Aug. 19, 1941. A. KIERNER 2,253,077

SEWING MACHINE

Filed Oct. 24, 1940 4 Sheets-Sheet 1

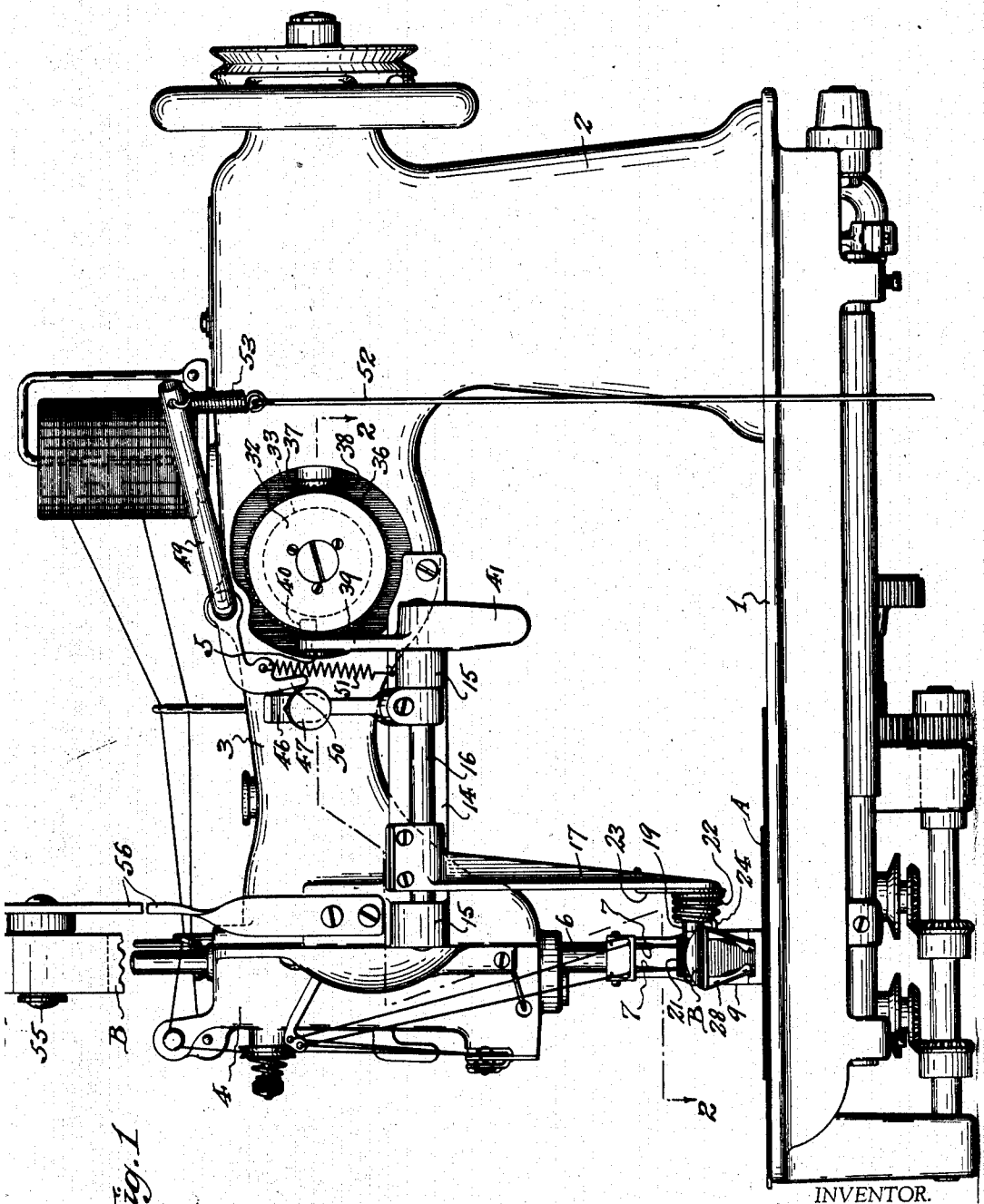


Fig. 1

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SEWING MACHINE

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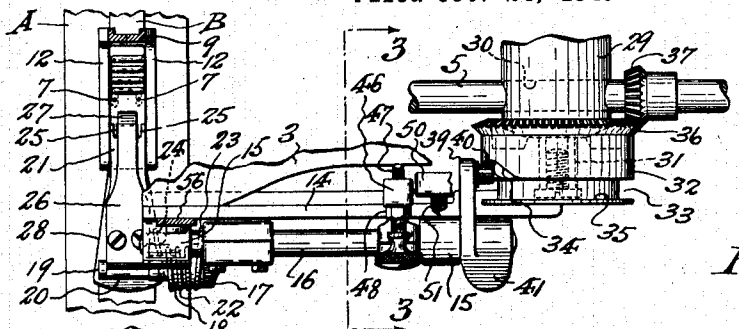


