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PATENTED OCT. 6, 1903.

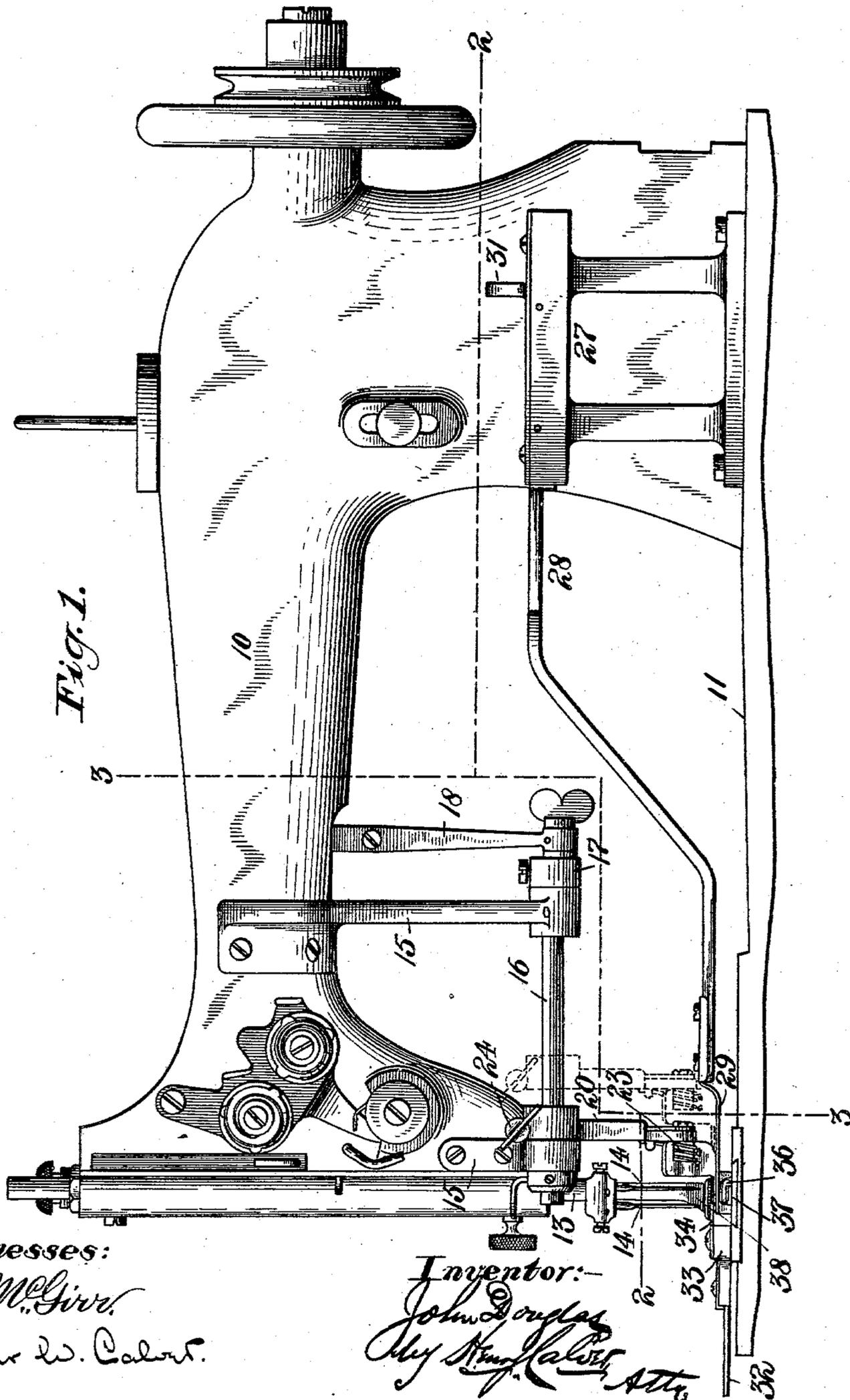
J. DOUGLAS.

COMBINED FOLDING AND RUFFLING DEVICE FOR SEWING MACHINES.

APPLICATION FILED SEPT. 22, 1902.

