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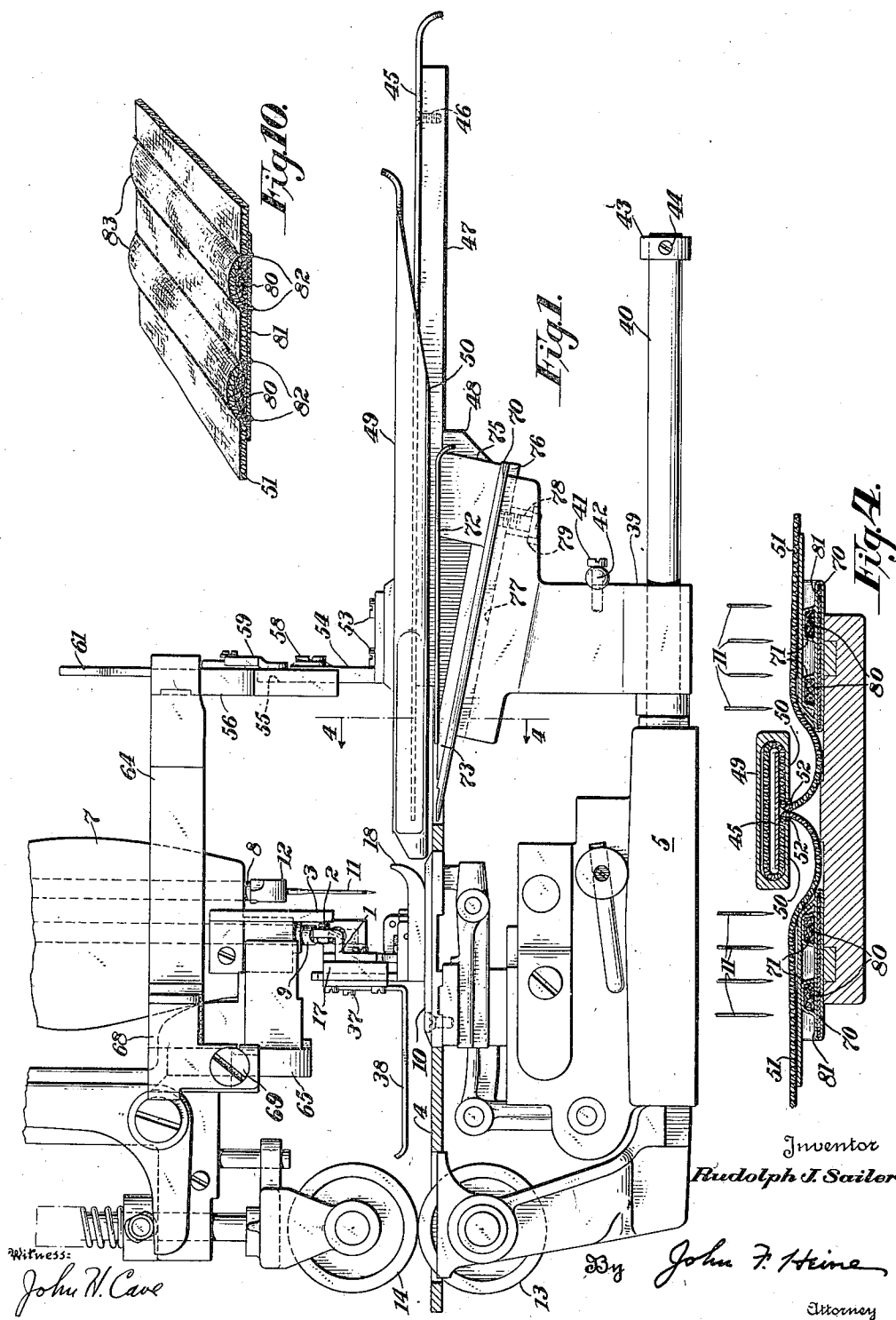
R. J. SAILER

