June 16, 1964 J. P. ENOS ETAL 3,137,254

BUTTONHOLE GAUGES

Filed Oct. 9, 1961

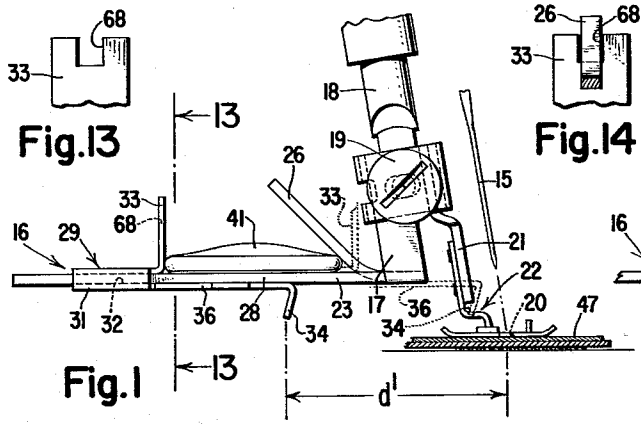


Fig.13

Fig.1

Fig.14

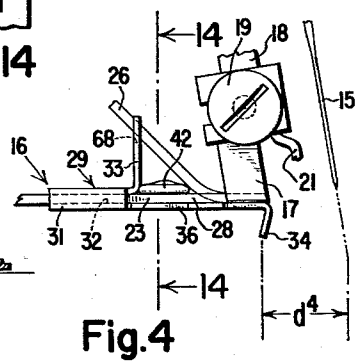


Fig.4

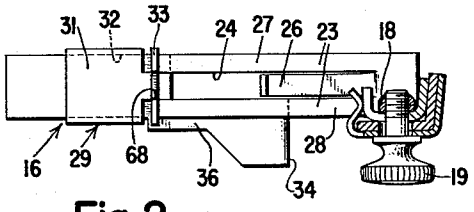


Fig.2

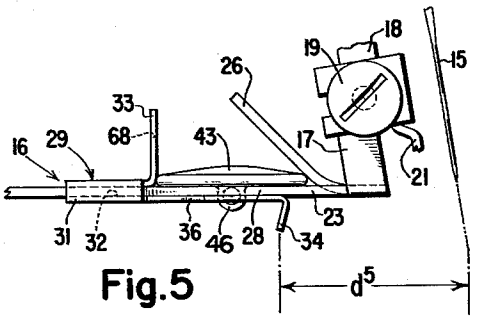


Fig.5

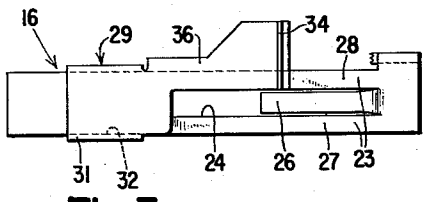


Fig.3

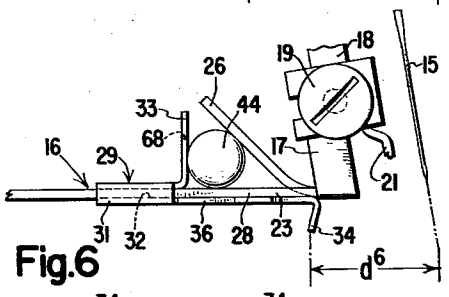


Fig.6

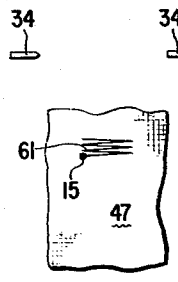


Fig.7

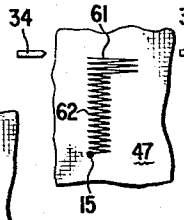


Fig.8

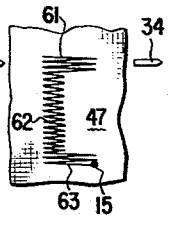


Fig.9

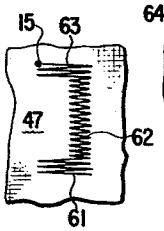


Fig.10

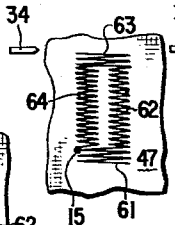


Fig.11

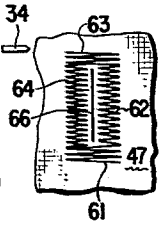


Fig.12

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BUTTONHOLE GAUGES

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This invention relates to buttonhole gauges and to the method for using the same and more particularly this invention relates to mounting a buttonhole gauge on the lower end of the presser bar of a sewing machine.

