Oct. 15, 1968 H. SCHOLL ET AL 3,405,670

DEVICE FOR SEWING INSTALLATIONS FOR CLAMPING WORKPIECES

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FIG.1

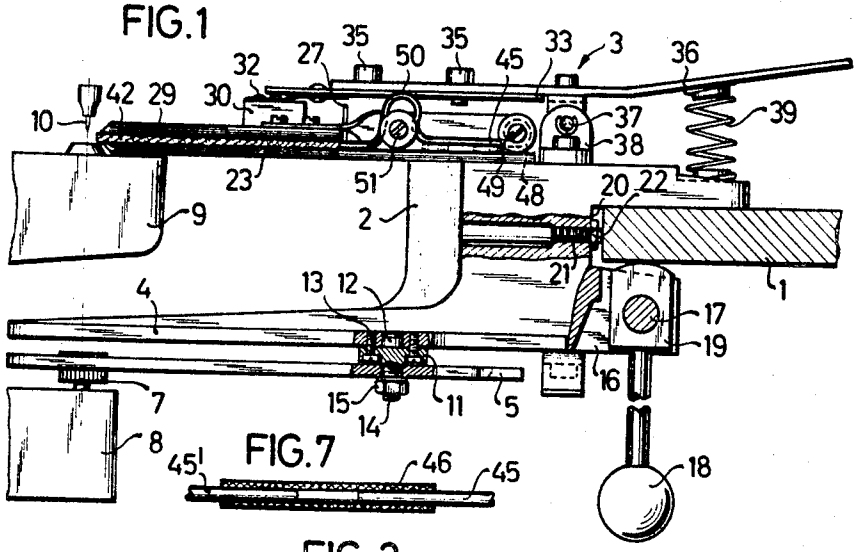
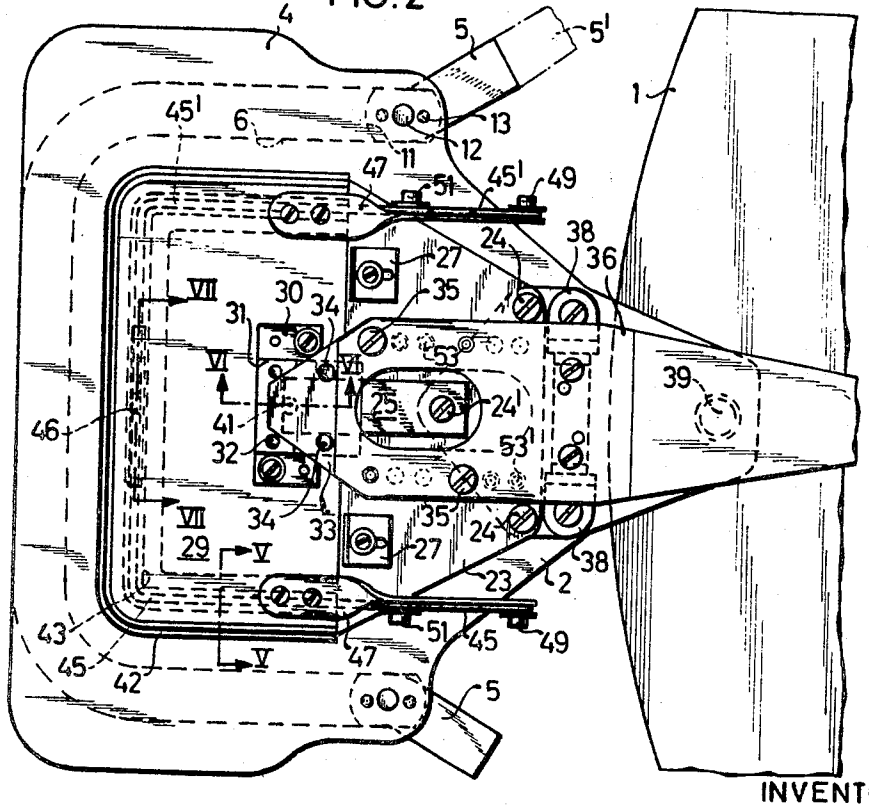


