

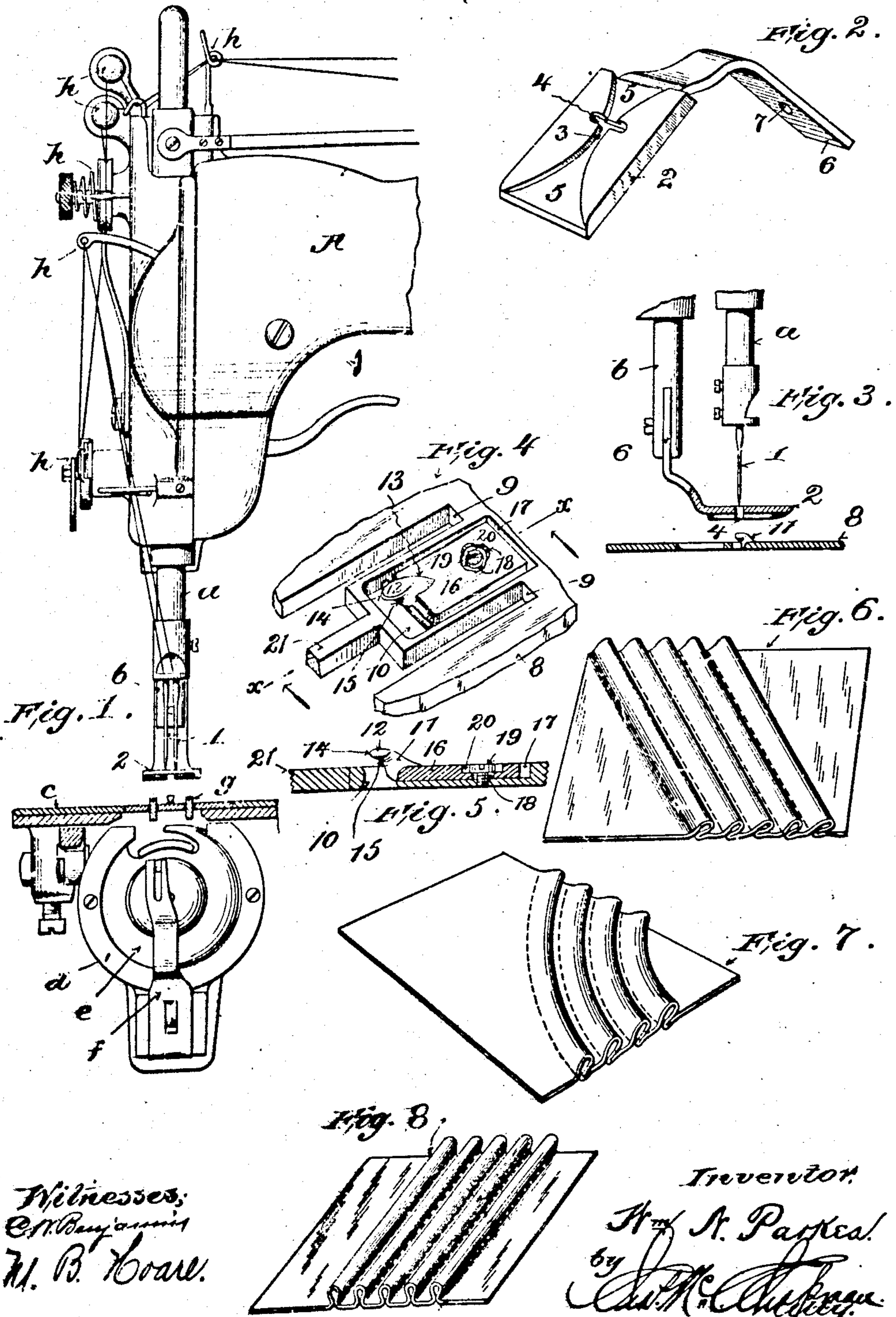
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TUCKING MECHANISM FOR SEWING MACHINES.

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TUCKING MECHANISM FOR SEWING-MACHINES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM N. PARKES, a citizen of the United States, residing in Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Tucking Mechanism for Sewing-Machines, of which the following is a description.

This invention relates to means for forming tucks, crimps or gathers; and particularly, it relates to means for attachment to a sewing-machine, whereby the latter is enabled, during the stitch-forming operation, to form even and uniform tucks or gathers.

It is the object of my invention to provide a device whereby a sewing-machine can be used in the formation of tucks or gathers of even and uniform character with great facility; and whereby said tucks or gathers can be formed in parallel, straight lines or in parallel, curved lines and in any part or portion of the material.

With these ends in view my invention consists in the devices, parts, features and combinations hereinafter described and set forth in the claims.

