The invention provides a stitching pattern selecting device for a zig-zag sewing machine, in form of a pattern cam selector dial showing stitching patterns which can be produced by selecting one of a number of pattern cams of the machine, an indicator movable with reference to the dial and being coupled with the respective cams so that when it is located opposite an indicia on the dial, it also has selected the associated cam. A table adjacent the dial is provided with indicia indicative of machine adjustments which are to be carried out when one of the pattern cams has been selected.

10 Claims, 4 Drawing Figures
ZIG-ZAG SEWING MACHINE

BACKGROUND OF THE INVENTION

The present invention relates generally to a sewing machine, and more particularly to a zig-zag sewing machine. Still more particularly, the present invention relates to a zig-zag sewing machine having pattern cams and a pattern cam selecting mechanism.

Zig-zag sewing machines are well-known and require no detailed description, and neither does the fact that there are many such sewing machines available commercially which permit a particular stitching pattern to be selected by utilizing one or more cams. Such pattern cams are used to make the machine produce a specific stitching pattern. Such machines also use additional cams for changing the zig-zag amplitude, the needle position and the feeding speed.

It is also known to provide such machines with a pattern panel showing a plurality of stitching patterns, but the selection of a stitching pattern corresponding to a particular stitching type depends mainly on the memory of the operator or on the use by the operator of an explanatory manual. This means that the decision as to which cam to select is cumbersome and time-consuming. Moreover, quite frequently the desired type of stitching pattern is often not obtained or not exactly obtained, because of a misunderstanding or a faulty memory on the part of the operator, with the result that an undesirable pattern may be produced.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the invention to overcome the disadvantages of the prior art.

More particularly, it is an object of the invention to provide an improved zig-zag sewing machine wherein these disadvantages are eliminated.

In keeping with these objects, and with others which will become apparent hereafter, one feature of the invention resides in a zig-zag sewing machine having pattern cams and a pattern cam selecting mechanism. Briefly stated, the invention comprises a combination of a pattern cam selector dial provided with a plurality of first indicia each representative of a stitching pattern which can be produced by selecting one of the pattern cams, and an index movable with reference to the dial to indicate respective ones of the first indicia. The index is connected with the pattern cam selecting mechanism so as to select during such movement the pattern cam which is associated with the respective first indicium. A table is provided adjacent the dial and has second indicia indicative of machine adjustments to be carried out when a respective pattern cam has been selected. Indicating means extends between the first and the second indicia to indicate which second indicia are associated with which first indicia, and vice versa.

By resorting to the present invention, the operator of the novel sewing machine can readily and simply select desired stitching patterns in accordance with associated stitching types, and can make such machine adjustments as may be necessary, for instance by selecting the corresponding presser or other attachment, by selecting a requisite needle position, feeding speed or zig-zag amplitude.

Moreover, the machine according to the present invention is so simple to operate that it requires no particular skill and does not adversely influence the speed and efficiency of the operator.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a fragmentary vertical cross-section showing an embodiment of the invention;

FIG. 2 is a fragmentary perspective of the embodiment of FIG. 1;

FIG. 3 is a fragmentary perspective of the embodiment of FIGS. 1 and 2, but showing the lid in closed position;

FIG. 4 is a diagrammatic vertical section of a further embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawing in general it will be noted that in all Figures the details of the actual sewing machine, including the frame of the same, have been omitted. Zig-zag sewing machines are well-known to require a detailed description as to their structure and operation. However, if further information is desired, reference may be had to my prior U.S. Pat. No. 3,641,957 wherein a zig-zag sewing machine is fully disclosed.

For the sake of simplicity I have also omitted any showing of pattern cams or a pattern cam selector mechanism, except that in FIG. 1 I have illustrated such a mechanism diagrammatically and identified it with reference character M. A sewing machine using pattern cams and a pattern cam selector mechanism, and with which the present invention may for instance be utilized, is disclosed in my prior U.S. Pat. No. 3,433,092.