Fig. 2

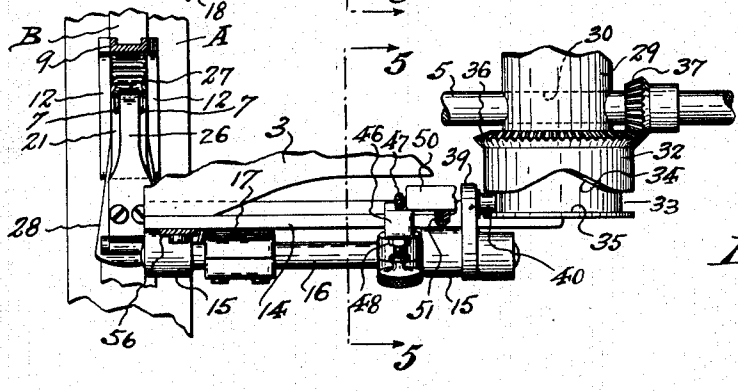


Fig. 4

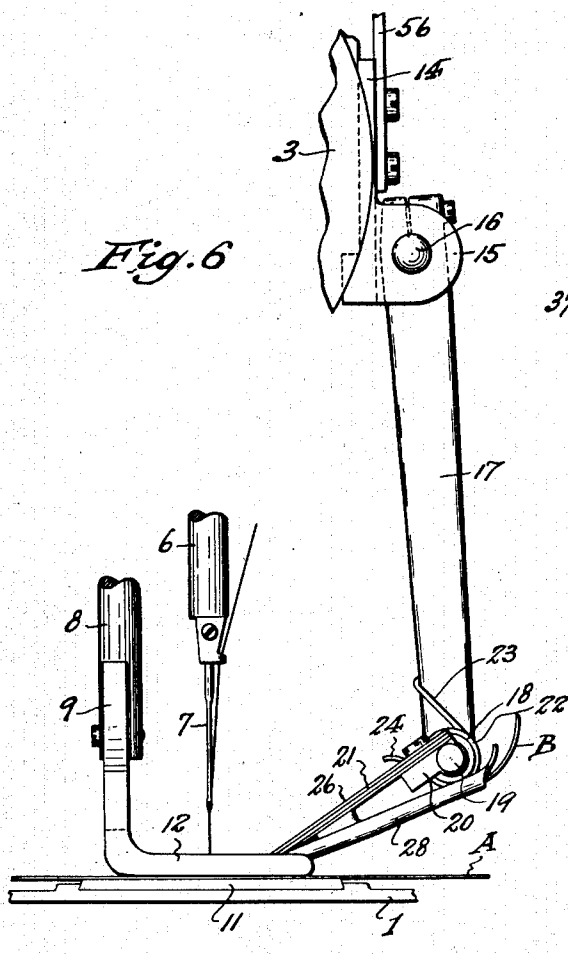


Fig. 6

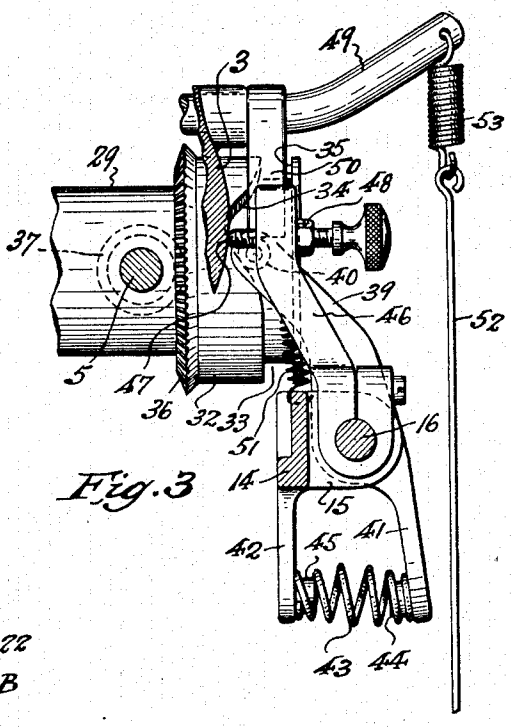


Fig. 3

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Aug. 19, 1941. A. KIERNER 2,253,077

