2 Sheets—Sheet 1.

C. O. APPLEBY.

Hat-Binding Attachment to Sewing-Machines.

No. 219,669. Patented Sept. 16, 1879.

Fig. 4.

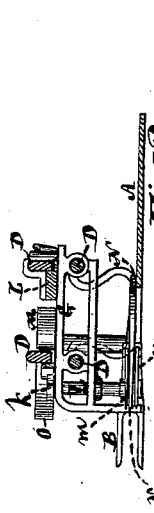


Fig. 2.

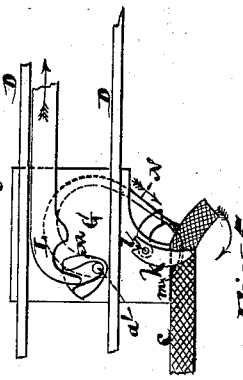


Fig. 5.

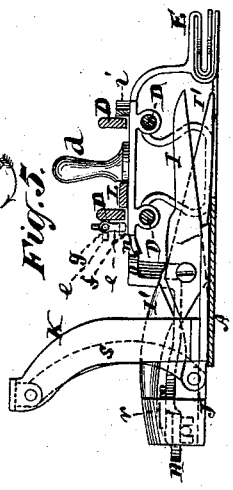


Fig. 1.

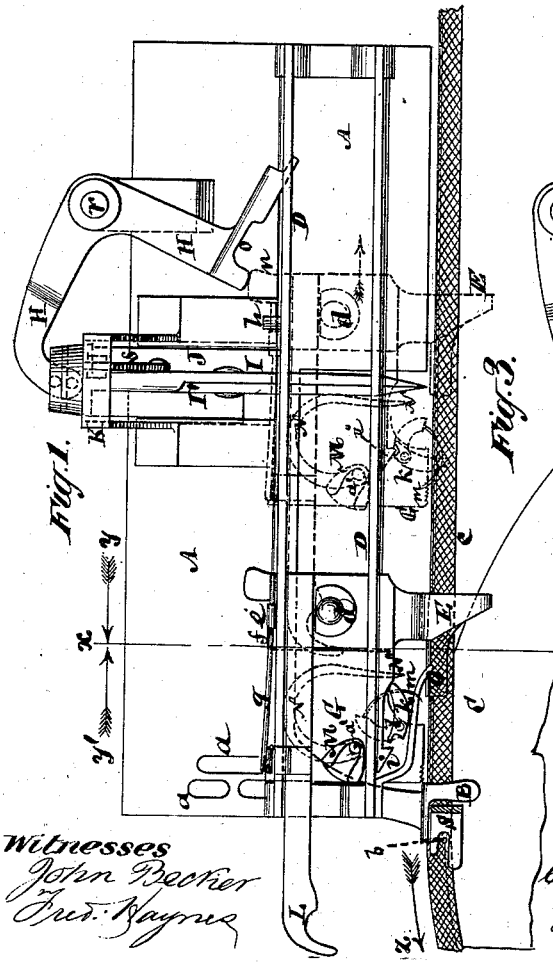
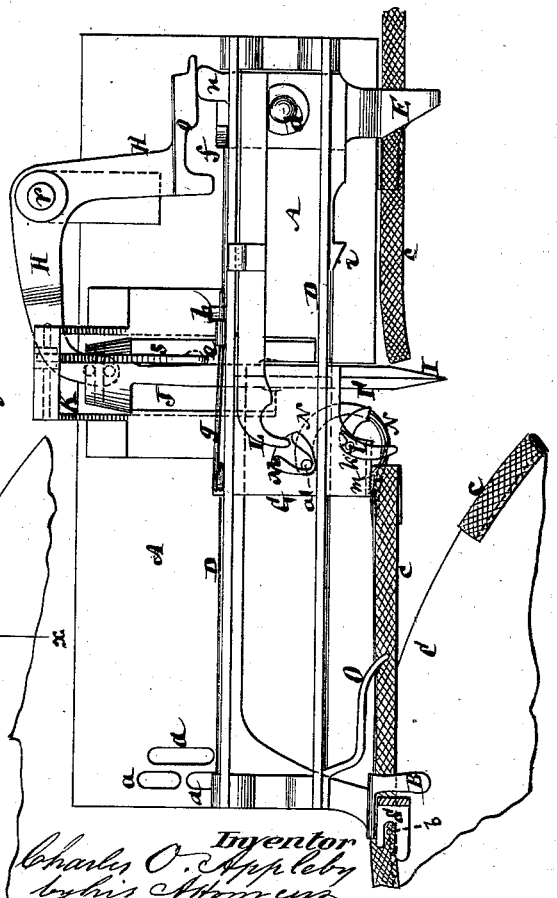


Fig. 3.



