

(No Model.)

2 Sheets—Sheet 1.

G. L. GRAY.

CONNECTING DEVICE FOR SEWING MACHINE ATTACHMENTS.

No. 540,812.

Patented June 11, 1895.

Fig. 1

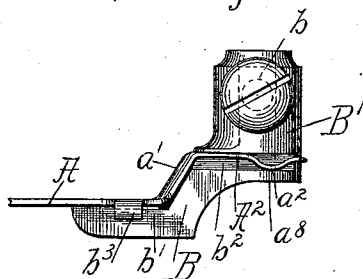


Fig. 2.

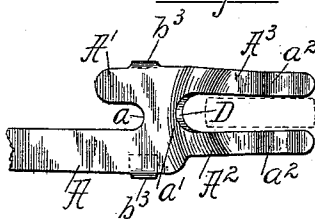


Fig. 3.

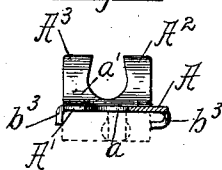
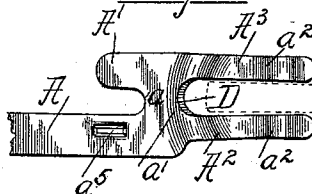


Fig. 4.



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(No Model.)

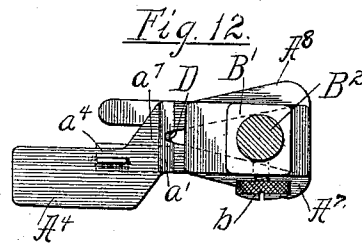
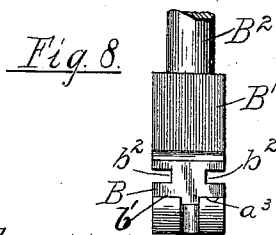
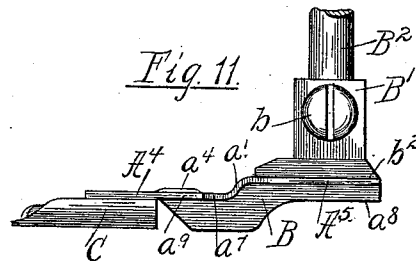
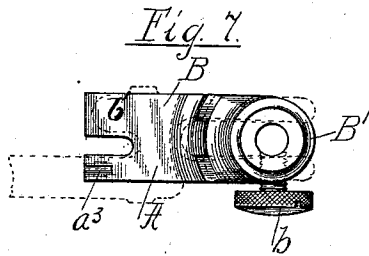
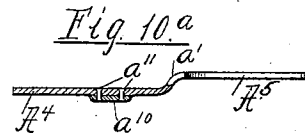
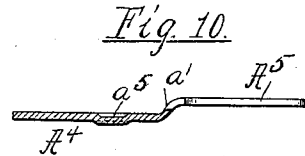
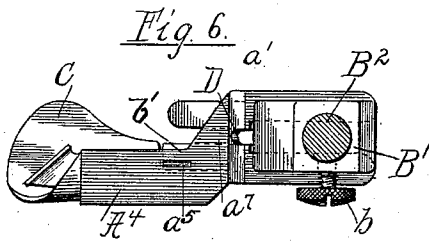
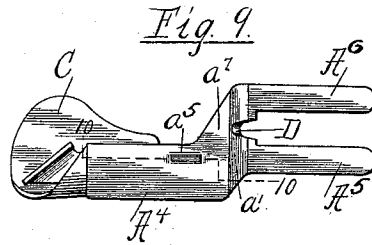
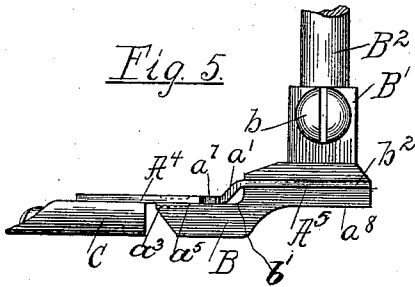
2 Sheets—Sheet 2.

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Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE L. GRAY, OF CHICAGO, ILLINOIS.

CONNECTING DEVICE FOR SEWING-MACHINE ATTACHMENTS.