NO MODEL.

3 SHEETS—SHEET 1.



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Inventor:  
*John Douglas*  
*By [Signature] Atty*

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3 SHEETS—SHEET 2.

Fig. 2.

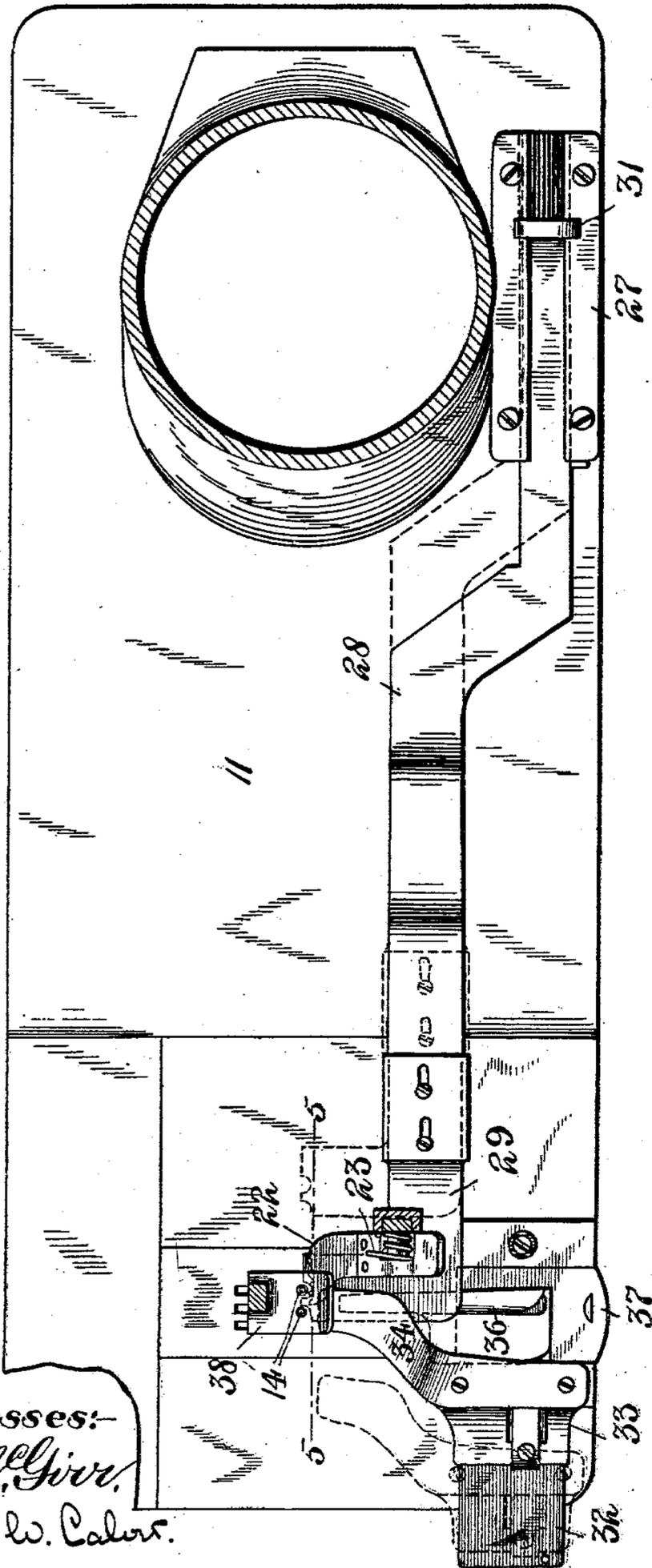


Fig. 7.