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2 Sheets—Sheet 2.

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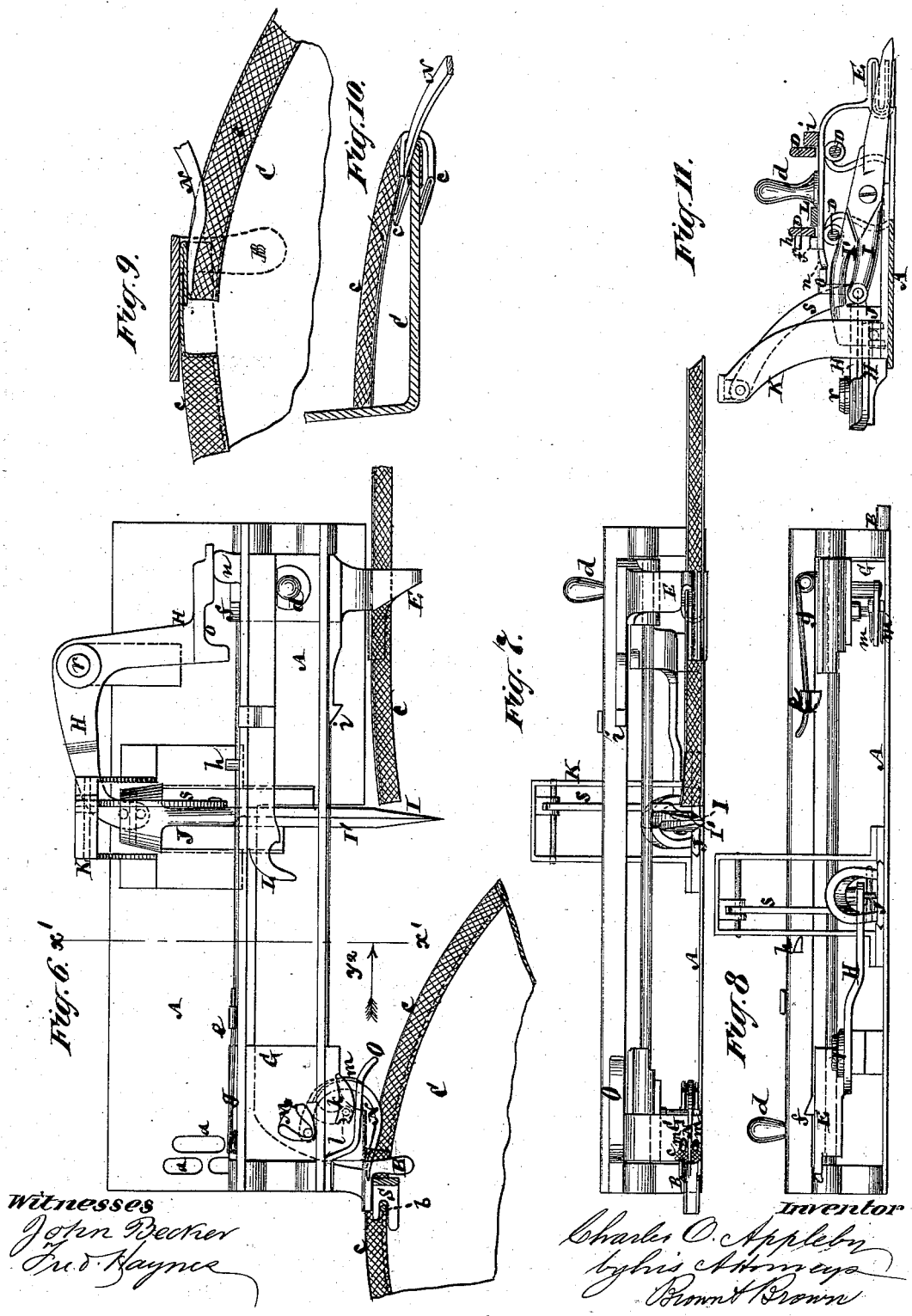
Hat-Binding Attachment to Sewing-Machines.

