A magnifying glass for a sewing machine including a first clamp for engaging the machine, a second clamp carried by the first clamp and adjusably engaging an L-shaped link which at its lower end telescopically engages a member which, through a ball-and-socket joint, carries a magnifying glass positionable adjacent the needle and pressure foot of the sewing machine.

13 Claims, 8 Drawing Figures
1 MAGNIFYING GLASS ATTACHMENT FOR A SEWING MACHINE

BACKGROUND OF THE INVENTION

1. Field of the Invention
This invention pertains to a magnifying glass attachment for a sewing machine.

2. Description of Prior Art
The use of a sewing machine frequently involves intricate and fine work which may cause eye strain and difficulty in carrying out precise sewing operations. This situation has led to the proposal that some form of magnification be provided to facilitate the operation of the sewing machine. Several devices of this type have been suggested in the past, yet they have possessed shortcomings and have not gone into any widespread use. One difficulty with past devices has been a lack of a suitable universal mounting to allow them to be connected to sewing machines of different manufacture. Also, these devices have lacked the number of different adjustments required in positioning the magnifying glass in the exact manner preferred by each individual machine operator. Another need is for a device which can be swung out of the way readily at times when it is not necessary or desirable to have the magnifying glass adjacent the needle of the machine. Rigidity of mounting is another feature often lacking, annoying vibration being encountered when the machine is in operation.

Representative prior-art devices are found U.S. Pat. Nos. 294,171, 756,024, 879,003, 1,567,439, 1,806,252, 2,554,544 and 2,563,473.

SUMMARY OF THE INVENTION

This invention provides an improved magnifying glass sewing machine attachment which is readily attached to any type of sewing machine permits universal adjustment, is readily operated and may be moved without difficulty as desired. The device includes a first clamp which grips the machine, the first clamp carrying a second clamp which, in turn, supports an L-shaped link. In one version, the first clamp is a C-clamp to grip the head of the machine, and, in another, it incorporates cables which circumscribe and grip the arm of the machine. The second clamp can be loosened to allow the L-shaped link to be moved axially or rotationally.

Proper tightening of the second clamp allows the L-shaped link to be pivoted relative to it, while being frictionally gripped with sufficient force to maintain its adjusted position.
The L-shaped link extends around the outside of the machine head and, at its lower end, telescoping engages a member which, in turn, carries a magnifying glass. A universal joint interconnects the member and the magnifying glass, allowing the glass to be rotated as desired relative to the member. The further adjustment of the telescoping engagement of the link and the member allows precise positioning of the magnifying glass adjacent the needle and pressure foot of the machine. The several adjustments provided by the clamps, telescoping links and universal joint allow the device of this invention to be associated with any machine and adjusted precisely to satisfy particular operators and operating conditions.

Despite the variety of adjustments, the device holds the magnifying glass rigidly while the machine is in use. When not in use, the magnifying glass is readily pivoted completely out of the way. The device of this invention also is durable, easily operated, producible at a reasonable cost and attractive in appearance.

BRIEF DESCRIPTION OF THE DRAWING:

FIG. 1 is a perspective view of a sewing machine to which is attached the magnifying glass arrangement of this invention;
FIG. 2 is an enlarged perspective view of the device of this invention, with the sewing machine head indicated in phantom;
FIG. 3 is a sectional view taken along line 3—3 of Fig. 2;
FIG. 4 is an elevational view of the lower end portion of the link and its engagement with the telescoping member;
FIG. 5 is a fragmentary sectional view taken along line 5—5 of FIG. 2;
FIG. 6 is a perspective view of a portion of a sewing machine with a modified magnifying glass attachment that clamps onto the arm of the machine;
FIG. 7 is an enlarged transverse sectional view taken along line 7—7 of FIG. 6; and
FIG. 8 is a fragmentary bottom plan view illustrating the arrangement for applying tension to the cables that encircle the sewing machine arm.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The adjustable magnifying glass assembly 10 of this invention, as shown in FIGS. 1—5, includes a C-clamp 11 which is adapted to engage the head 12 of the sewing machine 13. The C-clamp 11 is positioned transversely of the sewing machine 13 and on the inside portion of the head 12, held in position by a screw 14 which extends through a threaded opening 15 in one end of the C-clamp. An enlarged pad 16 with a rubber facing 17 is on the end of the screw 14. There is an additional rubber pad 18 on the inner surface of the clamp opposite from the screw 14, so that the clamp will not mar the finish on the sewing machine. A knurled head 19 on the screw 14 facilitates its rotation.

The end portion of the C-clamp 11 where the screw 14 is located includes an outward projection 21 which has a cylindrical exterior. This is received within a complementary opening 22 in a second and smaller clamp 23. The latter clamp includes a first slot 24 in its lower end, which is aligned with the axis of the screw 14 and extends inwardly to the opening 22 (see FIG. 3). A screw 25 extends across this slot. By tightening the screw 25, the lower end of the clamp 23 may grip the periphery of the projection 21 of the C-clamp 11, thereby locking the clamp 23 to the clamp 11.

