Oct. 17, 1933. H. E. SMALLBONE 1,930,628

PRESSER FOOT CONNECTION

Filed June 9, 1932

Fig. 1.

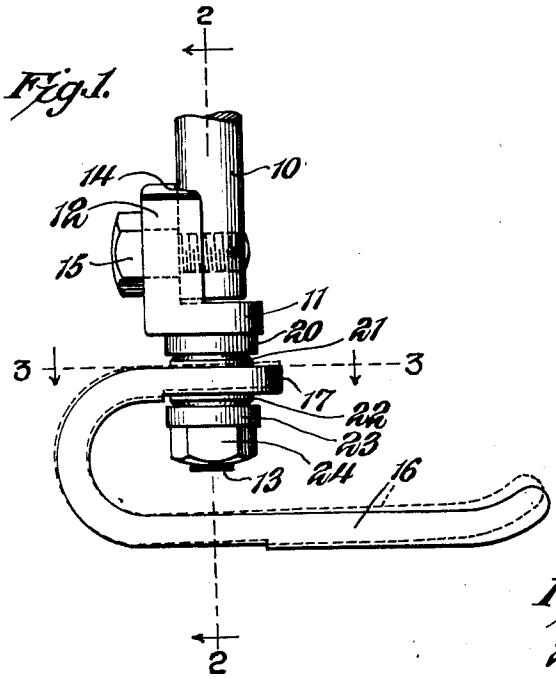


Fig. 2.

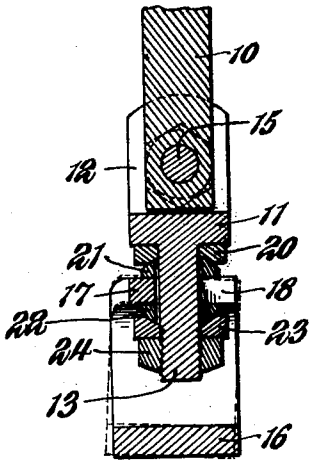


Fig. 3.

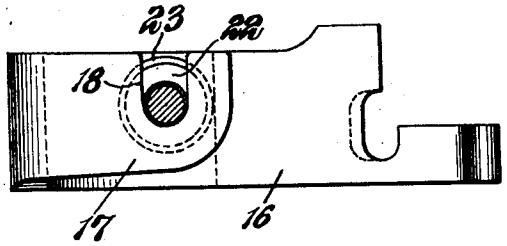


Fig. 4.

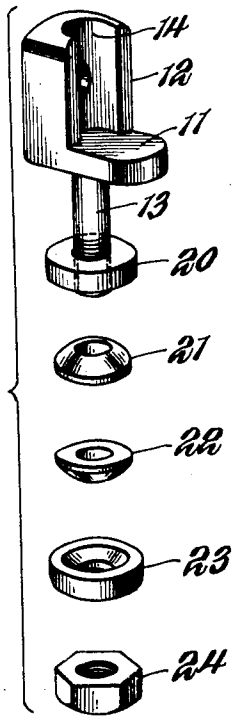
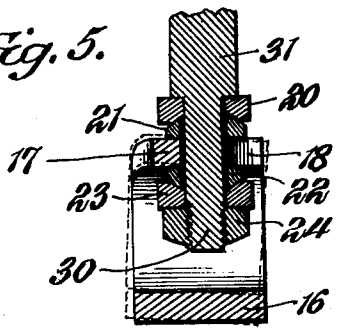


Fig. 5.



Inventor

Harry E. Smallbone,

By Mauro & Lewis

Attorneys

Patented Oct. 17, 1933 1,930,628

UNITED STATES PATENT OFFICE

1,930,628

PRESSER FOOT CONNECTION

Harry E. Smallbone, New York, N. Y., assignor to Wilcox & Gibbs Sewing Machine Company, New York, N. Y., a corporation of New York

Application June 9, 1932. Serial No. 616,329

8 Claims. (Cl. 112—240)

This invention relates to means for connecting or securing a presser-foot to the presser-bar of a sewing machine.

