

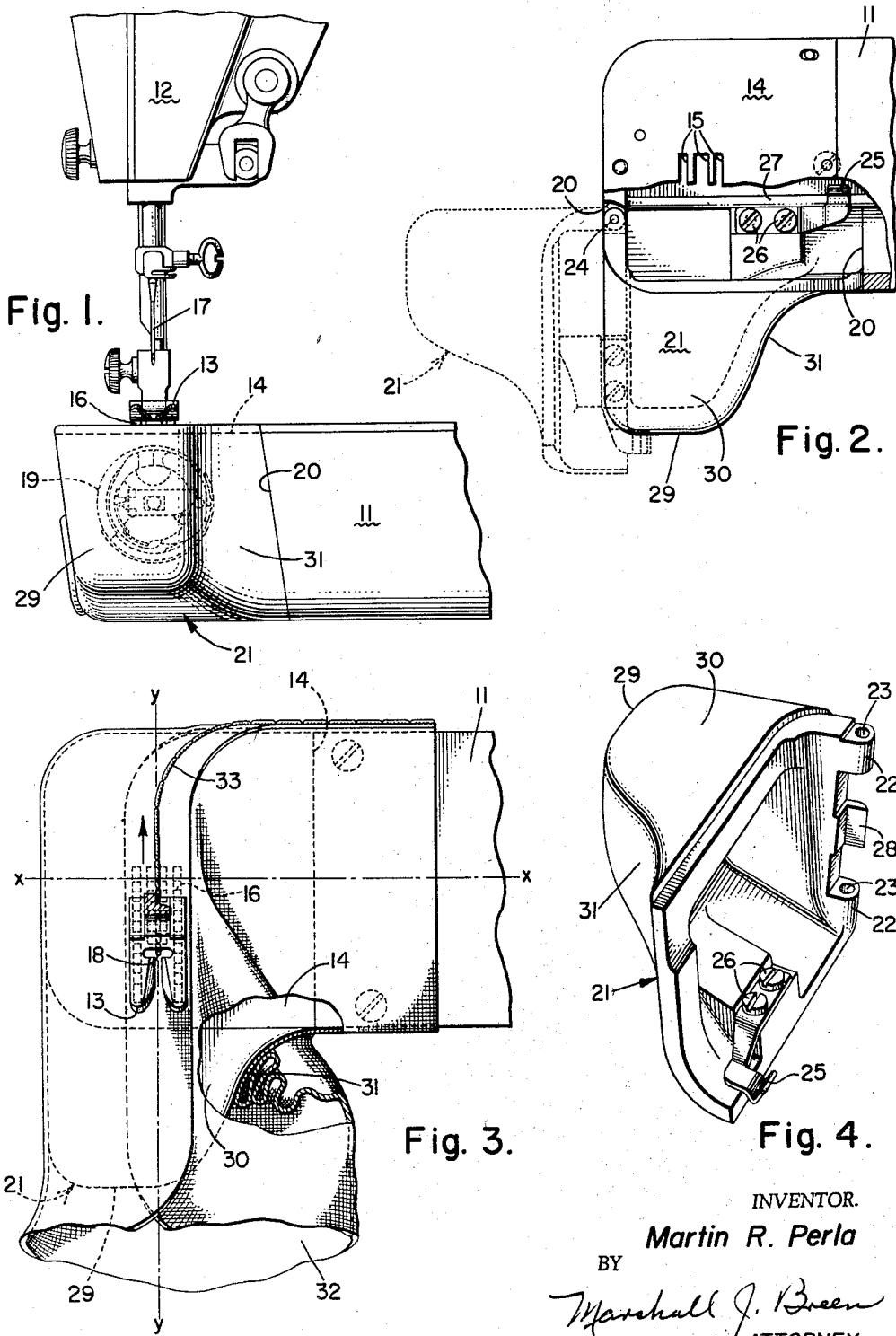
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M. R. PERLA

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SEWING MACHINE WORK-SUPPORTING BEDS

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INVENTOR.

