D. S. SEYMOUR.

FABRIC FEEDING AND STRETCHING MECHANISM.

APPLICATION FILED JUNE 16, 1915.

1,354,514.

Patented Oct. 5, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

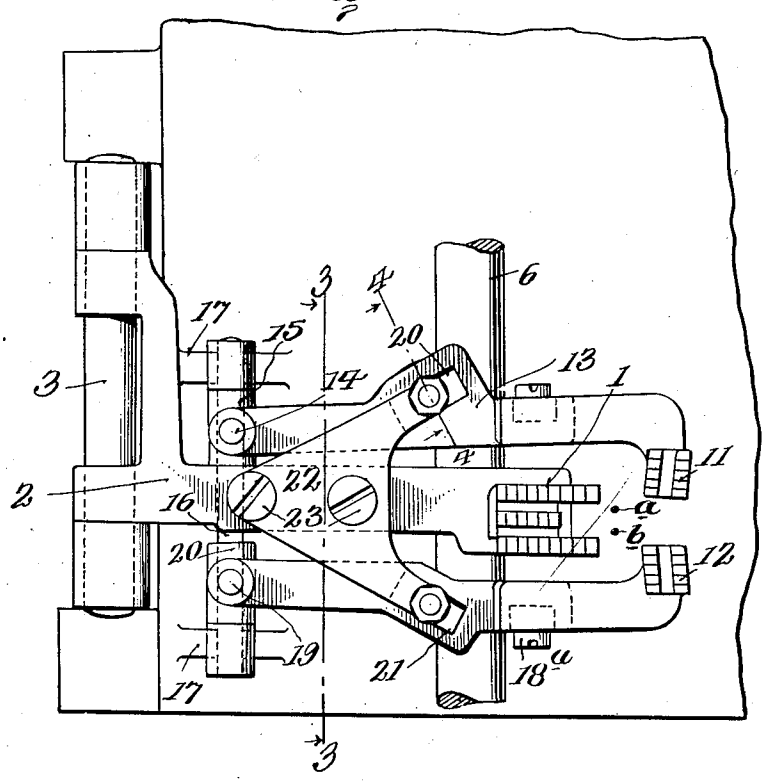
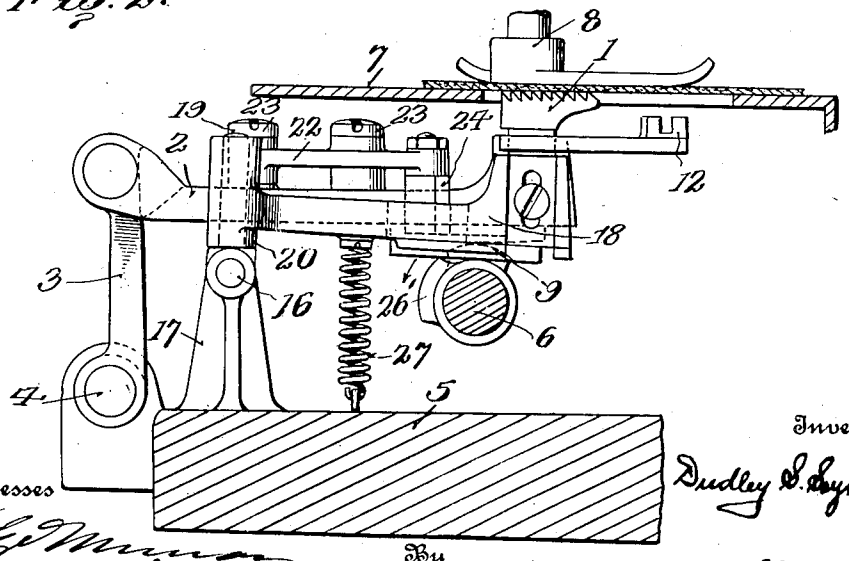


Fig. 2.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

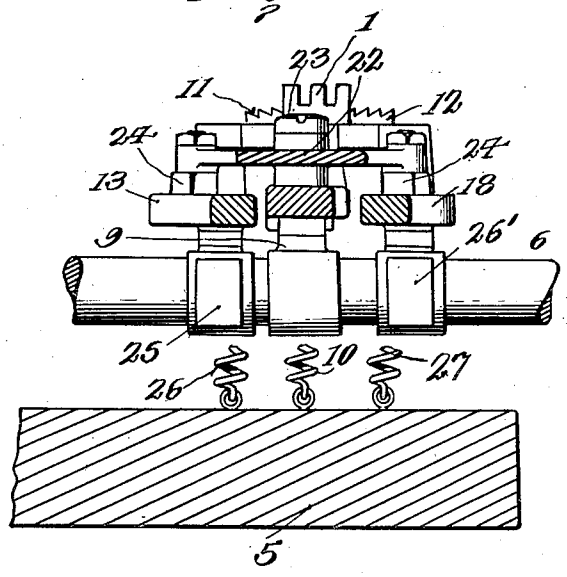


Fig. 4.

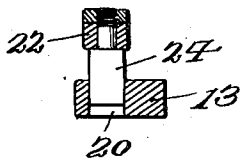


Fig. 5.



Fig. 6.

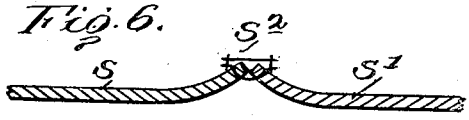
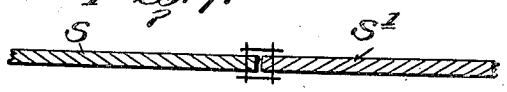


Fig. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

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FABRIC FEEDING AND STRETCHING MECHANISM.

1,354,514. Specification of Letters Patent. Patented Oct. 5, 1920.

Application filed June 16, 1915. Serial No. 34,477.

To all whom it may concern:

Be it known that I, DUDLEY S. SEYMOUR, a citizen of the United States, residing at Oak Park, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Fabric Feeding and Stretching Mechanism, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

The invention relates to new and useful improvements in fabric feeding mechanisms and more particularly to a fabric feeding mechanism used for feeding joined edges of fabric sections.

An object of the invention is to provide a feeding mechanism of the above character with coöperating means which operate to stretch the fabric sections so as to cause said sections which are joined to lie flat or substantially in the same plane.

A further object of the invention is to provide a stretching means of the above character, which is so timed as to operate on the fabric to stretch the fabric sections prior to the operation of the feeding mechanism thereon.

These and other objects will in part be obvious and will in part be hereinafter more fully disclosed.

In the drawings which show by way of illustration one embodiment of the invention—

Figure 1 is a plan view of a feeding and stretching mechanism embodying my improvements;

Fig. 2 is a vertical sectional view, showing the feeding mechanism in side elevation and showing the work support and cooperating presser foot for the same;

Fig. 3 is a sectional view on the line 3—3 of Fig. 1;

Fig. 4 is a sectional view on the line 4—4 of Fig. 1;

Fig. 5 is a detail view showing two fabric sections having their edges joined, which fabric sections are adapted to be operated upon by my improved feeding and stretching means;

Fig. 6 is a similar view showing the fabric sections turned out ready to be fed to the machine; and

Fig. 7 is a view showing the fabric sections after having been operated upon by the feeding and stretching means.

In carrying out the invention, I have provided a feeding mechanism which may be of the usual four-motion type, wherein the feed dog is moved into engagement with the fabric and then is moved to feed the fabric. Coöperating with this feed dog and engaging the fabric in advance thereof is a stretching mechanism which consists of two dogs mounted side by side so as to engage the respective fabric sections and these stretching dogs are moved in a direction transversely of the line of feed and in opposite directions so as to place the fabric under strain. This transverse strain on the fabric draws the edges into line and flattens the seam. The stretching dogs are preferably timed so as to perform their stretching action prior to the operation of the feeding dog on the fabric.

Referring more in detail to the drawings, my improved feeding and stretching means consists of a main feed dog 1, which is mounted on a feed bar 2 and this feed bar is pivoted to a feed rocker 3, pivoted at 4 to the supporting bed 5. This feed rocker is oscillated back and forth by any suitable mechanism from the main driving shaft 6. The main feed dog 1 is located beneath the work support 7 and is moved upwardly into engagement with the fabric which rests on the work support 7 and which is held thereon by a presser foot 8. The feed dog is raised and lowered by a cam 9, carried by the main shaft 6. This cam 9 is shown in Fig. 2 as raising the feed dog into engagement with the fabric and while so raised the feed rocker 3 is oscillated so as to move the feed dog rearwardly, thus feeding the fabric. After this feeding movement the cam 9 permits the feed bar 2 to drop, disengaging the feed dog from the fabric and the feed rocker is then moved in the opposite direction to return the feed dog to the forward end of its stroke ready for its next feeding action. A spring 10 is connected to the feed bar 2 at its upper end and to the supporting bed 5 at its lower end and this spring normally holds the feed bar 2 in contact with its lifting cam 9.

Located in advance of the main feed dog 1 are two dogs 11 and 12. These dogs are

arranged along side of each other. The dog 11 is carried by an arm 13 which is pivoted at 14 to a bracket 15, the pivot 14 being a vertical pivot so that the arm 13 may swing horizontally. The bracket 15 is in turn pivoted on a cross-shaft 16, which is journaled in suitable spaced standards 17. The dog 12 is carried by an arm 18 which is pivoted at 19 so as to swing about a vertical axis and the pivot 19 is carried by a bracket 20, also journaled on the cross-shaft 16. This pivoting of the arms 13 and 18 provides a universal support for each arm, so that the arms may be moved vertically to cause the dogs to engage the material and horizontally away from each other for stretching the material.

The arm 13 is provided with a slot 20, which is inclined relative to the longitudinal axis of the arm and the direction of movement of the main feed bar 2. The arm 18 has a similar slot 21 which is inclined in the opposite direction. Mounted on the main feed bar 2 is a bracket 22 which is secured to the main feed bar by suitable screws 23. The bracket 22 has two forwardly projecting arms and each arm carries a block 24 which is pivoted to the arm, and these blocks slide in the respective slots in the arms carrying the dogs 11 and 12. As the main feed bar 2 moves back and forth this bracket 22 will likewise move back and forth and the blocks 24 sliding in the slots 20 and 21 will force the arms 13 and 18 respectively outwardly and then inwardly. The rearward movement of the feed bar 2 moves the arm outwardly and the forward movement of this bar moves the arms inwardly.

The arm 13 is adapted to be engaged by a cam 25. A spring 26 secured at one end to the supporting bed 5 and at its other end to the arm normally holds the arm in contact with this cam. The arm 18 is adapted to cooperate with a cam 26′ on the main shaft 6, and a spring 27 holds the arm 18 in contact with the cam. These cams 25 and 26′ are similar and similarly located on the shaft 6, so that as the shaft rotates both arms will be simultaneously raised and lowered. The cams 25 and 26′ are so set relative to the cam 9 that as the shaft rotates in the direction of the arrow in Fig. 2, the cams 25 and 26′ will first raise the dogs 11 and 12 into engagement with the fabric; while thus in engagement with the fabric the feed bar 2 begins its rearward movement and the blocks 24 sliding along the inclined slots will force the arms 13 and 18 outwardly relative to the center line of feed.

The cam 9 is so positioned relative to cams 15 and 26′, that the main dog will engage the fabric before the stretching dogs completely leave the fabric. The main dog is then given its feeding movement.

In Fig. 1 of the drawings I have indicated two needles *a* and *b*, which may be used in connection with my improved feeding and stretching means. These needles are located between the main feed dog and the stretching dogs.

In Fig. 5 of the drawings I have shown two fabric sections *s* and *s′* which have been united by overedge stitches s^2. After the fabrics have been united they are turned outwardly to the position shown in Fig. 6, and are then fed through my improved feeding and stretching means. The stretching dogs 11 and 12 engage the respective sections of the fabric, and as they move outwardly away from each other, the fabric sections are placed under strain transversely of the line of seam. This pulls the edges around into abutting position, so that the sections of the fabric will lie flat. If a stitching mechanism is used, it would be so positioned as to engage the flat sections of the fabric and cover the meeting edges thereof. This stitching mechanism would, of course, consist of a plurality of needles, a looper coöperating with each needle or with all the needles beneath the work support, and a thread laying finger coöperating with the needles above the work support so as to form a covering seam, or some other form of seam covering mechanism could be used. The stretching dogs would cause the united edges to lie flat and hold the same until engaged by the feeding mechanism which in turn would hold the fabric stretched until stitched. It is to be understood, also that my improved feeding and stretching means may be used to operate upon the fabric sections wherein their edges have been united by through and through stitches, in which case the stretching dogs would operate to flatten the seam prior to the covering of the seam.

If a stitching mechanism is not used then the machine will be in a sense a preparing machine for flattening a seam which could be covered in a subsequent operation. The dogs 11 and 12 are adjustably secured to their supporting arms in the well known way and by adjusting the vertical position of these dogs the grip by these dogs on the fabric may be varied. These stretching dogs work in a line substantially at right angles to the main line of feed and the surfaces are therefore serrated in a direction transversely of their movement.

It is obvious that minor changes in the details of construction and arrangement of parts may be made without departing from the spirit of the invention.

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

1. The combination of a main feed dog, stretching dogs located side by side and in front of the main feed dog, means for mov-

ing the stretching dogs into engagement with the fabric, means for moving the main feed dog into engagement with the fabric subsequent to the engagement of the fabric by the stretching dogs, and means for separating the stretching dogs for stretching the fabric and for moving the main feed dog to feed the fabric.

2. The combination of a main feed dog, a feed bar carrying the same, means for reciprocating the feed bar, and means for raising and lowering the feed dog, auxiliary dogs engaging the fabric in advance of the main feed dog, arms supporting the respective auxiliary dogs, means for raising the auxiliary dogs into engagement with the fabric in advance of the engagement of the fabric by the main feed dog, and means operated from the main feed bar for moving the auxiliary dogs away from each other to stretch the fabric.

3. The combination of a main feed dog, a feed bar supporting the same, means for moving the feed bar back and forth and for raising said feed dog into engagement with the fabric, auxiliary dogs engaging the fabric in advance of the main feed dog, arms supporting the respective auxiliary dogs, means for engaging said arms for raising the auxiliary dogs into engagement with the fabric in advance of the engagement of the fabric by the main feed dog, a bracket carried by the feed bar, pivoted blocks carried by said bracket, the respective arms for the auxiliary dogs having slots formed therein for said blocks, said slots being inclined in opposite directions to each other and to the line of feed, whereby the rearward movement of the feed bar will separate the auxiliary dogs.

4. The combination of a main feed dog, means for intermittently operating the same to feed the fabric, and means for stretching the fabric in advance of the main feed dog while said feed dog is idle as to its fabric feeding movements.

5. The combination of a main feed dog, devices movable away from each other for stretching the fabric in a direction at an angle to the line of feed, and mechanism for intermittently and alternately operating said feed dog and said stretching devices to cause the same to perform their fabric feeding and stretching actions.

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

DUDLEY S. SEYMOUR.

Witnesses:

S. GEORGE TATE,

A. F. BREDSHALL.