Buttonhole gauges, in themselves, are not new, however, previously known buttonhole gauges have usually been separate loose accessories. Also previously known buttonhole gauges have usually been used to mark the size of proposed buttonholes on a garment, before the garment was moved to the sewing position of a sewing machine. The present invention provides a buttonhole gauge which is not a loose accessory but which has means for securing the same to the lower end of the presser bar of a sewing machine, preferably by use of the screw normally used to attach the presser foot to the presser bar, and the primary object of the present invention is to provide an improved device of this character.

Another object of the present invention is to provide an improved buttonhole gauge which eliminates the need for marking on a garment the size of a proposed buttonhole prior to the formation thereof.

Still another object of the invention is to provide an improved buttonhole gauge that may be secured to the presser bar of a sewing machine.

Another object of the invention is to provide an improved buttonhole gauge which when used in conjunction with the needle of a sewing machine, or the needle hole of a presser foot, will show the sewing machine operator the proper size or length of buttonhole to be provided for a particular sized button.

A further object of the invention is to provide an improved buttonhole gauge which will permit gauging the full diameter of a shank button.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter set forth and illustrated in the accompanying drawings of a preferred embodiment of the invention, from which the several features of the invention and the advantages attained thereby, will be readily understood by those skilled in the art.

In the drawings:

FIG. 1 is an elevational view showing one embodiment of the present invention comprising a buttonhole gauge secured to the lower end of a sewing machine presser bar, said buttonhole gauge gauging a large sized button,

FIG. 2 is a top plan view, partly in section, of the buttonhole gauge shown in FIG. 1, the gauge being shown without a button,

FIG. 3 is a bottom plan view of the buttonhole gauge, no button being shown,

FIG. 4 is a view similar to FIG. 1, but showing the gauging of a small sized button,

FIG. 5 is a view similar to FIG. 4, but showing the gauging of a shank button,

FIG. 6 is a view similar to FIG. 4 but showing the gauging of a spherical button,

FIGS. 7–12, inclusive, illustrate the various steps used to form a buttonhole by use of the gauge shown in FIGS. 1 through 6, inclusive,

FIG. 13 is a fragmentary view on the line 13—13 of FIG. 1, and

FIG. 14 is a fragmentary view, partly in section on the line 14—14 of FIG. 4.

Referring in more details to FIGS. 1 to 14, inclusive, a buttonhole gauge 16 having a shank 17 is shown secured to the lower end of a presser bar 18 of a sewing machine having a needle 15 (but the sewing machine otherwise not being fully shown). The shank 17 is held to the presser bar 18 by means of a screw 19 which also holds the shank 21 of a presser foot 22 to the lower end of the presser bar 18. The presser foot 22 is fully illustrated and described in United States Patent No. 2,968,267, and, except for saying that the presser foot 22 has a needle hole 20, needs no further description.

The lower end of the shank 17 of the buttonhole gauge 16 is integrally attached to one side of one end of a rearwardly extending horizontal arm 23. The arm 23 is longitudinally slotted as at 24 (FIG. 2) and a portion of the material cut away from the arm 23 by formation of the slot 24 is bent to extend upwardly at an angle of 45 degrees with respect to the arm 23 and this upwardly extending portion forms a button holder member 26. Formation of the slot 24 divides the arm 23 into two prongs 27 and 28 which are positioned one on each side of the slot 24. A gauging member 29 is slidably carried on the horizontal arm 23 by reason of having a slide block 31 apertured as at 32 to receive the horizontal arm 23. The gauging member 29 also has a vertical upstanding button clamp member 33 and an offset depending gauge finger 34, which latter finger is held to the slide block 31 by means of a horizontally extending reach 36.

When in use the subject buttonhole gauge 16 may be used in conjunction with the needle 15 of a sewing machine or with the needle hole 20 of the presser foot 22 to determine the proper length of buttonhole which must be produced in order to accommodate any one of many different sizes and shapes of buttons. For example, FIG. 1 shows the buttonhole gauge 16 as being used to determine the proper sized buttonhole for a large flat shankless button 41. FIG. 4 shows the same gauge 16 being used to determine the proper sized buttonhole for a small flat button 42. FIG. 5 shows the same gauge 16 being used to determine the proper sized buttonhole for a shank button 43 having a shank 46. And FIG. 6 shows the same gauge 16 being used to determine the proper sized buttonhole for a spherical button 44.

