

[54] **QUICK RETRACTING SPACE SELECTABLE
MULTIPLE NEEDLE HOLDER**

[75] Inventor: **Karl Weigert**, Englishtown, N.J.
 [73] Assignee: **Reliable Attachment Co., Inc.**, New York, N.Y.
 [22] Filed: **Mar. 9, 1972**
 [21] Appl. No.: **233,256**

[52] U.S. Cl. 112/226, 112/167
 [51] Int. Cl. D05b 55/02
 [58] Field of Search 112/163, 164, 165,
 112/166, 167, 221, 226, 79

[56] **References Cited**
UNITED STATES PATENTS

1,067,818	7/1913	Keller	112/226 X
581,822	5/1897	Harris	112/221
1,605,385	11/1926	Bebel	112/167
1,510,246	9/1924	Sharaf	112/226 X
599,561	2/1898	Hopewell	112/226 X
1,899,303	2/1933	Basso	112/221
2,495,586	1/1950	Kufall	112/226
112,189	2/1871	Smith	112/167 X

Primary Examiner—Werner H. Schroeder
 Attorney—Robert W. Fiddler

[57] **ABSTRACT**

A multiple needle sewing machine attachment for selectively holding a plurality of needles subject to being spaced at a desired distance from each other either in operative stitch forming position, or in an inoperative position so as to permit one or more of the needles to be made inoperative as material is fed through the machine, whereby the direction of stitching may be changed without having any cross-over of the rows of stitches. Each needle is held by a needle block having a positioning slot through which a screw extends to adjustably retain the needle block on a slide member in a slideway formed in the body of the attachment, with the slide member biased by a spring, to a needle retracted position in the slideway. A selectively operable latch engages the slide member to retain the needle in an extended operative position. However on release of the latch the needle is quickly retracted to an inoperative position by the spring.

9 Claims, 5 Drawing Figures

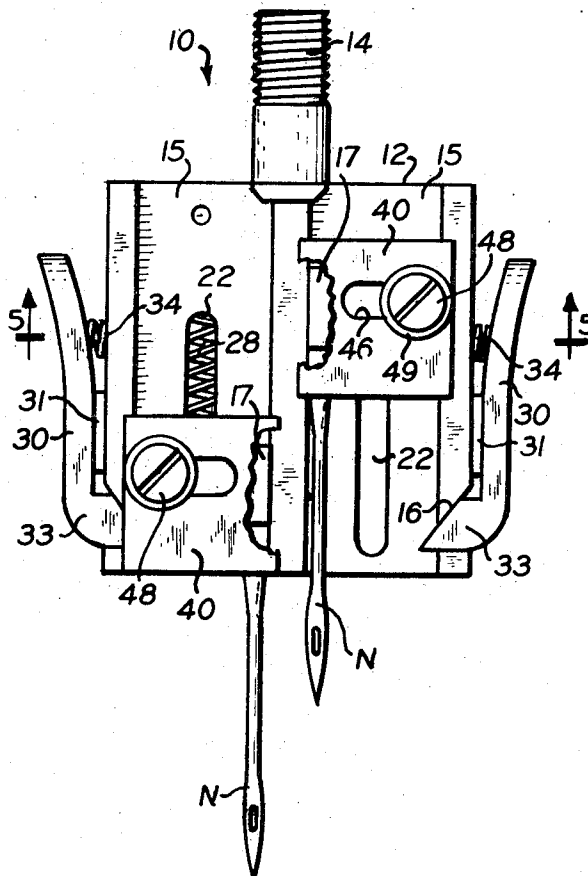


FIG. 1.