2,334,150

SEWING MACHINE WORK-GUIDE

Filed May 10, 1941

3 Sheets-Sheet 1



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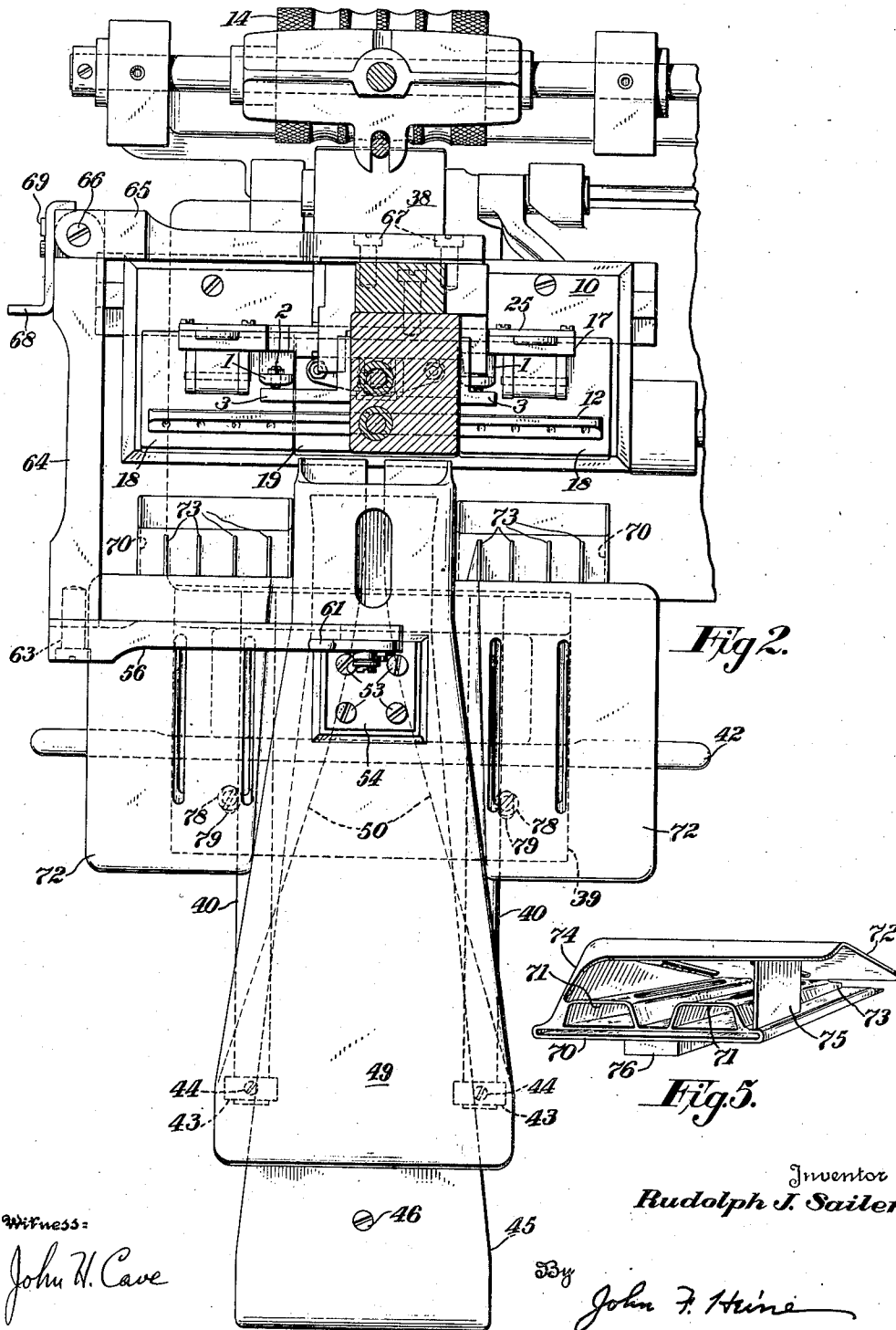
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3 Sheets-Sheet 2



