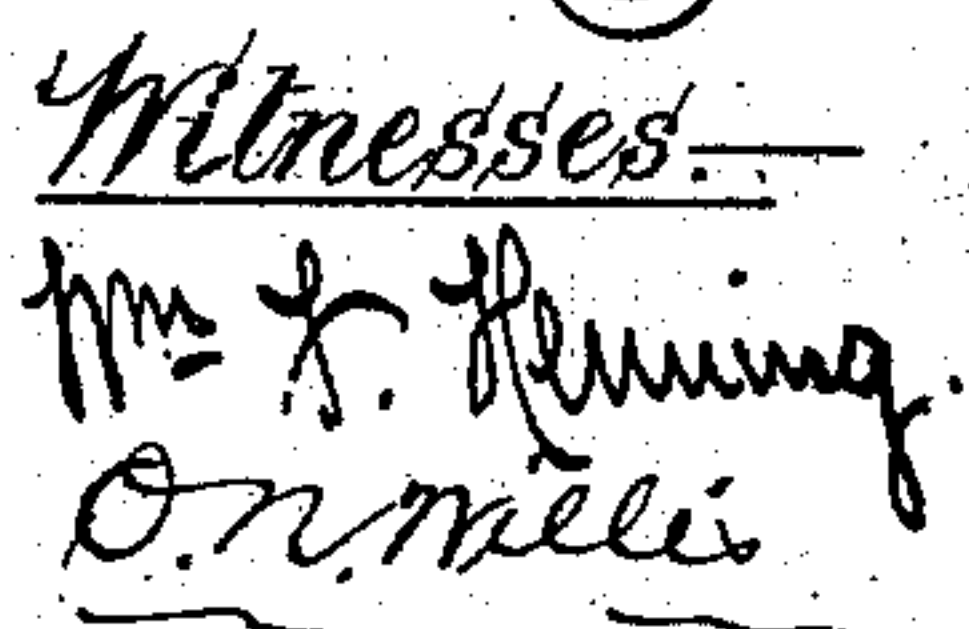


(Model.)
M. GARDNER & J. STONE.
SEWING MACHINE ATTACHMENT FOR MAKING DRESS STIFFENING.
No. 413,934. Patented Oct. 29, 1889.



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UNITED STATES PATENT OFFICE.

MARSHALL GARDNER AND JAMES STONE, OF AURORA, ILLINOIS, ASSIGNORS,
BY MESNE ASSIGNMENTS, OF TWO-THIRDS TO ALICE M. BALL, OF SAME
PLACE, AND ELIZABETH FLORSHEIM, OF CHICAGO, ILLINOIS.

SEWING-MACHINE ATTACHMENT FOR MAKING DRESS-STIFFENING.

SPECIFICATION forming part of Letters Patent No. 413,934, dated October 29, 1889.

Application filed July 8, 1887. Serial No. 243,735. (Model.)

To all whom it may concern:

Be it known that we, MARSHALL GARDNER and JAMES STONE, of Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in the Method of and Apparatus for Making Dress-Stiffening; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to an improved apparatus for making a certain form of stiffening for garments, which stiffening consists of two parallel filaments or strips of stiffening material enfolded edge to edge within a covering of cloth or similar material, such covering consisting of a single strip of fabric folded about the two stiffening-strips and having its margins overlapped opposite the space between the strips, the whole being held together by a row of stitching passed through the space between the stiffening-strips and through the three folds of the incasing fabric.

One part of the complete apparatus for making the stiffening consists of any ordinary or suitable sewing-machine. Another part embraces devices for folding and guiding the materials entering into the stiffening to the sewing-machine needle, and another part embraces means for drawing the material forward beneath the needle. The latter may be used in lieu or in aid of the ordinary feeding devices of a sewing-machine.

