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JP,05-261187,A

PAJ **Detail** Image

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]The present invention relates to the sewing machine with an embroidery function which has a mark cutter device which can make the character which make [an emblem] functioned or was cut, and a picture besides embroidery.

[0002]

[Description of the Prior Art]What can perform various embroidery sewing exists as the present sewing machine with an embroidery function. For example, JP,H2-57288,A is one of those which the applicant developed.

[0003]

[Problem to be solved by the invention]However, it was only usually being able to perform embroidery sewing out of sewing in the sewing machine with an embroidery function, and the availability to sewing work was low.

[0004]The problem of how to use the X-Y driving part which the sewing machine with an embroidery function possesses also occurred.

[0005]

[Means for solving problem]Then, in the sewing machine with an embroidery function which has a X-Y driving part for the invention intensively that the inventor should solve the aforementioned problem as a result of repeating research, In a sewing machine head, build in a heater with a soldering bit, and it constitutes the heater with a soldering bit from a Z motor so that up-and-down motion is possible, By having considered it as the sewing machine with an embroidery function which has the mark cutter device whose wearing of the frame for a mark cut was enabled in the aforementioned X-Y driving part, Usually, it can sew, the character and picture which were cut like an emblem making-function and mark cutter other than embroidery can be made, and the aforementioned problem is solved.

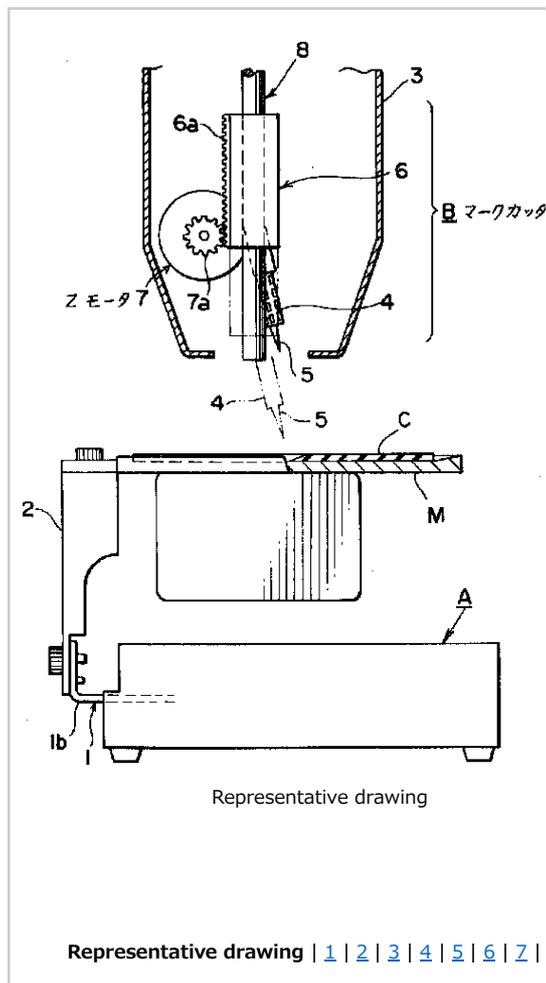
[0006]

[Working example]Hereinafter, the working example of the present invention is described based on Fig.1 thru/or Fig.9.

[0007]The code A is a sewing machine with an embroidery function, and points out the embroidery sewing machine in which only embroidery sewing is possible, and the compound embroidery sewing machine in which sewing and embroidery sewing are usually possible. This sewing machine A with an embroidery function incorporates a computer program preliminarily, and various embroidery sewing is constituted possible by the control device containing the central processing unit (CPU) 9.

[0008]As shown in Fig.2, the X-Y driving device 1 is provided by the sewing machine A with an embroidery function, The X motor 22 and the Y motor 23 which are controlled by the X-Y driving device 1 drive, the carriage guide 1a moves to X-direction, to this carriage guide 1a, X-direction is followed and the movable carriage object 1b is provided by Y-direction by the Y motor 23. Namely, the carriage object 1b is provided movable as appropriate in the direction of X-Y. An embroidery frame or the frame M for a mark cut is attached to the carriage object 1b via the attachment 2.