No. 219,669. **Patented Sept. 16, 1879.**



Witnesses
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UNITED STATES PATENT OFFICE

CHARLES O. APPLEBY, OF NYACK, ASSIGNOR TO JOSEPH A. LOCKWOOD, OF YONKERS, NEW YORK.

IMPROVEMENT IN HAT-BINDING ATTACHMENTS TO SEWING-MACHINES.

Specification forming part of Letters Patent No. **219,669**, dated September 16, 1879; application filed December 20, 1878.

To all whom it may concern:

Be it known that I, CHARLES O. APPLEBY, of Nyack, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Hat-Binding Attachments to Sewing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This invention has for its object the production of an attachment to sewing-machines which shall not only double the binding-ribbon in direction of its length to receive within it the outer marginal portion of the hat-brim, and provide, by the action of the sewing-machine, for feeding up and sewing to its place said binding-ribbon as the hat is rotated to receive the same around its brim, but which shall also automatically cut said ribbon to its required length and turn over or under one end of the cut ribbon to give it an overlapping finish which is exempt from a ragged exposure or liability to unravel.

To these ends the invention consists in certain combinations of devices whereby the doubled ribbon is cut to its required length from a continuous strip or length of ribbon introduced within the attachment, is automatically turned over or inward at its cut end, and a continuous operation of the attachment is provided for to bind a series of hats in succession.

Such attachment may be applied to sewing-machines now in use, and may be removed from the machine when the latter is required for any other purpose than binding hats.

In the accompanying drawings, Figure 1 represents a plan of the attachment with its parts in position before the binding-ribbon is cut and its cut end turned under or inward, and showing the needle and presser-foot of the machine and brim of the hat in the course of having the binding-ribbon applied to it. Fig. 2 is a detail plan view in illustration of the action of certain curved needles which hold onto the ribbon while it is being cut, and of a lapper or folding-hook which turns inward or under the cut end of the binding-ribbon on the hat. Fig. 3 is a plan of the attachment with its parts in position after the binding-ribbon has been cut and the cut end of the binding-ribbon on the hat turned under or inward. Fig. 4 is a section on the line $x\ x$ in Fig. 1, looking in direction of the arrow y; and Fig. 5, a section on the same line $x\ x$ in Fig. 1, looking in direction of the arrow y^1. Fig. 6 is a plan of the attachment with its parts in position after the binding-ribbon has been cut and the cut end of the latter turned inward and in the act of being sewed to complete the binding of the brim. Figs. 7 and 8 are side elevations, looking in reverse directions to each other, of the attachment with its parts in the position represented in Fig. 6. Figs. 9 and 10 are a detail broken plan and perspective view, respectively, in illustration of the application of a lapper or folding-hook for turning under or inward the cut end of the binding-ribbon on the hat. Fig. 11 is a transverse vertical section of the attachment on the line $x'\ x'$ in Fig. 6, looking in direction of the arrow y^2.

A is the bed or base portion of the attachment, which is a simple plate designed to be secured to the sewing-table of an ordinary or other suitable sewing-machine by means of screws arranged to pass through slots $a\ a$ in said plate. The position of this plate on the sewing-table should be such that a jaw-shaped guide, B, with which it is provided at its end nearest to the sewing-needle b, comes immediately in rear, relatively to the feed, of the presser-foot S of the machine, the brim C of the hat, having the binding-ribbon c applied to it, passing within and through said guide B as the hat is rotated by the feeding devices of the machine on the table, to sew the binding-ribbon around its brim in the direction of the arrow z in Fig. 1.

Mounted on and attached to said plate A are front and back longitudinal rails, D D, each of which may be formed of upper and lower bars or rods, to provide for the guidance and sliding movement of certain devices, as hereinafter described, toward and from the fixed guide B. These rails, which are parallel with one another, are here shown straight; but they might be curved away from the hat.

