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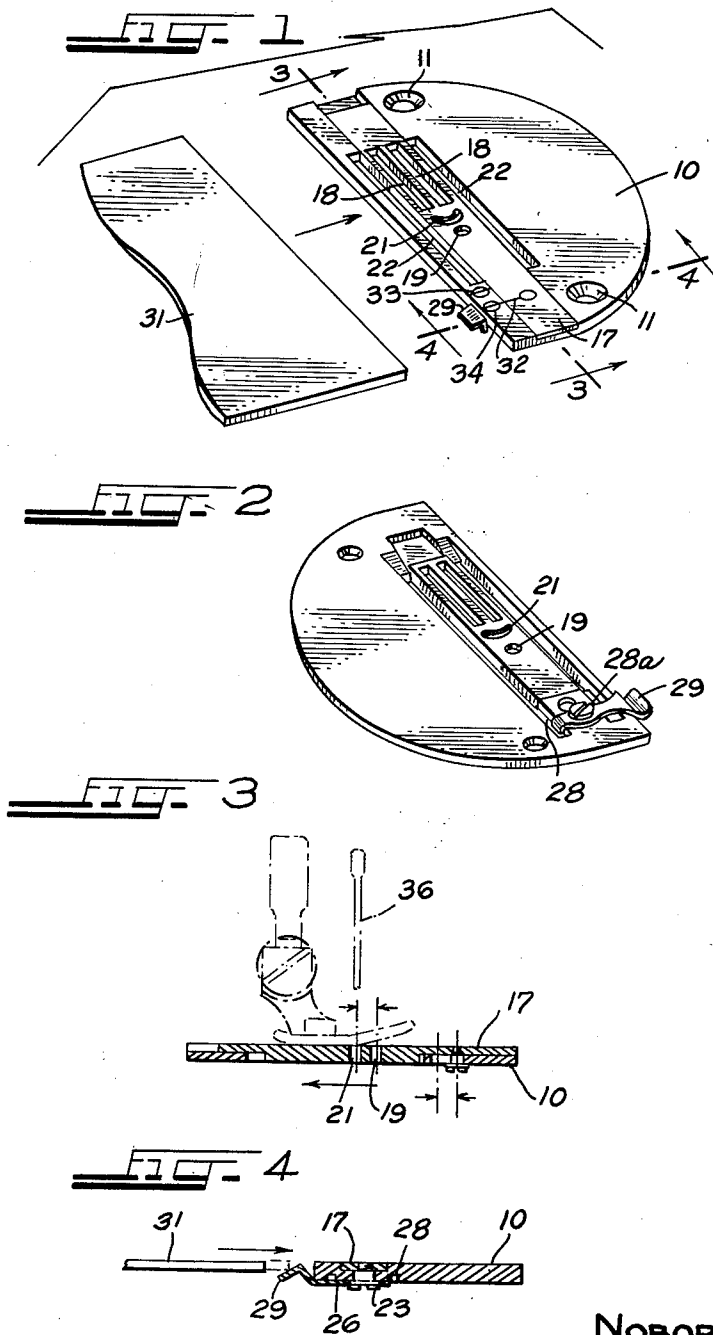
NOBORU IDOMOTO

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THROAT PLATE FOR A SEWING MACHINE