In using the buttonhole gauge 16 any one of the buttons 41, 42, 43, or 44 is placed on top of the horizontal arm 23 and the gauging member 29 is moved on the arm 23 toward the shank 17 until the buttons 41, 42, 43 or 44 is gripped between the 45 degree buttonholder member 26 and the button clamp member 33. When this is accomplished the distance from the needle 15, or from the needle hole 20, to the gauge finger 34 is the length of the buttonhole required for the specific button being gauged. For example, the distances d^1, d^4, d^5 and d^6 in FIGS. 1, 4, 5 and 6 are respectively the length of buttonholes required for buttons 41, 42, 43 and 44.

However, because the buttonhole gauge 16 is secured to the presser bar 18 it is not necessary to mark the lengths d^1, d^4, d^5 and d^6 on the garment to which the buttonhole is to be applied and the proper sized buttonhole can be formed directly on the garment 47. This is accomplished by selecting a location on the garment 47 which location is to be one end of the buttonhole to be formed. A tack 61 (FIG. 7) is sewed at the selected end of the proposed buttonhole. Then a zigzag stitch 62 (FIG. 8) is sewed along one side of the proposed buttonhole. This zigzag stitch 62 is continued until the garment material 47 moves forward sufficiently on the sewing machine so that the tack 61 arrives at the gauge finger 34 (FIG. 8). At this point, a second tack 63 (FIG. 9) is formed. Next

the material is turned a complete 180 degrees about the needle 15 or the needle hole 20 as a center until the proposed buttonhole takes the position shown in FIG. 10. Then a zigzag stitch 64 (FIG. 11) is sewed along the other side of the proposed buttonhole. Next a slit 66 (FIG. 12) is cut between the two sets of zigzag stitches 62 and 64 thus completing a buttonhole of proper size to accommodate either the buttons 41, 42, 43 or 44 as the case may be.

Reference to FIG. 5 shows that when the shank button 43 is to be gauged, the shank 46 is placed into the longitudinal slot 24 formed in the arm 23. Reference to FIG. 2 shows that the button holder member 26 and the button clamp member 33 are located at opposite ends of the slot 24. This permits the shank 46 (FIG. 5) to enter the slot 24 in such a way that the full diameter of the button 43 can be gauged. Also when the small button 42 (FIG. 4) is gauged, the 45 degree button holder member 26 enters an open ended slot 68 (FIG. 14) formed in the upper end of the vertical button clamp member 33. Attention is also called to the fact that the gauge finger 34 is offset (see FIGS. 3 and 5) to one side of the slot 24 to a position such that the finger 34 does not interfere with the shank 46 passing through the slot 24. In addition, the reach 36 is spring pressed upwardly against the lower surface of the prong 28 in such a manner that once the gauging member 29 is set at a selected gauging position it will remain in this position. This permits removal of the gauged button once the gauge member 29 has been set and aids in the formation of a number of buttonholes of the same size.

It is common knowledge that the length of a buttonhole must be slightly larger than the actual size of the button which is to be passed through the buttonhole. The subject buttonhole gauge 16 automatically provides a buttonhole which is slightly larger than the button gauged. The manner in which this is accomplished can be understood from the following theoretical consideration. Because the open ended slot 68 (FIGS. 13 and 14) does not extend to the base of the button clamp member 33, the member 26 will prevent the member 29 from being moved toward the needle 15 or toward the needle hole 20 until the base of the member 33 coincides with and the base of the member 26. If the base of the member 33 could be made to coincide with the base of the member 26, it would be the equivalent of setting the gauging member 29 for a button of zero size. If, under these circumstances, the gauge finger 34 were to become coincident with the needle 15 or the needle hole 20, the buttonhole gauge 16 would show that a button of zero size could be passed through a hole of zero size. However, the parts of the buttonhole gauge 16 shown in the drawings are not so constructed. Actually, if the base of the member 33 (see dot-dot portion of FIG. 1) could be moved to coincide with the base of the member 26, there would be a horizontal space between the finger 34 and the needle 15 or the needle hole 20. Theoretically this is extra space that would be needed in order to permit a button of zero size to pass through the buttonhole. This extra space is always added to the actual length of any button gauged and thus the subject gauge 16 always provides a buttonhole which is slightly larger than the button which is gauged