E is a ribbon-folder, or combined folder and guide, which is constructed to receive within or though it, and to double or fold longitudi-

nally, the binding-ribbon, as in other hat-binding attachments. This ribbon-folder is fitted to move longitudinally along the rails D D, and has its motion in such direction controlled by hand through a knob or handle, *d*. Said folder, having the ribbon entered through it and doubled or folded longitudinally by its passage therethrough, is first moved up toward the fixed guide B, as shown by full lines in Fig. 1, and one hand of the operator held on the knob *d*, while the other hand holds the free or loose portion of the ribbon back of said folder to direct the ribbon to the latter. Such is the position of the folder E while the doubled ribbon *c* is being sewed around the brim of the hat till a point is reached within a limited distance of that portion of the brim which was first entered within the fixed guide B, when the folder E is drawn partially back to the position shown for it by dotted lines in Fig. 1. Also, arranged to travel along the rails D D, and interposed between the folder E and the fixed guide B, is a slide, G, which, when the folder E occupies its extreme advanced position (represented by full lines in Fig. 1) is in locked connection by a spring-catch, *e*, attached to said slide, with a fixed hook or inclined projection, *f*, on the rear side of the folder E, whereby said slide is drawn back along with the folder E till the latter approaches the position represented for it by dotted lines in Fig. 1, when the spring *g* of the catch *e* is lifted by riding over a stud, *h*, attached to the back rail, D. This releases the slide G from the sliding ribbon-folder E, and at the same time, or immediately after, as the operation continues the backward movement of the folder E, a hook, *i*, attached to said folder, acts upon a lever-catch, *k*, connected with said slide. This lever-catch *k* has attached to its pivot *l* duplicate curved needles *m m*, which, as the catch *k* is moved by the hook *i*, are oscillated, so as to penetrate in two places, one above the other, the ribbon *c*, to hold, as shown in Figs. 1 and 2, that portion of the ribbon which has not yet been attached to the hat. The folder E is then moved still farther back till a rear projection, *n*, on it strikes the back end of a notched portion, *o*, of a lever, H, pivoted to the plate A, and, by the continued farther back movement of the folder, moves said lever on its fulcrum *r*, as shown in Figs. 3 and 4, to operate a pair of scissors or shears, I I′, which cut the ribbon to its required length to complete the binding of the hat.

The lever H is of a bell-cranked construction, one arm of which has the notched portion *o* within, and past which the projection *n* acts to operate the shears, the other arm of the lever H being attached to the rear end of a transverse slide, J, in the bed-plate A. One blade, I, of the shears is rigidly attached at its rear end to said slide J, and the other blade, I′, is pivoted at its rear end to a rod or arm, *s*, which is pivoted at its upper end to a frame or standard, K, erected on the plate A.

By this construction and connection of the shears the projection *n* on the folder E operates, as said folder is moved back to near the position shown in Figs. 3 and 6, to advance and close said shears to cut the ribbon to its required length. Shortly, however, before the folder E reaches its extreme back position (shown in Figs. 3 and 6) a hook-shaped bar or projection, L, attached to said folder and engaging with an open-mouthed cam, M, which works by a pivot, *a′*, in the slide G, turns or operates said cam to cause a lapper or folding hook, N, attached to said pivot *a′*, to turn under or inward, as illustrated in Figs. 2, 3, 9, and 10, the loose cut end of that portion of the longitudinally-doubled ribbon which is stitched on the hat and to hold the same against the slide G. Said slide G, having been previously liberated, as hereinbefore described, from the folder E, and having the turned-in end of the cut-off portion of the ribbon attached to the hat held up against it by the needles *m m* and lapper N, is then drawn forward by the action of the feeding devices of the sewing-machine on the hat until said slide comes up against the stationary jaw-shaped guide B, as illustrated in Fig. 6, where it remains during the stitching of the turned-under end of the binding-ribbon over that end of said ribbon which was first secured to the brim. During this finishing of the stitching of the binding-ribbon on the hat the lapper or folding hook N continues its frictional hold or pressure on the turned-in end of said ribbon against the slide G, with only sufficient force, however, to keep said ribbon-end in place without restricting its draft by the action of the feeding devices of the machine from between said slide and said hook. It is necessary, however, that the curved needles *m m*, which penetrate the ribbon, should be free from their positive hold on the latter as the slide G is drawn by the action of the feeding devices up against the fixed guide B. To this end the lever-catch *k* is caused to strike and slide within and against a fixed guide-bar, O, as shown in Fig. 1, and thereby made to turn the curved needles *m m* back and out of the ribbon, and to place said lever-catch in its previous position for operation in due course, as before, to project said needles into the ribbon for the purpose of holding the latter while being cut.