FIG.7

FIG.2



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FIG.3

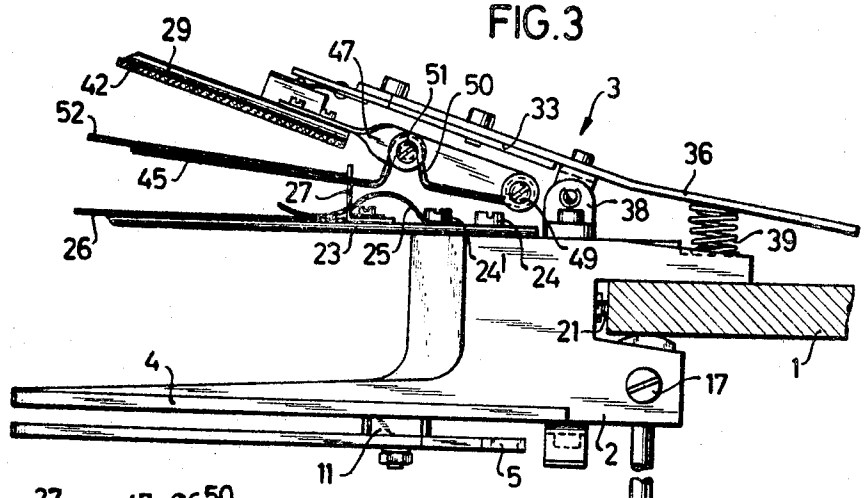


FIG.5

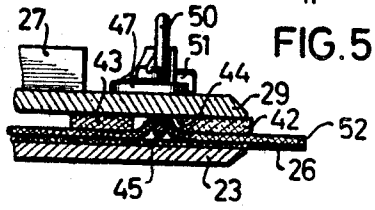


FIG.6

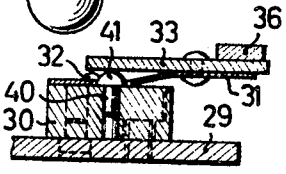
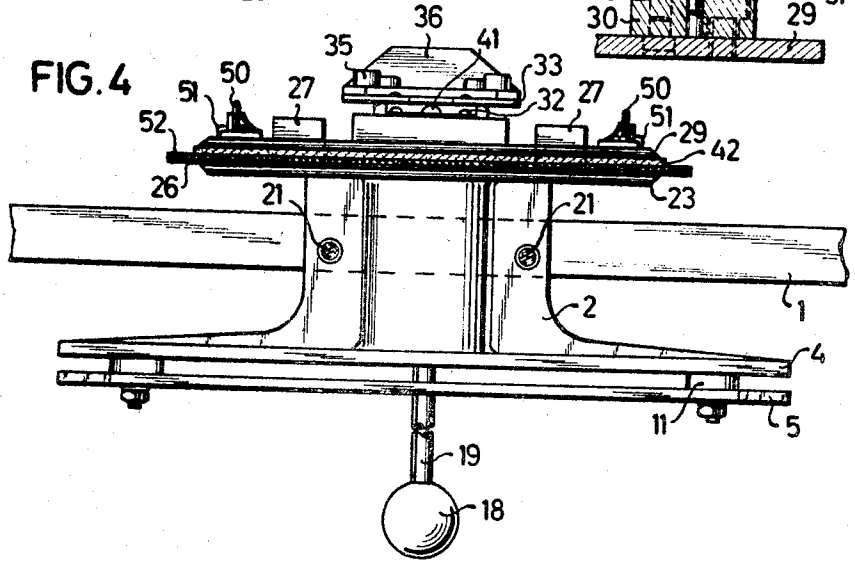


FIG.4



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DEVICE FOR SEWING INSTALLATIONS FOR CLAMPING WORKPIECES

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Claims priority, application Germany, Nov. 27, 1965, K 57,762
9 Claims. (Cl. 112—2)

ABSTRACT OF THE DISCLOSURE

A device for clamping workpieces consisting of two or more layers, in a sewing installation. The device includes a carrier for a workpiece, a clamp holder formed by a pair of plates articulated to one another, a template which determines the course of the seam and/or the shape of the workpiece and a device for lengthening one or more material layers relative to one another.