SPECIFICATION forming part of Letters Patent No. 540,812, dated June 11, 1895.

Application filed December 27, 1892. Serial No. 456,464. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. GRAY, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Connecting Devices for Sewing-Machine Attachments; and I 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.

My invention relates to devices for removably connecting various kinds of sewing-machine attachments to the presser-feet of sewing-machines, the devices being suitable for so connecting hemmers, tuck-markers and various other kinds of attachments.

The object of my invention is to produce connecting devices which shall be simple, compact and durable in construction, and of such form and arrangement as to be quickly and easily secured to the presser-foot, and also such as to retain their connection with entire certainty against accidental displacement either by longitudinal or transverse strains.

To the above purposes my invention consists in certain peculiar and novel features of construction and arrangement, as herein-
after described and claimed.

The more precise nature of my invention will be clearly understood when described with reference to the accompanying drawings, in which—

Figure 1 is a side elevation of a sewing-machine presser-foot with an attachment-connecting device embodying my invention applied thereto. Fig. 2 is a detached plan view of a connecting device embodying my invention. Fig. 3 is an end elevation of the same. Fig. 4 is a detached plan view of a connecting device embodying a modified feature of construction. Fig. 5 is a side elevation of a sewing-machine presser-foot having a further modified form of connecting device applied thereto. Fig. 6 is a plan view of the parts shown in Fig. 5. Fig. 7 is a plan view of a presser-foot adapted to receive the connecting device shown in a number of the preceding figures. Fig. 8 is a front elevation of the presser-foot shown in Fig. 7. Fig. 9 is a detached plan view of the attachment-connecting device shown in Figs. 5 and 6. Fig. 10

is a vertical longitudinal section of the connecting device, taken on the line 10 10 of Fig. 9. Fig. 10^a is a view similar to that of Fig. 10, but showing a further modification of construction. Fig. 11 is a side elevation of a presser-foot with a still further modified form of the connecting device applied thereto. Fig. 12 is a plan view of the parts shown in Fig. 11.

Referring first to the construction illustrated in Figs. 1, 2, 3, and 4 of the drawings, A designates the horizontal outer arm of the attachment-connecting device, this outer arm being shown as of somewhat elongated form, and the intention being to attach a hemmer, tucker, or other sewing-machine attachment to the outer end of the arm, either integrally or by means of rivets or solder, or in any suitable manner. At its inner end, this arm A is shown as formed with an integral lateral offset *a* to the opposite end of which is integrally united an outwardly projecting lug A' which extends practically parallel with the arm A, but which is much shorter than said arm.

A² and A³ designate two spring arms or extensions which are integrally united by an upwardly and outwardly inclined portion *a'* to the rear ends of the arm A and lug A', these spring-arms extending outward and normally slightly downward longitudinally away from the arm A and lug A'. Near its outer end, each spring-arm A², A³, is formed with a downwardly extending U-shaped bend *a''*, the purpose of which will be hereinafter explained. It is to be observed that the two spring-arms A² and A³ also converge toward each other, from their inner to their outer ends, as shown in Figs. 2 and 4; the purpose of such convergence being also hereinafter explained.

B designates a sewing-machine presser-foot, and B' the shank or tubular portion thereof, these parts being, in respect to their general construction, of the usual type, excepting as hereinafter pointed out. The shank B' is of hollow or tubular form and is designed to embrace the lower end of the presser-foot bar B² of a sewing-machine, in the usual manner, and is shown as provided with the usual clamping-screw *b* for retaining the shank in connection with the presser-foot bar of the machine. The presser-foot B extends horizon-

tally from its shank B', and its upper portion b' is perfectly flat, in order to insure the required clamping or binding action of the spring-arms A² and A³, as will be presently explained. At each side of the lower end of the shank B' is formed a transverse horizontal groove b², these two grooves extending parallel with each other and in the same horizontal plane, and also opening at their front and rear ends at the front and rear sides of the shank B'.

