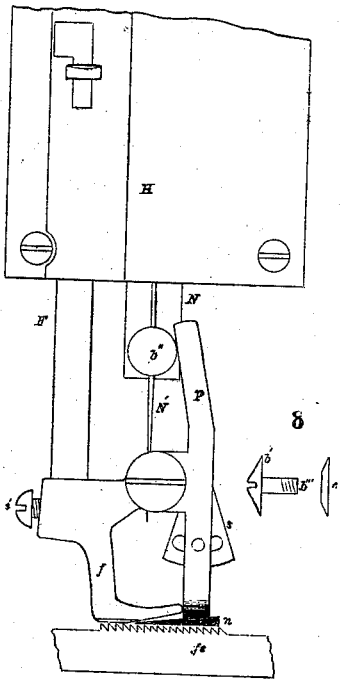
W. A. Mack,

Gatherer.

No. 111,130. Patented. Jan. 24. 1871.

FIG. 1.



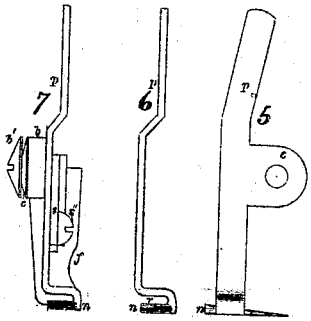


FIG. 2.

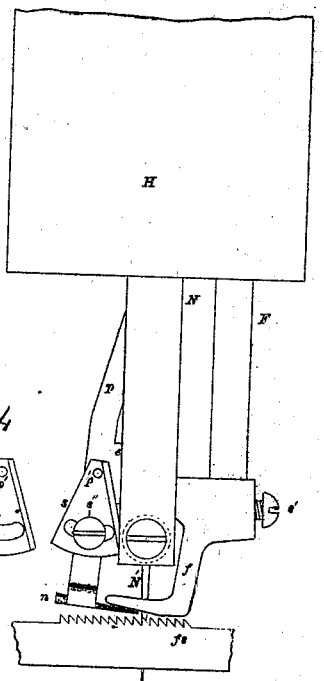
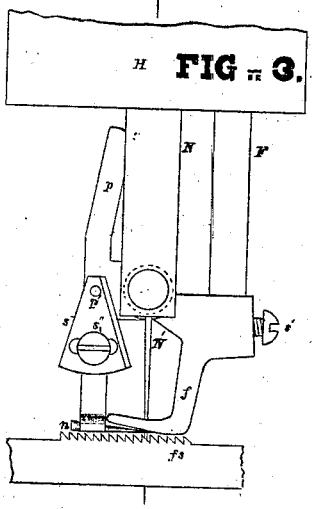


FIG. 3.



Witnesses. James Blake
James A. Skilton.

William A. Mack
Inventor

UNITED STATES PATENT OFFICE.

WILLIAM A. MACK, OF NORWALK, OHIO.

IMPROVEMENT IN GATHERING ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. **111,130**, dated January 24, 1871.

To all whom it may concern:

Be it known that I, WILLIAM A. MACK, of Norwalk, in the county of Huron and State of Ohio, have invented certain Improvements in Gathering and Braiding Sewing-Machine Attachments, of which the following is a specification:

The first part of my invention relates to several distinct and independent parts shown, and also to their co-ordination in one particular manner; but evidently capable of several slight changes and modifications in such co-ordination, and in their co-operative action, for the purpose, when in place on the sewing-machine, of performing the function called gathering, wherein each fold or gather of the material is by a positive and automatic action placed in such relation to the needle, &c., and of the sewing-machine, as to insure its being held by the stitch that needle then makes. It further relates to the means whereby several such gathers or ruffles may be made at the same time, and also one or more, out of several pieces of cloth, may be gathered and sewed, and all with perfect correspondence and regularity of stitch and plait.

Figure 1 is a front elevation of the attachment properly applied to the head of a sewing-machine. Fig. 2 is a rear elevation of the same. Fig. 3 is another elevation of the same. Figs. 4, 5, 6, 7, and 8 are the detail parts.

In all of these figures the same letters represent the same parts.

F is the foot-bar of the sewing-machine. H is the head of the same. N is the needle-bar of the same. *b* is a boss continuous with the foot-piece. *b'* is a binding and stay-screw. *c* is a conical spring. *f* is the foot-piece. *p* is the gatherer or plait-bar. *b''* is a boss on the needle-bar. N' is the needle of the sewing-machine. *p'* is a pin holding the slotted plate-cam to *p*. *r* is a recess for the piece or pieces of cloth above the gather. *s* is a slotted adjustable plate-cam. *n* is the nippers.