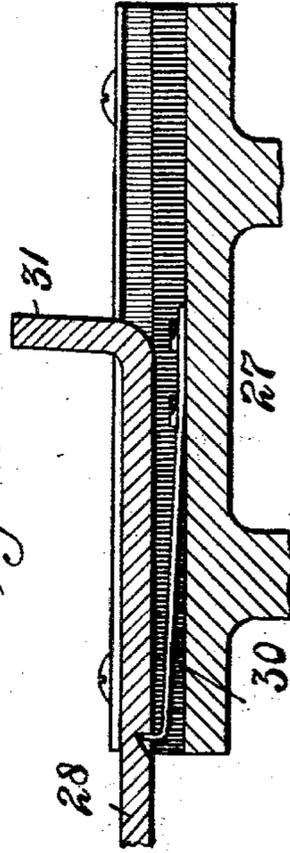
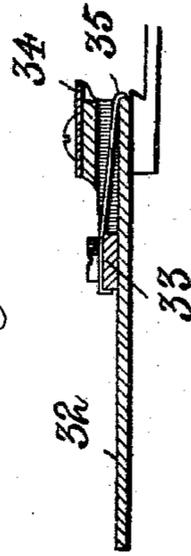


Fig. 6.



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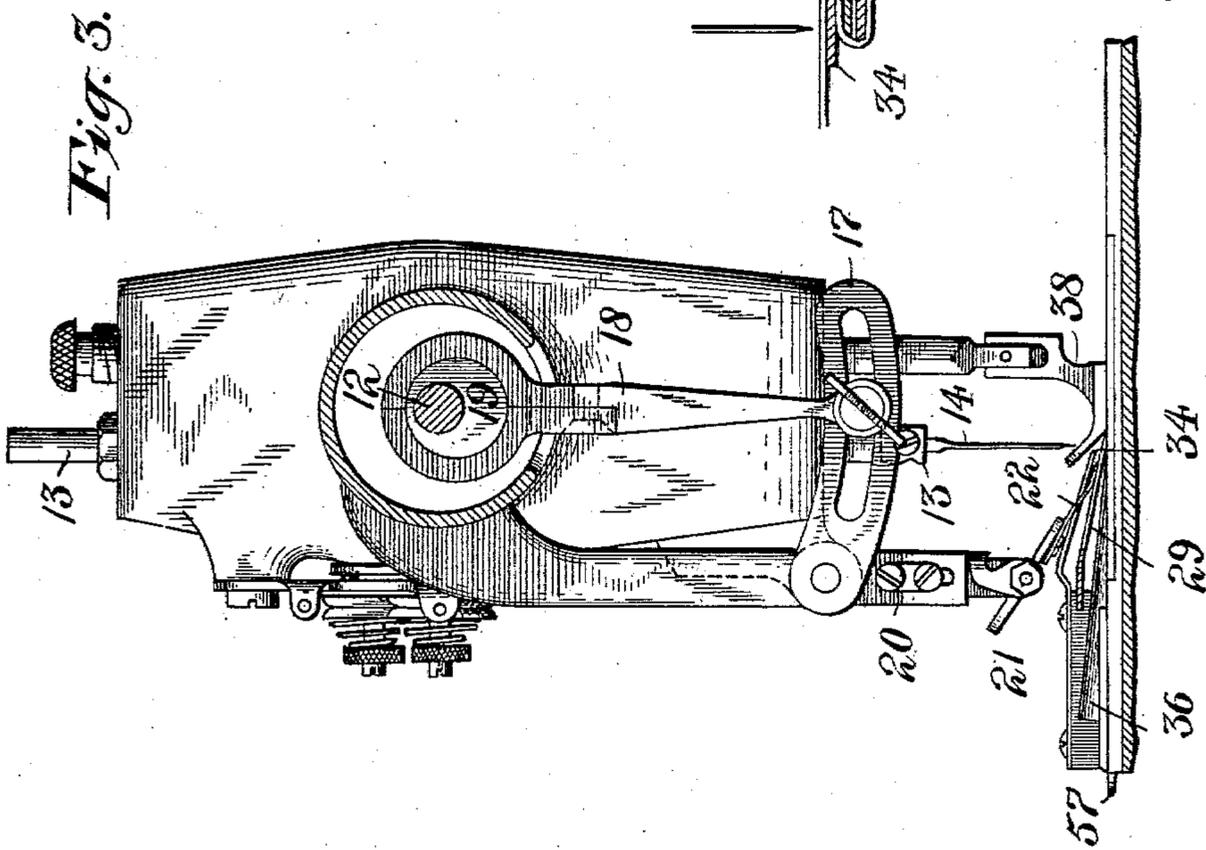
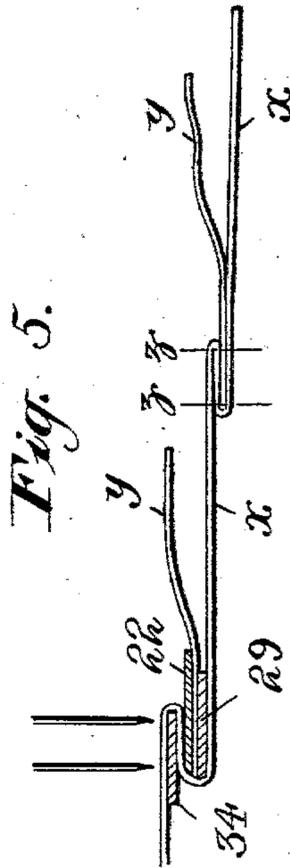
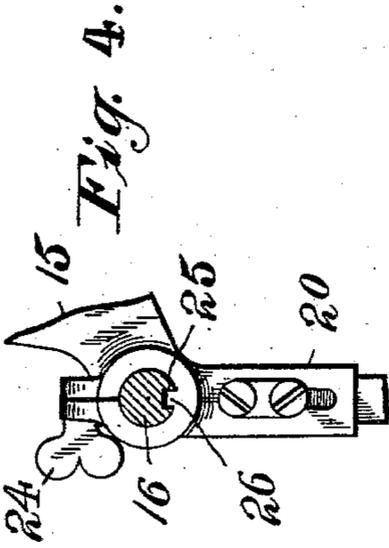
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APPLICATION FILED SEPT. 22, 1902.

