March 24, 1959 F. GEGAUF 2,878,765

PRESSER FOOT CONNECTION

Filed July 22, 1954

Fig. 2

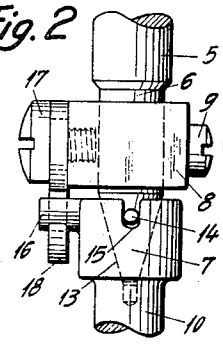
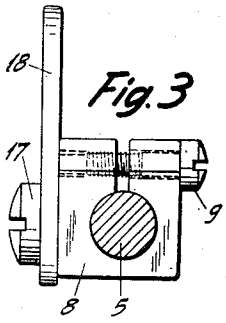


Fig. 3



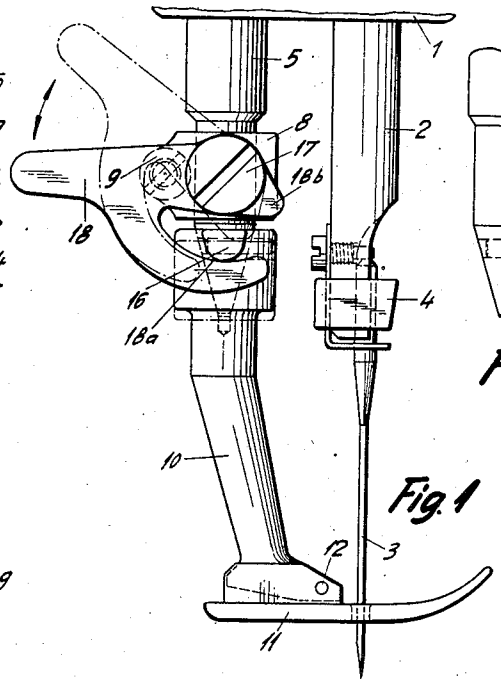


Fig. 1

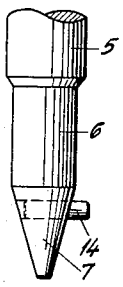


Fig. 4

Fig. 6

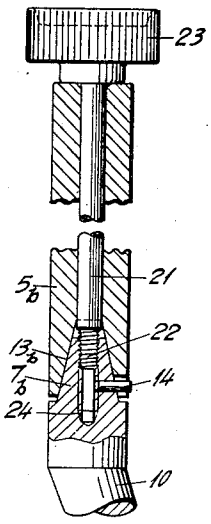


Fig. 5

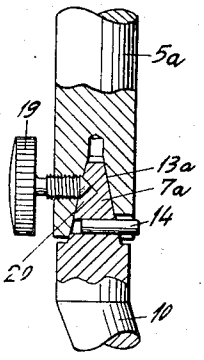
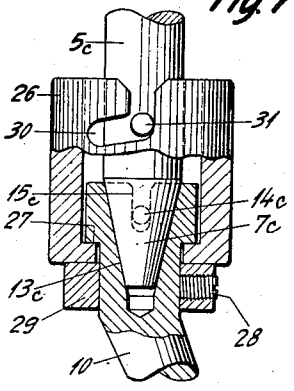


Fig. 7



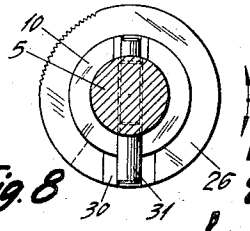


Fig. 8

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United States Patent Office 2,878,765
Patented Mar. 24, 1959

2,878,765

PRESSER FOOT CONNECTION

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Application July 22, 1954, Serial No. 445,155

Claims priority, application Switzerland July 30, 1953

4 Claims. (Cl. 112—240)

The present invention relates to attachment or fastening means, particularly for use in connection with sewing machine parts, especially with presser foot devices. In heretofore known sewing machines the presser foot is usually fixed to the presser foot bar by means of a screw or a nut. As a large number of small presser feet is necessary for the execution of various sewing works, an irksome, unaccustomed and protracted work results for the operator to exchange the presser feet, which work moreover necessitates the use of a tool, such as a screw driver or the like.

Furthermore heretofore known connecting or fixing means have the disadvantage that they do not permit a positive fixing in regard to the correct height.

The present invention has for its prime object to overcome this and other disadvantages. To this end, according to the invention a device for connecting the presser foot of a sewing machine to the presser foot bar is contemplated which enables rapid interchangeability of the presser foot on the presser foot bar. The connection of the presser foot to the presser foot bar is positive in every direction, while the smallest force is required and any auxiliary tool means may be dispensed with.