Referring to the accompanying drawings, Figure 1 is a perspective view of the folding and guiding device as a whole, showing the materials entering and emerging therefrom. Fig. 2 is a top view of the folding and guiding device. Fig. 3 is a longitudinal section through the channel or groove of the guide shown in Figs. 1 and 2, said section being taken in plane of the line 3 3 of Fig. 2. Fig. 4 is a perspective view of a removable block which occupies the entering end of the guide shown in Figs. 1, 2, and 3. Fig. 5 is a transverse section of the guide and the contained block, taken in the line 5 5 of Fig. 3. Fig. 6

is a transverse section taken in the line 6 6 of Fig. 3. Fig. 7 is a transverse section taken in the line 7 7 of Fig. 3. Fig. 8 shows the guide and folding device in combination with the presser-foot and needle of a sewing-machine and with the device for drawing the stiffening forward, the view being in vertical section of the guide and the remaining parts in the line of the stiffening as it is passing through the machine. Fig. 9 is a fragmentary top view of the guide applied to the sewing-machine bed-plate, and also showing two additional guide-blocks located one on each side of the presser-foot. Fig. 10 is a perspective view of the acting parts of the feeding device shown in Fig. 8. Fig. 11 represents the parts entering into the stiffening, with the inclosing fabric partly folded; and Fig. 12 is a similar section of the stiffening, showing both margins of the inclosing fabric folded down upon the inclosed stiffening-strips.

A represents a metal block having a longitudinal central channel A' therein of suitable width to receive the stiffening described, lying flatwise in the bottom of said channel. This block or guide-piece rests in use upon the bed-plate of a sewing-machine longitudinally in the line in which the material is to be fed to the needle and with its delivery end *a* adjacent to the presser-foot of the sewing-machine, as shown in Fig. 8. As the guide lies in this position on the sewing-machine, the materials entering into the stiffening to be formed by the apparatus are fed into the opposite end of the guide. The inclosing fabric F of the stiffening enters in the form of a strip of suitable width lying entirely flat upon the sewing-machine bed and entering the outer end of the guide in this flat position, as shown in Fig. 1. As it proceeds within the guide, however, its edges are upturned and successively folded over to embrace the stiffening-strips, which are also fed into the outer end of the guide above the inclosing fabric. The channel A' in the guide A is therefore made of the full width of the inclosing-strip at the extreme outer end of the said guide-block A and is narrowed as it proceeds in-

wardly to the point α' in Figs. 1, 2, and 3, whence it proceeds at a uniform width throughout the remainder of the length of the channel. Within the widened end of the channel is freely fitted a removable block B. (Shown detached and in perspective in Fig. 4.) This block has its opposite side walls $b\ b$ converged to fit rather closely but freely within the corresponding converging portions of the walls of the channel A' at the outer end of the block A; but the lower portions of said walls $b\ b$ (which lower portions are marked b' in Fig. 4) are cut away to a depth equal to or a little greater than the thickness of the fabric to be folded into the guide-block A, the upper margins of the cut-away portion being preferably inclined, as shown at b^2 in Fig. 4.

The fabric F is fed beneath the block B and between the lower surface of said block and the bottom of the channel A', and as the fabric proceeds its edges turn upwardly and occupy the spaces formed by the cut-away portions b' of the side walls b of the block B, passing thence into the uniform portion of the channel A'. In the removable and wedge-shaped block B is cut a channel B' in line with and of about the same width as the channel A'. At the outer end of the channel B' is located a partition B², dividing the channel B' into two channels at this point. Said channels are arranged side by side and are of equal width, and into them are fed side by side the two strips $s\ s$ to be covered by the fabric strip F. Commonly these strips $s\ s$ will be composed of thin narrow filaments of bamboo, and each strip will be made duplex by placing one filament flatwise upon another. They are accordingly thus shown in Fig. 1. The channel B' of the removable block B is separated from the adjacent portion of the channel A' by a thin bottom plate b^3 , belonging to the block B, and the stiffening-strips $s\ s$ therefore do not rest upon the fabric at the point of their entrance.

The block B, as a special improvement, is held down upon the entering fabric F by a yielding pressure, provided for in the particular construction here shown by springs $b^4\ b^4$, having slots at their free ends, through which pass screws $b^5\ b^5$ into the body of the block A.