In the drawings: Figure 1, is a front elevation of the head of an ordinary sewing machine, the same showing the character of stitch-forming mechanism which I contemplate using in connection with my device or means, parts being in section; Fig. 2, is a perspective view, looking at the bottom of the presser-foot forming part of the means employed by me for the functions stated; Fig. 3, is a side elevation, partly in sections, of the presser-foot, throat-plate and needle-bar showing the relation of such parts; Fig. 4, is a perspective view of a section of the throat-plate, illustrating a part of my means for the purposes stated; Fig. 5, is a longitudinal section of the parts shown in Fig. 4, taken on the line $x-x$ and looking in the direction of the arrows shown in said figure; and Figs. 6, 7 and 8 are perspective views showing three different ways of forming the tucks or gathers by the means of my invention.

In the drawings, A, represents the head of the sewing-machine; *a*, the needle-bar which is caused to reciprocate therein; *b*, the presser-bar which is usually supported by said head; *c*, the bed-plate; *d*, the shuttle-race; *e*, the shuttle, or looper; *f*, the latch for holding the bobbin-case from rotation; *g*, the feed-dogs; *h*, the several elements employed for guiding the thread, placing tension there-

on and taking-up and setting the stitch. These may all be common devices for the purpose such as will be found in any ordinary sewing-machine.

My invention contemplates the application to the needle-bar of two needles, 1, to be used in conjunction with the single shuttle, or looper, *e*, which latter takes a loop from each of the needles and passes its own thread through said needle-loops and holds the same on the under side of the work. In two-needle machines the condition contemplated by my invention, as just set forth, will ordinarily be found, though sometimes loopers will be found, respectively, cooperating with the needles. Under such circumstances, means should be added to the machines for enabling the thread of one of the loopers to pass through both the needle-loops. This is an essential feature of my invention, inasmuch as the character of the tucks or gathers produced depends upon the needle-loops being drawn together below the work for the purpose of drawing the work together at the bottom of the tucks or gathers.

The presser-foot 2, forming part of my means for making the tucks or gathers, is provided on its bottom with a groove narrowed in the center 3, at and adjacent the needle aperture 4, and flared at both ends 5, as shown in Fig. 2. Obviously, this foot is provided with a shank 6, and an aperture 7, affording means for readily attaching it to the presser-bar in the ordinary manner.

The throat-plate 8, shown in Figs. 4 and 5, is provided with the ordinary feed-slots 9, a transverse elongated slot 10, for the reception of the needles lying between the feed slots, and an upwardly projecting tongue 11, for the purpose of fitting in the grooves in the bottom of the presser-foot, and over which the fabric is fed and the tucks are formed. This tongue is quite broad on the surface, 12, tapered abruptly toward the front to a narrow edge 13, and slightly tapered and rounded toward the rear end as shown at 14. On the under side the tongue 11, is very much reduced as shown at 15, thus making a neck around which the fabric may be drawn by the looper-thread as the needle-loops are drawn together in setting the stitch. The tongue 11, is of a size sufficient to leave a space on each side thereof and between the same and the walls of the groove in the presser-foot, at and near the needle aperture therein, this being for the purpose of allowing the ready and

free passage of the folded material through the groove in the presser-foot and over said tongue, thus avoiding unnecessary drag and friction.

5 By tapering the tongue on the throat plate toward the front to a narrow edge 13, the work can approach the tongue and ride or pass upon and by the same without drag or catching, and this construction also coöperates with the front flared part of groove 5 in the presser foot by allowing the work to be manipulated in the said groove to form curved tucks, without drag on or snagging the work. The broad portion 12 of the tongue gives the proper size to the tucks, and the neck 15 enables the bottom of the tucks to be drawn together by the looper thread as the stitch is set, this operation being facilitated by disposing the tongue so as to overhang the needle slot 10, as shown in Figs. 4 and 5. By rounding or slightly tapering the rear end of the tongue as at 14, the tuck can pass with facility from the tongue without drag and the manipulation of the work, after leaving the stitching point, in the rear flared part of groove 5 is also facilitated without detriment to the formed tucks when the same are made curved.

It will be obvious that the tongue may be formed as an integral part of the throat-plate 8, which, of course, is removable from the bed-plate and can be slid into place in any ordinary machine. However, after the presser-foot has been attached, it may be found necessary to accurately adjust the tongue relatively to the groove and needle aperture in said foot. In order to secure a nice adjustment it is necessary to render said tongue movable and adjustable. Hence, I have provided the means, shown in Figs. 4 and 5, for moving said tongue both laterally and longitudinally of the throat-plate. In said figures the tongue is shown as mounted upon a plate 16, set within a countersink 17, in the throat-plate, thus rendering the surface of the latter flush with the surface of the adjustable plate 16. Said adjustable plate is capable of movement both laterally and longitudinally by means of cross-slots 18, and a flat-headed screw 19, set down in an enlarged opening or depression 20, in said plate 16. The countersink in the throat-plate is of sufficient dimensions to give considerable play or movement to the plate 16, thus enabling a very fine and nice adjustment of the tongue 11, relatively to the groove in the presser-foot and the needles.