At the upper end of the clamp 23 is a second slot 27, which is at right angles to the lower slot 24. The slot 27 extends inwardly to a cylindrical opening 28, through which extends a rod 29 which has a cylindrical exterior. A screw 30, having a knurled head 31, extends across the slot 27 and so can be tightened to cause the upper portion of the clamp 23 to firmly grip the periphery of the rod 29. On the other hand, loosening of the screw 30 allows the rod 29 to be slid axially relative to the clamp 23 and also to be rotated relative to the clamp 23. The screw 30 may be tightened to a degree where the clamp 23 grips the rod 29 sufficiently to hold it in
position, but will allow manual rotation of the rod 29.

The rod 29 is L-shaped, so that, when the unit 10 is attached to the sewing machine 13, the rod has a first portion extending along the rearward part of the head 12 and a second portion extending along the end of the head. The end of the rod 29 telescopes into a tube 33 which includes a diametrical slot 34 and a threaded periphery 35 at the end where the rod 29 enters. The thread 35 is tapered as is the thread of a knurled nut 36 received in the end of the tube 33. As a result of the mating tapered threads, the end of the tube is deflected inwardly as the nut 36 is advanced onto the tube. The tapered threads and the slotted tube end allow the tube 33 to be locked on the end of the rod 29. By loosening the nut 36, on the other hand, the tube 33 may rotate relative to the rod 29 and may be slid axially relative to the rod.

Beyond the tube 33 and integral with it is a socket 38, portions of which have a spherical contour and which receive a ball 39 on a stem 40 extending from a frame 41 which carries a magnifying glass 42. The ball 39 is pressed into the socket 38 by a plunger 43 which is loaded by a compression spring 44. The spring pressure may be controlled by adjusting a screw 45 which extends into a threaded opening in a plate 46 that engages one end of the spring 44. The screw 45 is axially fixed relative to a second plate 47 carried at the end of the tube 33, which allows it to adjust the spring force. The ball-and-socket joint allows universal adjustment of the magnifying glass 42, which is located at the forward portion of the machine adjacent the needle 48.

The device 10 of this invention provides complete versatility in adjustment, allowing it to be associated with different types of sewing machines. Moreover, it may be adjusted to suit the preference of the operator of the machine or the particular job at hand. The clamps 23 allows the rod 29 to be adjusted both axially and rotationally so that its end may assume the proper position to locate the magnifying glass 42 adjacent the needle 48 and pressure foot 49 of the machine. It is assured that the rod 29 can extend around the end of the head 12, and that its outer leg can project downwardly to clear the base of the machine in the sewing area. Adjustment of the position of the rod 29 can be accomplished both at the upper end of the clamp 23, which allows the rod 29 to move axially and to rotate about its axis, as well as at the connection of the clamp 23 to the C-Clamp 11. The telescoping connection to the tube 33 allows the effective length of the rod to be varied as needed. Finally, the ball-and-socket joint where the magnifying glass connects to the support allows the magnifying glass to be positioned at the proper angle with respect to the operative portions of the sewing machine. Additionally, this permits the magnifying glass to be swung out of the way when the presence of the magnifying glass is not desired. The magnifying glass may be removed entirely from the sewing area merely by rotating the rod 29 relative to the clamp 23 to pivot the glass upwardly.

In some instances, the sewing machine head may have a rounded surface or be tapered or in some other manner be constructed such that the C-Clamp 11 cannot grip it securely. In that event, the C-Clamp 11 may be replaced by the cable clamp 51 illustrated in FIGS. 6, 7 and 8, which engages the arm 52 of the sewing machine inwardly of its head.

The cable clamp 51 includes a pair of metal cables 53 and 54 which are received in plastic tubes 55 and 56, respectively, for protecting the finish of the sewing machine. Balls 57 are swaged on the ends of the cable 53, and similar ball ends 58 are swaged on the cable 54. Adjacent the ball ends 57, the cable 53 extends through openings 59 and 60 in bars 61 and 62, respectively. Sockets 63 and 64, connecting to the openings 59 and 60, receive the balls 57. In a like manner, the cable 54 passes through openings 65 and 66 in the bars 61 and 62, while the ball ends 58 are received in sockets 67 and 68 in the two bars.

A screw 69 extends through an opening 70 in the bar 61, with its shank received in a tapped hole 71 in the bar 62. Therefore, with the cables wrapped around the arm 52 of the sewing machine, the screw 69 may be tightened, drawing the bars 61 and 62 closer together and causing the cables to securely grip the periphery of the sewing machine arm. The use of two cables instead of one enhances the stability of the clamp 51 when it is tightened around the sewing machine arm.