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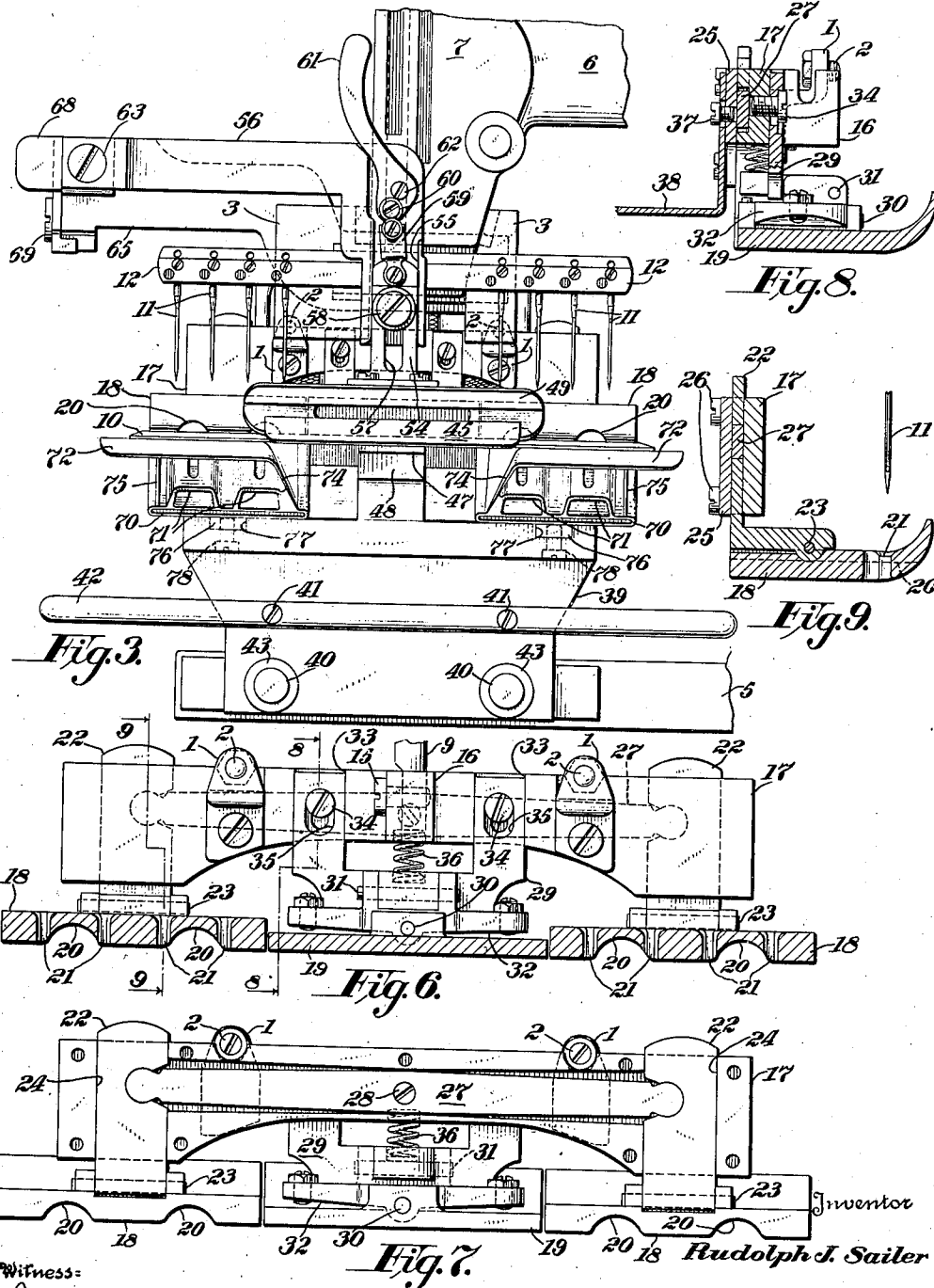
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SEWING MACHINE WORK-GUIDE

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5 Claims. (Cl. 112—136)

This invention relates to improvements in work-guides for use in connection with sewing machines and has for its primary object to facilitate the production of rows of stitches which are so disposed in a finished product that the spacing between at least two of said rows may be greater than that spacing between the needles used to produce the same.

A more specific object of the present invention is to effect the production of a plurality of parallel, reenforced, bat-filled beads in a body fabric with a standard multi-needle sewing machine arranged to sew at least two of such beads with a spacing between them, when removed from the machine, greater than the spacing between the two outer needles of said machine.