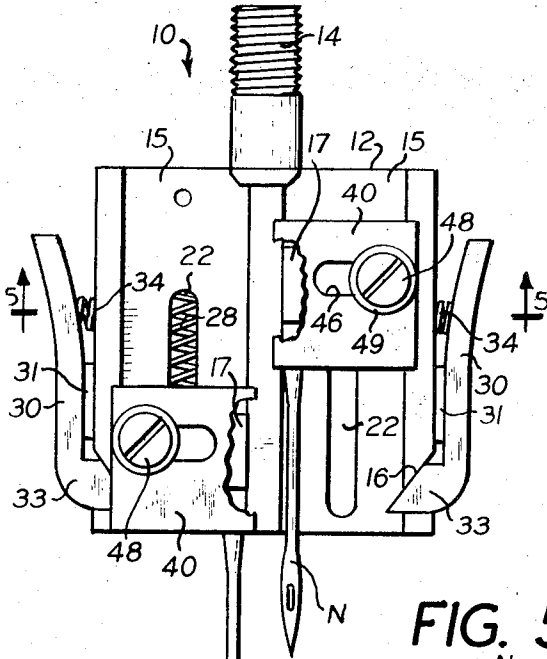


FIG. 3.

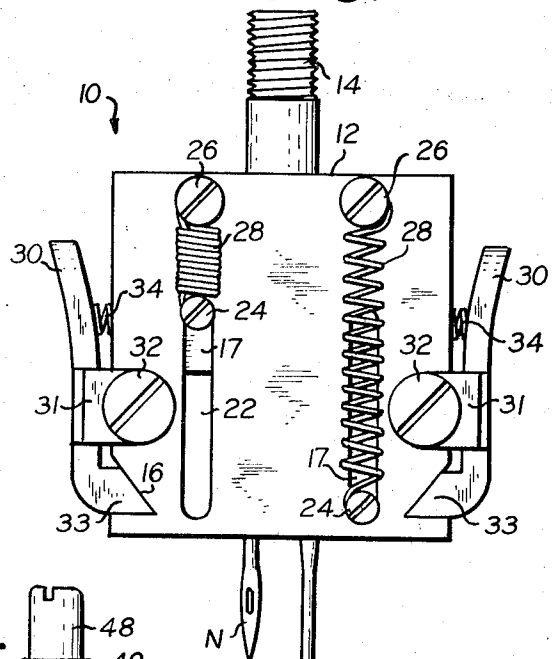


FIG. 5.

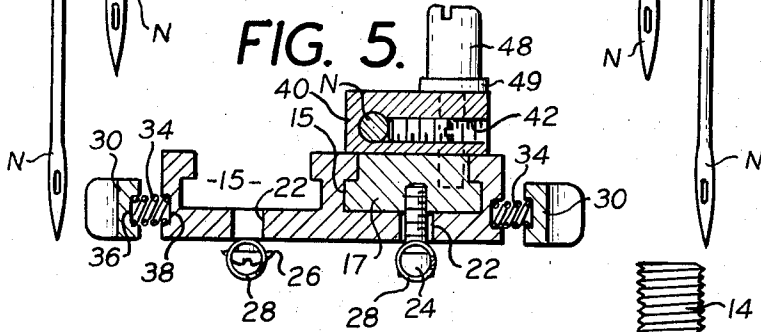


FIG. 4.

