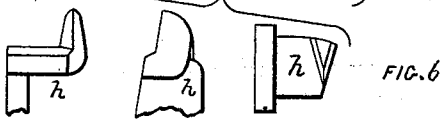
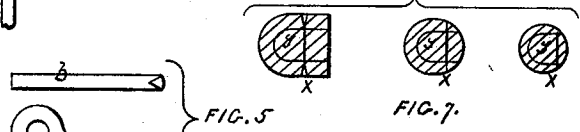
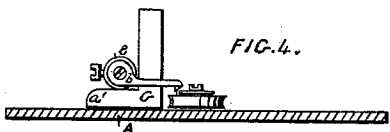
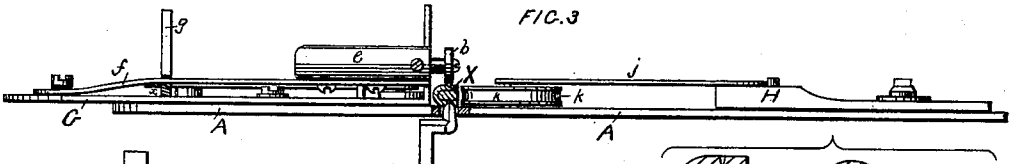
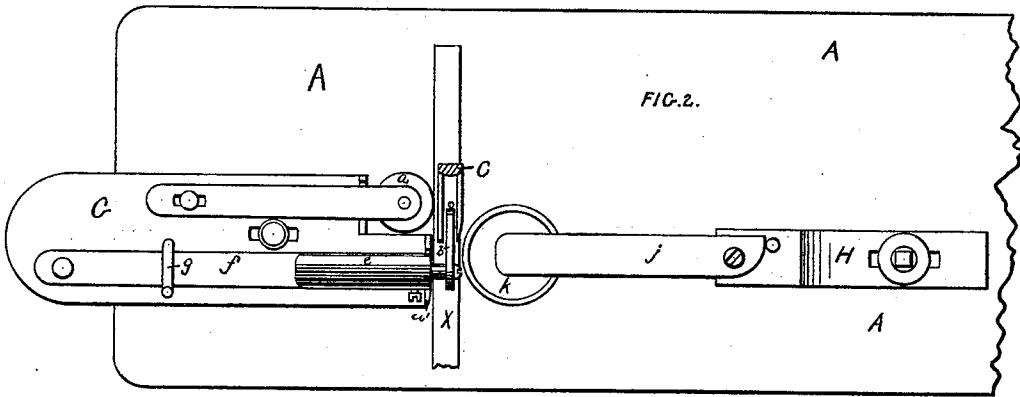
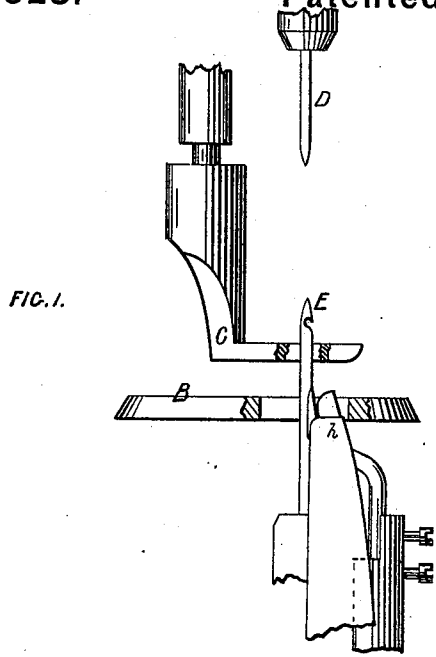


J. B. SULGROVE.
Sewing-Machine Attachment.
No. 212,523. Patented Feb. 18, 1879.



WITNESSES.
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Geo. O. Coale

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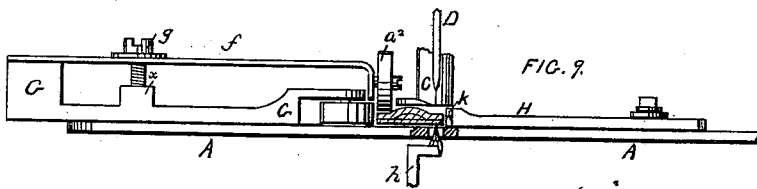
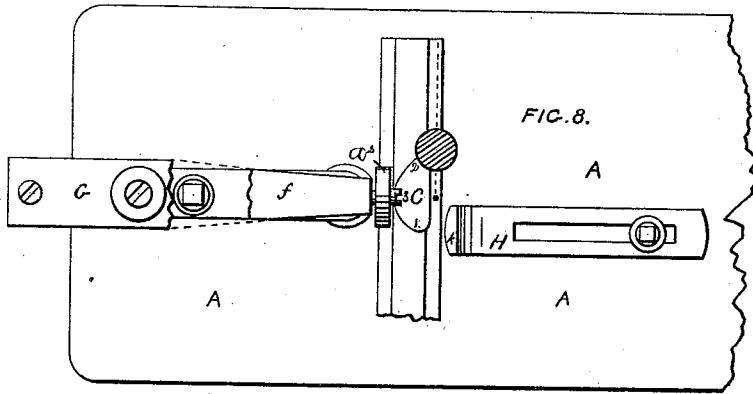


FIG. 14.