Within the block B is mounted a presser or tongue B³, which extends to or preferably a little beyond the bottom b^3 of said block B and serves to bear the stiffening-strips $s\ s$ closely down upon the fabric F preparatory to the overfolding of the latter upon said strips. This tongue B³ is in form a thin spring-plate attached at its base to a cross-wire B⁴, which is rotatable in the outer end of the block B and projects far enough at both ends to enter slots α^2 in the ends of the walls of block A. In one projecting end of the cross-wire B⁴ is inserted a wire B⁵, which extends forwardly and has its free end bent inwardly, so that it may be inserted in a hole α^3 in the side of the guide-block A. This

hook-formed wire at once retains the block B in place within the block A and serves to depress the forward and free end of the tongue B³ upon the stiffening-strips and fabric. To lift the spring-presser B³, the end of the wire B⁵ is withdrawn from the hole α^3 , and when the wire is thus withdrawn may be removed from the block A by drawing the former backward.

At the point where the fabric and stiffening-strips come together at the end of the tongue B³ the margins of the fabric F stand vertical. Farther on these edges are successively folded down upon the strips $s\ s$ by suitable tongues or pressers arranged in advance of the tongue B³, as shown at A² and A³, one for operating upon each margin of the fabric. Each of these pressers is in form similar to B³, or composed of a long thin plate of spring-steel attached to a cross-wire as a means of connecting it with the block A. These cross-wires A⁴ A⁵ are thrust into the horizontal holes in the block or body of the guide A near the top, and the metal above the hole for each cross-wire in one side wall of the block A is cut away to form a slot α^4 , through which the presser-tongue may pass in sliding the cross-wire in or out of the block. The cross-wires A⁴ A⁵ severally project from the guide-block for the attachment of the wires A⁶ and A⁷, formed like the wire B⁵, already described, and having their free ends fitted to similarly enter holes α^3 in the sides of the block. These wires when occupying said holes serve to hold the pressers or tongues A² A³ down with suitable force upon the material beneath. The tongues are made long and inclined at a slight angle with the bottom of the channel A', so that they gradually fold the several margins of the fabric F down upon the strips $s\ s$, A² being narrower than the channel A', as seen at Figs. 2 and 6, so as to operate upon only one margin of the fabric, while the other margin passes it to be subsequently engaged by the presser A³. The folding actions of the various presser-tongues and of the block B are shown in Figs. 6, 7, and 8.

The guide A is arranged upon the sewing-machine table to bring the needle C of the sewing-machine in line with the space between the stiffening filaments $s\ s$, and the stitches pass through the two overlapping margins of the fabric F, which rest upon the strips $s\ s$, and also through the bottom fold of said fabric, upon which the strips $s\ s$ rest. By this means the parts entering into the product are held together in place and the covering is drawn more or less closely about the strips $s\ s$, according to the tension applied to the stitching.

Preferably and as a special improvement the presser-foot D of the sewing-machine is made of the same width as the channel A' of the guide A, or a little narrower, and fixed guides D' are placed on the sewing-machine bed on opposite sides of the presser-foot to

form a continuation of the channel of the guide A. These guides D' D' more perfectly insure the placing of the stitches accurately in the middle of the stiffening and between the inclosed strips s s. Said guides D' D' may of course be made integral or continuous with the side bars of the guide A.

E is a device for drawing the stiffening forward through the guide and beneath the needle. It consists of two vibrating side bars or frame-pieces E' E', united by a cross-bar E², together with a dog E³, pivoted above the cross-bar in an inclined position, so as to bite the stiffening between said dog and cross-bar in one direction of motion on the part of the vibrating bars E' and to release it in the opposite movement. The frame E is located beyond the needle and is mounted on a rocking shaft E⁴ below the bed-plate of the sewing-machine, through which bed-plate suitable slots are provided for the vibration of the frame-bars E'. The shaft E⁴ may be that from which the ordinary feed G is actuated, or it may be one specially provided and actuated for this purpose. The stiffening after leaving the needle passes over the cross-bar E² and beneath the dog E³, which inclines away from the needle, so that on each rearward motion of frame E the stiffening will be clutched and drawn along the length of a stitch. The lower face of the dog may be serrated, as shown, to more certainly bite into and firmly hold the stiffening.