SEWING MACHINE

Filed Oct. 24, 1940 4 Sheets-Sheet 3

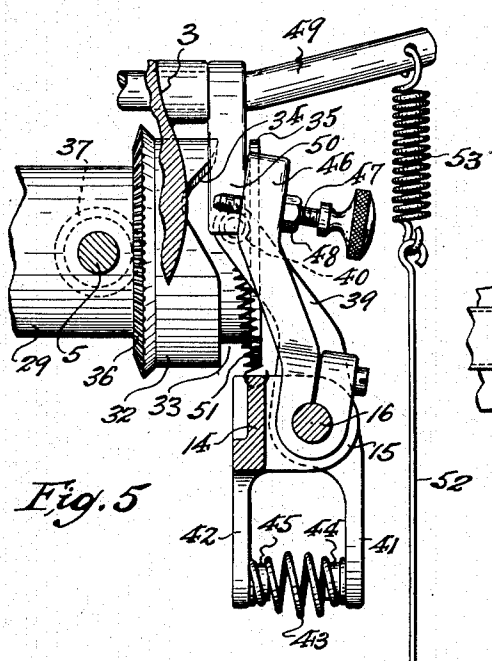


Fig. 5

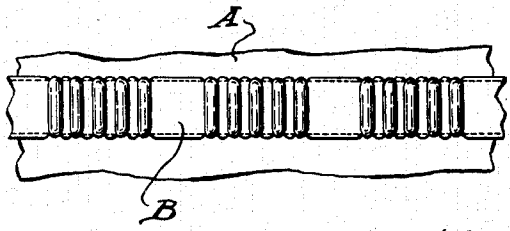


Fig. 14

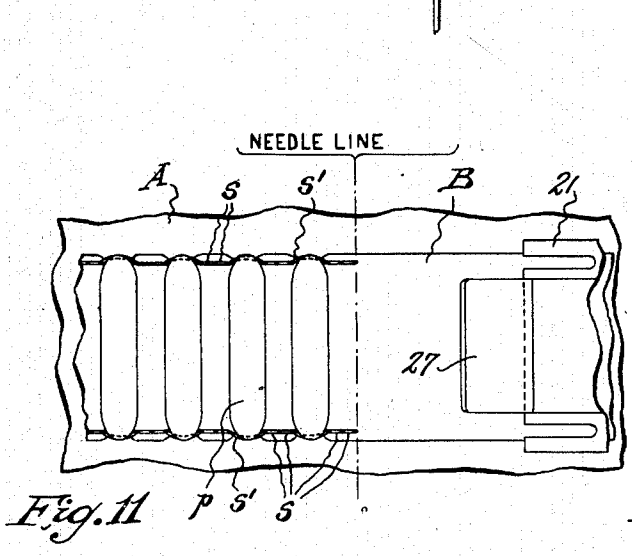


Fig. 11

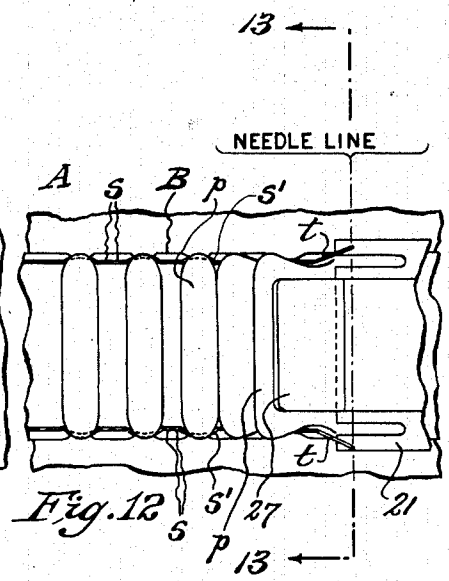


Fig. 12

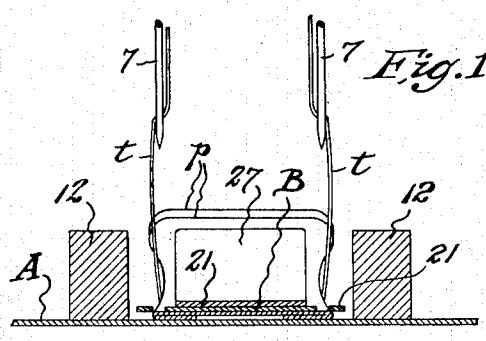


Fig. 13

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SEWING MACHINE

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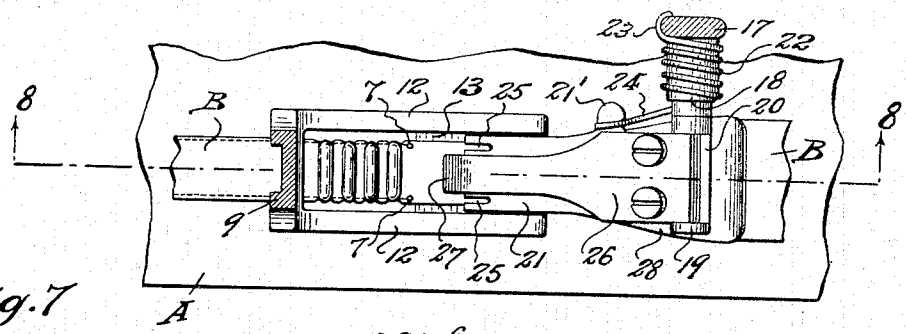