[0009]Mark cutter device B is built in the sewing machine head 3 in the sewing machine A with an embroidery function. The mark cutter device B mainly comprises the heater 4 (it may point



out with a heat cutter) with the soldering bit 5, and the Z motor 7 which moves up and down the Z carriage 6 which provided this.

[0010]Specifically, like Fig.2, it is installed beside a needle bar by the up-down lever 8, and to the up-down lever 8, The drilled hole drilled in the vertical direction of the Z carriage 6 of block like shape is inserted in, It gears on the rack 6a which the motivation gear tooth 7a of the aforementioned Z motor 7 (stepping motor) provided in the sewing machine head 3 provided on the vertical-like side surface of the Z carriage 6, and the motivation gear tooth 7a rotates in the proper direction, and via the rack 6a, comprises a drive of the Z motor 7 so that up-and-down motion is possible. Besides, the guide 8a is provided for the Z carriage 6 as prevention from reversal at the time of downward moving.

[0011]The soldering bit 5 may be provided at the tip side of the heater 4, or the heater 4 may be built in.

[0012]The mark cutter device B goes up and down between two points of a bottom dead point (refer to Fig.3) position from an upper dead point position (refer to Fig.2 solid line position), and especially, the program is stored in the control device controlled on the Z motor 7 so that waiting for selection may be carried out in the chain line part of Fig.2 and it may stand by.

[0013]What was shown in Fig.8 is a block diagram of the 1st working example that operates the present invention.

[0014]To the sewing machine A with an embroidery function, it is contained by the central processing unit (CPU) 9 in a control box, and to the central processing unit (CPU) 9, As an input, By usually, the mode selection means 10 which sews and chooses embroidery sewing, a mark cut, etc. as appropriate, the pattern selection means 11 provided with the pattern selection key 11a, the zero-bight-needle-location detection means 12 which detects a zero bight needle location, and a program. The pattern data memory means (ROM) 13 which memorizes the created net-pattern data and the system program for control, and the selection encaustic memory means (RAM) 14 which memorizes the read embroidery data for embroidery are connected, respectively.

[0015]The actuator driving circuit 15, the heater control equipment 16, the sewing-machine motor drive circuit 17, and also the pattern display equipment 18 are connected to the output side, respectively.

[0016]When sewing is usually chosen and it controls by the aforementioned mode selection means 10 as appropriate, The motor for needle-bar amplitude of the change drive motor 19 of the motor for needle-bar amplitude and the motor for Y-direction and the stitch-length-regulation motor 20 for stitch length regulations are made to drive with the output signal of the actuator driving circuit 15. It is constituted so that the sewing-machine motor 21 may furthermore drive with the output signal of the sewing-machine motor drive circuit 17.

[0017]When embroidery is chosen by the mode selection means 10 and controlled as appropriate, It is constituted so that the motor for Y-direction and the X motor 22 by the change drive motor 19 may be made to drive and the sewing-machine motor 21 may drive with the output signal of the sewing-machine motor drive circuit 17 with the output signal of the actuator driving circuit 15.

[0018]When embroidery is chosen by the mode selection means 10 only in the case of an embroidery function and is controlled as appropriate to it here, It is constituted so that the X motor 22 and the Y motor 23 may be made to drive and the sewing-machine motor 21 may drive with the output signal of the sewing-machine motor drive circuit 17 with the output signal of the actuator driving circuit 15.

[0019]When a mark cut is chosen by the mode selection means 10 and controlled as appropriate, With the output signal of the actuator driving circuit 15, the motor for Y-direction and the X motor 22 by the change drive motor 19 are driven, and the Z motor 7 is driven, and it is constituted so that heating control of the heater 4 and the soldering bit 5 (heat cutter) may be carried out with the output signal of the heater control equipment 16.