Having thus set forth the nature of the invention, what we claim herein is:

1. A buttonhole gauge for use with a sewing machine equipped with a needle, a presser bar, and a presser foot having a needle hole, the presser foot being carried by said presser bar, said buttonhole gauge comprising a shank adapted for securement to the presser bar of said sewing machine; an arm having one of its ends attached to said shank; a button engaging member immovable relatively to said arm when said buttonhole gauge is secured to a sewing machine; and a gauge member slidably mounted on said arm, said gauge member having a portion thereof

easily visible to the operator and disposed substantially adjacent to the garment on which the buttonhole is being sewn, said buttonhole gauge being usable with the sewing machine in such a manner that when a button is placed between and abuts said gauge member and said button engaging member the distance between the needle or needle hole of the sewing machine and a portion of the gauge member indicates the proper length of buttonhole needed for the gauged button.

2. A buttonhole gauge for use with a sewing machine equipped with a needle, a presser bar, and a presser foot having a needle hole, the presser foot being carried by said presser bar, said buttonhole gauge comprising a shank adapted for securement to the presser bar of said sewing machine; a horizontally extending apertured arm having one of its ends attached to said shank; a holder member immovable relatively to said arm and extending upwardly therefrom; and a gauge member slidably mounted on said arm, said gauge member having a portion thereof readily visible to the operator and disposed substantially adjacent the garment on which the buttonhole is being sewn, said buttonhole gauge being usable with the sewing machine in such a manner that when a button is placed between and abuts said gauge member and said button engaging member the distance between the needle or needle hole of the sewing machine and the said portion of the gauge member determines the proper length of buttonhole needed for the gauged button.

3. A buttonhole gauge for use with a sewing machine equipped with a needle, a presser bar, and a presser foot having a needle hole, the presser foot being carried by said presser bar, said buttonhole gauge comprising a shank adapted for securement to the presser bar of said sewing machine; an arm having one of its ends attached to said shank; a button holder member carried by said arm and extending upwardly therefrom at an angle of 45 degrees; and a gauge member slidably mounted on said arm, said gauge member having an upstanding button clamp member, and a depending offset gauge finger, said buttonhole gauge being usable with the sewing machine in such a manner that when a button is gauged between the button holder member and the button clamp member, the distance between the needle or needle hole of the sewing machine and the depending gauge finger of the gauge member determines the proper length of buttonhole needed for the gauged button.

4. A buttonhole gauge for use with a sewing machine equipped with a needle, a presser bar, and a presser foot having a needle hole, the presser foot being carried by said presser bar, said buttonhole gauge comprising, a shank adapted for securement to the presser bar of said sewing machine; an arm having one of its ends attached to said shank; a button engaging member immovable relatively to said arm; a gauge member slidably mounted on said arm; and a gauge finger carried on said gauge member, said gauge finger being readily visible to the operator and disposed substantially adjacent the garment on which the button is being sewn, the dimensional sizes of said buttonhole gauge being such that if the base of said gauge member could be made to coincide with the base of said button engaging member, there would remain a small horizontal space between said gauge finger and said needle or needle hole.

5. A buttonhole gauge for use with a sewing machine equipped with a needle, a presser bar, and a presser foot having a needle hole, the presser foot being carried by said presser bar, said buttonhole gauge comprising a shank adapted for securement to the presser bar of said sewing machine; an arm having one of its ends attached to said shank; a button holder means immovable relative to the arm, said button holder means extending upwardly at an acute angle wtih respect to said arm, and a gauge member slidably mounted on said arm, said gauge member having an upstanding button clamp member, a

portion of said gauge member being readily visible to the operator and arranged substantially adjacent to the garment in which the buttonhole is being sewn, said buttonhole gauge being usable with the sewing machine in such a manner that when a button is placed between and abuts the button holder member and the button clamp member the distance between the needle or needle hole of the sewing machine and said visible portion of the gauge member determines the proper length of buttonhole needed for the gauged button.

6. The buttonhole gauge as claimed in claim 5, the

said portion of the gauge member being a depending offset gauge finger.

References Cited in the file of this patent

UNITED STATES PATENTS

1,237,569	Spencer et al.	Aug. 21, 1917
1,249,301	Barmon	Dec. 11, 1917
1,727,776	Johnson	Sept. 10, 1929

FOREIGN PATENTS

837,788	Great Britain	June 15, 1960