Other advantages and features of the invention will become apparent from the description now to follow, of preferred embodiments thereof, given by way of example and in which reference will be had to the accompanying drawing in which:

Fig. 1 is a side view of a first embodiment showing the connection of the presser foot and some adjacent parts of a sewing machine made in accordance with the invention;

Fig. 2 is a fragmentary front elevational view of the embodiment of Fig. 1;

Fig. 3 is a top plan view of Fig. 2, the presser foot bar being shown in section;

Fig. 4 is an elevational view of the lower end of the presser foot bar;

Fig. 5 is a fragmentary section through the connecting machine parts showing a second embodiment;

Fig. 6 is a fragmentary sectional view through connecting machine parts illustrating a third embodiment, and

Figs. 7 and 8 illustrate, partly axial and cross sectional views, respectively, of a fourth embodiment of the invention.

Embodiment according to Figs. 1–4

The head portion 1 of the sewing machine comprises the vertically movable needle bar 2 to which the needle 3 is secured by means of a clamp connection 4. Seen from the front of the machine the presser foot bar 5 is arranged in the head portion 1 behind the needle bar 2. This presser foot bar 5 is provided at its lower end with a cylindrical neck portion 6 ending in a downwardly tapering conical plug or tap 7 (Fig. 4). A clamping piece 8 is clamped onto the cylindrical neck portion 6 by means of a screw bolt 9 so as to be adjustable in longitudinal direction of cylindrical portion 6. The presser foot 10, the bottom 11 of which may oscillate about an axle 12, is formed as an inner hollow cone or socket 13 at its thickened upper end. This cone or socket 13 is adapted to fittingly receive the conical tap or plug 7 of the presser foot bar 5 onto which the presser foot 10 is slipped and centered by means of the centering guide or transversal pin 14, the latter engaging an upper recess 15 of the presser foot 10.

By means of a cam 16 rigidly provided on the presser foot 10 as well as by means of the tension lever 18 supported on the adjustable clamping piece 8 by screw 17 the presser foot 10 is pressed with its inner cone 13 onto the tap 7 of the presser foot bar 5 serving as counter guide means. Thereby the cam surface 18*a* (Fig. 1) provided on the tension lever 18 cooperates with the curved surface of the mentioned cam 16.

The tension lever 18, which is easily operable by hand comprises an eccentric forming an ejector 18*b*, which, when the lever 18 is released, abuts against the cam 16 and thus disengages the presser foot 10 from tap 7.

If it is desired to replace the presser foot the tension lever 18 is swung into the position indicated by dot-and-dash line in Fig. 1, whereby the ejector 18*b* pushes off the presser foot 10 from the conical tap 7 of the presser foot bar 5.

For connecting or fixing a presser foot to the presser foot bar it is slipped over the conical tap 7, the direction being given by the transversal pin 14, whereupon the tension lever 18 is swung into its operative position. A slight pressure onto the tension lever 18 sufficies for tightly pressing the presser foot 10 onto the conical tap 7 of the presser foot bar 5. The clamping piece 8 permits adjustment of the distance between the axis of screw 17 of lever 18 and the cam 16 of the presser foot 10. It is of course also possible to omit the ejector 18*b*.

Embodiment according to Fig. 5

A transverse screw 19 is carried by the presser foot bar 5*a* which is provided at its lower end with an inner cone 13*a*. The presser foot 10 having its upper portion formed as a conical tap 7*a* has a corresponding recess 20 adapted to be engaged by the wedge-shaped front end portion of screw 19.

Tightening of the screw 19 results in the conical tap 7*a* of the presser foot being pressed into the inner cone 13*a* of the presser foot bar 5*a*. By turning the screw 19 in the opposite direction the engagement between the presser foot 10 and the presser foot bar 5*a* is released.

Embodiment according to Fig. 6

A tension bar 21 is arranged in the hollow cylindrical presser foot bar 5*b* provided at its lower end with an inner cone 13*b*. This lever 21 has its lower end provided with a thread 22 and its upper end formed as a knob 23 adapted to be manually operated. The presser foot 10 has on its upper portion a conical tap 7*b* comprising a thread 24. The tap 7*b* pressed into the inner cone 13*b* of the presser foot bar 5*b* is further pulled into the latter by turning the knob 23 whereby the thread 22 of the tension bar 21 cooperates with the thread 24.

By turning the knob 23 in the opposite direction the presser foot may be released.