The invention relates to a device employed in sewing installations for clamping workpieces consisting of two or more layers, said device comprising a carrier for a workpiece and a clamp holder formed by a pair of plates articulated to one another, a template which determines the course of the seam and/or the shape of the workpiece and a device for lengthening one or more material layers relative to another.

The object of the invention is to facilitate the insertion of several layers of material which are to be sewn automatically onto workpieces, such as collars, cuffs, pocket patches, trouser loops, in clamp holders for workpieces, in order to increase the operational efficiency of these installations. Here, the material blanks must be arranged with their wrong sides facing one another in such a manner that the upper material will be longer than the lining, to prevent the lining from protruding beyond the edges of the upper material after the sewing and the final reversal of the workpiece. A further object of the invention is to facilitate the changeover of the devices in sewing installations, in order to speed up the change from one sewing program to another.

In a known automatic, template controlled, sewing device (German Patent 980,500), there are employed exchangeable workpiece clamp holders distributed radially and symmetrically on a rotatable table in order to bring, consecutively into the operating area of a sewing machine, the workpieces clamped in workpiece clamp holders during a continuous cycle. These workpiece clamp holders are provided with a mechanism for making one layer of material longer than the other when the plates articulated to one another are clasped together, so that the seam of the completed garment will not be seen directly after turning the sewn workpiece portion. These workpiece clamp holders are provided with a mechanism for making one layer of material longer than the other when the plates articulated to one another are clasped together, so that the seam of the completed garment can not be seen directly after turning the sewn workpiece portion.

In this workpiece clamp holder there is employed a rigid spacing plate, which is secured at a corresponding distance to the lower plate for picking up the lower material layer which is laid on the upper material layer before the closing of the holder. In a template for the mechanical sewing of material layers, disclosed in the German published patent application No. 1,175,536, there is arranged a fill plate for spacing interiorly of the templates, said fill plate being articulated to at least one of the templates and extending into corresponding recesses of the templates in the closed position of said templates and connected with the linking station by means of a substantially thinner connecting piece opposite the fill plate.

In this template, this articulated fill plate must be lifted manually for inserting individual material portions, whereby time is lost during the work cycle.

Time losses occur likewise during the required change of workpiece clamp holders used in the above described sewing installation, when the sewing program is changed; the workpiece holders being secured to the rotary table by clamping screws and requiring an adjustment in such a manner, that the guide templates for the magnetic rollers butt or joint one another without steps.

This arrangement is complicated since the secure clamping of the workpiece clamp holders to the rotary table can only take place after the adjustment of the guide templates.

The object of the invention is to provide a device, of the above type, which comprises simple means which will make possible an accelerated insertion of the material portions to be sewn and the lengthening of one material layer relative to another layer, when the workpiece clamps are closed, as well as speeding the change of the devices in the sewing installation for changing the program.

This problem is solved by means of a device for automatically reaching an intermediate position, facilitating the insertion of the material layers, when the workpiece clamp holders are opened and to space one or more material layers opposite one another after the closing of the workpiece clamp holders.

This device consists of a bolt swingably mounted on an upper clamp plate of the workpiece holder, which serves as a gripper, a yoke which may be brought into a position between the clamp plates when the workpiece holder is open, and which is received in a recess formed by elastic clamping bars when the holder is closed. This yoke is swingably supported on arms secured on the upper clamp plate and provided with stop bolts for the yoke. The yoke consists of two halves, which are secured to one another by means of a hose coupling.

In order to achieve a parallelism between both plates articulated to one another, independent of the thickness of the material layers, the upper clamping plate is secured to an extension arm by means of a thin leaf spring, said arm being adjustably screwed to a spring biased lever supported on the carrier. A pin with a semispherical head is mounted in the upper clamping plate, said pin registering with the extension arm when the workpiece clamp holder is closed.

A leaf spring is arranged at the lower clamp plate secured to the carrier, while guides are provided on the lower clamping plate for aligning the layers of material.