My invention has its greatest use in the production of upholstery work in which field it has been found that it is often not practical to furnish a sewing machine having a needle spacing or gauge that is commensurate with the stitching requirements. To provide such a sewing machine would involve a great expenditure of money and heretofore the common recourse has been to effect the desired widely spaced stitchings in a plurality of successive sewing operations. However, to perform successive sewing operations using one or more machines involves extra work handling and results in lost time and added costs. My invention, therefore, may be used to a marked advantage whenever the above described condition arises as the device may be applied, with slight modifications, to any standard multi-needle sewing machine and thus obviate the necessity for using an abnormally wide gauge machine, or a multiple head machine, for a one operation job.

With the above and other objects in view, as will hereinafter appear, the invention comprises the devices, combinations and arrangements of parts hereinafter described in connection with the accompanying drawings which illustrate a preferred embodiment of the invention and in which:

Fig. 1 is a side elevation of the attachment in operative position as applied to a sewing machine and showing the work-plate of the machine in section.

Fig. 2 is a top plan view of the attachment as applied to a sewing machine with the work-plate removed and showing a fragment of a sewing machine head.

Fig. 3 is a front elevation showing the entrance end of the attachment with the sewing machine

work-plate removed and disclosing fragments of the sewing machine arm and head.

Fig. 4 is a vertical section taken substantially along line 4—4 of Fig. 1 showing a fragment of a body fabric, four cords of batting, and two backing strips in proper relation as being directed to the sewing machine stitch-forming mechanism.

Fig. 5 is a perspective view of one of the two strip and bat guides.

Fig. 6 is a front elevation, partly in section of the sewing machine presser-foot unit.

Fig. 7 is a rear elevation of the presser-foot unit with its back plate removed.

Fig. 8 is a vertical section taken substantially along line 8—8 of Fig. 6.

Fig. 9 is a vertical section taken substantially along line 9—9 of Fig. 6.

Fig. 10 is a perspective view of a fragment of a finished work-piece and showing two of the four bat-filled beads.

The drawings illustrate the improvement as applied to a sewing machine having a base-frame 5, and an overhanging arm 6 terminating in the hollow head 7 in which the reciprocatory needle-bar 8 and the spring biased presser-bar 9 are mounted. Secured to the base 5 is a work-plate 4 and a throat-plate 10 apertured to receive the needles 11 which are mounted in the needle-frame 12 carried by the needle-bar 8.

Any suitable loop-taking elements and mechanism may be employed as complementary to the needles 11 in the formation of stitches, and the work may be advanced past the needles 11 by any usual or suitable feeding mechanism, although in the present modification a puller feeding mechanism is used in conjunction with the usual lower four-motion feed-dogs.

The puller feeding mechanism disclosed in the drawings comprises two horizontally disposed feeding rollers, 13 and 14, which are mounted upon and actuated by suitable mechanism that is not pertinent to the present invention.

Secured to the presser-bar 9, by means of a screw 15 and the presser-bar receiving lug 16, is a presser-foot unit best illustrated in Figs. 6 to 9, inclusive. This presser-foot unit comprises a frame member 17 carrying said lug 16, the two outer presser-feet 18, and the central foot 19. The outer feet 18 are each provided with two bead-guiding grooves 20 which are flanked on each side by a respective needle-aperture 21. The feet 18 are pivotally secured by means of pins 23 to shank elements 22 which are slidably confined in the grooves 24 by means of a backing

plate 25. Fig. 7 shows the presser-foot unit with the plate 25 removed therefrom and Fig. 9 best illustrates the screws 26 which secure the plate 25 to the frame 17.

The presser-foot shank elements 22 are pivotally interconnected by means of the beam 27 which is pivoted on screw 28. Thus the two feet 18 may compensate for variations in thickness of work and may move simultaneously in opposite directions within their respective guide-grooves 24.