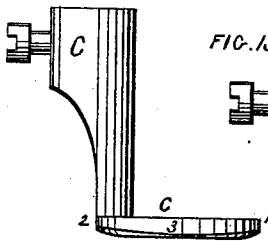


FIG. 15.

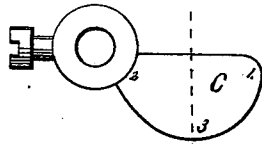


FIG. 11.

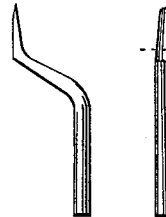
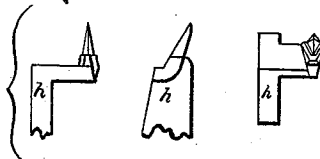


FIG. 16.

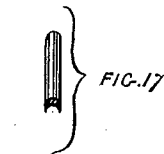


FIG. 17.

FIG. 10.

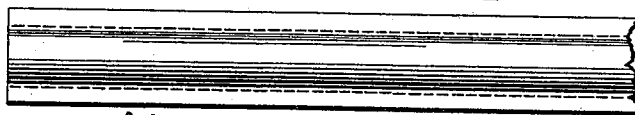


FIG. 10^a.

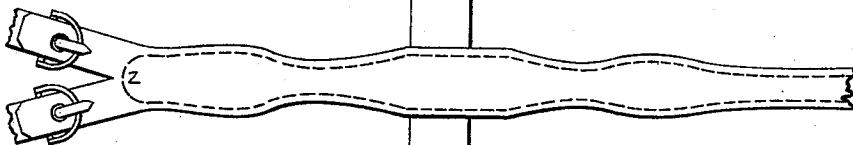
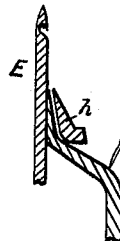


FIG. 12.

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FIG. 13.



INVENTOR.

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UNITED STATES PATENT OFFICE.

JOSEPH B. SULGROVE, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN SEWING-MACHINE ATTACHMENTS.

Specification forming part of Letters Patent No. 212,523, dated February 18, 1879; application filed October 25, 1877.

To all whom it may concern:

Be it known that I, JOSEPH B. SULGROVE, of Indianapolis, Marion county, Indiana, have invented an Attachment for Sewing-Machines, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, making a part thereof.

My invention is designed especially for forming harness, but is applicable, of course, for the manufacture of other similar articles.

Harness-reins formed by folding a strap over a filling-piece, *y*, sewing the two together near the edge, the threads being in channels formed in the folded strap, and afterward rounding up the article thus formed, have long been well known, but prior to my invention were always channeled and sewed by hand; and the main object of my invention is to provide a machine which will do this work.

The drawings illustrate the best embodiment of my invention now known to me, only those parts of the sewing-machine being shown which are necessary to a clear understanding of my invention.

Figure 1 is a front elevation of the plate, needle, cast-off, awl, and presser-foot, as arranged in the "National Wax-Thread Sewing-Machine," so called, together with a channeling-knife, for making a channel in the under side of the material worked on. Fig. 2 is a plan of the work-table with my improved attachments fastened to it, and showing the position of a round rein while being started. Fig. 3 is an edge view of the same. Fig. 4 is a cross-section of the work-table, taken on a line with the edge of the rein next to the guide *k* in Fig. 2, the rein being removed. Figs. 5 and 6 are views of the upper and lower channeling-knives, and Fig. 7 shows cross-sections of reins sewed by the aid of my attachments. The other figures show details and modifications referred to below.

In the drawings, A is the table, and B the throat-plate, of a wax-thread sewing-machine, the particular machine here represented being that known in the market as the "National."

The plate G is adjustably secured to the table A, in order to bring the guides *a a'* and upper channeling-knife, *b*, in proper relation with the presser-foot C, awl D, and needle E

of the machine. The upper channeling-knife has a shank, which fits the socket *e*, in which it is held by a set-screw, in order that this knife may be adjusted both in and out (by inserting more or less of its shank in the socket *e*) and up and down, (by turning it on the axis of its shank.) The arm *f* carries the socket *e*, and is best made as a spring, and held to the plate G by a single screw, for convenience in swinging it out of the way when required, the screw serving as a pivot. A latch or locking device, *g*, is employed to stiffen the arm *f*. The lower end of this piece *g* is provided with a screw-thread, which screws into the plate G, in order that the horizontal part of the piece *g* may be brought nearer to or farther from the surface of plate G, and thereby exert more or less pressure upon the arm *f*.

The lower channeling-knife, *h*, is adjustably secured to some stationary part of the machine or to the feed-post. I prefer the feed-post.

When secured to some stationary part of the machine, the knife will cut the channel while the material is fed forward; but when secured to the feed-post, the knife, of course, moves back with the needle and feed-post to feed the material, and only cuts while the feed-post is moving forward.