An additional clamp 73 includes spaced pads 74 and 75 having openings through which extend the cables 53 and 54. Therefore, the cables 53 and 54 hold the clamp 73 firmly against the rearward side of the arm 52 of the sewing machine. Beyond the pads 74 and 75, the clamp 73 includes an opening 77 which receives one end portion of the L-shaped rod 29. A slot 78 extends inwardly from the edge of the clamp 73 and diametrically through the opening 77. A screw 79, having a knurled head, extends transversely across the slot 78, its threaded shank being received in a tapped opening 80 on the inner portion of the clamp. Therefore, tightening the screw 79 can cause the clamp 73 to grip the rod 29 at the opening 77 and, conversely, loosening of the screw 79 frees the rod 29. As before, the rod 29 extends around the end of the machine, positioning the magnifying glass adjacent the pressure foot and needle.

Preferably, to help steady the rod 29 to avoid vibration while the machine is in operation, there is a bar 82, spaced between the clamp 73 and the end of the machine, having an opening that receives the rod 29. Two parallel screws 83 and 84 extend through tapped openings in the bar 82 so that their heads may bear against the surface of the machine. Advancing the screws 83 and 84 causes the bar 82 to push outwardly on the rod 29, thereby cooperating with the clamp 73 to hold the rod steady during operation of the sewing machine.

The foregoing detailed description is to be clearly understood as given by way of illustration and example only, the spirit and scope of this invention being limited solely by the appended claims.

What is claimed is:
1. An adjustable magnifying glass attachment for a sewing machine comprising a first clamp means for gripping a portion of a sewing machine, a second clamp means carried by said first clamp means, link means carried by said second clamp means, said second clamp means including means for permitting longitudinal and rotational adjustment of said link means relative to said second clamp means, a member carried by said link means, means for varying the position of said member relative to said link means,
a magnifying glass, adjustable means connecting said magnifying glass to said member, an additional member connected to said link means at a location remote from said second clamp means, and an additional adjustable means carried by said additional member for engaging the surface of a sewing machine and cooperating with said first and second clamp means for holding said link means steady during operation of a sewing machine.

2. A device as recited in claim 1 in which said link means is a substantially L-shaped element having a first portion adapted to be positioned adjacent the arm of a sewing machine, and a second portion adapted to be positioned adjacent the outside end of a head of a sewing machine, said additional member engaging said first portion of said substantially L-shaped element.

3. In combination with a sewing machine having an arm, a head at the outer end of said arm, and a needle and pressure foot carried by said head, an adjustable magnifying glass device for said sewing machine comprising a first clamp including at least one flexible nonresilient cable receiving and engaging said arm, a second clamp carried by said first clamp, a link, said link being substantially L-shaped and having a first portion extending alongside said arm and a second portion extending around said head, said first portion of said link being engaged and carried by said second clamp, said second clamp including means for fixedly gripping said link, and for permitting said link to be moved axially and rotationally relative to said second clamp, a member telescopingly engaging the outer end of said second portion of said link, said member including clamping means fixedly gripping said outer end of said link and for allowing relative axial and rotational movement of said member relative to said link, a magnifying glass, and universal joint means interconnecting said magnifying glass and said member for permitting rotation of said magnifying glass relative to said member and adjustably positioning said magnifying glass adjacent said needle and pressure foot.

4. A device as recited in claim 3 including in addition an additional member carried by said first portion of said link at a location spaced from said second clamp, and threaded means carried by said additional member and engaging and pushing against the surface of said sewing machine for cooperating with said first and second clamps in holding said link means steady during operation of said sewing machine.

5. A device as recited in claim 1 in which said means connecting said magnifying glass to said member in- cludes a ball-and-socket joint.

6. A device as recited in claim 2 in which, for said means for varying the position of said member relative to said link means, said member includes a tubular portion telescopically receiving one end of said substantially L-shaped element, said tubular portion being compressible in diameter, and a threaded member for so compressing said tubular portion for thereby gripping said end of said substantially L-shaped element.

7. A device as recited in claim 2 in which said second clamp means includes a member having an opening for receiving said first portion of said substantially L-shaped element, and means for compressing said last-mentioned member at said opening for causing said last-mentioned member to grip said portion of said substantially L-shaped element.

8. A device as recited in claim 1 in which said first clamp means includes at least one flexible nonresilient cable for encircling the arm of a sewing machine, and means for applying tension to said cable for causing said cable to grip said arm.

9. A device as recited in claim 8 in which said second clamp means includes a member having an opening receiving said cable, and a surface adapted to engage the surface of a sewing machine upon said application of tension to said cable.

10. A device as recited in claim 9 in which there are two of said cables.

11. A device as recited in claim 3 in which said second clamp includes an opening for so permitting said link to be moved axially and rotationally relative to said second clamp, a slot extending from the exterior of said second clamp to said opening, and means for compressing said second clamp at said slot for causing said second clamp at said opening to so fixedly grip said link.

12. A device as recited in claim 3 in which said first clamp includes a pair of cables encircling said arm of said sewing machine, an enlargement at either end of each of said cables, a pair of adjacent members having openings receiving said cables and surfaces engaging said enlargements, and a screw thread means for advancing adjacent members toward each other for causing said adjacent members through said enlargements to pull on said cables and cause the same to grip said arm of said sewing machine.

13. A device as recited in claim 12 including in addition a relatively soft protective member around each of said cables for protecting the surface of said sewing machine.

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