Martin R. Perla

BY

Marshall J. Green
ATTORNEY

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SEWING MACHINE WORK-SUPPORTING BEDS

Martin R. Perla, Bridgeport, Conn., assignor to The Singer Manufacturing Company, Elizabeth, N.J., a corporation of New Jersey

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This invention relates to sewing machine work-supporting beds and, more particularly, to free-ended work-supporting beds adapted to accommodate tubular articles.

Free-ended work-supporting beds are commonly termed "cylinder beds" in the sewing machine art whether or not the bed is of a true cylindrical shape.

Cylinder bed sewing machines known in the prior art are fitted with either one of two general types of work-feeding mechanisms, i.e., either a feed-across-the-arm type which advances a work fabric in a direction transversely of the longitudinal axis of the cylinder bed or a feed-up or feed-off-the-arm type which advances a work fabric in a direction parallel to the longitudinal axis of the cylinder bed. The feed-up or feed-off-the-arm arrangement is used to form a continuous tube from a flat piece of fabric, while the across-the-arm feed is ordinarily used to apply stitching around an existing tube.

The present invention concerns particularly a cylinder bed sewing machine with an across-the-arm work feeding mechanism, and it is the primary object of this invention to provide a means on the cylinder bed for facilitating the manipulation of a tube of fabric up the cylinder bed as the fabric is being stitched into a tube on the sewing machine.

A further object of this invention is to provide a means for facilitating the manipulation of a stitched tube of fabric up the arm of a cylinder bed sewing machine without appreciably diminishing the capacity of the machine in its normal function of sewing around an existing tube.

Another object of this invention is to provide a means of the above character which may be applied conveniently to any existing sewing machines.

With the above and other objects and advantages in view as will hereinafter appear, this invention comprises the devices, combinations, and arrangements of parts hereinafter described and illustrated in the accompanying drawing of a preferred embodiment in which:

Fig. 1 represents a front elevational view of a portion of the bed and sewing head of a cylinder bed sewing machine adjacent the stitching point thereof and having this invention applied thereto,

Fig. 2 represents a top plan view of the cylinder bed of Fig. 1 with a portion of the throat plate and cylinder bed broken away and with the work-controlling member of this invention represented in operative position in solid lines and in an inoperative position in dashed lines,

Fig. 3 represents a top plan view of the cylinder bed of Fig. 1 including a work fabric and the sewing machine presser foot, and illustrating the manner in which a fabric is formed into a tube and directed up the cylinder bed with this invention, and

Fig. 4 is a perspective view of the work-controlling member of this invention.

In the drawing this invention is illustrated as applied to a conventional cylinder bed sewing machine, that is, a sewing machine of which the work-supporting bed, as indicated at 11, projects free of a supporting base (not shown). The bed is preferably of substantially uniform

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transverse cross sectional size so as to accommodate tubular articles. As is also conventional in sewing machine construction and, therefore, not illustrated in the drawings, the structure which supports the cylinder bed 11 also supports a bracket arm which terminates in a head 12 extending over the free end of the cylinder bed. Carried in the head 12 is a presser foot 13 urged downwardly against a throat plate 14 which forms a part of the work-supporting surface of the cylinder bed. As shown in

Fig. 2 the throat plate is formed beneath the presser foot with slots 15 through which serrated teeth of a feed dog 16 operate to grip a work fabric against the under surface of the presser foot and to advance the fabric over the cylinder bed. An endwise reciprocatory needle 17 carried in the head 12 moves in a path between the toes of the presser foot and through a needle aperture 18 formed in the throat plate and cooperates in the formation of stitches with a loop taker carried within the cylinder bed beneath the throat plate. Illustrated in Fig. 1 is a loop taker in the form of a rotary hook 19 of conventional design adapted, as is well known in the art, to house and be rotated about a non-rotatable bobbin on which is wound a thread which is thus concatenated with a needle thread to form lock stitches. The needle aperture 18 may be referred to as the stitching point on the cylinder bed since this is the point at which the stitches are set into the work fabric.