Referring now to the embodiment illustrated in FIGS. 1-3, it is seen that reference numeral 1 identifies a cover plate which is detachably mounted on a non-illustrated frame of a sewing machine of the zig-zag type. As a comparison of FIGS. 1, 2 and 3 clearly shows, the cover plate 1 is formed with an opening or cutout having a top opening 1a and a front opening 1b, it being understood that the front opening 1b will be arranged to face the sewing machine operator. A lid 2 is mounted on the cover plate 1 by means of a pivot 3 in the region of a rear side of the top opening 1a, that is a side which is remote from the front opening 1b (compare FIGS. 1 and 3). The lid 2 is pivotally movable between a first position (shown in full lines in FIG. 1) in which it exposes the top opening 1a, and a broken-line second position in which it overlies the top opening 1a. Mounted in the front opening 1b, by means of a panel support 4 which is secured to the non-illustrated machine frame, is a transparent plate 5 which may be of an appropriate synthetic plastic resin, e.g. PVC. I wish it to be understood that the front opening 1b could be omitted and that the plate 5 could be a part of the cover plate 1, for instance by being integral therewith. The entire plate 1 could be transparent or translucent, or all but the transparent portion 5 could be opaque.
Located inwardly of and visible through the transparent plate 5 is a pattern cam selector dial 6 provided with a plurality of indicia 7a, 7b, 7c ... each of which is representative of a stitching pattern that can be produced by selecting one of the non-illustrated pattern cams. If desired, it is also possible to omit the separate panel or dial 6 and to provide the indicia 7a, 7b, 7c ... directly on the plate 5.

Reference numeral 8 identifies a movable index or pointer that can move between the plate 5 and the panel 6 in parallelism with the two, and which of course is visible through the plate 5 as seen in FIG. 2. The index 8 includes a movable base 9 which carries the pointer and produces the movement of the same relative to the dial 6 in the longitudinal direction of the latter, that is normal to the plane of the drawing in FIG. 1. In non-illustrated but conventionally obvious manner the base 9 is connected with the pattern cam selecting mechanism M (shown only diagrammatically) so that, as the pointer 8 moves longitudinally of the dial 6 to one of the indicia 7a, 7b, 7c ..., the cam which produces the stitching pattern identified by the particular indicia is selected during the movement of the base 9 as soon as the pointer 8 is located opposite the respective indicium.

Reference numeral 10 identifies a member which carries on its upwardly directed surface (i.e., the surface which is directed upwardly when the member 10 assumes the position shown in FIGS. 1 and 2) a table 12 which replaces the heretofore required instruction manuals. In the illustrated embodiment the member 10 is pivoted at 10a to the lid 2, and at 10b to the cover plate 1. Intermediate the pivots 10a and 10b the member 10 is provided with a notch 11 about which it can fold from the full-line to the broken-line position of FIG. 1 depending upon whether the lid 2 is moved to open or closed position.

The table 12 is provided with various columns A-F showing different information, such as adjustments to be made to the machine. For instance, column A shows the "kind of stitches," column B shows the "pressing attachment" to be used, columns C, D and E show letters or figures indicating needle positions, feeding speeds and zig-zag amplitude, and column F is provided with indicating lines 13 which connect the vertical rows formed in these columns with the corresponding indicia 7a, 7b, 7c ... on the dial 6.

When a machine having the present invention is to be used with its pattern cams, the cover 2 is first opened to the full-line position shown in FIG. 1. Next, the operator looks at the column A showing the "kind of stitches" and selects a corresponding indicium 7a, 7b, 7c ... Thereupon, the operator moves the base 9 by manipulating a dial or the like (not illustrated) until the index 8 is aligned with the selected pattern, i.e., with the selected indicium 7a, 7b, 7c ... Since the movement of the base 9 and pointer 8 causes a simultaneous selection of the cam which is capable of producing the pattern represented by the indicia against which the pointer 8 has been placed, the machine is now ready to produce such a stitching pattern. Any machine adjustments that must be further made are indicated by reference to columns B, C, D and E, the vertical row appropriate for the respective selected indicium 7a, 7b, 7c ... being indicated by the respective line or lines 13.