NO MODEL.

3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

JOHN DOUGLAS, OF NEWARK, NEW JERSEY, ASSIGNOR TO THE SINGER MANUFACTURING COMPANY, A CORPORATION OF NEW JERSEY.

COMBINED FOLDING AND RUFFLING DEVICE FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 740,632, dated October 6, 1903.

Application filed September 22, 1902. Serial No. 124,433. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN DOUGLAS, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in a Combined Folding and Ruffling Device for Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a combined folding and ruffling attachment for sewing-machines, whereby the goods can be folded over in the form of a plait or tuck and a ruffling-strip be ruffled or gathered and secured at one edge between the folds of the plait or tuck, preferably by two rows of stitches simultaneously formed on a two-needle sewing-machine, the fold or tuck when thus stitched down on a two-needle machine presenting the appearance and serving the purpose on both sides of the work of tapes sometimes heretofore employed on the upper and lower sides of the work to give a proper finish. The improved attachment also preferably includes a hemmer for turning in the edge of the goods when a tuck or fold is to be made at and the ruffle is to be stitched to such edge; but when the ruffle-inclosing tuck or fold is to be made in the body of the goods or at a distance from the edge the hemmer will not be used.

To facilitate adjustment of the work in sewing ruffles to what may be termed a "tubular" article—such as a closed skirt, around which the ruffle-inclosing folds or tucks will be continuous or endless—the folding-blades are adjustably mounted, so as to be removable laterally out of the way in adjusting the work at the commencement or end of a stitching operation, and the lower folding-blade is preferably so arranged as to serve as a separator plate or blade for the ruffler. Also for convenience in adjusting the ruffling-blade to its operative ruffling position, so that it can act on the ruffling-strip between the folds of the plait or tuck, the ruffling-blade carrier is preferably adjustably mounted on its operating rock-shaft, so that it may be moved laterally or toward and from the needles to adjust the ruffling-blade to working position at the commencement of a stitch-

ing operation and to remove it out of the way when a stitching operation has been completed.

In the accompanying drawings, Figure 1 is a front side view of a sewing-machine with the invention applied thereto, the parts below the work-plate being omitted. Fig. 2 is a plan view of the work-plate of the machine and of the folding and ruffling devices, with certain parts in horizontal section on line 2 2, Fig. 1. Fig. 3 is a partial vertical section of the parts above the work-plate on line 3 3, Fig. 1. Fig. 4 is a detail view to show the manner of mounting the ruffling-blade carrier on its operating rock-shaft. Fig. 5 is an enlarged detail section on line 5 5, Fig. 2, showing also the manner of disposing the goods in the folding and ruffling operation. Figs. 6 and 7 are detail sectional views showing the detent-springs which removably hold the folding-plates in working positions.