The center foot 19 is pivotally secured to the two-armed carrier 29 by means of the pins 30, 31 and the intermediate gimbal-piece 32. Guide-grooves 33 slidably receive the two-armed carrier 29 which is retained in the frame 17 by the two screws 34 passing through slots 35 provided in said carrier 29. A spring 36 acts to retain the foot 19 in normal operating position and the slots 35 and screws 34 limit the up-and-down movement thereof relative to the frame 17.

Secured to the backing plate 25 of the presser unit by means of screws 37 is a resilient arm 38 which is adapted to exert a downward pressure upon the plait-folded section of the work to be described, so as to prepare the same for proper entry between the feed-rollers 13 and 14.

Angle arms 1, provided with adjusting screws 2, are secured to the frame 17 and said screws 2 are thus adapted to contact the braces 3 which are carried by the machine head 7. The frame 17 is thereby held from twisting about the axis of the presser-bar 9.

The work-guide proper comprises the attachment base 39 slidably mounted upon the rods 40 which are threaded into the sewing machine base 5. Secured by means of screws 41 to the base 39 is a handle rod 42 which furnishes a means by which the operator may retract the base 39 from the sewing machine in order that access may be had to the loop-taking elements. The collars 43, made fast to the rods 40 by means of set-screws 44, limit the retraction of the base 39. Fig. 1 illustrates the position of the base 39 when the attachment is in its operative position.

A fabric folding device, which in the preferred modification is adapted to form a box-plait, is mounted upon the base member 39 to extend in the direction of feed. This plaiting device comprises an arbor or spreader-plate 45 secured by means of screws 46, one of which is shown in Fig. 1, to a supporting beam 47 which is suitably mounted upon the fin 48 of the base 39. Spaced from the arbor 45 is a wall-section 49 which extends about the opposite sides of the arbor 45 to form folding wings 50 about which the fabric 51 is adapted to be folded to form two reentrant folds 52.

As may be seen in Fig. 2, the width of the arbor section 45 tapers towards its discharge end and the surrounding wall-section 49 also tapers in proportion therewith so that the fabric material will be gradually gathered to form the two reentrant folds 52.

The wall-section 49 is secured by means of screws 53 to the angle-bracket 54 which is slidably received by the grooved portion 55 of the overhanging arm 56. As best illustrated in Fig. 3, the bracket 54 is provided with a slot 57 which receives the confining screw 58 that is adapted to hold the bracket 54 within the groove 55. The bracket 54 may be raised and lowered within the slot 55 by means of links 59 and 60 which are actuated by a pivotal movement of arm 61 about

the screw 62. This vertical movement of the bracket 54 raises the wall-section 49 of the folder, but due to the position of the arbor 45 within said wall-section 59, the attachment base 39 carrying the arbor 45 must first be retracted along the rods 40 before the wall-section 49 can be thus raised.

The overhanging arm 56 is secured by a screw 63 to the arm 64 which, in turn, is hinged to the bracket-arm 65 by means of the screw 66. As the bracket-arm 65 is made fast by screws 67 to the machine head 7, the unit made up of the wall-section 49 and the two arm members 56 and 64 may be swung about the screw 66 to be thus positioned to one side of the stitching area. A locking piece 68, pivotally secured by screw 69 to the arm 65, is swung in place, as shown best in Fig. 2, to lock the arm and wall-section unit in its operative position.

On each side of the above described plaiting or folding unit is mounted a unitary guiding device for two cords of batting material and one strip of backing material. Each of these units comprises a flat strip-guide tube 70 upon which are mounted two spaced, parallel and relatively narrow bat-guiding tubes 71. The top portions of these tubes terminate at the juncture of a fabric-supporting apron 72 and said tubes 71, and the vertically disposed side walls 73 of the tubes extend from this point to the discharge end of the guiding unit. The fabric-supporting apron 72 is secured to and spaced from the strip-guiding tube 70 by means of the side wall 74 and a web-member 75. Secured to the bottom portion of each tube 70 is a tongue 76 which is slidably received by one of the two channels 77 provided in the attachment base 39. These guiding units may be moved along the channels relative to the base 39 so that they may be adjusted relative to the stitching area. Set-screws 78 passing through slots 79, provided in the base 39, secure the tongues 76 in their adjusted positions.