To effect a quick change of the devices in the sewing installation, adjustable guide screws are inserted in the carriers, said screws serving to align the device on the sewing installation.

An embodiment of the invention is illustrated in the drawing and will be described below:

In the drawing:

FIG. 1 is a device secured to a rotatable table and a partly shown sewing machine driven by a magnetic roller, shown in side elevation;

FIG. 2 is a plan view of the device;

FIG. 3 is a side view of the device with open workpiece clamps;

FIG. 4 is a front view of the device;

FIG. 5 is a cross-section taken on line V—V of FIG. 2;

FIG. 6 is a section taken on line VI—VI of FIG. 2 and

FIG. 7 is a section on line VII—VII of FIG. 2.

Rigidly clamped to a rotary table **1** of a sewing installation (not shown), are carriers **2**, bearing workpiece clamp holders **3** and provided with a lower plate **4** for securing a template **5**, against the inner contour **6** of which rolls a driven magnetic roller **7** (FIG. 1) which determines the course of the seam and the shape of the workpiece. The magnetic roller is supported in a horizontal swinging arm **8**, displaceable in all directions and which also carries the sewing machine **9**, whose needle **10** extends axially of the magnetic roller **7**.

Spacer pieces **11** are provided between the lower plate **4** and the template **5**, said spacer pieces being fitted to plate **4** by means of pin **12** and screws **13**. A threaded bolt **14** on the spacer piece **11** serves to receive the template **5**, which is secured by means of nut **15**.

A clamping lever **19**, rotatable about a bolt **17** and provided with an hand grip **18**, is positioned in the slot **16**. A recess **20** in the carrier **2** permits the securing of clamp holder **3** on table **1**. Adjustable slotted stop screws **21** are screwed in the carrier **2** in the area of the recess, said screws being adjustable with a screwdriver and being secured against rotation by nuts **22**.

Positioned parallel to the rotary table **1** on carrier **2**, is a lower clamping plate **23**, which is exchangeably secured to the carrier by means of screws **24**, **24'**. A leaf spring **25** (FIGS. 2 and 3) secured on clamp plate **23**, serves for securely clamping a lower material layer **26** after it is inserted in the workpiece holder **3**.

A pair of adjustable stops **27**, for positioning the lower layer of material **26** and the upper layer of material **52**, are screwed to the clamping plate **23**. A block **30** is screwed on to the upper clamp plate **29** and a thin leaf spring **31** is secured thereto by rivets **32**, the other end of the spring **31** being riveted to extension arm **33** at **34**. The extension arm **33** is adjustably secured to lever **36** by means of screws **35**, said lever being rotatably mounted about a shaft **37** (FIG. 1), which is received in the bearing supports **38** screwed to the carrier **2**. The lever **36** is under the tension of a spring **39**. A pin **40** with a semispherical head **41** is inserted in the middle of block **30**. The extension arm **33** secured to the lever **36** is disposed on pin **40**, against which it is biased by spring **39**.

The upper clamping plate **29** is provided on its side which faces the lower clamping plate **23**, with elastic clamping bars **42**, **43**, which are glued or vulcanized to the clamping plate **29** in such a manner, that a recess **44** is formed between them. A parted yoke **45**, **45'** is received in this recess when the workpiece clamp holder **3** is closed, both halves of the yoke being connected by hose piece **46** (FIG. 7). The yoke parts **45**, **45'** are swingably supported on spreading arms **47** which are screwed on to the upper clamp plate. To this end, the yoke parts **45**, **45'** are provided with ears **48** (FIG. 1) through which extend the shaft screws **49**, threaded in the spreading arms **47**.

The yoke parts **45**, **45'** are provided with crimpings **50**, in the effective area of which crimpings are provided gripping bolts **51**, which are inserted in the spreading arms **47**. As may be seen in FIG. 3, the bolts **51** come in contact with the crimpings **50** of the yoke **45**, **45'**, when the workpiece clamp holders **3** are opened, so that the yoke parts arrive in a middle position for the insertion of the upper material layer **52**. With the lowering of the workpiece clamp holder **3**, the upper layer of material **52** is drawn into the recess **44** by the yoke parts **45**, **45'**, whereby this layer of material (upper material) is lengthened relative to the lower material **26** (lining material).