In order to connect this device to the presser-foot, the outer ends of the spring-arms A² and A³ are presented to the inner or front ends of the grooves b². Said arms are pushed longitudinally directly into the grooves until the lateral enlargement a and the oblique portion a' come into contact with the inner inclined front part of the presser-foot. When so placed in position, the resilience of the arms A², A³, causes retaining pressure to be exerted at three points: first, downwardly upon the lower walls of the grooves b², at the outer ends of said walls, and at the under sides of the bends a²; secondly, upward against the upper walls of the grooves b², at the front ends of said walls and of the arms A², A³, and, thirdly, downward upon the front or outer portion of the upper side of the presser-foot B, by the arm A and lug A'. It will thus be seen that ample security is provided for retaining the device in connection with the presser-foot and against accidental upward, downward, or lateral thrusts, while at the same time no material resistance is offered to the voluntary detachment of the device from the presser-foot, by a direct longitudinal pull upon the arm A. Owing to the described convergence of the arms A², A³, said arms are also caused to closely embrace the inner walls of the grooves b², and to thus further provide against lateral displacement of the device.

In order to further provide against accidental lateral displacement of the device, two oppositely disposed and downwardly extending spring lugs b³ are provided for the device, one of said lugs being formed on the outside margin of the arm A, and the other lug being formed on the outer side margin of the lug A'. When the connecting-device is in proper position upon the presser-foot, these two lugs firmly embrace the two opposite sides of the presser-foot and effectively resist any lateral displacement of the device and also aid in resisting displacement by upward and also by outward or forward thrusts. At the same time, said lugs offer no resistance to the voluntary disconnection of the device from the presser-foot by a longitudinal inward pull upon the arm A.

As a still further means for preventing lateral displacement of the device, the arm A is shown in Fig. 4 as formed with a longitudinally extending depression a⁵ produced by stamping the material of the arm A downward, or in any other suitable manner, so as

to form a rib or protuberance on the under side of the arm. This rib is located about midway of the length of the arm A, and, when the connecting-device is in proper operative position, the rib enters a longitudinal depression a³ (see Fig. 7) which is formed in the upper side of the presser-foot B. This depression a³ is preferably located at the forward end of the upper flat face b' of the presser foot B so as to be open at its outer end for the purpose of more readily receiving the rib a⁵, as the connecting-device is moved endwise into connection with the presser-foot. It is to be understood that the rib a⁵ and the spring lugs b³ may both be used in the same device, but that generally when the rib a⁵ is used, the spring-lugs b³ are omitted, and vice versa.

Referring now to the remaining figures of the drawings a single connecting-arm A⁴ is shown as employed for the purpose of the arm A and lug A' above described; the lug A' being dispensed with, and the inner end of said arm being formed with a lateral offset a' corresponding in purpose with the lateral offset a' above referred to. For the purpose of illustration merely, a hemmer C is shown as carried at the outer end of the arm A⁴, such hemmer being of the usual form, and being either integral with the arm or secured thereto in any suitable manner, and it being further understood that any other kind of attachment is to be carried by the outer end of the arm A⁴. In this instance, the connecting-arm A⁴ is arranged to extend longitudinally over the presser-foot B and substantially parallel with the upper surface of the same, and said connecting-arm A⁴ is formed with the two spring-arms A⁵ and A⁶ which extend longitudinally outward from the arm A⁴ and which are integrally united to the offset a', by an inclined integral portion a' as before. These arms a⁵ and a⁶ enter the oppositely disposed grooves b² in the presser foot, as previously stated, but in this instance, the U-shaped bends a² are dispensed with; the arms A⁵ and A⁶ simply forcing the connecting-arm A⁴ downward upon the upper side of the presser-foot B by virtue of the resilience of said arms.

Both in the construction now being described and in that above described, the grooves b² of the presser-foot are located above the level of the upper surface of the presser-foot proper, and the under surface a⁸ of the rear part of said presser-foot is located considerably above the lower surface of the front part of said presser-foot, so that the rear part of the presser-foot entirely clears the fabric which is being operated upon by the machine.

In the present construction and in that previously described is shown a notch D extending into the inclined portion a' from the opening between the spring-arms A⁵ A⁶. The purpose of this notch is to avoid all possibility of contact between the needle of the sewing

machine and the connecting device when the latter is being moved, either for the purpose of being secured to or being removed from the presser-foot.