Line x—x in Fig. 3 represents the longitudinal axis of the cylinder bed 11. The slots 15 through which the feed dog operates, extend transversely of the longitudinal axis of the cylinder bed. Any known feed mechanism may be used to advance a work fabric in a direction transversely of the longitudinal axis of the bed. Line y—y in Fig. 3, therefore, illustrates the line of stitch formation of the sewing machine, which line passes through the stitching point and extends parallel to the line of action of the feed. In machines of this type the normal direction of work feed is from front to back as indicated by the arrow in Fig. 3.

The cylinder bed, forwardly of the stitching point considered in the line of stitch formation, is formed with an aperture 20 which provides access to the rotary hook particularly for the purpose of replacing exhausted bobbins.

The access opening 20 is closed by a cover, indicated generally as 21, which is formed at one side with a pair of rounded ears 22 drilled with aligned holes 23 adapted to accommodate a hinge pin 24 by which the cover is hinged to the cylinder bed at one side of the access aperture. A resilient spring clip 25 secured by screws 26 to the cover cooperates with a raised rib 27 formed on the cylinder bed along the bottom edge of the access aperture to latch the cover in position to close the opening, as illustrated in full lines in Fig. 2. When unlatched and swung open the cover can assume an opened position as illustrated in dashed lines in Fig. 2. A lug 28 formed on the cover acting against the hinge pin provides a stop limiting the open position of the cover.

The cover 21 is formed with a protuberance 29 disposed when the cover is latched in closed position to extend forwardly from the cylinder bed in front of the stitching point considered in the line of stitch formation. The top surface 30 of the protuberance provides an extension of the work-supporting surface forwardly of the stitching point and preferably extends at a level substantially flush with the throat plate 14 and the work-supporting surface of the cylinder bed. With respect to the line of stitch formation, the protuberance 29 extends to a point inboard of the line of stitch formation that is, on that side of the line of stitch formation toward the supported extremity of the cylinder bed. The inboard

sidewall 31 of the protuberance is preferably concave in form.

Referring particularly to Fig. 3 which illustrates a ply of work fabric 32 as it is being formed into a tube by a line of stitches 33, the operation of this invention will now be explained. As the ply of work fabric is formed into a tube and the lapped edges are directed to the stitching point along the line of stitch formation y—y, that side of the tube toward the inboard side of the line of stitch formation becomes the inside corner of the fabric tube as the tube is turned and directed up the cylinder bed. The fabric at the inside corner of the tube forms into irregular folds. The inboard sidewall 31 of the protuberance on the cover provides in effect an abutment against which these folds in the fabric tube are constrained and prevented from moving toward the line of stitch formation. Without this work controlling function of the protuberance, the folds would shift to a position in front of the needle aperture and be drawn to the stitching point and stitched permanently into the tube being formed. In addition to producing an imperfect tube, such inclusion of the folds into the seam would cause the tube diameter to be decreased appreciably until the tube diameter became too small to be directed up the cylinder bed. The material would thus bind itself on the free end of the cylinder bed.

Being concave as illustrated in the drawing, the inboard sidewall of the protuberance defines an inside corner about which the folds at the inside corner of the fabric tube are directed as the tube is turned and directed up the cylinder bed. The inboard sidewall of the protuberance may, however, be flat in which case since the cover abuts the cylinder bed when latched in closed position, the inboard sidewall 31 together with the cylinder bed would define the necessary inside corner to facilitate turning of the fabric tube.

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

1. A free-ended cylinder bed for a sewing machine, a flat throat plate carried on said cylinder bed, means defining a stitching point on the throat plate of said cylinder bed, a work-feeding mechanism adapted to advance a work fabric in a direction transversely of the longitudinal axis of said cylinder bed to define a line of stitch formation across said cylinder bed, and means for facilitating the manipulation of a tube of fabric up the cylinder bed as the fabric is being stitched into a tube across the cylinder bed, said means comprising a member carried by said cylinder bed and projecting forwardly from said cylinder bed in front of the stitching point considered in the line of stitch formation, said member being formed with a flat top surface disposed flush with said throat plate and extending forwardly beyond said cylinder bed.