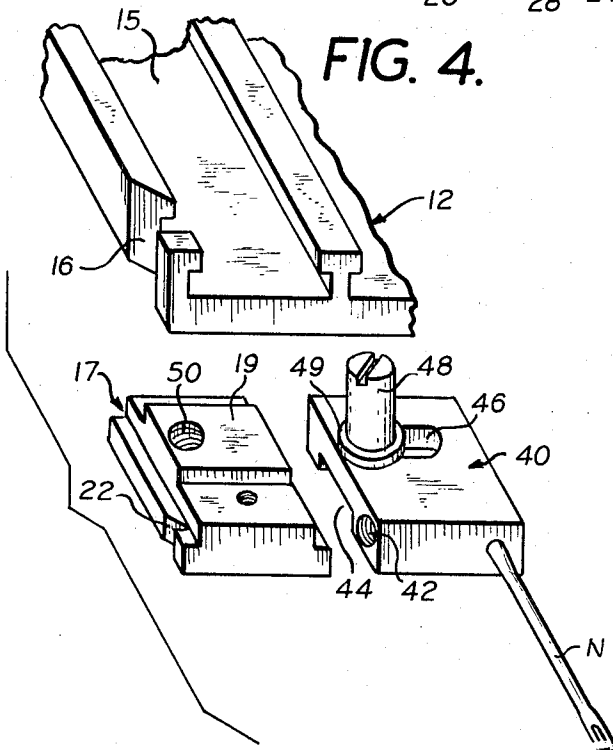
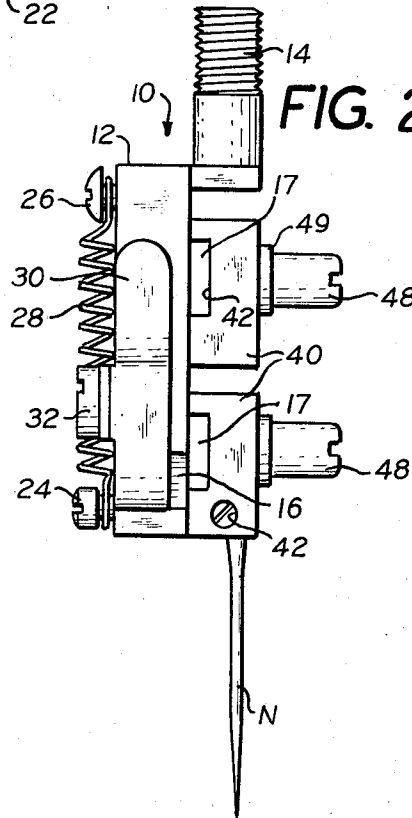


FIG. 2.



QUICK RETRACTING SPACE SELECTABLE MULTIPLE NEEDLE HOLDER

BACKGROUND OF THE INVENTION

This invention relates to the art of multiple needle holders for multiple needle sewing machines and more particularly to a multiple needle holder permitting selective spacing of the needles, and quick displacement of one or more of the needles from an operative position, whereby the direction of stitching may be changed without having the stitches of one row crossing those of another row.

Multiple needle machines are often employed to simultaneously form two or more parallel rows of stitches to obtain desired decorative effects or to attain a desired security of stitching. By the use of such multiple needle machines forming a plurality of rows of stitching simultaneously, sewing time is reduced and the desired parallelism between stitching rows is insured.

In using such multiple needle machines problems often arise when the rows of stitching must be made along a stitching course which changes direction. Thus when stitching a rectangular pocket on a garment, utilizing a double needle machine, at the corners the desired right angle turn cannot be made, since with both needles down the material cannot be pivoted, and if the needles are raised from the material to permit the pivoting of the fabric, upon resumption of stitching after the fabric is pivoted, there will be a gap in the line of stitches.

Attempts have in the past been made to ameliorate this problem by providing a needle holder in which the needle innermost on the radii of turning are subject to being retracted from the material, as for example in the prior U.S. Pat. Nos. 2,495,586 to Kufall, or 599,561 to Hopewell.

Such previously evolved selectively retractable multiple needle holders are however not satisfactory for use in present day commercial garment production, in that the time involved in stopping the machine, and manipulating the needle holders, when turning a corner becomes so wasteful as to minimize the time saving resulting from the use of a double needle machine.

Further problems exist in the use of double needle holders in that the spacing between the needles is fixed, so that different holders must be employed to obtain different spacing between the rows of stitches.

SUMMARY OF INVENTION

It is with the above considerations in mind that the present multiple needle holder has been evolved providing a needle holder for use on multiple needle machines, in which the needles are subject to positioning at a desired spacing between needles, and which permits selective rapid retraction of one or more of the needles to an inoperative position during the sewing operation with minimal interference with the rate of sewing.

It is accordingly among the primary objects of this invention to provide a multiple needle holder for multiple needle machines permitting selective displacement of one or more of the needles from operative position, in a fashion producing minimal interference with the sewing operation.