By reference to Fig. 6 it will be seen that when the binding-ribbon *c* is cut by the shears I I′, a portion of the main strip from which the binding of one hat has been cut is left projecting in front of the folder E, ready for a succeeding binding operation.

To repeat the operation on another hat, the folder E is moved by hand from the position shown for it in Figs. 3, 6, 7, and 8 forward again toward the fixed guide B, as shown by full lines in Fig. 1, and the same action proceeded with as before. During this forward movement of the folder E it is first caused to strike, by its projection *n*, the forward end of

the notched portion *o* of the lever H, and to move said lever so that the shears I I′ are drawn back to their normal position. (Shown in Fig. 1.) The next action of said folder during its forward movement is to strike and turn, by its hook-shaped bar L, the open-mouthed cam M to the position shown for the latter by full lines in Fig. 1, which causes the lapper or folding hook N to be turned back or out of the way, as represented in said figure, and ready, when the folder is moved back, for projection again in due course as before by the engagement of the bar L with the cam M and turning of the latter in the proper direction for the purpose. The final actions of said folder E during its advance movement take place as it completes its forward stroke. The actions are the passage of the hook *i*, as shown in Fig. 1, beyond the lever-catch *k*, and adjustment of the latter to insure said hook in due course engaging with and operating said catch to project the curved needles *m m* through the ribbon as before, and the engagement of the hook or inclined projection *f* on the folder with the spring-catch *e*, to insure the folder E, when moving back, drawing along with it the slide G until the spring-catch *e* is liberated by riding over the fixed stud *h* as before.

I claim—

1. The combination, in a hat-binding attachment to sewing-machines, with a sliding folder which serves to longitudinally double or fold the ribbon and guide it to the hat, of a pair of scissors or shears actuated by said folder and operating to cut the ribbon to its required length to encircle and bind the brim of the hat, substantially as specified.

2. The combination, with the sliding ribbon-folder and with the scissors or shears actuated by said folder, of an independent slide controlled by the ribbon-folder, two or more curved needles carried by said slide, and engaging and disengaging devices connected with said needles and with said folder for operating the needles to enable them to penetrate the ribbon and to hold it while being cut, essentially as described.

3. The combination, with the sliding ribbon-folder and with the scissors or shears actuated by said folder for cutting the binding-ribbon to its required length, of a lapper or folding hook, an independent slide controlled by the sliding ribbon-folder and carrying said lapper, and engaging and disengaging devices connected with the sliding ribbon-folder and with the lapper for operating the latter to turn under and inward the cut end of the ribbon attached to the hat, substantially as specified.

4. The combination of the sliding ribbon-folder, the scissors or shears actuated by said folder for cutting the binding-ribbon to its required length, an independent slide controlled by the sliding ribbon-folder, two or more curved needles, and a lapper or folding hook carried by said slide, and engaging and disengaging devices connected with the sliding ribbon-folder, and with said curved needles and said lapper, respectively, for operating the needles to hold the ribbon while being cut, and for actuating the lapper to turn under and inward the cut end of the ribbon, essentially as described.

5. The plate A of the attachment provided with a fixed hollow jaw, B, rails D D, and a ribbon-folder, E, fitted to slide upon said rails, substantially as specified.

6. The combination, with the sliding ribbon-folder E, provided with a projection, *n*, and with the shears I I′, of the slide J, carrying said shears, the lever H, having a notched portion, *o*, with which said projection *n* engages, and the rod *s*, having a fixed pivot and connected with the working-blade of the shears, essentially as described.

7. The combination of the slide G, the sliding folder E, the spring-catch *e*, the projection *f*, with which said spring-catch engages, and the disengaging-stud *h*, substantially as and for the purposes specified.

8. The combination, with the sliding ribbon-folder E, of the hook-shaped bar L, attached to said folder, the pivoted open-mouthed cam M, the slide G, and the lapper or folding hook N, attached to said cam, essentially as described.

9. The combination, with the sliding ribbon-folder E, of the hook *i*, attached to said folder, the lever-catch *k*, the slide G, carrying said catch, the curved needles *m m*, attached to the latter, and the fixed guide-bar O, substantially as and for the purpose specified.

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