If, for instance, the "chain stitch" of column A is desired, the pattern represented by indicia 7a is selected as indicated by the connecting line 13 in column F. The index 8 is then moved until it is opposite the indicium 7a as shown in FIG. 2, and the presser foot and the chain stitching shuttle shown in column B are now attached to the sewing machine. The needle position is set to the "M" position as indicated by column C, the feeding speed is set to between 2 and 3 as indicated in column D, and the zig-zag amplitude is set to zero, as indicated in column E. The machine is now ready for use. Similar setting operations are carried out if for instance straight stitching or pattern stitching should be selected from column A.

FIG. 4 shows a further embodiment of the invention wherein the lid is identified with reference numeral 17 and is pivoted at 16 so it can turn between the full-line position and the broken-line position illustrated in FIG. 4. The member 17 is mounted on the cover plate 14 and carries on one of its two major surfaces, namely the one identified with reference numeral 18, a table similar to the table 12 of FIG. 2. In all other respects the embodiment of FIG. 4 corresponds to that of FIG. 2, i.e., relative to the components 5, 6, 8 and 9. It will be appreciated that when the member 17 in the full-line position, the table at the surface 18 is exposed to view, whereas when the member 17 is in the broken-line position 17a, the surface 18 and therefore the table thereon will be facing downwardly and be concealed from view. The two major surfaces, of which the surface 18 is one, are inclined with reference to one another so that when the table on the surface 18 is in fact exposed as shown in FIG. 4, it will be so inclined to the operator of the machine (who should be understood to be to the right of FIG. 4) that the table can readily be read. The arrow X indicates the direction of rotation of the member 17.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of constructions differing from the types described above.

While the invention has been illustrated and described as embodied in a zig-zag sewing machine having pattern cams and a pattern cam selecting mechanism, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

1. In a zig-zag sewing machine having pattern cams and a pattern cam selecting mechanism, a combination comprising a pattern cam selector dial provided with a plurality of first indicia each representative of a stitching pattern which can be produced by selecting one of said pattern cams; an index movable with reference to said dial to indicate respective ones of said first indicia, and being connected with said pattern cam selecting mechanism so as to select during such movement the pattern cam which is associated with the respective first
indicium; a table adjacent said dial and provided with second indicia some of which are indicative of machine adjustments to be carried out when a respective pattern cam has been selected; and indicating means extending between said first and second indicia to indicate which second indicia are associated with which first indicia.

2. A combination as defined in claim 1; and further comprising a pivotable lid movable between a first position in which it exposes said table, and a second position in which it conceals said table.

3. A combination as defined in claim 2, wherein said table is provided on said lid.

4. A combination as defined in claim 3, wherein said lid has two major surfaces on one of which said table is provided; and wherein said one major surface is exposed when said lid is in said first position and the other of said major surfaces is exposed when said lid is in said second position.

5. A combination as defined in claim 3, wherein said table is provided on a foldable member which is connected with said lid and unfolds when said lid moves from said second position to said first position, and folds when said lid moves from said first position to said second position.

6. A combination as defined in claim 1; further comprising a cover plate covering said index and having a portion adjacent the same; and wherein said dial is provided on a dial plate adjacent said index.

7. A combination as defined in claim 6, wherein said portion is transparent, and said dial plate is located inwardly spaced from said portion, said index being movable in a space defined between said dial plate and said portion.

8. A combination as defined in claim 7; and further comprising fixed support means for supporting said transparent portion.

9. A combination as defined in claim 1, wherein said index comprises a pointer, and a movable base carrying said pointer and being movable with the same relative to said dial.

10. A combination as defined in claim 9, wherein said movable base is connected with said pattern cam selecting mechanism.