A further object of the invention is to provide a multiple needle holder for multiple needle sewing ma-

chines in which the period of stoppage of the sewing machine is reduced to a minimum when turning corners during the sewing operation.

Another object of the invention is to increase the speed of retraction of one or more needles held by a multiple needle holder when such retraction is desired.

It is also an object of the invention to provide a multiple needle holder for multiple needle sewing machines in which the spacing between needles may be selectively varied.

These and other objects of the invention which will become hereafter apparent are achieved by providing a multiple needle holder with a body adapted for securement to the needle bar of a multiple needle sewing machine. The holder body is formed with a slideway for each needle, and the needles are held by a needle block mounted on a slide member in each slideway. A spring biases the slide member and the needle block mounted thereon to a retracted position in said slideway, and a latch member is mounted on the body to engage said slide member and maintain same with the needle in an extended operative position against the biasing action of the spring. The needle block is secured to the slide member by a fastening screw extending through a positioning slot in the needle block into the slide member to permit selective positioning of the needle block on the slide member thus permitting selective spacing between the needles held by the holder.

A feature of the invention resides in the fact that retraction of the needle is effected by the action of the spring upon release of the latch, which requires simply finger pressure, thus eliminating the time consuming steps previously required in moving a needle to an inoperative position.

Another feature of the invention resides in the fact that the positioning slot in the needle block permits selective lateral shifting of the needles held by the holder, so that a single holder may be employed to provide a variety of needle spacings.

BRIEF DESCRIPTION OF DRAWINGS

The specific details of a preferred embodiment of the invention and their mode of functioning will be particularly pointed out in clear, concise and exact terms in conjunction with the accompanying drawings wherein:

FIG. 1 is a front elevational view of a multiple needle holder embodying the inventive concepts of the invention; here shown with the right hand needle retracted and the left needle in operative extended position;

FIG. 2 is a left side view of the holder shown in FIG. 1;

FIG. 3 is a rear elevational view of the holder shown in FIG. 1;

FIG. 4 is an exploded detail perspective view of the lower left corner of FIG. 1 illustrating how the needle block is held on the slide member, and the preferred arrangement of the slide member in the holder body channels; and

FIG. 5 is a cross-sectional view on line 5—5 of FIG. 1 showing the spring biasing of the latch levers.

DESCRIPTION OF PREFERRED EMBODIMENT

Referring now more particularly to the drawings, like numerals will be employed to designate like parts. As illustratively shown in the drawings, the holder 10, is formed of a rectangular block-like body 12. The body 12 is provided with a stud 14 at the upper end thereof

for securement to the needle bar of a multiple needle sewing machine. Slideways 15 are formed in the body 12, one for each needle to be held. In the illustrated embodiment showing a two needle holder, the slideways 15 as best seen in FIGS. 4 and 5 are T-shaped in cross-section, milled to provide overhanging flanges. A notch 16 is cut into the sides of the body 12 at the lower end of the lateral edges thereof extending into the slideways 15.

Arranged within each slideway 15 is a slide member 17. As illustratively shown the preferred slide member is T-shaped in transverse cross-section to match the slideways 15 (see FIG. 4) and is contoured with an elevated transverse needle block seating land 19. A notch 22 is formed at the lower edge of one of the sides of each slide member 17.

The base of the slideways 15 are formed with slots 22 and a spring anchoring slide member pin 24 in the form of a machine screw or the like as best seen in FIG. 3 is extended from the slide members through the slots 22. A spring anchoring body pin 26 is secured to the back of the holder body (see FIG. 3) above slots 22 and a slide member biasing tension spring 28 is extended between anchoring pins 24 and 26 to bias the slide member 17 towards anchoring pin 26 as spring 28 contracts.

Latches 30 are pivotally secured to the sides of the holder body on fulcrum arms 31 pivoted to the rear of the holder body 12 (see FIG. 3) on latch pivot screws 32. The lower ends of latches 30 are formed with detents 33 contoured to fit into notches 16 in body 12, and natches 22 in slide member 17.