Referring to the drawings, 10 denotes the arm of the machine and 11 the work-plate thereof. Journaled in the upper part of the arm is the usual driving-shaft 12, with which the needle-bar 13 is operatively connected in any suitable manner, said needle-bar being preferably provided with two needles 14, with which cooperate any suitable loop-taking devices beneath the work-plate, but preferably shuttles or other lock-stitch loop-takers.

Journaled in brackets 15, rigid with the arm 10, is a ruffler-operating rock-shaft 16, provided with an arm 17, to which is connected a pitman 18, actuated from an eccentric 19 on the driving-shaft 12, said rock-shaft having attached thereto a depending arm 20, having at its lower end a pin 21, with which the ruffling-blade 22 has a pivotal connection, said arm thus serving as a ruffling-blade carrier. A spring 23 serves to press the forward end of the ruffling-blade yieldingly downward on the work. The arm 17 is slotted, so that the point of connection of the pitman 18 there-with may be varied to change the throw of the ruffling-blade to make ruffles or gathers of differing fullness. The arm 20 is split at its upper end and is clamped in working position on the rock-shaft 16 by a thumb-screw 24, so that by loosening said thumb-screw the said arm may be free to be adjusted laterally from

or toward the needles, and to prevent disturbing the axial position of said arm on its shaft the latter is provided with a groove 25, entered by a spline or tooth 26 on said arm.

5 The work-plate 11 is provided near its rear end with a standard 27, in which is slidingly mounted a plate 28, bent downward forwardly and carrying at its forward end a folding-plate 29, over which the ruffling-blade 22 works and  
10 which folding-plate serves also as a separator-plate for the ruffler. A detent-spring 30 serves to hold the plate 28 in place to retain the folding-plate 29 in working position; but when a suitable pressure is applied to the thumb-piece  
15 31 on said plate 28 said detent-spring will yield to permit the said folding-plate to be moved laterally away from the needles, as denoted by the dotted-line position of Fig. 2.

20 Supported slightly above the work-plate 11 is a rigid guide 32, on which is slidingly mounted a carrier 33, to which is attached the upper folding-plate 34, retained in working position by a detent-spring 35, which will yield under suitable pressure when it is desired to move  
25 the said folding-plate laterally to the dotted-line position of Fig. 2 when the work is to be adjusted to or removed from folding, ruffling, and stitching position.

30 Arranged in front of the right-hand needle is a hem-folder or hemmer 36, which is used to turn in the edge of the goods when a ruffle is to be stitched to such edge. The hemmer 36 is in the present instance attached to a slide 37, mounted in suitable ways in the work-  
35 plate 11, so that the said hemmer may be readily removed, if desired.

40 By reference to Figs. 2 and 5 it will be seen that the lower folding-plate 29 is overlapped by the upper folding-plate 34 and that the ruffling-blade 22 works partly between said plates. It will also be seen that the opposite outer edges of the two folds are outside of the needles in the line of the feed of the work. Thus as a tuck or fold in the goods  $x$   
45 is formed by the overlapping and underlapping folding-plates a ruffling-strip  $y$  can be led and ruffled or gathered between the lower and middle plies constituting the three-ply fold in the goods, and as the work is presented to the two needles by the folding and  
50 ruffling devices extending forward partly beneath the presser-foot 38 the ruffle and tuck or plait will be secured by two rows of stitches, the positions of which are denoted by the dotted lines  $z z$ , thus affording a neat finish to the work on both sides, the double seam and the three-ply fold or tuck, in which the edge of the ruffle-strip  $y$  is fastened, giving an effect similar to a double seam which has  
60 been taped on both sides of the work. Thus by the use of the invention there can be formed on a two-needle sewing-machine at a single operation a finished ruffled and tucked double seam which has heretofore generally required three operations to produce.  
65