Fig. 7

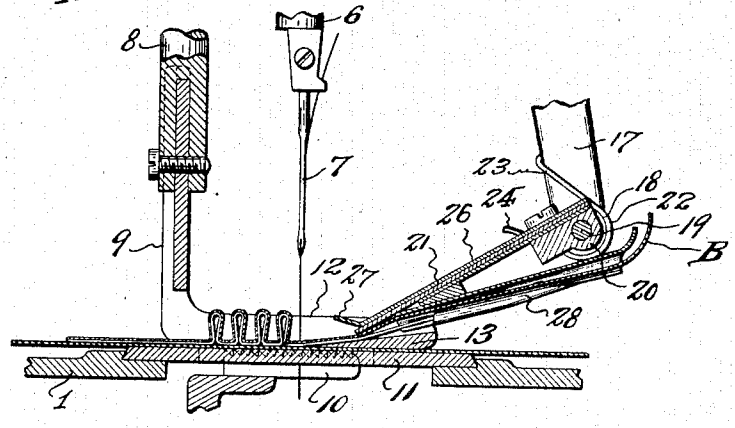


Fig. 8

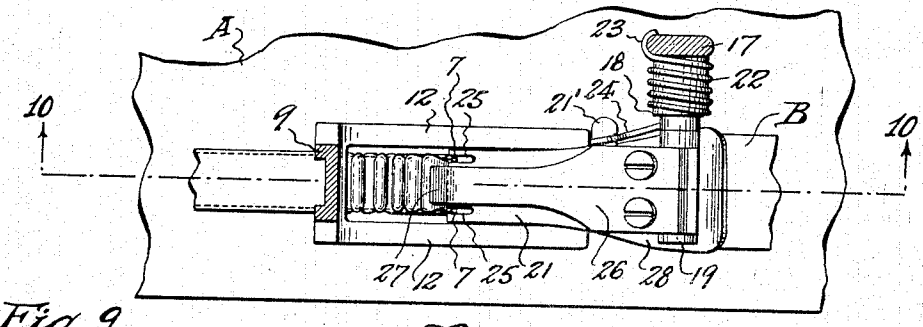


Fig. 9

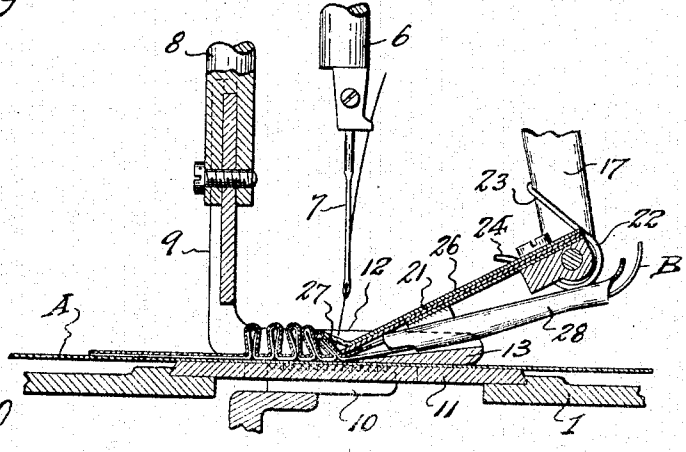


Fig. 10

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Patented Aug. 19, 1941 2,253,077

UNITED STATES PATENT OFFICE

2,253,077

SEWING MACHINE

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Application October 24, 1940, Serial No. 362,524

14 Claims. (Cl. 112—132)

This invention relates to sewing machines; and the invention has reference, more particularly, to improvements in sewing machines whereby the machine is adapted to automatically form and apply to goods operated upon plaited appliques, trimmings and the like.

The invention has for an object to provide a novel automatic material plaiting means together with means for effecting the operation thereof in timed relation to stitch forming means of a sewing machine containing the same, whereby the plaited material is both formed and sewn to the goods to which it is desired to apply the same as a trimming or the like.

The invention has for a further object to provide novel control means cooperative with the mechanism for operating the plaiting means, whereby the latter may be thrown into and out of service at the will of the machine operator without interrupting the operation of the stitch forming mechanism of the machine.

Other objects of this invention, not at this time more particularly enumerated, will become apparent in the following detailed description of the same.

An illustrative embodiment of this invention is shown in the accompanying drawings, in which—

Fig. 1 is a front side elevational view of the machine equipped with the novel plaiting mechanism according to the invention; Fig. 2 is a horizontal view with parts broken away, said view being taken on line 2—2 in Fig. 1; Fig. 3 is a transverse vertical section, taken on line 3—3 in Fig. 2, but drawn on an enlarged scale; Fig. 4 is a view similar to that of Fig. 2, but showing the operation of the plaiting mechanism interrupted; Fig. 5 is a transverse vertical section, taken on line 5—5 in Fig. 4, but drawn on an enlarged scale; Fig. 6 is a fragmentary end view of the plaiting mechanism, looking toward the right in Fig. 1, this view being also drawn on an enlarged scale.

Fig. 7 is a fragmentary plan view of the plaiting means in retracted position ready to initiate a pleat forming operation; Fig. 8 is a longitudinal sectional view of the same, taken on line 8—8 in Fig. 7; Fig. 9 is a view similar to that of Fig. 7, but showing the plaiting means advanced to pleat forming position; and Fig. 10 is a longitudinal sectional view of the same, taken on line 10—10 in Fig. 9.

Fig. 11 is a diagrammatic plan view showing previously formed pleats and the initial stage in the formation of a succeeding pleat; Fig. 12 is a similar view showing the formation of said succeeding pleat; and Fig. 13 is a diagrammatic transverse sectional view, taken on line 13—13 in Fig. 12.

Fig. 14 is a fragmentary plan view showing a plaited trimming comprising spaced groups of pleats capable of production by the sewing machine of this invention.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

Referring to the drawings, the reference character 1 indicates the base of a sewing machine having an upstanding pedestal 2 from which projects the arm 3 in such manner that the same overhangs said base 1. At the free end of the arm 3 is the vertically disposed head 4.

Journaled in the arm 3, to extend longitudinally therethrough, is the drive shaft 5. From this drive shaft is driven, through the customary transmission means, the vertically reciprocable needle-bar 6 with which the head 4 is provided, the same being equipped at its lower end with suitably spaced sewing needles 7 (the machine being of the well-known two-needle type). The sewing mechanism is of the lock-stitch producing kind, and therefore includes the customary rotary hook or looper devices (not shown), which are operated by well-known actuating means for cooperation with said sewing needles 7. Also supported by the head 4 is the vertically movable carrier bar 8 of a yieldable presser foot 9. Said presser foot cooperates with a feed-dog means 10 operative through the slotted throat plate 11 of the machine, whereby material A operated upon is controlled and advanced relative to the sewing mechanism for normal stitch formation; said feed-dog means being operated in the manner and by means (not shown) well known to the art.

The presser foot 9 includes a longitudinally channeled foot-piece having a rearwardly open bottom bounded by side bars 12 and bridged at its forward end by a bottom plate 13 of reduced thickness, said bottom plate tapering in thickness to provide a downwardly and rearwardly inclined floor adapted to converge upon the underlying throat plate 11, so as to terminate somewhat forward of the line of sewing needle movement.