Latch biasing compression spring 34 is arranged between the sides of holder body 12 and latches 30. Counter bores 36 and 38 are preferably formed in the body 12 and latch 30 respectively to seat and retain the latch biasing spring in position as best seen in FIG. 5. As is apparent springs 34 act to bias the detent 33 of the latch toward the notches 16 and 22.

Needle blocks 40, as best seen in FIG. 4, are formed to receive a needle N which is removably held by the needle block by means of a set-screw positioned in needle set screw aperture 42. Needle blocks 40 are preferably formed with a channel 44 to straddle land 19 of slide member 17. Adjusting slot 46 is formed in needle block 40 and a relatively long headed needle block attaching and adjusting machine screw 48 is extended preferably through washer 49 through slot 46 into attaching screw aperture 50 in slide member 17.

OPERATION

In use the aforescribed needle holder 10 is secured to the needle bar of a multiple needle sewing machine with the face shown in FIG. 1 facing the operator.

The spacing between needles is subject to selective adjustment by loosening needle adjusting screws 48 to permit the needle blocks to be moved to a position providing desired spacing between the needles, at which time the needle adjusting screws are tightened.

When a straight course of parallel rows of stitches is desired, needle adjusting screws 48 are normally pressed downwardly to bring all needles to a downward extended operative position.

When the course of stitches must turn a corner, the operator presses the latch on the side of the needle holder body adjacent the needle innermost on the radius of turning, whereupon the needle springs upwardly to a retracted inoperative position under the action of

spring 28. The outer row of stitching continues, the material is pivoted about the outer needle, stitching is continued with the outer needle until the inner row is reached, at which time the inner needle is brought down by pressing down the adjusting screw 48 on the retracted needle, and the formation of multiple stitching rows is again resumed.

As is apparent, the manipulations required to effect retraction of a needle and repositioning are subject to being performed by mere exertion of digital pressure by the operator.

The above disclosure has been given by way of illustration and elucidation and not by way of limitation and it is understood that all embodiments of the inventive concept are to be protected within the scope of the appended claims.

What is claimed is:

1. A multiple needle holder for a multiple needle sewing machine, said holder comprising a body adapted for securement to the needle bar of a multiple needle sewing machine; slideways formed in said body, one for each needle to be held; a slide member slideably mounted in each slideway; a needle block having an elongate laterally extending positioning slot extending therethrough; and an adjusting screw extending through said slot into said slide member; a needle secured to said needle block; a spring biasing said slide member to a retracted position away from the stitch forming area of the sewing machine; and a latch having a detent engaging said slide member in an operative extended position at the end of said slideway remote from the retracted position of said slide member.

2. A multiple needle holder as in claim 1 in which said slide member is formed with a notch in which said latch detent engages when said slide member is slid to a position maintaining the needle in operative position.

3. A multiple needle holder as in claim 1 in which said holder body is of a rectangular block-like configuration; said slideways extend vertically through said body when said holder is operatively positioned; and a latch pivoted on a side of said body adjacent said slideway.

4. A multiple needle holder as in claim 3 in which said latch is in the form of a first class lever, the spring biasing of said latch being provided by a compression spring arranged between said latch and said holder biasing the latch lever arm remote from the latch detent away from the body to bring the detent toward said body.

5. A multiple needle holder as in claim 1 in which said adjusting screw is of a length such that the shank of the screw may be digitally engaged to facilitate shifting of the needle to an operative extended position.

6. A needle holder as in claim 1 in which said spring biasing said slide member comprises a tension spring anchored at one end to said holder body, and at its other end to said slide member.

7. A needle holder as in claim 1 in which said slideways are T-shaped in cross-section, providing flanges overlying the edges of said slide members.

8. A needle holder as in claim 7 in which said slide member is T-shaped in cross-section with the leg of the T sliding between said flanges.

9. A needle holder as in claim 1 in which said needle block is formed with a channel straddling a land on said slide member.

* * * * *