The invention is not to be understood as being limited to the details herein shown and

described, or to the use of the hemmer in connection with the combined ruffler and tuck-folder, or to the use of the new device in connection with a two-needle sewing-machine, as the invention is capable of much variation from the constructions herein shown and described and to various modified uses. If desired, the ruffling-strip may be omitted in producing plain tucks sewed down by two rows of stitches to present the appearance of taped work.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a sewing-machine, the combination with a stitch-forming mechanism, of two independently-supported, overlapping folding-blades adapted to form two folds in the body of the goods, and a ruffling-blade so disposed as to act on a ruffle-strip passing between the plies of the fold formed by said blades; whereby a ruffle-strip is stitched between the plies of a tuck or fold in the body of the goods.

2. The combination with a two-needle stitch-forming mechanism, of two independently-supported, overlapping folding-blades, arranged in front of the needles and so disposed as to make two folds in the goods, with the outer edge of one of said folds outside of one of said needles, in the line of the feed of the work, and the outer edge of the other of said folds outside of the other of said needles, in the line of the feed of the work, and a ruffling-blade working partly between the said folding-blades; whereby a plait or tuck is formed in the body of the goods and a ruffling-strip secured between the folds constituting the said plait or tuck and which latter is sewed down by two rows of stitches.

3. The combination with a stitch-forming mechanism, of a tuck-forming folder comprising two independently-supported folding-blades extending from opposite directions and one overlapping the other, a ruffler which gathers a ruffle-strip between the plies of a tuck or fold, and a hemmer to turn in the edge of the body of the goods in which the tuck or fold is formed.

4. In a sewing-machine, the combination with stitch-forming devices, of overlapping folding-plates and a ruffling-blade working partly between said folding-plates, the lowermost of which serves as a separator-plate for the ruffler.

5. The combination with stitch-forming devices, of overlapping folding-plates movably mounted so as to be adjustable laterally toward and from the stitch-forming devices, and a ruffler-blade working partly between said folding-plates and also movable laterally, on its operating part, toward and from the said stitch-forming devices.

6. The combination with stitch-forming devices, of movably-mounted folding-plates one of which overlaps the other when the said plates are in working position, a ruffling-blade movably mounted laterally on its operating

part but normally working partly between said folding-plates, and a removably-mounted hemmer.

7. A sewing-machine attachment consisting of a combined tuck-forming folder and ruffler comprising two independently-supported guiding and folding plates extended from opposite directions and one of which overlaps the other, and a ruffling-blade working partly between the plates of said folder.

8. A sewing-machine attachment comprising two laterally-movable tuck-forming folding-plates one of which overlaps the other when said plates are in working position, combined with detent-springs for yieldingly retaining said plates in working position, and a ruffler the blade of which works partly between said folding-plates.

9. A sewing-machine attachment comprising two laterally-movable tuck-forming folding-plates one of which overlaps the other when said plates are in working position combined with detent-springs for yieldingly retaining said plates in working position, a ruffler the blade of which works partly between said folding-plates, and a hemmer cooperating with said folding-plates and ruffler.

10. The combination with a two-needle stitch-forming mechanism for simultaneously producing two parallel seams, of a tuck-folding device comprising two independently-supported, overlapping folding-blades ex-

tending from opposite directions and arranged in front of the needles, and so disposed as to make two overlying folds in the goods with the outer edge of one of said folds outside of one of said needles, in the line of the feed of the work, and the outer edge of the other of said folds outside of the other of said needles, in the line of the feed of the work; so that the said overlying folds will both be entered by said needles forming two rows of stitches, each row of stitches passing through the three plies of fabric forming the double fold, and thus producing work which will present a taped appearance on both sides.

11. The combination with a two-needle stitch-forming mechanism for producing two parallel seams, of a tuck-folding device comprising two overlapping folding-blades arranged in front of the needles in the line of the seams to be formed near the edges of the fold or tuck, so that when the latter is stitched down it will present a taped appearance on both sides of the work, and a hemmer for turning in the edge of the material when the tuck is formed near such edge.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN DOUGLAS.

Witnesses:

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HENRY A. KORNEMANN.