[0020]If mark cut mode is chosen by the mode selection means 10 as it is shown in Fig.1, when it describes about an operation of the 1st working example of Fig.8, the heater 4 will fall to the chain line position of Fig.2, and will carry out a character or selection waiting of picture data. And if a proper pattern is chosen by the pattern selection means 11 provided with the pattern selection key 11a and a start switch is pushed, The data chosen from the pattern data memory means (ROM) 13 by which program data was stored is once stored in the selection encaustic memory means (RAM) 14, This is outputted to the actuator driving circuit 15 and the heater control equipment 16, the motor for Y-direction and the X motor 21 by the change drive motor 19 -- and the Z motor 7 is made to drive, respectively, to the position of Fig.3, heating control of the heater 4 is carried out, the heater 4 with the soldering bit 5 is lowered, and the soldering bit 5 drives to X, Y, and Z-direction further. By doing in this way, the bodies C stretched by the frame M for a mark cut, such as cloth and paper, to be cut are omitted by the soldering bit 5 provided to the heater 4, and clipping work, such as a character and a picture, is performed.

[0021]In embroidery and usually sewing, the heater 4 has shunted in the sewing machine head 3 like a Fig.2 solid line.

[0022]What was shown in Fig.9 is a block diagram of the 2nd working example that operates the present invention.

[0023]Identical codes are attached and omitted about the same component member as the 1st working example. this 2nd working example -- the input side of the central processing unit (CPU) 9 -- a card -- ROM -- the pattern data memory means (ROM) 24 which memorizes the net-pattern data created by a program, and the system program for control -- and, The heat cutter connection detection means 25 which checks automatically that the heat cutter has been

connected is connected, respectively.

[0024]The actuator driving circuit 15 of an output side separates into the X motor driving 15A for X motor 22 drive, the Y motor driving 15B for Y motor 23 drive, and the Z motor driving 15C for Z motor 7 drive, and is provided.

[0025]If it describes about an operation of the 2nd working example of Fig.9 and the pattern data memory means (ROM) 24 as external data will be put into an input side, [that the heat cutter was automatically connected by the heat cutter connection detection means 25, and] The data chosen from the pattern data memory means (ROM) 24 by which program data was stored is once stored in the selection encaustic memory means (RAM) 14, This is outputted to the X motor driving 15A, the Y motor driving 15B, and the Z motor driving 15C, the bodies C stretched by the frame M for a mark cut, such as cloth and paper, to be cut are omitted by the soldering bit 5 provided to the heater 4, and clipping work, such as a character and a picture, is performed. In this 2nd working example, there is an advantage which serves as a heat cutter process of operation automatically by putting the pattern data memory means (ROM) 24 of an external data card into an input side.

[0026]

[Effect of the Invention]In the sewing machine A with an embroidery function which has the X-Y driving part 1 in the present invention, In the sewing machine head 3, build in the heater 4 with the soldering bit 5, and it constitutes the heater 4 with the soldering bit 5 from the Z motor 7 so that up-and-down motion is possible, By having considered it as the sewing machine with an embroidery function which has the mark cutter device whose wearing of the frame M for a mark cut was enabled in the aforementioned X-Y driving part 1, the effect which comes to be able to perform a clipping of an emblem and a clipping of a character and a picture is produced.

[0027]If these effects are explained in full detail, by providing the mark cutter device B first, It comes to be able to perform a mark cut reliably, a clipping of an emblem and a clipping of a character and a picture can be performed very tidily to the cloth in the frame M for a mark cut, and paper, and effective use very wide also as a sewing machine can be performed. That is, a sewing machine can be used effectively for the sewing machine which it was only with the embroidery function by taking in a mark cut function, and it has an effect which can increase the practical use opportunity of a sewing machine markedly, and it can meet a consumers's request largely.

[0028]The present invention is providing mark cutter device B in the sewing machine head 3. Composition is comparatively easy and there is a big advantage which can be provided inexpensive.

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