The pleating means for pleating a strip B of trimming material to be applied and stitched to the material A comprises the following structure:

Affixed to the front side of the machine arm 3 is a bracket plate 14 having longitudinally spaced, outwardly projecting bearing members 15. Journaled in and between said bearing members 15 is a rock-shaft 16. Affixed to the forward end portion of said rock-shaft 16, adjacent to the machine head 4, is a dependent lever arm 17, provided at its free end with a laterally and forwardly projecting boss 18. Extending axially from said boss 18 is a journal stud 19 upon which is pivotally mounted the hinging knuckle 20 of a plaiting member 21. The plaiting member com-

prises a thin plate-like body to the rearward end portion of which said hinging knuckle 20 is affixed, whereby the plaiting member inclines downwardly and forwardly toward the presser foot 9. Said plaiting member 21 is of a width adapted to enter between the side bars 12 of the presser foot so that its forward end portion may be reciprocably moved back and forth within the channeled way with which the latter is provided. Said plaiting member is yieldably urged to swing its free end portion toward the presser foot, whereby the same operatively cooperates with both the floor of the presser foot bottom plate 13 and with the machine throat plate 11 beyond the forward termination of said bottom plate 13. To this end coiled spring means 22 is mounted on and around the lever arm boss 18, so that one terminal 23 of said spring means engages the lever arm 17, and the other terminal arm 24 exerts a downward swinging thrust upon the plaiting member 21, the latter having an outwardly projecting abutment lug 21' engageable by said spring terminal arm 24. Said plaiting member is provided in its free end portion with outwardly open slotways 25 which are respectively aligned with the respective paths of reciprocation of the sewing needles 7, so as to permit the adjacent portions of said plaiting member to straddle said sewing needles at proper times.

Affixed to said plaiting member 21, in superposed relation thereto, is the body 26 of a pleat shifter means. The operative part of this pleat shifter means comprises an upwardly and forwardly inclined push-piece 27 which projects from and beyond the operative free end portion of said plaiting member 21. Said push-piece 27 is of somewhat less width than the width of the plaiting member 21. The trimming material B to be plaited may comprise a strip of fabric or like material of selected width which, prior to submission to the operation of the plaiting member 21, may have its longitudinal marginal portions turned or folded inwardly to conceal the raw edges thereof. In such case, a suitable margin turn-over guide or folder member 28 is suitably affixed to the underside of the plaiting member 21, through which the material B is caused to pass before being operatively engaged by the effective forward end portion of said plaiting member 21. If the material to be plaited is in the form of braid, tape or other strip material having selvaged or otherwise finished longitudinal margins, so that inturning of margins to conceal rough edges is unnecessary, then said turn-over guide or folder member 28 may be omitted entirely, or a non-turning guide means may be substituted therefor.

The arrangement for actuating the plaiting means in timed relation to the operation of the stitch forming mechanism of the sewing machine comprises the following mechanism. Suitably mounted within and in affixed relation to the machine arm 3 is a bearing stud 29 having a transverse opening 30 through which the drive shaft 5 extends. Projecting axially from the outer end of said bearing stud 29 is a journal stud 31. Rotatably mounted on said journal stud 31 is a plaiting means actuating cam member 32 having in its outer portion an annular raceway 33 bounded on its inner side with a suitably shaped cam face 34, and on its outer side with a smooth faced neutral flange 35. Formed on or otherwise suitably connected with the inner end of said cam member 32 is a driven bevel gear 36. Affixed on said drive shaft 5 is a bevel pinion 37 which meshes with and drives said bevel gear 36, and thus the cam member 32. The front side wall of the machine arm 3 is pierced with an opening 38 exposing said cam member 32 so as to give the cooperating mechanism access thereto. Affixed on the rearward end portion of the rock-shaft 16 is an upwardly projecting rocker arm 39, the upper free end portion of which is provided with a roller stud 40 to engage in the raceway 33 of said cam member 32. Said rocker arm 39 is provided with a dependent tail-piece 41, and said bracket plate 14 is also provided with a fixed dependent tongue 42 which is opposed to said tail-piece 41. Engaged between said tail-piece 41 and tongue 42 is a compression spring 43, the respective ends of which are supported by seating studs 44 and 45 with which said tail-piece and tongue are respectively provided. Said spring 43 yieldably urges said rocker arm 39 to inwardly swung position to cause its roller stud 40 to normally cooperate with and follow the cam face 34 of said cam-member 32. In order to adjustably and exactly determine the limit of the operative pleat forming stroke of the plaiting member 21 under the inswinging movement of the lever arm 17 which carries the same, there is affixed to said rock-shaft 16 an upwardly extending stop arm 46, through the free end portion of which is threaded an adjustable stop-screw 47, the end of which is adapted to abut the machine arm 3, so as to limit the rocking movement of said rock-shaft 16 under the control of the cam face 34 of said cam member 32. Threaded onto said stop-screw 47 is a lock or jam nut 48 engageable with said stop arm 46 to secure said stop-screw against displacement from a predetermined position to which it has been adjusted.

Control means is provided for cooperation with said stop arm 46, whereby the plaiting means may be thrown into and out of service at the will of the machine operator without stopping the machine or interrupting the continued operation of the stitch forming mechanism, when it is desired to sew portions of the trimming strip B in flatly applied relation to the material A, i. e. without pleat formation therein. This control means comprises, a lever 49 pivotally mounted in connection with the machine arm 3. Affixed to this lever 49 is a detent arm 50 adapted to cooperate with said stop arm 46. Said detent arm 50 is yieldably held in a normally depressed or down swung position by a pull-spring 51, in which position its end portion is displaced out of the path of movement of said stop arm 46. When said detent arm 50 is thus depressed, the lever 49 is disposed in up-swung position (see Figs. 1 and 3). Connected with the free end portion of the lever 49 is a pull rod 52, which may include, if desired, the yieldable or tensional coupling spring connection 53. The lower end of said pull rod 52 is operatively attached to a foot treadle (not shown), whereby the operator may, at desired times, exert a downward pull upon the same. When the pull rod 52 is pulled down, it transmits to the lever 49 a down-swinging movement whereby the detent arm 50 is up-swung into the path of movement of said stop arm 46, thereby to obstruct inward swinging movement thereof, so that the rock-shaft 16 is held in outwardly rocked position, thus likewise holding the rocker arm 39 in outswung position with its roller stud 40 compelled to follow the neutral flange 35 of the cam member 32, and consequently being prevented from cooperating with the cam face 34 of