We claim as our invention—

1. In an apparatus for making stiffening of the character described, and in combination, a block having a channel for guiding the fabric, a block within said channel having passages therein to guide the stiffening-filaments side by side, and pressers for folding the fabric, substantially as described.

2. A sewing-machine attachment for the purpose set forth, consisting of a metal block having a channel therein formed with converging walls for the passage of the fabric, guides for the stiffening-filaments within said channel, a guide-passage having parallel side walls for the passage of the fabric, and stiffeners and pressers within said guide-passage, substantially as described.

3. A sewing-machine attachment for the purpose set forth, comprising a metal block A, provided with a central guide-channel having converging side walls at its receiving end, a U-shaped block B, fitting the receiving end of said channel and having converging walls, the spaces between the walls of the block B and guide-channel forming a converging guide-passage for the fabric and provided with guides for the stiffening-filaments, and pressers located in the said guide-channel for folding the fabric, substantially as described.

4. The combination, with the metal block A, provided with a guide-channel having converging side walls at its receiving end, of a block of U shape in cross-section fitting the

receiving end of said channel and having converging walls, the spaces between the walls of the blocks B and guide-channel forming a converging guide-passage for the fabric, a partition in said block B, forming two guides for the stiffening-filaments, a presser in said block acting upon the said filaments, and pressers for folding the cloth located in the said guide-channel, substantially as described.

5. The combination, with the metal block A, provided with a guide-channel having converging side walls at its receiving end, of a block B, having converging walls and fitting within the said channel, the spaces between the walls of the block and the walls of the guide-channel forming a converging guide-passage for the fabric, said block having a yielding connection with the block A, guides for the stiffening-filaments, and pressers for folding the fabric, substantially as described.

6. In an apparatus for making dress-stiffenings of the character described, and in combination, a main block having a passage for guiding the fabric, a block within said passage, having channels therein for guiding the stiffening-filaments side by side, said main block being provided with a guide-passage having parallel side walls forming a continuation of the said fabric-guiding passage, adapted to receive the fabric and stiffeners, pressers within said fabric-guiding passage for folding the fabric upon the stiffeners, shafts passing through the block, each having a presser attached thereto, said shafts being also provided with arms, and the main block being provided with recesses which are entered by said arms, whereby the pressers are held in operative position, substantially as described.

7. The combination, with the stitch-forming mechanism of a sewing-machine, guides for stiffening-filaments, and pressers for folding a fabric about said filaments, of a feed device for the stiffening, consisting of a vibrating frame having opposing clamp-jaws acting to engage and move forward the stiffening when the frame is moving in one direction, substantially as described.

8. The combination, with the stitch-forming devices of a sewing-machine and a presser-foot thereof, of guides for stiffening-filaments, pressers for folding a fabric about the said filaments, stationary guides, as blocks D' D', located at opposite sides of the presser-foot and supported upon the bed-plate of the machine, and feed devices for carrying the stiffening beneath the presser-foot, substantially as described.

9. An apparatus for making stiffening of the character set forth, consisting of a metal block A, having a guiding-channel for the fabric, said channel having its walls parallel throughout the greater portion of its length, but having convergent walls at the receiving end; a block, as B, fitting said channel at its receiving end and provided with converging

walls, said block having guides formed there-
in for the passage of the stiffening material,
springs for holding said block B upon the
fabric, and pressers A² A³, arranged in the
5 guiding-channel for the fabric, substantially
as described.

In testimony that we claim the foregoing as

our invention we affix our signatures in pres-
ence of two witnesses.

MARSHALL GARDNER.

JAMES STONE.

Witnesses:

C. CLARENCE POOLE,

O. N. WILLIS.