2. A free-ended cylinder bed for a sewing machine, a flat throat plate carried on said cylinder bed, means defining a stitching point on the throat plate of said cylinder bed, a work-feeding mechanism adapted to advance a work fabric in a direction transversely of the longitudinal axis of said cylinder bed to define a line of stitch formation across said cylinder bed, and means for facilitating the manipulation of a tube of fabric up the cylinder bed as the fabric is being stitched into a tube across the cylinder bed, said means comprising a member carried by said cylinder bed and projecting forwardly from said cylinder bed in front of the stitching point considered in the line of stitch formation, said member formed

with a flat top surface extending forwardly beyond said cylinder bed, at least a portion of said flat top surface being disposed inboard of said line of stitch formation on said free-ended cylinder bed.

5. A free-ended cylinder bed for a sewing machine, a work-supporting surface on said cylinder bed, means defining a stitching point on said work-supporting surface, a work-feeding mechanism adapted to advance a work fabric in a direction transversely of the longitudinal axis of said cylinder bed to define a line of stitch formation across said work-supporting surface, and means for facilitating the manipulation of a tube of fabric up the cylinder bed as the fabric is being stitched into a tube across the cylinder bed, said means comprising a block carried on said cylinder bed and disposed to project forwardly from said cylinder bed in front of the stitching point considered in the line of stitch formation, said block having an upper surface abutting substantially flush with the work-supporting surface of said cylinder bed and a sidewall disposed substantially perpendicular to said upper surface extending inboard of said line of stitch formation and facing away from the free end of said cylinder bed, said sidewall providing an abutment against which the folds at the inside corner of a fabric tube are confined as the tube is turned and directed up the cylinder bed.

10. 3. In a sewing machine, a free-ended cylinder bed, stitch-forming instrumentalities in said cylinder bed defining a stitching point thereon, means on said sewing machine for advancing a work fabric in a direction transversely of the longitudinal axis of said cylinder bed to define a line of stitch formation across said cylinder bed, said cylinder bed being formed with an aperture in front of the stitching point considered in the line of stitch formation for access to said stitch-forming instrumentalities, a cover for said access aperture, hinge means joining said cover to said cylinder bed at one side of said access aperture, cooperating latch means on said cover and on said cylinder bed for holding said cover in place spanning said access aperture, and means carried on said cover and disposed to project forwardly from said cylinder bed in front of the stitching point considered in the line of stitch formation when said cover is disposed in place spanning said access aperture.

15. 4. In a sewing machine, a free-ended cylinder bed, stitch-forming instrumentalities in said cylinder bed defining a stitching point thereon, means on said sewing machine for advancing a work fabric in a direction transversely of the longitudinal axis of said cylinder bed to define a line of stitch formation across said cylinder bed, said cylinder bed being formed with an aperture in front of the stitching point considered in the line of stitch formation for access to said stitch-forming instrumentalities, a cover for said access aperture, hinge means joining said cover to said cylinder bed at one side of said access aperture, cooperating latch means on said cover and on said cylinder bed for holding said cover in place spanning said access aperture, and means carried on said cover and disposed to project forwardly from said cylinder bed in front of the stitching point considered in the line of stitch formation when said cover is disposed in place spanning said access aperture.

5. In a sewing machine having a sewing head, a cylinder bed, means for supporting said cylinder bed beneath said sewing head, said cylinder bed having a planar L shaped work-supporting surface including a first limb extending lengthwise of said cylinder bed and a second limb protruding laterally from said first limb and terminating in a free extremity, stitch forming mechanism carried in said sewing head and in said cylinder bed cooperating to define a stitching point on that portion of the first limb of said work-supporting surface which is laterally opposite said second limb thereof, and a work feeding means carried on said sewing machine for advancing a work fabric past the stitching point laterally across the first limb of said work-supporting surface and from the free extremity of said second limb thereof.

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