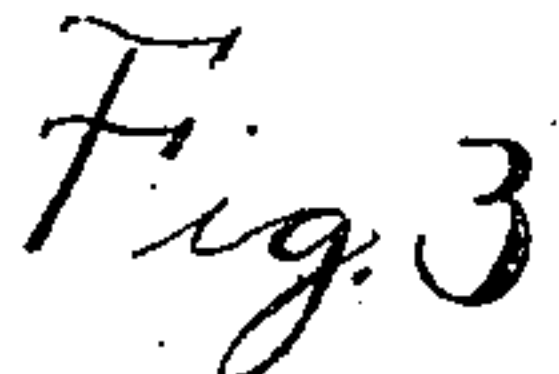
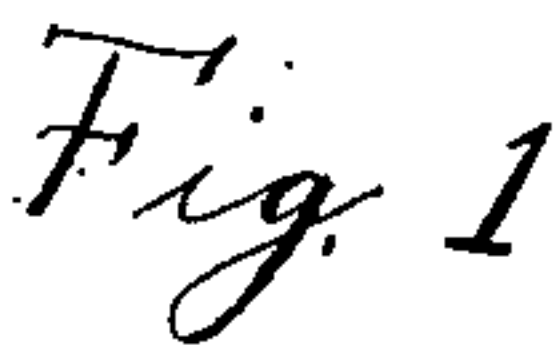


PRESSER FOOT MECHANISM FOR SEWING MACHINES.

APPLICATION FILED APR. 10, 1909.

Patented Apr. 25, 1911.



WITNESSES:

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Fig 4

~~INVENTOR:~~

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PRESSER-FOOT MECHANISM FOR SEWING-MACHINES.

990,413.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed April 10, 1909. Serial No. 489,106.

To all whom it may concern:

Be it known that I, JOHN P. WEIS, a citizen of the United States, residing in Nyack, county of Rockland, and State of New York, have invented a new and useful Improvement in Presser-Foot Mechanisms for Sewing-Machines, of which the following is a description.

This invention relates to sewing machines, and has particular reference to means by which varying thicknesses of fabric can be compensated for while passing through the machine up to and from the stitching position, so as to render positive and effective the feed of the work.

Among the objects of my invention may be noted the following: to provide a presser-foot constructed so as to compensate for varying thicknesses of fabric passing thereunder and between it and the feeding mechanism; to provide a presser-foot composed of a plurality of independently movable parts, which, in their operation upon the work, may perform their functions without affecting the functions of each other; to provide a presser-foot comprising a plurality of independently movable parts, which, in co-operating with the feed, may perform their functions independently; and to provide a presser-foot of such form that one part may operate upon the binding, or thick portion of the work, and the other upon the body, or thin portion of the work, and thus, in co-operation with the feed, properly handle the work and feed it smoothly and uniformly, and without drag up to and past the stitching position.

With the above objects in view, and others which will be detailed during the course of this description, my invention consists in the parts, features, elements and combinations of elements as hereinafter described and claimed.

Referring to the drawings: Figure 1 is a top-plan view of a portion of the front end of a sewing-machine work-plate showing my invention and arrangement of the mechanism comprehended thereby with reference to the feed and the stitching position, this figure showing the presser-bar and the top feed-supporting frame in section; Fig. 2 is an end elevation of the parts shown in Fig. 1, with the addition of enough of the feeding mechanism to illustrate its character and identify the same as the feed; Fig. 3

is a right side elevation of the presser-foot included in my present invention; Fig. 4 is a top-plan view of the foot-portion of the presser-foot shown in Fig. 3; and Fig. 5 is a perspective view of the spring for supporting and controlling the auxiliary foot.

Referring to the drawings, the numeral 1 indicates the work or cloth plate of the machine, 2 the throat-plate thereof, through which the feed-dogs work, one of which, indicated by 3, being the main feed-dog since it operates upon both the body fabric and the binding, or the combined pieces of work, after the same have been stitched together by the stitch-forming mechanism of the machine, and the other of which, indicated by 4, being the auxiliary feed-dog since it operates upon the body fabric. The main feed-dog is arranged in rear of the needle and substantially centrally thereof, while the auxiliary feed-dog is arranged in advance of the needle and wholly at one side thereof, the two dogs thus operating in parallelism. The auxiliary dog is capable of a motion, or length, or speed of feed, different from that of the main feed-dog under control of the operator and at his will, according to the demands of the work passing through the machine, all as usual.

A binding-device, indicated by 5, is adjustably applied to the cloth-plate of the machine by means of the attaching-plate 6, provided with elongated slots 7, through which pass clamping-screws 8. This binding-device may be of any form which will properly guide and hem the edges of the binding 9 and carry the same properly up to the feed-line for laying the hemmed edges on opposite sides of the body fabric for proper attachment to the edge of the latter, but, as presently described, its forward end is specially formed. The body-fabric has been omitted from the illustrations to avoid covering the parts of the machine which must be shown. The main feed-bar, indicated by 10,—the auxiliary feed-dog being indicated by 11,—has connected to it a curved arm 12, which extends up through the cloth-plate of the machine for pivotal connection at 13 with the rear end of a link 14, adjustably connected to a lever 15, pivoted at its upper end at 16 to the forward end of a supporting-arm 17, the rear end of which is firmly secured, by means of screws 19, to an arm 20, rigidly supported by any

fixed part of the head of the machine. To the lever 15, near its lower end, is pivotally secured the top-feed or feed-foot 21, normally held in the position of Fig. 2 by means of a spring 22, the lower end of which engages a pin 23, extending laterally from the top of the feed-foot 21, and at its upper end fixed to the lever 15, or coiled about, or firmly secured to, its pivotal pin 16. This top-feed is, in its specific construction, no part of my present invention, but, in the present combination, constitutes, in one aspect of my invention, one of the co-operating elements, since it operates upon the top of the binding in advance of and beside the needle on the side thereof opposite that on which the auxiliary feed-dog operates, all as clearly shown in Figs. 1 and 2.

The presser-bar is indicated by 24 and is, or may be, of the usual type and normally depressed toward the work-plate by means of the usual flat or coiled spring, according to the machine in which the same is used. The lower end of the presser-bar has clamped to it, by means of the screw 25, in usual manner, the socket-portion 26 of the presser-foot shank 27, which extends laterally and forwardly from said socket-portion, as shown in Fig. 1, and to the outer or left side of which is secured the vertical part 28 of the main foot-portion 29. The shank 27 is secured to the vertical part 28 of the foot by means of the two screws 30, passing through, from the outside, two vertically-elongated slots 31, in the said vertical part 28 of the foot, and tapped into the said shank 27, see Fig. 3. By this means, the foot 29 can be adjusted vertically upon the shank 27 to the extent desired for adjusting the same in any given machine and for an additional and important purpose, which will be presently disclosed. The main portion of the foot 29 is provided with the needle-slot 32, formed in a forward extension or toe 33 of the solid foot-portion 29, and is also provided with the slot 34, formed between said toe 33 and the side-bar 35. The top feed-foot 21 works in and through the said slot 34 in the foot and, in its operation, coöperates with a solid portion of the throat-plate directly thereunder. The toe 33, at its front end, is slightly upturned, as shown in Fig. 3, thus providing between it and the vertical part 28, of the foot, a channel or groove 36, in which lies, and the walls of which retain from lateral displacement, a long spring 37, the rear end of which is firmly secured to the solid portion of the main foot 29, by means of the screw 38, passing through the aperture 38^a of said spring and tapped into said foot. The forward end of this spring is downwardly bent at 39 and then forwardly bent and broadened at 40, the sides 41 of the broadened portion being bent downwardly to provide parallel lugs

forming a channel or groove 42 between them, as clearly shown in Figs. 3 and 5. In this channel or groove is set the shank 43 of the auxiliary and independent presser-foot, the forward end 44 of which is upturned and extended laterally, or to the right, toward the binding-device and given a substantially wedge form, as indicated at 45. It will now be noted that the forward end 5^a of the binding-device is arranged at an obtuse-angle to its front edge, so as to give the same a substantially wedge form to coöperate with the wedge form of the auxiliary presser-foot, which is firmly secured in place by means of the screw 46, which passes through the aperture 47, in the broadened portion 40 of the spring, and is tapped into the said shank 43 of the foot. In addition to the important features already set forth, the auxiliary foot, at the rear end of its shank 43, is beveled, as indicated at 48, so as to provide the keen edge 49, extending across its bottom, the purpose of which will be presently stated.

It will now be understood that the main presser-foot 29 coöperates with the main feed-dog 3, the two operating upon the combined materials,—binding and body fabrics,—to feed the same up to and from the stitching position, while the top feed-foot co-operates with the solid portion of the throat-plate directly under it, at one side of the stitching position, the two also operating upon the combined materials to feed the same up to and past the stitching position, the said top feed-foot and main feed-dog thus giving to the combined materials a uniform and positive feed. The auxiliary feed-dog coöperates with the auxiliary presser-foot 43, in advance of the stitching position and on the side thereof opposite that on which the top feed-foot operates, the said auxiliary feed and foot thus operating upon the body-material only to advance the same in front of and up to the stitching position to prevent any drag on the said body-material from drawing the same away from, or from between the hemmed edges of, the binding. Now, it will be understood that the binding and the body materials present, for a line of stitching, five thicknesses of work with which the top feed-foot and main presser-foot and main feed-dog coöperate, which will necessarily result in lifting the said main-foot a considerable distance from the throat-plate. On the other hand, the body-material, to which the binding is being stitched, presents one thickness of work upon which the auxiliary feed-dog should operate, but which feed-dog, without my auxiliary foot, would merely fan or beat the bottom of the body-fabric and have practically no feeding action thereon. To overcome this, I have mounted my auxiliary foot yieldingly,—by the medium of the spring 37,—

upon the main foot, the normal position of which auxiliary foot, relatively to the main foot, is shown in Fig. 3, and as operating in a plane considerably lower than that of the main foot. Hence, when the presser-foot bar is dropped so that the feet may engage the work, the auxiliary foot goes firmly into engagement with the body-material and forces the latter firmly into engagement with the auxiliary feed-dog, thus bringing about a positive coöperation of the two said auxiliary devices for the purpose of feeding the body-material in front of, and up to, the stitching position.

According to the thicknesses of material primarily to be passed under the main presser-foot, or according to the pressure of the auxiliary presser-foot upon the work which may be required, the main foot may be adjusted on the shank 27 by loosening the binding-screws 30 and adjusting the vertical portion 28 on said shank, as required, thus regulating the extent to which the spring 37 may yield vertically and also regulating the amount of pressure the auxiliary foot may have upon the work in coöperation with the auxiliary feed. In other words, by adjusting the foot vertically, as just described, the spring 37 will be adjusted relatively to the horizontal bottom portion 50 of the shank 27, so that said spring, when the auxiliary foot is in engagement with the work for operation, may be more or less limited in its vertical yielding movements. The front end of the binder and the right side of the auxiliary foot are given the corresponding wedge form for the purpose of approaching the said foot as near as possible to the fold of the binding and enabling the same to co-operate with said binding to help smooth, and keep smooth, the inturned hemmed edges of the same and prevent them from springing into or assuming an improper position. During the stitching operation, it often happens that the operator will, unwittingly, place a slight drag upon the body-material in holding it up in position for passage between the hems of the binding, thus stretching the same as the binding is applied in front of the stitching position and drawing the edge of the body-fabric from between

the edges of the binding; or, for failure of the operator to properly hold or manipulate the body-material, the latter will sag aside or drag with the same results. To overcome this, the keen edge 49, at the rear of the shank of the auxiliary presser-foot, is provided, which operates to prevent either the weight of the body-fabric, or the operator creating any drag upon the material after it has passed the auxiliary foot. This is among the important features of my invention which, in its individual features and its coöperative elements, is specially directed to the proper handling of the work and insuring smooth, even and uniform application of the binding to the body-material without distorting or puckering either of the materials.

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

1. In combination, a stitch-forming mechanism; a feeding mechanism comprising a main and an auxiliary lower feed-dog and a top feed-foot; a presser-foot mechanism comprising a main foot and an auxiliary foot, the top feed-foot operating in advance and on one side of the stitching position and the auxiliary feed-dog and auxiliary presser-foot coöperating and operating on the opposite side of the stitching position and in advance of the latter, and the main feed-dog coöperating with the presser-foot in rear of the stitching position.

2. A presser-foot provided with an up-turned extension and a vertical portion forming between the two a groove or channel, a spring secured to said foot within said channel, and an auxiliary foot secured to said spring, whereby the auxiliary foot may yield relatively to the main foot and be prevented from lateral displacement.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN P. WEIS.

Witnesses:

FRITZ BENDER,
OSCAR DE VOL.