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2 Sheets-Sheet 1



INVENTOR
NOBORU IDOMOTO
BY *Nathan H. Kraus*
Frank H. Morris
ATTORNEYS

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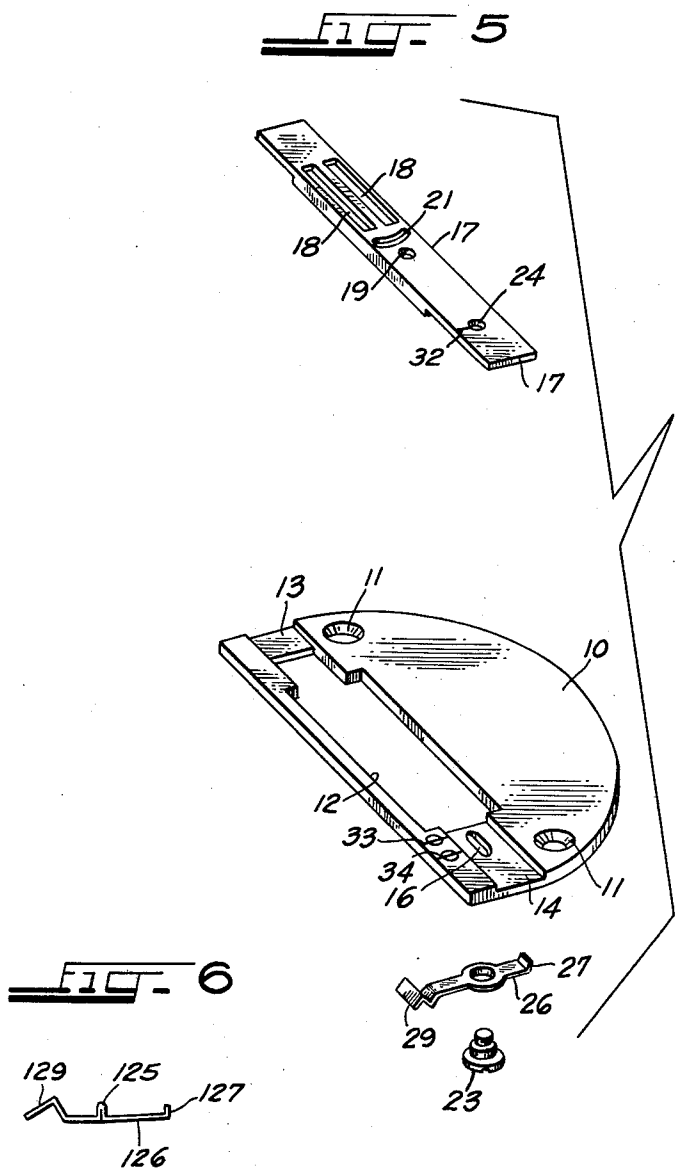
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INVENTOR
NOBORU IDOMOTO
BY *Nathan H. Kras*
Frank H. Marks
ATTORNEYS

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THROAT PLATE FOR A SEWING MACHINE

Noboru Idomoto, Osaka City, Osaka, Japan, assignor to Maruzen Sewing Machine Co. Ltd., Osaka City, Osaka, Japan

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5 Claims. (Cl. 112-260)

My invention relates to throat plates for zig-zag stitch type ornamental stitch sewing machines.

The object of my invention is the provision of a throat plate which is adjustable to selectively present an appropriate needle aperture in the throat plate for straight or for zig-zag stitching.

Another object of my invention is the provision of a throat plate of the foregoing character which is simple in construction, efficient in operation and economical to manufacture.

Other and further objects and advantages of my invention will become apparent from the following description when the same is considered in connection with the accompanying drawings in which,

FIG. 1 is a perspective view of a throat plate in accordance with my invention, the same being shown in spaced relation to a co-operating slide plate.

FIG. 2 is a perspective view of the throat plate illustrated in FIG. 1 and showing the same turned upside down.

FIG. 3 is a cross sectional view taken substantially on line 3-3 of FIG. 1, and showing, in broken lines, a presser foot and needle in co-operative relation.

FIG. 4 is a cross sectional view taken substantially on line 4-4 of FIG. 1.

FIG. 5 is an exploded perspective view of the components constituting my invention, and

FIG. 6 is a side elevational view of a modified embodiment of a detail of construction.

Referring to the drawings, my improved throat plate includes a main plate body 10, shaped substantially as illustrated, and provided with a pair of apertures 11 to receive suitable screws by which the plate body may be secured to a machine base. The plate body 10 is provided with a cut-out 12, the longitudinal axis of which extends in a direction parallel to the line of feed. The plate body 10 is recessed at each end of the cut-out 12 to afford guide grooves 13 and 14 arranged in linear alignment. It will be seen that the guide grooves 13 and 14 are of lesser width than that of the cut-out 12 and that the grooves extend approximately to one-half of the depth of the plate body. A guide slot 16 is provided in the recess 14 for a purpose, as will be hereinafter described.

A slide member 17, generally rectangular in plan, is arranged to be received within the recesses 13 and 14 for sliding movement therein. Referring to FIG. 5, it will be seen that the ends of the slide member 17 are of reduced thickness, so that when the said ends are received in the respective recesses, the top surface of the slide member 17 will lie flush with the top surface of the plate body 10. The slide member 17 is provided with a pair of parallel feed dog slots 18 in the intermediate portion thereof, and also in said portion, there is provided a circular needle aperture 19 as well as an elongated needle slot 21 extending transversely of the direction of feed. As will be apparent, the slide member 17 bridges the cut-out 12 affording another pair of parallel feed dog slots 22 on opposite sides of the slots 18.