In order to fabricate various types of workpieces, using the carrier **2**, it is only necessary to exchange the lower clamping plate **23**, the upper clamping plate **29** with the spreading arms **47** and the divided yoke as well as the template **5**. In the extension arm **33**, there are provided two rows of threaded bores **53**, **53'** in which the screws **35** may be inserted according to the desired degree of the extension of the lever **36**.

The devices must be securely clamped to the rotary table **1** by means of the clamping levers **18**, **19** in such a manner, that the adjacent templates **5**, **5'** (FIG. 2) butt one another without forming steps or interspaces, so that the magnetic roller **7** may roll over the butt joints without hindrance. This equalization can be effected by means of stop screws **21**, which, once adjusted, always provide an unobstructed passage at the butt joints.

The advantages achieved by the invention reside in that the insertion of the material layers in the workpiece clamps is greatly facilitated and thus speeded up, so that it may be brought to the sewing installation in clamped condition, while one layer of materials attains an increased distance from another layer; in the speedier exchangeability of the device at the sewing installation, e.g., a rotary table, for the purpose of a programming change. A further advantage is to be noted, in that only one clamping type carrier is required for various shapes of workpieces requiring appropriately formed guide templates and workpiece clamp plates; the guide templates as well as the workpiece clamping plates may be cut out of sheet metal by a photo-electric copying method according to drawn originals and provided with a final sandblasting, leveling and drilling at a reasonable cost.

We claim:

1. In a sewing installation including a sewing machine with a vertically displaceable needle and magnetic roller means associated with the machine and in axial alignment with said needle, a rotary table, a carrier member secured to said table, means on said carrier member for clamping a plurality of layers of material to be sewn, said clamping means including means for lengthening one layer of material relative to the other when said clamping means is in closed position, means for securing a template to said carrier member and cooperating with the magnetic roller means for determining the course of a seam to be sewn.

2. The combination according to claim **1**, wherein said clamping means comprises an upper clamping member and a lower clamping member, a pair of bars of elastic material spacedly secured to said upper clamping member for forming a recess therebetween, a yoke member in said clamping means, said yoke member being adapted to be received in said recess when said clamping means is in closed position and gripping bolts for engaging with said yoke in said closed position.

3. The combination according to claim **2**, further comprising a pair of jibs secured to said upper clamping member, said yoke and said gripping bolts being secured to said jibs.

4. The combination according to claim **3**, wherein said yoke member consists of two parts and a hose piece connecting said parts to one another.

5. The combination according to claim **4**, wherein said upper clamping member further comprises a lever pivotally mounted on said carrier, spring means biasing one end of said lever, an extension arm adjustably secured to the other end of said lever, and upper clamping plate, and a thin leaf spring securing said clamping plate to said extension arm.

6. The combination according to claim **5**, including a

pin secured to the upper clamping plate, said pin having a semispherical head, adapted to be emplaced against said extension arm when said clamping means is in closed position.

7. The combination according to claim 6, a lower plate member is provided with a leaf spring for adjusting the lower layer of material.

8. The combination according to claim 7, further including stops secured to said lower clamping member for aligning the layers of material.

9. The combination according to claim 8, further including adjustable stop screws secured to said carrier adjacent said rotary table, said screws being in abutment with said table for aligning said carrier with the sewing machine.

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HERBERT F. ROSS, *Primary Examiner.*

U.S. DEPARTMENT OF COMMERCE

PATENT OFFICE

Washington, D.C. 20231

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,405,670 October 15, 1968

Hans Scholl et al.

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

In the heading to the printed specification, line 5, "68B Sudbrackstrasse, both of 48 Bielefeld, Germany" should read -- Bielefeld, Germany, assignors to Kochs Adlernahmaschinen Werke A.G., Bielefeld, Germany --.

Signed and sealed this 10th day of March 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents