

(Model.)

2 Sheets—Sheet 1.

S. LASKEY.

HEMMER AND FELLER FOR SEWING MACHINES.

No. 457,785.

Patented Aug. 18, 1891.

Fig. 1.

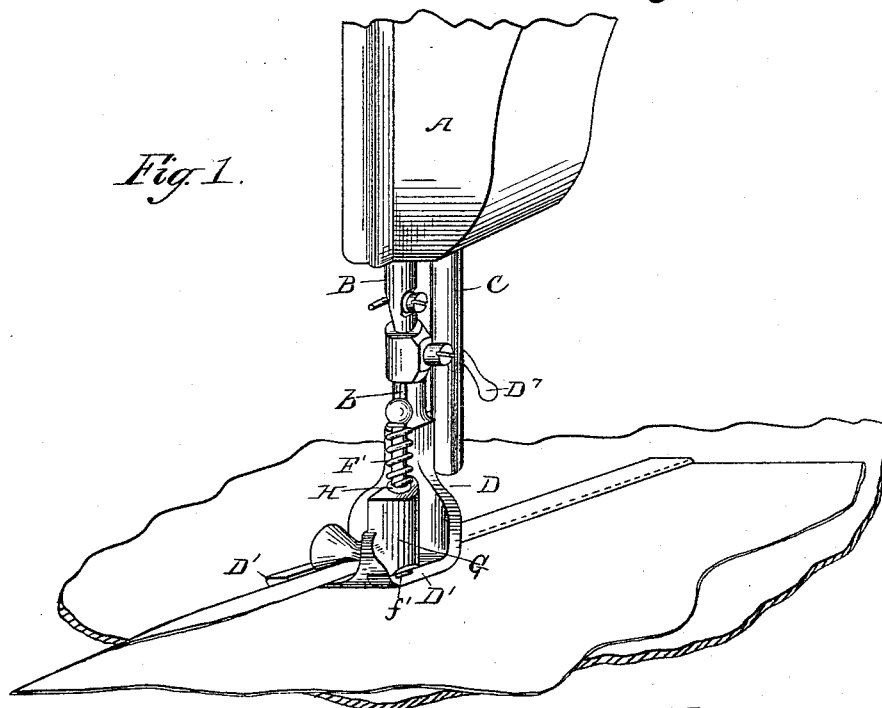


Fig. 2.

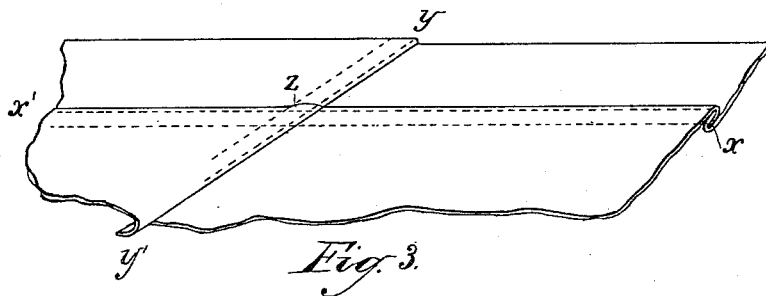
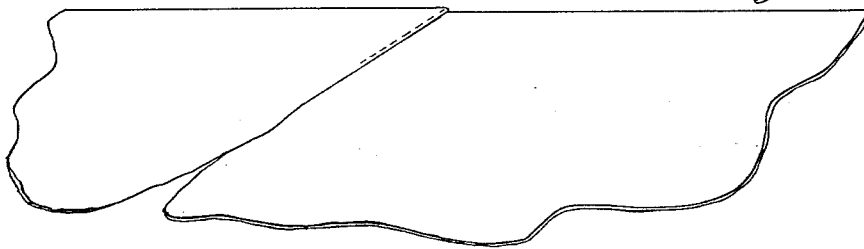


Fig. 3.

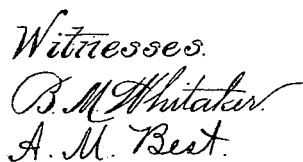
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2 Sheets—Sheet 2.

HEMMER AND FELLER FOR SEWING MACHINES.

Patented Aug. 18, 1891.



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UNITED STATES PATENT OFFICE.

STEPHEN LASKEY, OF CHICAGO, ILLINOIS.

HEMMER OR FELLER FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 457,785, dated August 18, 1891.

Application filed May 10, 1888. Serial No. 273,503. (Model.)

To all whom it may concern:

Be it known that I, STEPHEN LASKEY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Hemmers or Fellers, which is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a construction embodying my invention; Fig. 2, a similar view showing one of the seams; Fig. 3, a similar view showing other forms of seams; Fig. 4, a side elevation; Fig. 5, a front elevation; Fig. 6, a detail sectional view taken on the line 1 1 of Fig. 4; Fig. 7, a detail sectional view taken on the line 2 2 of Fig. 4; Fig. 8, a detail plan section taken on the line 3 3 of Fig. 7; Fig. 9, a detail bottom plan view of the locking-cam detached; Fig. 10, a side elevation of the attachment, taken from the side opposite to that shown in Fig. 4 and showing the hemmer and feller turned into inoperative position; and Fig. 11, a detail plan view of the feed-dog.

Like letters refer to like parts in all the figures of the drawings.

My invention relates to sewing-machines, and more particularly to that class of sewing-machine attachments known as "hemmers" or "fellers." These devices as usually constructed are rigid in all their parts, and while they are adapted for use upon smooth fabrics, which present no such inequalities or enlargements as transverse seams, fells, or the like, they are not, for obvious reasons, capable of use where such inequalities or enlargements are present, since if the passages through which the cloth or other fabric passes while being turned upon itself are of such dimensions as to properly effect their purpose these enlargements cannot pass through the same. Other devices of this class are adjustable for the purpose either of obtaining a wider or narrower hem or fell, or for accommodating the device for operation upon a thicker or thinner fabric. This class of devices is also open to the same objections, for the reason that, although adjustable after the parts have once been adjusted, they are rigid in their relation to each other, and consequently form, in effect, while in operation a rigid device.

Still another class exists in which the parts are free to expand and contract with relation to each other, this action taking place automatically during the operation of the device; but in every instance of this kind it will be found that an expansion of one part of the device causes a corresponding contraction of another part thereof, which will effectually prevent any enlargements of the fabric from passing through the device. Devices have also been heretofore known for hemming and felling—as, for example, in United States Patent No. 25,715, of 1859—in which are yielding members through or between which cross-seams and other irregularities might pass; but such yielding members yield more or less in the arc of a circle and not in direct lines.

It is the chief object of my present invention to provide a hemmer or feller which will operate in an effective manner to turn the cloth into the desired position to form the hem or fell, which device will at the same time automatically expand equally throughout and on direct lines when any enlargement of the fabric, such as heretofore have been mentioned, enters the same and permit the same to pass freely through without clogging or binding and without interrupting in any way the operation of the machine.

My invention has for its further object to produce a device of this description which will operate with a minimum of friction and which will produce a smooth and uniform hem or fell.

I will now proceed to describe a construction in which I have practically carried out my invention in one form, and will then particularly point out in the claims those features which I deem to be new and desire to protect by Letters Patent.

In the drawings, A represents the head of a sewing-machine provided with the needle-bar B, carrying the needle *b* and actuated in any suitable manner, and the presser-bar C, which is normally depressed by a suitable spring of considerable strength, as is usual. To the lower end of the presser-bar C is attached a presser-foot D, which is preferably constructed in the manner set forth in an application filed by me August 29, 1887, Serial No. 248,225. It may be connected to the presser-bar in any desired manner, the connection being shown

in the present instance as effected by forming in the rear portion of the presser-foot, at one side thereof, a groove d , which receives the flattened lower end c of the presser-bar, the two parts being secured in position by means of a screw c' . The central portion of the horizontal part of the presser-foot is cut away from front to rear, thus leaving on each side a portion D' , which is rigid so far as its connection with the presser-bar C is concerned. These side portions are rounded off at their front ends, as shown at d' , to permit the cloth to pass readily under the same without catching. In the central cut-away space between these side portions there is arranged the upwardly-yielding center D^2 , which extends from a point slightly in the rear of the side portions D' to about midway of their length, its forward end being inclined upward, as shown, and being provided with an aperture d^2 , through which the needle passes. In my application hereinbefore mentioned this yielding center was connected to the body of the presser-foot by a flexible or pivotal connection. In the present instance I have mounted the same so as to slide vertically upward in a straight line. For this purpose I provide the said center with an upwardly-projecting shank D^3 , which fits within a corresponding recess D^4 , formed in the body of the presser-foot. The lower portion of the shank D^3 corresponds in diameter to the recess D^4 , and the said shank is provided with an upward extension d^3 of less diameter than the shank proper. Within the recess D^4 there is arranged a spring D^5 , coiled around the extension d^3 and bearing against the top of the shank D^3 and the top of the recess D^4 , thus serving to normally depress the yielding center D^2 . It will be understood, of course, that the spring D^5 is a much lighter spring and exerts a much lighter pressure than the spring employed to depress the presser-bar C . The extension d^3 of the shank D^3 passes upward through a suitable aperture in the top of the body of the presser-foot and is provided with a collar D^6 , having cam-inclines d^4 and free to rotate on said extension. Corresponding cam-inclines d^5 are arranged on the top of the presser-foot D . The extension d^3 is provided at its upper end with a cap-piece d^6 , which serves to hold the collar D^6 in position, and the said collar is provided with a handle D^7 , bent around the presser-bar C , as shown, so as to be within easy reach of the right hand of the operator and serving to rotate the collar. In order to provide means for locking the yielding center rigidly to the presser-foot, I provide in the rear face of the shank D^3 of the center a transverse slot or groove e , as shown in Fig. 4, and to co-operate with this groove there is pivoted on the under side of the body of the presser-foot which projects rearward at this point an eccentric or cam E , its pivot being formed by a screw e' . The cam E is provided with a handle E' , by means of which it may be so turned as to cause it to enter the groove

e , and thus lock the center D^2 and render the same rigid in its relation to the other portions of the presser-foot.

It will be seen that the presser-foot just described is in principle identical with that set forth in my prior application, hereinbefore specified, certain improvements having been made in the details for the purposes hereinafter pointed out.

The devices for turning the cloth upon itself into proper position to form the hem or fell are mounted upon the forward portion of the presser-foot, one of the side portions or lateral arms D' of which is provided at a point slightly in the rear of its front end with an upright cylindrical post or pin F , which is screwed into the same, as shown in Fig. 7, or otherwise connected thereto. Upon this post is mounted a sleeve G , which carries the lower member of the cloth-turning devices. This sleeve is free to move vertically upon the post F and is also capable of being turned around the said post when raised to a sufficient height, as hereinafter set forth.

g represents a tongue attached to the lower end of the sleeve G , arranged within the cut-away portion of the presser-foot and forming the lower one of the two members which serve to turn the cloth. Its underside is normally flush with the bottom of the presser-foot, and it is provided on the side adjacent to the sleeve G with a shoulder g' , which, when the parts are in operative position, as shown more particularly in Figs. 5 and 7, abuts against the member D' of the presser-foot, to which the post F is attached, and serves to prevent the rotation of the sleeve G around said post. The tongue g extends about half-way across the cut-away space between the members D' of the presser-foot, and its upper surface is inclined or curved upward, as shown, to properly turn the cloth or other fabric operated upon.

Within the sleeve G there is formed a central recess or socket G' , slotted at the front, as shown at g^2 , Figs. 7 and 8, and in this recess or socket there is arranged a second sleeve H , which surrounds the post F , and which is free to move vertically on said post both independently of and along with the sleeve G , while it is capable of rotation around the said post along with the said sleeve G . Upon the sleeve H there is mounted, near its lower end, a pin h , extending at right angles to the said sleeve through the slot g^2 and serving to carry the upper member H' of the cloth-turning device. This upper member consists, preferably, of a roller mounted to revolve upon the pin h as an axis and having the form of two truncated cones joined by their apexes. The smaller of these cones h' forms the end of the roller adjacent to the sleeve H , while the larger of these cones h^2 forms the other end of the roller, the entire roller extending entirely across the cut-away space between the lateral arms D' of the presser-foot above the lower member g . The

surface of the roller is curved at the junction of the two conical portions thereof, in order to avoid a sharp angle, which might interfere with the turning of the cloth.

5 The post F extends some distance above the sleeves G and H, and there is coiled around this upper portion of the said post a spring F', the lower end of which bears upon the top of the sleeve H, while its upper end
10 abuts against a cap or head piece f, attached to the upper end of the post F. There is formed on the upper surface of the lateral arm D', to which the post F is attached, in front of the said post, a transverse groove f'
15 of sufficient width to receive the lower member g of the hemmer when the parts are in the position shown in Fig. 10.

In connection with the above apparatus I employ a feed-dog, which is constructed to
20 co-operate with the particular form of presser-foot shown and described. This construction is shown in detail in Fig. 11 of the drawings.

J represents the throat-plate, and i the needle-aperture, through which the needle passes
25 downward at each stroke. The feed-dog consists of two lateral members J', corresponding substantially in size and location to the lateral arms D' of the presser-foot. Each of
30 these parts J' is provided at its rear end with the inward lateral extension J², which extensions are directly under the yielding center D² of the presser-foot. It will be observed that one of these portions J² of the feed-dog
35 is practically in the rear of and in line with the needle-aperture i.

The operation of the device is as follows: The general operation of the particular form of
40 presser-foot shown and described and the advantages obtained thereby have been set forth at length in my prior application, hereinbefore referred to, and therefore need no detailed description here. It will be observed that the
45 lateral arms or side portions D' of the presser-foot bear upon the cloth during the operation of felling upon each side of the fell to be formed, thereby forming gages which accurately determine the width of the fell, while
50 at the same time they serve to hold the cloth down upon the feed-dog at those points where only a single thickness of cloth intervenes between the presser-foot and the feed-dog, with the full pressure due to the heavy spring which
55 depresses the presser-bar. The rough edges to be turned in and stitched thus occupy the central cut-away space between the said lateral arms. The manner in which the turning
60 in of these parts is effected is illustrated in Fig. 1 of the drawings, in which the attachment is shown as employed in the operation of hemming. In this latter operation, of course, one of the lateral arms D' acts merely as a gage without assisting in the feeding operation. Fig. 2 shows the seam produced in
65 the operation of felling, by which the two rough edges are turned in and stitched together, as shown more particularly in section

at x in Fig. 3. If we suppose the seam x x' in said Fig. 3 to have been already formed, and it being desired to form the seam y y' in
70 said figure, the enlargement at the point z, where these seams intersect, could not pass through the ordinary or rigid hemmer or feller. In the construction which I have devised, however, when this point is reached the upper
75 and lower members g and H' will separate bodily—that is to say, evenly or by equal resisting movement on direct lines—to leave space of uniform dimensions sufficiently to
80 allow the said enlargement to readily pass between the same without in any way interrupting the operation of the device. It will be observed that this separation of the two members of the hemmer proper produces an
85 enlargement of the passage through which the fabric passes without in any way contracting any other portion of the device and thus causing it to bind, and in this it is distinguished in details heretofore known of
90 this class, in which a flat spring having one fixed and one free end in the cloth-turning device forming an enlargement unevenly by yielding more at the free end and less at the fixed end, whereby in the passage of thicker
95 cloth or of the seam pressure would not be uniform throughout. It will also be observed that not only can the two members yield upward together, the lower members being held upon the cloth only by the comparatively
100 light pressure of the spring F'; but in addition to this the upper member H' is free to yield upward independently of the lower member g for the purpose of enlarging the passage, as just described. The upper member
105 being in the form of a roller, the friction is reduced to a minimum, and the resistance to the operation of the feed which exists in other attachments of this kind is obviated. The hem or fell thus formed passes under the
110 yielding center D², being stitched just before it passes completely under the same, and the said center rides upon the hem or fell with a comparatively light pressure, in the manner and for the purposes set forth in my previous application. The collar D⁶, with its cam-inclines, serves for the purpose of lifting the
115 center slightly in case of an enlargement of the cloth, which might tend to clog the apparatus as it passes under the yielding center. To effect this, the operator grasps the handle
120 D⁷ and presses it back for an instant, thereby raising the center sufficiently for this purpose. As soon as the enlargement is passed the handle D⁷ is relaxed and the parts return to their original position. As a rule, however,
125 the center will yield upward automatically sufficiently without necessitating the employment of this device for lifting the same, which is only necessary when heavy goods are being operated upon. The cam E, by its en-
130 gagement with the slot e, serves as a locking device for the center. The necessity of this device arises when the apparatus is employed on a curved seam, such as the hem of a

round corner, in which case the lateral feed at one side of the seam would prevent the successful turning of the corner. By locking the center and rendering it rigid with the rest of the presser-foot a central feed is obtained, which obviates this disadvantage. The portion J² of the feed-dog, which is directly in the rear of the needle, and which consequently exerts its pull directly in the line of the seam, is of special utility in this operation, although it is of course advantageous under all circumstances.

It will be observed that the entire hemmer proper is pivoted upon the post F in such manner that it may be swung entirely out of the way when not in use, so that it will not in any way interfere with the ordinary operation of the machine. This position of the parts is shown in Fig. 10 of the drawings. When the hemmer is in operative position, as shown in Figs. 5 and 7 of the drawings, the shoulder g' locks against the side of the lateral arm D' of the presser-foot and holds the hemmer rigidly in line for work. When it is desired to use the presser-foot as an ordinary presser-foot, it is only necessary to raise the hemmer upward upon the post F and give the same a quarter-turn, when it will assume the position shown in Fig. 10, the tongue g, which forms the lower member, fitting within the groove f' and serving to lock the parts in this inoperative position, in which they are out of the way. I thus obtain an attachment which may be used either as a hemmer or feller or as an ordinary presser-foot, thereby dispensing with the necessity of removing one attachment from the presser-bar and substituting another.

It is obvious that various modifications in the details of construction may be made without departing from the principle of my invention. The particular configuration of the parts which serve to turn the cloth may be varied as desired, provided the gist of the invention, which consists of an automatically-expandible hemmer, which during its expansion does not contract any other portion of device, be retained. I therefore do not wish to be understood as limiting myself strictly to the precise details hereinbefore set forth and shown in the drawings.

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

1. In a hemmer or feller, the combination, with the upwardly-yielding spring-controlled lower cloth-turning member, of the upper cloth-turning member arranged above the former, means for bodily supporting the said members, and a spring arranged to normally retain the said upper member against the lower, but permitting the entire upper member to yield upward independently of the lower member to uniformly and simultaneously enlarge the entire opening between the two members, substantially as and for the purposes specified.

2. In a hemmer or feller, the combination, with the lower member consisting of a tongue provided with a suitably inclined and curved upper surface, of the upper cloth-turning member consisting of a roller composed of two truncated cones joined by their apexes and arranged to co-operate with said tongue, substantially as and for the purposes specified.

3. In a hemmer or feller, the combination, with the lower member g, consisting of a tongue provided with a suitably inclined and curved upper surface, of the upper member H', consisting of a roller composed of a large truncated cone h² and a small truncated cone h', joined by their apexes and with a convex curve in the surface of the roller at the said point of junction, substantially as and for the purposes specified.

4. The combination, with the presser-foot provided with a central recess cut from the front edge of the foot rearward, of the cloth-turning devices arranged within said recess in the presser-foot, substantially as and for the purposes specified.

5. The combination, with the presser-foot cut away centrally from front to rear, of an upwardly-yielding center arranged in the rear of said recess, and the cloth-turning devices arranged in the front of said recess, substantially as and for the purposes specified.

6. The combination, with the presser-foot D, cut away centrally from front to rear and forming the side portions or lateral arms D', rigidly connected to the presser-bar, of the upwardly-yielding center D², arranged in the rear portion of the cut-away space and provided with a light spring to depress the same, and the cloth-turning devices arranged in the front portion of the cut-away space, capable of yielding upward and provided with a light spring to normally depress the same, substantially as and for the purposes specified.

7. The combination, with the presser-foot having a vertical pivoting standard thereon, of a spring-controlled cloth-turning device on said standard arranged to be turned aside and held in a turned-out position, substantially as described.

8. The combination, with the presser-foot D, having its central portion cut out from front to rear, of the center piece D², arranged in said central opening and free to move up and down bodily, a spring arranged to hold the center down to working position, and a handle whereby the attendant may positively lift the center bodily whenever desired, substantially as and for the purposes specified.

9. The combination, with the presser-foot D, having its central portion cut out from front to rear, of the central piece D², arranged in said central opening, a spring arranged to depress the center to its work, and a lock whereby the center may be secured in working position and made rigid with the station-

ary portion of the presser-foot, substantially as and for the purposes specified.

10. The combination, with the presser-foot D, having its central portion cut out from front to rear, of the center D^2 , arranged within said recess and provided with the shank D^3 d^3 , and the spring D^3 , arranged within a recess D^4 in the body of the presser-foot which incloses said shank, substantially as and for the purposes specified.

11. The combination, with the presser-foot cut away centrally from front to rear and

provided with lateral arms D' , of the upwardly-yielding center D^2 , arranged between said arms at the rear, and the feed-dog consisting of lateral members J' , corresponding in position to the arms D' , and lateral extensions J^2 , arranged under the upwardly-yielding center, substantially as and for the purposes specified.

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