contour edges, including inside or outside curve or straight line. In lockseaming, generally three threads from respective bobbins are used. Further, lockseaming sewing machines are coordinated with needles and a conventional pusher.

Heretofore, when a piece of cloth was to be lockseamed, it had to carefully be placed by hand between the press and the advance, against a plain vertical wall board beyond the needle. This cloth had to be maintained in this position until the next cloth arrived on the spot, and the worker could not turn his or her attention away from this operation. The requirement of a trained worker constantly in attendance further increases cost beyond the inherent high cost of lockseaming machines per se. Further, lockseamed edges by different workers vary, and uniform appearance cannot be expected when manual operation is required.

SUMMARY OF THE INVENTION

It is, accordingly, an object of the present invention to provide a universal lockseamer mechanism having the following attributes, in order to provide a device which does not require constant attention.

1. The cloth should be guided to the proper position under the needle, regardless of the contour of the edge to be lockseamed. This conditions the length of the principal gauge such that two gauges are provided, one principal gauge and a supplementary gauge. The former is short and generally fixed to the main structure, and the latter is movably mounted, depending upon the length of the edge to be lockseamed and the variations of the curve on a table by strong permanent magnets. The gauges are generally well polished stainless steel duly strengthened in part.

2. To provide means to press cloth against the inside curve of the principal gauge; the cloth must be lockseamed by means of high pressure nozzle(s) of air.

3. To move the cloth without hesitation once it has been pressed on the inner curve of the principal gauge; a jet from an air pump is provided so that it prevents piling up of cloth in front of the needle in addition to the usual pusher gadget.

4. In order to balance the high pressure forces exerted by the jets, the system is controlled by an electric eye installed in front of the needle mechanism.

Additional attributes of the present invention reside in the specific construction of the exemplary embodiments of the universal lockseamer mechanism, particularly described in the specification and shown in the several drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front perspective view of one embodiment of this mechanism placed on a table according to the present invention.

FIG. 2 is the back view of FIG. 1.

FIG. 3 shows a needle working position and other constructions in enlarged details near the needle position.

FIG. 4 depicts a front perspective view of an advanced embodiment in relation to thread bobbins.

FIG. 5 depicts control knobs for controlling jet nozzle pressure.

FIG. 6 depicts a form of lockseamed cloth produced by the subject invention.

FIG. 7 is a detailed diagrammatic illustration of the principal gauge in relationship to the sewing machine proper.

FIG. 8 shows a diagrammatic illustration of the relationship between the electric eye and pressing member of the sewing machine proper and the principal and supplementary gauges.

FIG. 9 shows an embodiment of the principal gauge.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawings in more detail, there is shown in FIGS. 1–3 a universal lockseamer mechanism. On table 1, a supplementary thin stainless steel gauge 2 is fixed by means of a permanent magnet. The supplementary gauge has a pocketwise holder for the cloth to be lockseamed. In operation, the edge is inserted into the supplementary gauge and pushed along toward principal stainless steel gauge 10. There, the cloth edge encounters downwardly directed air jet 4, which presses the cloth edge firmly against the stainless steel gauge 10. Further air duct 4' throws an air jet downwardly to press the cloth edge downward within the gauge. Electric eye 8 detects the incoming cloth edge and starts the operation of needle 7. From the far end, vacuum nozzle 5 pulls the cloth toward it. For broad cloth, conveyor roller 9 is provided to assist the advance of the cloth, without which piling of cloth results in the vicinity of the needle.

There is shown in FIGS. 4–9 a more advanced version of the subject universal lockseamer mechanism. In this type of machine, only one operator is required instead of the three operators who are generally employed in conjunction with the three thread lockseaming sewing machine conventionally used. Besides, due to well controlled working, better quality products are obtained in addition to reducing the number of required operators.

The general layout of the machine is shown in FIGS. 4 and 5. Two high pressure air jet nozzles 4 are provided to press the cloth inwardly within the pocket 10 of the principal gauge 10 shown in FIG. 9. The pocket can receive in-curve and out-curve and straight line cloth edge contours and places the edge cloth right in front of needle 7 of sewing machine 6. Air jets from nozzles 4 and 4' can be appropriately set by knobs 11 and 12 according to the character of the cloth edge. Supplementary, the stainless steel gauge 2 has incoming folding edge 2'. This gauge 2 must be set so that continuation of the curve can be nicely achieved to match the contour of the cloth edge to the principal gauge 10.

These supplementary gauges 2 and 2" can be easily detachable, for they are kept in position by permanent magnets buried in the surface of table 1. A third air jet 16 is provided in FIG. 8 since the since the usual sew teeth advance mechanical unit provided in the three thread sewing machine was found insufficient to negotiate the movement of the cloth edge. This extra jet air assists the advance of cloth edge, and replaces vacuum.
set up 5 in the first embodiment. Usual press unit 15 is shown in FIG. 8.

Although the invention is herein shown in what the inventors believe to be the most practical and preferred embodiments, it is recognized that departures may be made therefrom within the scope of this invention.

What we claim is:

1. An improved lockseamer mechanism for use with a three thread type of sewing machine having a body and a needle, comprising:
   a principal guide gauge formed of thin stainless steel sheet and removably coupled to said sewing machine body, said principal guide gauge being adapted to guide cloth having a straight edge or an edge curved in either direction;
   a table, said sewing machine being positioned on said table, said table having permanent magnets buried therewithin;
   a supplementary guide gauge formed of thin stainless steel sheet and supported on said table by said permanent magnets;
   a plurality of air jet nozzles mounted adjacent said principal guide gauge and operatively directed thereto;
   an adjustable source of compressed air coupled to said nozzles, air streams being thereby directed toward said principal guide gauge for positioning cloth therewithin;
   an electric eye positioned between said principal gauge and said sewing machine needle and operatively coupled such that said needle operates when said electric eye detects the presence of said cloth;
   vacuum means positioned behind said needle for attracting said cloth thereto; and
   a band roller positioned adjacent said principal guide gauge for advancing cloth having relatively large dimensions, whereby cloth can be automatically fed to the sewing machine once it is placed in the gauge.

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