the latter (see Figs. 4 and 5). With the rock-shaft thus held stationary in outwardly rocked position, the lever arm 17 will be held stationary in inwardly swung position whereby the plaiting means is held inactive after completing the last previously formed pleat, and until the detent arm 50 is released and returned to normal initial position to permit renewal of plaiting operations.

The trimming strip B may be drawn from a supply roll 54 from which it is led to the folder member 28 and plaiting member 21. Said supply roll 54 is rotatably mounted on a journal stud means 55, supported from the machine head 4 by an upwardly extending standard or supporting bracket 56 affixed to the latter.

In the operation of the plaiting mechanism, the strip of trimming material B, after passing through the turn-over or other guide 28, passes beneath the edge of the forward end of the plaiting member 21 which bears tensionally thereupon so as to grip the same as backed by the throat plate 11 or the presser foot bottom plate 13, as the case may be. As initially disposed, while the rocker arm roller stud 40 rides on the high straight run of the cam member cam face 34, whereby to outswing the rocker arm 39 and thus outwardly rock the rock-shaft 16 to swing forward the lever arm 17 which carries the plaiting means, said plaiting member 21 is held in forwardly moved position with its strip gripping forward edge slightly advanced beyond the path of reciprocation of the sewing needles 7, thus serving to hold the strip down while the sewing needles operate to produce straight run stitches *s* in advance of a pleat *p* to be formed. In properly timed relation to the formation of the last such straight run stitch, rotation of the cam member 32 moves the low part of the cam face 34 into cooperation with the rocker arm roller stud 40, so as to permit the rocker arm 39 to swing inwardly under the thrust of the spring means 43, thus inwardly rocking the rock-shaft 16 to swing rearward the lever arm 17 whereby the plaiting means is retracted to a position for initiating its pleat forming operation (see more particularly Figs. 7, 8 and 11). In such position, the operative forward edge of the plaiting member 21 grips the strip of trimming material B against the forwardly and downwardly inclined floor of the presser foot bottom plate 13. As the sewing needles 7 rise upon completing the said last straight run stitch, the low part of the cam face 34 passes beyond the rocker arm roller stud 40 to again outswing the rocker arm 39 so as to rock the rock shaft to swing forward the lever arm 17, thus advancing the plaiting member 21, whereby the strip of trimming material is pushed ahead so as to form an upstanding pleat *p*, so disposed that the rear side of its base is approximately aligned to the path of reciprocation of the sewing needles 7. During such pleat forming operation, as the operative edge of the plaiting member passes beyond the forward terminal of the presser foot bottom plate 13, the same also functions to advance the material A somewhat in excess of the distance the latter material is normally fed by the operation of the feed dog means 10, thus compensating the feed of the material A in consonance with the transverse thickness of the formed pleat *p*. As the formation of the pleat *p* is thus completed, the forwardly and upwardly inclined push-piece 27 of the pleat shifter means, which is carried by the plaiting member 21, engages the formed pleat and bends or swings the same forwardly so as to pass the same between and forwardly beyond the stitch threads *t* extending to the raised needles 7 from the terminals of the last formed straight run stitch, and, at the same time, so as to shift the bight of the pleat out of the needle path prior to descent of the needles 7 (see Figs. 9, 10, 12 and 13). After the pleat *p* is thus formed and since it has been pushed between the threads, which yield to its passage, whereby the threads are disposed to lie exteriorly of the respective side margins of the pleat and across the same, the sewing needles 7 descend to complete skirting stitches *s'* which are thus drawn into place so as to engage exteriorly around the pleat ends. The plaiting means is held in the described advanced position until the desired ensuing straight run stitches *s* are formed, whereafter the above described operations are repeated.

If desired, the trimming material B may be continuously plaited to form an uninterrupted succession of pleats. It is sometimes desirable, however, for the purpose of obtaining variations of ornamental effects, to form the pleats in spaced groups similarly as shown in Fig. 14. The operator may accomplish this end by actuating the pull rod 52 to interpose the detent arm 50 in arresting relation to the stop arm 46 as above described, thereby to hold the plaiting means out of service, while continuous straight run stitches *s* are formed to flatly sew down the trimming material B according to the spacing distance desired to be provided between the groups of pleats. It will be understood that the number of pleats in the group is likewise controllable by the operator accordingly as the plaiting means is put into or taken out of service by the latter.

It will be understood that various changes could be made in the above described constructions, and that widely different embodiments of this invention could be made without departing from the scope thereof as defined in the following claims. It is therefore intended that all matter contained in the foregoing description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a sewing machine having a sewing mechanism including laterally spaced vertically reciprocable sewing needles, a centrally open presser foot bridged at its forward end portion by a bottom plate terminating, in direction of the movement of work, somewhat beyond the path of needle reciprocation, a material plaiting means adapted to form upstanding pleats in the material, said plaiting means comprising a material engaging plaiting member adapted to traverse said presser foot bottom plate, its operative stroke being in the direction of the movement of work, means to retract and advance said plaiting member relative to a point slightly beyond the path of needle reciprocation and in timed relation to stitch forming movements of said needles, and a pleat shifter means rigidly affixed to said plaiting member, the same having an upwardly and forwardly inclined operative end portion freely projecting beyond the operative end of said plaiting member, said pleat shifter being adapted to temporarily swing forward a formed pleat so as to pass the same between the threads of the raised sewing needles prior to stitch completing descent of said nee-

dles, whereby pleat skirting stitches disposed to pass exteriorly around the pleat sides are formed by the descending needles.