The plate H is adjustably secured to the table A. In Figs. 2 and 3 this plate has an arm, *j*, secured to it, which arm can be turned upon the screw which secures it to the plate H, to get it out of the way, but brings up against a stop when in position for use. This arm *j* carries the guide *k*.

In making round reins the operation is as follows: The strap *x*, folded with the filling-piece *y* in place, is placed under the presser-foot and between the guides, which are properly adjusted for the width of the stock, the guide *k* determining the distance of the stitch from the edge, and the other guides, *a a'*, serving to keep the stock against the guide *k*. Usually the guides *a a'* and under knife, *h*, are in place, and the guide *k* and the upper channeling-knife, *b*, out of the way when the stock is inserted, and are brought in place after the stock is put on the machine. The stock is then forced forward a short distance—say, the length of one or more stitches—each of the two knives cutting a channel, and the

point of the stock where the awl is to first penetrate brought in position to be pierced by the awl D.

The machine is then started, and the strap and filling-piece y are drawn along by the feed of the machine, the upper and lower channels being formed in advance of the stitch, and the piece y being always pressed into its place by the guides. The operator folds the strap x as it is drawn into the machine; or a folder may be added to the attachment.

When a hand-sewed rein is desired, the same machine may be used, but without thread, the stitch being afterward made by hand, the machine channeling and pricking only. By using a different feed the machine may be used for channeling without pricking.

I prefer to have the guides revolve; but this is not essential.

In Figs. 8 and 9 a modification is shown, in which the guide k does not revolve, and also an upper guide, a^2 , is substituted in place of the upper channeling-knife. The guide a is also so arranged in relation to the guide k as to make the guide a^1 unnecessary.

The operation of this modified form of guide is the same as above described, except that the upper guide, a^2 , acts only to hold the stock down upon the table A.

The details of construction of that form of guide first described render it better adapted for round work. The modification is somewhat simple; but either form may be used for straight work—for example, a trace like that shown in section and plan in Figs. 10 and 10^a, the upper channeling-knife being omitted, of course, where no upper channel is to be made.

The main feature of my invention consists in the combination of the upper and lower channeling-knives, b and h , with a guide; and the principal advantage of this part of my invention is, that the two channels may be cut after the strap is folded at one operation, and always in the proper relation to each other, the old plan being to channel the strap before folding it, the channels being cut as nearly parallel to each other as possible, in order that when the strap was properly folded the channels should come into the desired relation with each other.

Where the channeling and sewing or channeling and pricking are done at the same time, the guide for the filling-piece insures the proper relation between the folded strap and the filling-piece before the awl pricks them; and this combination of a channeling knife or knives with two guides, the stock passing between the two guides, and the guides acting to bring the parts of the stock into proper relation, one with the other, constitutes another valuable feature of my invention, more especially useful in the manufacture of round reins, and of great advantage in many other cases, whether two channels or only one be used.

The channeling-knives are also peculiar, and constitute an important part of my invention. These blades are nearly pyramidal in form, with the cutting-edges arranged with respect to the stock, as shown in the drawings. (See especially Figs. 6 and 11.) These stocks also are peculiarly shaped, the knife being especially adapted for use with a needle and cast-off, as shown.

By this form of knife the channel can be opened properly, as well as cut, and the needle, the lower channeling-knife, and cast-off may be brought so close together as to form, practically, one pivot, on which the work can be turned. This is essential in sewing curves, particularly short curves, such as that marked z in Fig. 12, which frequently occur in harness-making.

With the knife shown in Fig. 11, the axis of the needle and the upper extremity of the cutting-edge can be brought very close together, as illustrated in Fig. 13, which is a section through the needle, cast-off, and knife, close enough for all practical purposes in harness-making, especially if the cast-off be made with a long slender blade, as shown.

In trace-work, and also in other parts of the harness, the upper surface of the work is often uneven, (see Figs. 10, 10^a, and 12,) and a special presser-foot should be used to make this work successfully. The best form of presser-foot for this purpose is shown in Figs. 14, 15, and 16. It is cut away upon one side, so as not to extend over the line of stitching, and at the front, 1, rear, 2, and along that side, 3, farthest from the stock it is rounded off, and thereby prevented from defacing raised work, although pressed hard upon it.

What I claim as my invention is—

1. The combination of the guide a with two channeling-knives, b and h , arranged one for channeling the upper and the other the under side of the stock, all substantially as described.
2. The combination of the two guides a and h with one or more channeling-knives, b and h , the knife being between the guides, all substantially as described.
3. The plate G, guide a , arm f , and channeling-knife b , in combination, and adapted for attachment to a sewing-machine, all substantially as described.
4. The means described for holding and adjusting the channeling-knife b , consisting of the plate G, spring-arm f , latch g , socket e , the shank of the channeling-knife, and the set-screw, all substantially as set forth.
5. The channeling-knife above described, consisting of the pyramidal blade, arranged at right angles with its stock, as shown, and adapted for the purpose specified.

JOSEPH B. SULGROVE.

Witnesses:

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C. H. SLADE.

Joseph B. Sulgrove