The description and operation of the invention are as follows, viz: The nippers *n* are composed of two thin plates of metal, which are intended to operate together upon the cloth being gathered like fingers. These plates approach each other at the ends nearest the needle and presser-foot, and come in contact when empty; but when in charge of the material press upon and even into the same with sufficient tenacity and force to insure it being carried forward when they are moved forward. These ends are provided with the needle-slot, which divides them into teeth or serrations, the sharp edges and corners of which are pressed, both by the spring action of the plates and the natural resistance of their converging shape, into the material.

To further help make the hold of the nippers on the material positive I sharpen their forward ends with the sharp edges inward and the bevel outward. Therefore, when moved forward they engage and carry forward the material with certainty; but when moved backward, while the material is held in front, they readily slip over the same.

The parts being in the relations represented in Fig. 1, the boss *b''* on the needle-bar N, in contact with the upper end of the plait-bar, hung at *b'''* of the stay-screw *b'*, has pressed, and continues to hold, the nippers under the toe of the presser-foot, with the plait or gather in charge, and ready for the descending needle to engage, secure, and stitch the same. As the needle-bar and needle commence to descend, the boss *b''* loses contact with the plait-bar *p*. Owing, however, to the pressure of the conical spring *c*, held down, as required, by the binding and stay-screw *b'*, which passes into and secures the plait-bar, said bar remains in place during the descent of the needle, and until it has penetrated and engaged the cloth, plait, or gather. Toward the end of its downward motion the boss *b''* comes in contact with the slotted plate-cam *s*, and, as it does so, the plait-bar *p* begins to move, and to slip the nippers *n*, which hold the material to be plaited between them, as it were between thumb and finger, along on the material; the needle, in the material, preventing its simultaneous movement, the feed of the sewing-machine and the presser-foot co-operating with the needle to hold the material. (See Figs. 2 and 3.) The distance given to this movement of the nippers *n*, or their equivalent, fixes the amount of material to be put into the next plait, and this distance is regulated by the slotted plate-cam S, held in any given position by the stay-screw S''. The next action, after the finish of the downward motion of the needle-bar and boss, is of course an upward motion of the same.

When this takes place, and the boss b'' has cleared the plate-cam S, the conical spring c, as before, holds the plait-bar and its fixed attachments stationary until the boss b'' again comes in contact with the upper part of the plait-bar, and then, by the sliding action of the boss b'', said bar is moved again, the nippers, with the new measure of cloth for a plait, being carried under the toe of the foot-piece thereby. From this point the above-described action may be repeated again and again, resulting in the gathering and sewing desired.

It is evident that one or more thicknesses of cloth may be intrusted to the nippers n, and all be plaited and sewed at the same time. Thus one or more pieces may be sewed upon one or more thicknesses, passed under the foot and under the nippers, and not gathered; so, also, may they, one or more, be sewed at the same time to one or more thicknesses, made to pass through the recess r, provided for that purpose, and then under the foot, and all to one or more thicknesses, passed under the nippers n; or in other words the ruffle may be made, and at the same time sewed between two or more pieces of cloth passing over and under the nippers.

When it is desired to do puffing it is only necessary to repeat the gathering and sewing upon the opposite sides of the material. The plaits or gathers, formed by this attachment, are made with absolute precision and regularity. Each plait has its own stitch, has the same amount of material in each and every one, except where it is desired to vary the same, which can very readily be done. The gathering of one or more pieces or ruffles between two or more pieces of cloth, laid plain, can be accomplished, and the whole sewed with one seam, permitting the folding edges or seams, on each side of the ruffle or ruffles, to correspond or coincide; and, finally, the work done by this attachment presents great variety, beauty, and superiority of finish, with less labor and less expenditure of thread.

When it is the wish of the operator to use the attachment as a braider, it is only necessary to relieve the plate-cam S, and secure it with its rubbing-surface flush with the inside edge of the plait-bar, or nearly so, and then placing the braid in charge of the nippers n, in such away that it traverses the eye or needle-slot of the same, they will act as a guide, holding the braid like minute thumb and finger, while the operating machine sews the braid upon the cloth, as desired.

The superior action of my invention, as a braider, is especially apparent when the plate-cam S is so adjusted as to give a slight motion of the nippers on the braid, like that described in gathering. In such case the nippers not only act as a guide for the braid, but also prevent the tension, and consequent stretching, of the braid, which occurs in other devices, and permits even slight fulling thereof when desired. The whole attachment is promptly applied or detached by means of the set-screw S′ to the foot-bar.

I claim as my invention—

1. The notched spring fingers or nippers converging toward each other at the ends nearest the presser-foot, and shaped to positively retain and carry the material lying between them during their forward movement, and in their backward movement slip over the same, as described.

2. The adjustable plate-cam S, in combination with the nippers n to measure the plait.

3. The plait-bar p, provided with the nippers n, and with the opening r, as and for the purposes set forth.

4. The combination, with the presser and the plait-bar, having the nippers n, of the spring c and stay-screw b', as and for the purposes set forth.

WILLIAM A. MACK.

Witnesses:
JAMES BLAKE,
DANIEL H. STONE.