2. In a sewing machine having a sewing mechanism including laterally spaced vertically reciprocable sewing needles, a centrally open presser foot bridged at its forward end portion by a bottom plate terminating, in direction of the movement of work, somewhat beyond the path of needle reciprocation, a material plaiting means adapted to form upstanding pleats in the material, said plaiting means comprising a material engaging plaiting member adapted to traverse said presser foot bottom plate, its operative stroke being in the direction of the movement of work, means to retract and advance said plaiting member relative to a point slightly beyond the path of needle reciprocation and in timed relation to stitch forming movements of said needles, a pleat shifter means rigidly affixed to said plaiting member, the same having an upwardly and forwardly inclined operative end portion freely projecting beyond the operative end of said plaiting member, said pleat shifter means being adapted to temporarily swing forward a formed pleat so as to pass the same between the threads of the raised sewing needles prior to stitch completing descent of said needles, whereby pleat skirting stitches disposed to pass exteriorly around the pleat sides are formed by the descending needles, and manipulatable means for holding said plaiting means out of service without interrupting continued operation of the sewing mechanism.

3. In combination with a two-needle sewing mechanism of a sewing machine, material plaiting means in advance of the machine needles adapted by its operative stroke toward said needles to form upstanding pleats in the material subject to stitching operations of the sewing mechanism, and pleat shifter means rigidly affixed to said plaiting means, the same having an upwardly and forwardly inclined operative end portion freely projecting beyond the operative end of said plaiting means, said pleat shifter means being adapted to swing forward a formed pleat so as to pass the same between the threads of the raised sewing needles prior to a stitch completing descent of said needles, whereby pleat skirting stitches disposed to pass exteriorly around the pleat sides are formed by the descending needles.

4. In a sewing machine having a drive shaft extending through its arm and a two-needle sewing mechanism operated thereby, a centrally open presser foot bridged at its forward end portion by a bottom plate terminating, in direction of the movement of work, somewhat beyond the path of needle reciprocation, material plaiting means adapted to form upstanding pleats in the material, said plaiting means including a pleat shifter means rigidly affixed thereto and having an upwardly and forwardly inclined operative end portion freely projecting beyond the operative end of said plaiting means, said pleat shifter means being adapted to swing forward a formed pleat so as to pass the same between the threads of the raised sewing needles prior to a stitch completing descent of said needles, whereby pleat skirting stitches disposed to pass exteriorly around the pleat sides are formed by the descending needles, oscillatable means for causing said plaiting means to reciprocably traverse said presser foot bottom plate with pleat forming effect, and cam means operated by said drive shaft for actuating said oscillatable means in timed relation to stitch forming movement of the sewing needles.

5. In a sewing machine having a drive shaft extending through its arm and a two-needle sewing mechanism operated thereby, a centrally open presser foot bridged at its forward end portion by a bottom plate terminating, in direction of the movement of work, somewhat beyond the path of needle reciprocation, material plaiting means adapted to form upstanding pleats in the material, said plaiting means including a pleat shifter means rigidly affixed thereto and having an upwardly and forwardly inclined operative end portion freely projecting beyond the operative end of said plaiting means, said pleat shifter means being adapted to swing forward a formed pleat so as to pass the same between the threads of the raised sewing needles prior to a stitch completing descent of said needles, whereby pleat skirting stitches disposed to pass exteriorly around the pleat sides are formed by the descending needles, oscillatable means for causing said plaiting means to reciprocably traverse said presser foot bottom plate with pleat forming effect, cam means operated by said drive shaft for actuating said oscillatable means in timed relation to stitch forming movements of the sewing needles, and manipulatable means for interrupting the operation of said oscillatable means and said plaiting means actuated thereby without interrupting continued operation of the sewing mechanism.

6. In a sewing machine having a drive shaft extending through its arm and a two-neede sewing mechanism operated thereby, a centrally open presser foot bridged at its forward end portion by a countersunk tapered bottom plate terminating, in direction of the movement of work somewhat beyond the path of needle reciprocation, material plaiting means to reciprocably traverse said presser foot bottom plate, said plaiting means including a pleat shifter means rigidly affixed thereto and having an upwardly and forwardly inclined operative end portion freely projecting beyond the operative end of said plaiting means for the purposes described, and means to actuate said plaiting means in timed relation to stitch forming movements of said sewing needles comprising, a rock-shaft mounted exteriorly along the front face of the machine arm, a dependent lever arm affixed to said rock-shaft to the lower end of which said plaiting means is pivotally connected, spring means to yieldably urge said plaiting means toward said presser foot bottom plate, a rocker-arm affixed to said rock-shaft, and cam means operated by said drive shaft for actuating said rocker-arm.