The slide member 17 is secured in position by a shouldered screw 23 which passes through the guide slot 16 in the plate body and is received in a threaded aperture

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24 in the slide member. The screw 23 secures a leaf spring 26, presently to be described.

The leaf spring 26, shown more clearly in FIG. 5, extends transversely of the line of feed and includes at one end a bent-up finger 27 which is received in a recesses 28 on the underside of the plate body 10. The finger 27 preferably engages against the vertical wall of the recess 28 and affords a degree of stability to prevent the leaf spring 26 from rocking about the axis of the screw 23. The opposite end of the spring 26 overhangs the edge of the plate body 10 and terminates in a latching portion 29 arranged to engage against the underside of the slide plate 31 of the sewing machine. It will be apparent that the latching portion 29 bearing against the underside of the slide plate 31 will afford a substantial degree of resistance to movement of the slide member 17, so as to prevent inadvertent displacement of the same. It will also be understood that when the spring 26 is deformed as when it is engaged against the slide plate 31, the finger 27 will be canted into positive engagement with the vertical wall of the recess 28 thereby further increasing the frictional engagement of the cooperating parts. A reference marking 32 is provided on the surface of the slide member 17 and cooperates with a pair of corresponding markings 33 and 34 on the surface of the plate body 10, to indicate to the operator when the slide member is in a proper position of adjustment. It will be understood that the slide member 17 may be shifted at will, within the limits of the guide slot 16.

The operation of my invention should be apparent from the foregoing description, but briefly stated, it is as follows: When it is desired to employ the sewing machine for straight stitching, the slide member 17 is manually shifted by the operator to align the needle aperture 19 with the position of the needle 36, the correct position of the slide member 17 being indicated when the reference markings 32 and 34 are in registration, as illustrated in FIG. 1. Generally, the shifting may be accomplished without the necessity for sliding the slide plate 31 to the position illustrated in FIG. 4, wherein the latching portion 29 is free from engagement with said slide plate 31. However, if it is found that the frictional resistance is too great to be conveniently overcome, the slide plate 31 may be shifted to the position just described, to free the latching portion 29, whereby the slide member 17 may be readily shifted to a desired position.

In order to position the slide member 17 for zig-zag stitching, it is merely required to shift the slide member 17 so that the needle 36 is in registration with the slot 21, as illustrated in FIG. 1. This position being indicated by the registration of the reference markings 32 and 33.

In the modified embodiment illustrated in FIG. 6, the spring 126 is provided with an intermediate folded section 125 parallel with the finger 127 and arranged to be received in the recess 28a opposite the recess 28 of the plate body 10. The spring 126 terminates in a latching portion 129. It will be understood that where such a folded section such as 125 is used the finger 127 may be omitted.

Various other changes coming within the spirit of my invention may suggest themselves to those skilled in the art. Hence, I do not wish to be limited to the specific embodiments shown and described or uses mentioned, but intend the same to be merely exemplary, the scope of my invention being limited only by the appended claims.

I claim:

1. In a sewing machine, in combination with a slide plate and a reciprocating needle, a throat plate comprising,

- (a) a plate body having a cut-out, the longitudinal axis of which extends in a direction parallel to the line of feed,
 - (b) there being a pair of grooves in said plate body, one adjacent each end of said cut-out and said grooves being in linear alignment, 5
 - (c) a slide member slideably received in said grooves and bridging said cut-out,
 - (d) said slide member having a plurality of parallel feed dog slots extending longitudinally thereof and two spaced needle apertures, 10
 - (e) said plate body having in one of said grooves an elongated screw slot,
 - (f) a leaf spring extending transversely of the line of feed and secured on the underside of said plate body to said member by a screw passing through said screw slot and engaging in a threaded aperture in said slide member, 15
 - (g) the end of said leaf spring extending beyond the edge of said plate body and in a position to engage frictionally against the underside of said slide plate when the same is in juxtaposition to said plate body, 20
 - (h) said slide member being slideable to selectively effect registration of either of said needle apertures with said needle, 25
 - (i) the frictional engagement of said leaf spring end with the underside of said slide plate retaining said slide member in a position of adjustment.
2. In a sewing machine, in combination with a slide plate and reciprocatory needle, a throat plate comprising, 30
- (a) a plate body having a cut-out, the longitudinal axis of which extends in a direction parallel to the line of feed,
 - (b) there being a pair of grooves in said plate body, one adjacent each end of said cut-out and said grooves being in linear alignment, 35
 - (c) a slide member slideably received in said grooves and bridging said cut-out,
 - (d) the end portions of said slide member being of lesser thickness than the intermediate portion whereby the top surface of the slide member is flush with the top surface of the plate body, 40
 - (e) said slide member having a plurality of parallel feed dog slots extending longitudinally thereof and two spaced needle apertures,
 - (f) said plate body having in one of said grooves an elongated screw slot, 45
 - (g) a leaf spring extending transversely of the line of feed and secured on the underside of said plate body to said slide member by a screw passing through said screw slot and engaging in a threaded aperture in said slide member, 50
 - (h) the outer end of said leaf spring extending beyond the edge of said plate body and in a position to engage frictionally against the underside of said slide plate when the same is in juxtaposition to said plate body, 55
 - (i) said slide member being slideable to selectively effect registration of either of said needle apertures with said needle.
3. In a sewing machine, in combination with a slide plate and a reciprocatory needle, a throat plate comprising, 60
- (a) a plate body having a cut-out, the longitudinal axis of which extends in a direction parallel to the line of feed, 65
 - (b) there being a pair of grooves in said plate body, one adjacent each end of said cut-out and said grooves being in linear alignment,
 - (c) a slide member slideably received in said grooves and bridging said cut-out, 70
 - (d) said slide member having a plurality of parallel feed dog slots extending longitudinally thereof and two spaced needle apertures,
 - (e) said plate body having in one of said grooves an elongated screw slot, 75

- (f) a leaf spring extending transversely of the line of feed and secured on the underside of said plate body to said slide member by a screw passing through said screw slot and engaging in a threaded aperture in said slide member,
 - (g) said leaf spring having at its outer end a latching portion arranged to engage against the underside of said slide plate when the same is in juxtaposition to said plate body,
 - (h) said slide member being slideable to selectively effect registration of either of said needle apertures with said needle,
 - (i) the frictional engagement of said latching portion with the underside of said slide plate retaining said slide member in a position of adjustment.
4. In a sewing machine, in combination with a slide plate and a reciprocatory needle, a throat plate comprising,
- (a) a plate body having a cut-out, the longitudinal axis of which extends in a direction parallel to the line of feed,
 - (b) there being a recess in the underside of said plate body,
 - (c) said plate body having a pair of grooves, one adjacent each end of said cut-out and said grooves being in linear alignment,
 - (d) a slide member slideably received in said grooves and bridging said cut-out,
 - (e) said slide member having a plurality of parallel feed dog slots extending longitudinally thereof and two spaced needle apertures,
 - (f) said plate body having in one of said grooves an elongated screw slot,
 - (g) a leaf spring extending transversely of the line of feed and secured on the underside of said plate body to said slide member by a screw passing through said screw slot and engaging in a threaded aperture in said slide member,
 - (h) the outer end of said leaf spring extending beyond the edge of said plate body and in a position to engage frictionally against the underside of said slide plate when the same is in juxtaposition to said plate body,
 - (i) said leaf spring having on its inner end a bent finger engageable in said recess,
 - (j) said slide member being slideable to selectively effect registration of either of said needle apertures with said needle,
 - (k) said finger being canted into engagement with the wall of said recess when the end of said leaf spring is engaged by said slide plate thereby to secure said slide member in a position of adjustment.
5. In a sewing machine, in combination with a slide plate and a reciprocatory needle, a throat plate comprising,
- (a) a plate body having a cut-out, the longitudinal axis of which extends in a direction parallel to the line of feed,
 - (b) there being a pair of grooves in said plate body, one adjacent each end of said cut-out and said grooves being in linear alignment,
 - (c) said plate member having an elongated screw slot in one of said grooves,
 - (d) a slide member slideably received in said grooves and bridging said cut-out,
 - (e) said slide member having a plurality of parallel feed dog slots extending longitudinally thereof and two spaced needle apertures,
 - (f) a leaf spring secured on the underside of said plate body to said slide member as by a screw passing through said screw slot and engaging in a threaded aperture in said slide member,
 - (g) said leaf spring extending transversely of the line of feed and moveable with said slide member,
 - (h) the end of said leaf spring extending beyond the edge of said plate body and constituting a latching

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portion arranged to engage against the underside of said slide plate when the same is in juxtaposition to said plate body,

- (i) said slide member being slideable to selectively effect registration of either of said needle openings with said needle, 5
- (j) the frictional engagement of said latching portion with the underside of said slide plate retaining said slide member in a position of adjustment.

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