Fig. 4 illustrates the folding and guiding device with the work inserted therein. The four bat-guiding tubes 71 are illustrated as containing the cords of batting 80 and paper backing strips 81 are shown in their respective guiding tubes 70.

Fig. 10 illustrates a fragment of the finished work with the stitches 82 confining the batting cords 80 between the fabric 51 and the backing strips 81, thus forming bat-filled beads or welts 83 in the body fabric 51. As may be seen from Fig. 4, the spacing between the pairs of beads 83 will be greater than that spacing between the corresponding groups of needles 11, when the fabric 51 is removed from the attachment and unfolded.

From the above description it will be understood that by using a folding means of the present type, in conjunction with suitable guiding elements, a plurality of widely spaced welts or beads may be produced in a body fabric in one operation by a single-head multiple-needle sewing machine of moderate gauge.

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

1. An attachment for sewing machines, comprising; work-guiding and -folding means for directing a body fabric, batting cords, and backing strips towards a stitching mechanism; said means including a fabric-folding unit and a pair of cord- and strip-guiding units; said folding unit comprising an arbor-section and a pair of folding wings spaced therefrom and adapted to fold a fabric thereabout; each cord- and strip-

guiding unit comprising a plurality of tubular strip and cord-guides and a substantially flat fabric-supporting and guiding apron; said cord- and strip-guiding units being mounted on opposite sides of said folding unit and being adapted to cooperate therewith in the directing of said fabric toward a sewing machine stitching mechanism.

2. An attachment for sewing machines adapted to effect the production of stitched bat-filled beads in a body fabric and comprising, a fabric-folding unit including an arbor-section and a wall-section spaced therefrom to define a fabric passageway therewith, a vertically movable means adapted to be carried by a head portion of a sewing machine for supporting said wall-section, a base element, said arbor-section being mounted upon said base element, and a pair of bat-guiding units each including a plurality of tubular bat-guiding elements and a substantially flat fabric-supporting plate, said bat-guiding units being mounted upon said base element and on opposite sides of said folding unit so that said fabric-supporting plates may cooperate therewith in directing the fabric towards the stitching mechanism of a sewing machine.

3. A fabric-folding attachment for sewing machines comprising, a substantially horizontally disposed unitary spreader-plate, means to support said spreader-plate so that it may be shifted endwise of itself, a tubular and unitary wall-section spaced from the top of said spreader-plate along the major portion thereof, said wall-section extending about the opposite sides of said spreader-plate to form tapered folding wings adapted to produce reentrant folds intermediate the edges of a fabric of indefinite width, said wings having their widest portion underlying the discharge end of the spreader-plate and devices for supporting and vertically shifting said wall-section.

4. In a sewing machine having a bed and an overhanging head, the combination with stitch-forming mechanism including a plurality of lat-

erally spaced needles to form spaced rows of stitches in a body fabric, of fabric-folding means having its discharge end located between two vertically disposed planes each being parallel to the line of seam formation and containing one of two adjacently disposed needles, said folding means including a substantially horizontally disposed spreader-plate and a unitary wall-section spaced therefrom and extending about the opposite sides thereof to form horizontal folding wings, said wings being adapted to have a fabric folded thereabout so that at least two rows of said stitches in the finished product are spaced at a greater distance than that distance between the respective needles used to produce the same, an attachment base retractably fastened to said bed and carrying said spreader-plate, and vertically movable means carried by said head for supporting said wall-section.

5. In a sewing machine having a bed and an overhanging head, the combination with stitch-forming mechanism including a plurality of laterally spaced needles to form parallel rows of stitches in a body fabric, of fabric folding means the discharge end of which is located between two vertically disposed planes, each plane being parallel to the line of seam formation and containing one of two adjacently disposed spaced needles, said folding means including a spreader-plate mounted upon a fin projecting from said bed and a continuous wall-section spaced from said spreader-plate and extending about the opposite sides thereof to form folding wings, said wings being adapted to have a fabric folded thereabout so that at least two rows of said stitches in the finished product are spaced at a greater distance than that distance between the respective needles used to produce the same, and means depending from said overhanging head for supporting said wall-section, said last mentioned means being secured to said wall-section between the side edges thereof.

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