7. In a sewing machine having a drive shaft extending through its arm and a two-needle sewing mechanism operated thereby, a centrally open presser foot bridged at its forward end portion by a countersunk tapered bottom plate terminating somewhat in advance of the path of needle reciprocation, material plaiting means to reciprocably traverse said presser foot bottom plate, said plaiting means including a pleat shifter means for the purposes described, and means to actuate said plaiting means in timed relation to stitch forming movements of said sewing needles comprising, a rock-shaft mounted exteriorly along the front face of the machine arm, a dependent lever arm affixed to said rock-shaft to the lower end of which said plaiting means is pivotally connected, spring means to yieldably urge said plaiting means toward said presser foot bottom plate, a cam mem-

ber operated by said drive shaft, said cam member having an annular raceway bounded on one side by a suitably shaped cam face and on its other side by a neutral face, a rocker arm affixed to said rock-shaft having a roller stud to ride in said cam raceway, spring means for normally urging said rocker arm in direction to cause its roller stud to follow the cam face of said cam member, a stop arm also affixed to said rock-shaft, a detent means, and operator controlled means for moving said detent means at will into engagement with said stop arm thereby to retain said rocker arm in position to cause its roller stud to follow the neutral face of said cam member whereby actuation of the plaiting means is arrested without interrupting continued operation of the sewing mechanism.

8. In a sewing machine having a drive shaft extending through its arm and a two-needle sewing mechanism operated thereby, a centrally open presser foot bridged at its forward end portion by a countersunk tapered bottom plate terminating somewhat in advance of the path of needle reciprocation, material plaiting means to reciprocably traverse said presser foot bottom plate, said plaiting means including a pleat shifter means of the purposes described, and means to actuate said plating means in timed relation to stitch forming movements of said sewing needles comprising, a rock-shaft mounted exteriorly along the front face of the machine arm, a dependent lever arm affixed to said rock-shaft to the lower end of which said plaiting means is pivotally connected, spring means to yieldably urge said plaiting means toward said presser foot bottom plate, a cam member operated by said drive shaft, said cam member having an annular raceway bounded on one side by a suitably shaped cam face and on its other side by a neutral face, a rocker arm affixed to said rock-shaft having a roller stud to ride in said cam raceway, spring means for normally urging said rocker arm in direction to cause its roller stud to follow the cam face of said cam member, a stop arm also affixed to said rock-shaft, a detent means, operator controlled means for moving said detent means at will into engagement with said stop arm thereby to retain said rocker arm in position to cause its roller stud to follow the neutral face of said cam member whereby actuation of the plaiting means is arrested without interrupting continued operation of the sewing mechanism, and said stop arm having an adjustable stop screw to abut the adjacent machine arm, whereby to adjustably limit the pleat forming stroke of the plaiting means.

9. A sewing machine as defined in claim 6 including, a stop arm affixed to said rock-shaft, and an adjustable stop screw carried by said stop arm to abut the adjacent machine arm, whereby to adjustably limit the pleat forming stroke of the plaiting means.

10. A sewing machine as defined in claim 1 wherein the means for retracting and advancing the plaiting member comprises, a rock-shaft, a dependent lever arm affixed to said rock-shaft by which said plaiting member is carried, spring means to yieldably urge the thus carried plaiting member toward the presser foot bottom plate, a driven cam member having an annular raceway bounded on one side by a suitably shaped cam face, a rocker arm affixed to said rock-shaft having a roller stud to ride in said cam raceway, and spring means for normally urging said rocker arm in direction to cause its roller stud to follow the cam face of said cam member.

11. A sewing machine as defined in claim 1 wherein the means for retracting and advancing the plaiting member comprises, a rock-shaft, a dependent lever arm affixed to said rock-shaft by which said plaiting member is carried, spring means to yieldably urge the thus carried plaiting member toward the presser foot bottom plate, a driven cam member having an annular raceway bounded on one side by a suitably shaped cam face, a rocker arm affixed to said rock-shaft having a roller stud to ride in said cam raceway, spring means for normally urging said rocker arm in direction to cause its roller stud to follow the cam face of said member, a stop arm affixed to said rock-shaft, and said stop arm having an adjustable stop screw to abut the machine frame, whereby to adjustably limit the pleat forming stroke of the plaiting member.

12. A sewing machine as defined in claim 2 wherein the means for retracting and advancing the plaiting member comprises, a rock-shaft, a dependent lever arm affixed to said rock-shaft by which said plaiting member is carried, spring means to yieldably urge the thus carried plaiting member toward the presser foot bottom plate, a driven cam member having an annular raceway bounded on one side by a suitably shaped cam face and on its other side by a neutral face, a rocker arm affixed to said rock-shaft having a roller stud to ride in said cam raceway, and spring means for normally urging said rocker arm in direction to cause its roller stud to follow the cam face of said cam member, and wherein the means for holding the plating means out of service comprises a stop arm also affixed to said rock-shaft, a detent means, and operator controlled means for moving said detent means at will into engagement with said stop arm thereby to retain said rocker arm in position to cause its roller stud to follow the neutral face of said cam member.

13. A sewing machine as defined in claim 1 including, a turn-over guide affixed to the underside of the plaiting member behind its operative end whereby to return the side marginal portions of the material to be pleated prior to formation of pleats therein.

14. In combination with the sewing mechanism of a sewing machine, material plaiting means, a pleat shifter means rigidly affixed thereto and having an upwardly and forwardly inclined operative end portion freely projecting beyond the operative end of said plaiting means for the purposes described, the operative stroke of said plaiting means and pleat shifter means being in the direction of movement of the work through the machine, means to reciprocate said plaiting means and pleat shifter means in timed relation to the sewing mechanism, and a turn-over guide affixed to the underside of said plaiting means behind its operative end whereby to in-turn the side marginal portions of the material to be pleated prior to formation of pleats therein.

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