5 In the construction now being described, as well as in that previously described, interlocking projections and recesses are provided which serve to engage each other, when the connecting-arm is in proper operative position; the said projections and recesses being of elongated form and extending longitudinally of the arm and presser-foot, so as to prevent lateral displacement of the connecting-arm. The projection a^5 of the device 10 shown in Fig. 4 has already been described, and in Figs. 5, 6, 9, and 10, a similar projection a^5 is shown as formed in the arm A^4 , near its point of union with the lateral offset a^7 . In Figs. 11 and 12 an equivalent construction 15 is shown, the upper surface of the presser-foot being formed, or provided in any suitable manner, with a longitudinal rib a^9 , while the connecting-arm A^4 is formed in its under side with a longitudinal recess a^4 produced 20 by punching up the metal from beneath. When brass is employed in making these connecting-arms, the projections can be readily produced by stamping or punching the metal in proper manner, but where steel is used, it is preferable to apply the projections, as separate pieces, to the connecting-bars. Thus in Fig. 10^a I have shown a separate longitudinal projection a^{10} as secured to the under side of the connecting-arm A^4 by rivets a^{11} . However, such separate projections may be soldered or otherwise suitably secured to the connecting-arms, and may project either from the upper or lower sides of the arms. In Fig. 12, the inner margins of the spring-arms A^7 and A^8 are shown as diverging outward so as to engage the similarly divergent inner walls of the grooves b^2 ; this construction being preferably employed in connection with interlocking projections and recesses, or with the 45 spring-lugs b^3 . Obviously, both the projections and recesses and the spring lugs may be dispensed with, if preferred; the downward pressure of the connecting-arm and spring-arms being, in all of the constructions shown, sufficient to usually prevent lateral displacement of the device.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

55 1. The combination with a presser-foot provided with oppositely arranged grooves and an upper surface exterior to said grooves at the inner ends thereof, of an elastic attachment carrier comprising a bifurcated portion 60 the two arms of which press downwardly at their outer ends upon the lower walls of the grooves and the inner ends of which press upwardly upon the upper walls of the grooves, and an integral body portion which presses 65 downwardly upon the upper surface of the presser-foot, substantially as described.

2. The combination with a presser-foot provided with oppositely arranged grooves and an upper surface exterior to said grooves at the inner ends thereof, of an elastic attachment carrier comprising a bifurcated portion 70 the two arms of which press downwardly and inwardly at their outer ends upon the lower and inner walls of the grooves, and the inner ends of which press upwardly upon the upper walls of the grooves, and an integral body portion which presses downwardly upon the upper surface of the presser-foot, substantially as described.

3. The combination with a presser-foot having substantially horizontal grooves in opposite sides of its shank, the upper surface of the presser-foot portion being without said grooves at the inner ends thereof, of an elastic attachment carrier comprising a bifurcated 85 portion the two arms of which press downwardly at their outer ends upon the lower wall of the grooves and upwardly at their inner ends upon the upper wall of the grooves, and an integral body portion which presses 90 downwardly upon said upper surface of the presser-foot proper, and interfitting parts on said body portion and presser-foot proper to maintain the carrier against lateral displacement, substantially as described.

4. The combination with the presser-foot provided with the oppositely arranged grooves and having in its upper surface at the outer end thereof the open ended groove, of an attachment carrying shank or arm having a bifurcated portion and being also provided with a lug or projection to enter the said groove and thereby steady the attachment carrying arm, substantially as described.

5. The combination with a presser-foot having substantially horizontal grooves in opposite sides of its shank, the upper surface of the presser foot proper being without and below the plane of said grooves at the inner ends thereof, of an elastic attachment carrier comprising a bifurcated portion the two arms of which press downwardly at their outer ends upon the lower surface of the grooves and upwardly at their inner ends upon the upper surface of the grooves, an integral body portion pressing downward on the said upper face of the presser-foot proper and bent upward at its inner end to connect with the bifurcated portion, and a notch extending downwardly into the connecting portion from between the arms of the bifurcated portion, whereby said arms may be entered endwise into the grooves without striking the needle at their base, substantially as described.

In testimony that I claim the foregoing as 125 my invention I hereunto affix my signature in presence of two witnesses.

GEORGE L. GRAY.

Witnesses:

TAYLOR E. BROWN,
G. W. HIGGINS, Jr.