From the above description the operation of my means will be clear with the following brief statement: The needles, in penetrating the work, pass on opposite sides of the tongue 11, and the loops of needle-thread are caught by the nose of the looper which, in rotating, eventually passes its thread through said loops. As the stitches are set, the needle-

loops are drawn close together beneath the fabric and the latter has its adjacent portions drawn close together around the neck of the tongue 11. This gives to the tucks or gathers a tubular formation leaving them, as they pass from the tongue, standing erect as shown in Fig. 8. After the tucks are thus formed and as successive tucks are made, previously formed tucks are flattened or ironed, as shown in Figs. 6 and 7, this being accomplished by the presser-foot and throat-plate as said tucks pass between the same; that is to say, the flat portion of the bottom of the presser-foot, on each side of the flared groove 5, will engage the previously formed tucks, as others are being made, and according to which side of the line of seam it is desired to lay the same, and press them against the throat-plate, the force of the pressure corresponding to the power of the usual presser-bar spring; and as said spring opposes the lifting action of the feed upon the presser-foot, the two cause the foot to vibrate vertically and produce a hammering action, increasing the smoothing or ironing action. The flared portion of the groove 5 in rear of the needle-slot in the presser-foot, permits of a proper manipulation of the work to enable the foot to iron or flatten the curved tucks shown in Fig. 7.

By manipulating the fabric or work, the tucks or gathers may be made to extend, relatively to the edges of the work, in parallel lines in any direction desired; and by properly manipulating the fabric or work the tucks or gathers may be given a curved formation as shown in Fig. 7, the shape of the tongue facilitating such manipulation on account of its curved, forward end and its narrowed neck. The flaring groove 5 in the presser-foot also facilitates this operation and manipulation.

From the above it will be seen that I have provided a simple means for producing perfect tucks or gathers of varied character; and a means which are cheap and effective for the purpose and which are capable of application to any ordinary sewing machine.

Having described my invention what I claim and desire to secure by Letters Patent is:

1. In combination, a stitch-forming mechanism; a presser-foot having a needle aperture, and formed in its bottom with a groove flared from said needle aperture to its front end; and a stationary tongue coöperating with said groove and tapered toward its front end to a narrow edge, whereby the work may ride upon and pass the tongue without drag and be manipulated in the flared portion of the groove to form curved tucks.

2. In combination, a stitch-forming mechanism, a presser-foot formed in its bottom with a groove, and a throat-plate provided

with an upwardly projecting tongue for cooperating with said groove in forming tucks or gathers, said tongue being tapered toward its front to a narrow edge, for the purpose described.

3. In combination, a stitch-forming mechanism, a presser-foot formed on its bottom with a groove, and a throat-plate provided with an upwardly projecting tongue for cooperating with said groove in forming tucks or gathers, said tongue having its rear end narrowed and curved.

4. In combination, a stitch-forming mechanism; a presser-foot formed with a groove in its bottom; and a tongue provided with a broad, top portion, for cooperating with said groove to form tucks, and with a narrowed neck-portion below said top-portion against the opposite sides of which the bottoms of the tucks may be drawn as the stitch is set, substantially as described.

5. In combination, a stitch-forming mechanism, a presser-foot having in its bottom a groove, and a throat-plate provided with an upwardly projecting tongue for cooperating with said groove in forming tucks or gathers, said tongue being provided with a tapered front end and a rear narrowed and curved end.

6. In combination, a stitch-forming mechanism, a presser-foot provided in its bottom with a groove, and a throat-plate provided with an upwardly projecting tongue for cooperating with said groove in forming tucks or gathers, said tongue being tapered toward its front end, narrowed and curved toward its rear end, and formed with a neck in its under side.

7. In combination, a stitch-forming mechanism, a presser-foot formed with a groove in its bottom, and a throat-plate provided with an upwardly projecting tongue for cooperating with said groove in forming tucks or

gathers, and means for adjusting said tongue relatively to said groove in a horizontal plane.

8. In combination, a stitch-forming mechanism, a presser-foot formed with a groove in its bottom, a throat-plate provided with an upwardly projecting tongue for cooperating with said groove in forming tucks or gathers, and means for adjusting said tongue relatively to said groove, in directions at right-angles to each other.

9. In combination, a stitch-forming mechanism, a presser-foot formed with a groove in its bottom, a throat-plate, an independent plate or slide connected to said throat-plate, and having an upwardly projecting tongue for cooperating with said groove in forming tucks or gathers, and means, for adjusting said tongue, accessible from the top of said slide.

10. In combination, a stitch-forming mechanism, a presser-foot formed with a groove in its bottom, a throat-plate having a countersink therein, a slide or plate secured in said countersink and provided with an upwardly projecting tongue for cooperating with said groove in forming tucks or gathers.

11. In combination a stitch-forming mechanism comprising a plurality of needles and a cooperating means for passing a thread into engagement with the loops of the thread of both needles, a plurality of devices for puckering or folding the work between the needles, and means for horizontally adjusting said devices relatively in two directions to facilitate the proper formation of the puckers or folds.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

WILLIAM N. PARKES.

Witnesses:

CHAS. McC. CHAPMAN.
M. B. HOARE.