Embodiment according to Figs. 7 and 8

The presser foot 10 with its inner cone 13*c* is engaged on the lower conical tap 7*c* of the presser foot bar 5*c*. By means of a pin 14*c* rigidly mounted in the tap 7*c* and by means of a slot 15*c* in the upper portion of the presser foot 10 the latter is directionally centered. A stretching ring 26 is arranged on the thickened, cylindrical, upper end portion of the presser foot 10 and bears with a lower inner flange against a shoulder 27 of the

presser foot **10**. An adjusting ring **29** fixed by means of a screw **28** to the presser foot **10** serves as abutment for the lower side of the ring **26**. The latter is provided on its upper end portion with an angular slot **30** to form a bayonet catch together with a transversal pin **31** provided on the presser foot bar **5***c*.

As soon as the presser foot **10** with the ring **26** is slipped onto the conical tap **7***c* of the presser foot bar under observation of the direction given by the transversal pins **14***c* and **31** the self-locking key-surface of the slot **30** is drawn against the tension pin **31** by a corresponding rotation of ring **26**. Thereby the presser foot **10** is pressed onto the conical tap **7***c* of the presser foot bar **5***c*. By turning the ring **26** in the opposite direction the pressing action of the presser foot **10** onto the conical tap **7***c* is eliminated and the presser foot **10** may be removed from the presser foot bar **5***c*, as soon as the vertical portion of the bayonet slot **30** provided on ring **26** is vertically opposite the pin **31**.

Obviously other modifications of attachments are possible without departing from the invention.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a sewing machine having a presser foot bar and a presser foot, means for rapidly connecting and disconnecting said presser foot with respect to said presser foot bar comprising; a conical plug depending from said presser foot bar, said presser foot having a tapered conical socket, said presser foot having a slot therein communicating with said socket, a centering guide on said conical plug, said conical plug being received in said socket with said centering guide extending into said slot, a cam on said presser foot, a cam lever pivotally attached to said presser foot bar, said cam lever having a cam surface engageable with said cam so that upon operation of said lever in one direction said cam surface engages said cam to draw said presser foot into engagement with said presser foot bar with said plug being wedgingly urged into said socket.

2. In a sewing machine having a presser foot bar and a presser foot, means for rapidly connecting and disconnecting said presser foot with respect to said presser foot bar comprising; a conical plug depending from said presser foot bar, said presser foot having a tapered conical socket, said presser foot having a slot therein communicating with said socket, a centering guide on said conical plug, said conical plug being received in said socket with said centering guide extending into said slot, a cam on said presser foot, a cam lever pivotally attached to said presser foot bar, said cam lever having a cam surface engageable with said cam so that upon operation of said lever in one direction said cam surface engages said cam to draw said presser foot into engagement with said presser foot bar with said plug being wedgingly urged into said socket, said cam lever having an eccentric ejector engageable with said cam so that upon operation of said cam lever in a second direction opposite to said one direction said ejector engages said cam to disconnect said presser foot from said presser foot bar.

3. In a sewing machine having a presser foot bar and a presser foot, means for rapidly connecting and disconnecting said presser foot with respect to said presser foot bar comprising; a conical plug depending from said presser foot bar, said presser foot bar having a tapered conical socket, said presser foot having a slot therein communicating with said socket, a centering guide on said conical plug, said conical plug being received in said socket with said centering guide extending into said slot, a clamping piece adjustably clampingly secured to said presser foot bar above said plug, a cam lever pivotally attached to said clamping piece, said cam lever having a cam surface engageable with said cam so that upon operation of said lever in one direction said cam surface engages said cam to draw said presser foot into engagement with said presser foot bar with said plug being wedgingly urged into said socket, said clamping piece being adjustable to adjust the engagement of said cam surface with said cam.

4. In a sewing machine having a presser foot bar and a presser foot, means for rapidly connecting and disconnecting said presser foot with respect to said presser foot bar comprising; a conical plug depending from said presser foot bar, said presser foot bar having a tapered conical socket, said presser foot having a slot therein communicating with said socket, a centering guide on said conical plug, said conical plug being received in said socket with said centering guide extending into said slot, a clamping piece adjustably clampingly secured to said presser foot bar above said plug, a cam lever pivotally attached to said clamping piece, said cam lever having a cam surface engageable with said cam so that upon operation of said lever in one direction said cam surface engages said cam to draw said presser foot into engagement with said presser foot bar with said plug being wedgingly urged into said socket, said clamping piece being adjustable to adjust the engagement of said cam surface with said cam, said cam lever having an eccentric ejector engageable with said cam so that upon operation of said cam lever in a second direction opposite to said one direction said ejector engages said cam to disconnect said presser foot from said presser foot bar.

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