Although especially designed and adapted for use in what are commonly known as "straw machines", such as are employed in the manufacture of hats from braid of straw or other material, the means of this invention may be employed in other types of sewing machines.

The principal object is to provide efficient, simple and inexpensive means by which the presser-foot may be secured to its presser-bar in such position that the plane of the bottom or work-engaging surface of the presser-foot may be parallel to the work supporting surface, or may be tilted sidewise (either to the right or to the left), or endwise, or both, as may be desired.

Another object is to provide means of the character stated which may be used with presser-feet now in common use without changing the construction thereof.

Still other objects realized by the invention will be apparent from the detailed description and the accompanying drawing illustrating one embodiment of the invention and wherein—

Fig. 1 is a view in elevation of the lower end of a presser-bar having a presser-foot secured thereto by the means of this invention;

Fig. 2 is a vertical section on line 2—2 of Fig. 1;

Fig. 3 is a horizontal section on line 3—3 of Fig. 1;

Fig. 4 shows various parts in perspective; and

Fig. 5 is a vertical section (similar to Fig. 2) of a modified embodiment of the invention.

Referring to the drawing, 10 is the lower end of a presser-bar. An extension member for said bar comprises three parts, preferably formed integrally, that is, an intermediate part 11, an upstanding part 12 at one side of part 11 and a stem 13 screw-threaded at its lower end and depending centrally from part 11. A semicircular seat 14 formed by the inside face of the upstanding part 12 conforms to and closely fits one side of the presser-bar 10 and a bolt 15, passing through an opening in part 12 and making screw-threaded engagement in an opening in the presser-bar, rigidly but detachably secures the extension member to the lower end of the presser-bar.

The presser-foot shown is of the construction long commonly used in the well known straw machine of the Willcox & Gibbs Sewing Machine Company and comprises sole portion 16 and a shank 17 integrally formed. 18 is a slot through the shank transversely thereof, said slot being open at one end at one side edge of the shank and at its other end being rounded and terminating about half way across the shank. By a sidewise movement of the presser-foot, the stem 13 of the presser-bar extension member is engaged in the slot 17 in the manner shown in Figs. 2 and 3; and by a reverse movement the presser-foot may be disengaged from said stem 13.

20 is a centrally perforated plate, or washer, strung on stem 13 and having a flat top surface, seated against the flat bottom face of the part 11 of the extension member, and a concave bottom surface. A second perforated plate or washer 21, also strung on stem 13, has a convex top surface fitting the concave bottom surface of the washer 20 and a flat bottom surface engaging the flat top surface of the presser-foot shank 17 around the slot 18 in the latter. A third perforated plate or washer 22 is also strung on stem 13 and has a flat top surface engaging the flat bottom surface of the presser-foot shank 17 and a convex bottom surface engaging the concave top surface of a fourth perforated plate or washer 23 which is also strung on stem 13. A nut 24 engages the screw-threaded extremity of stem 13 and bears against the flat bottom surface of the plate or washer 23. The openings through plates or washers 21 and 22, as well as the curved inner end of the slot 18, are all of larger diameter than the stem 13, thereby permitting the presser-foot and the plates 21 and 22 to be tilted in any direction in relation to the stem 13 of the presser-bar extension member, whereby the presser-foot in its entirety, and particularly its bottom or work-engaging surface, may be tilted universally in relation to the work-supporting surface of the sewing machine. As thus appears, the plates or washers 21 and 22 move with the presser-foot shank 17 when the presser-foot is shifted to the desired position of adjustment and said plates in effect provide convex or spherical surfaces on the top and bottom surface of said shank 17 which, by their engagement with the concave surfaces of the plates or washers 20 and 23, constitute a universal joint. Furthermore, the pair of plates 20, 21, above the shank 17, and the similar pair of plates 23 and 22 below the shank, constitute clamping elements which, when forced together in clamping engagement with said shank by tightening nut 24, rigidly secure the presser-foot to the position of adjustment.

In Figs. 1 and 2, the presser-foot is shown in full lines as being secured in such position that the plane of its bottom or work engaging surface is approximately parallel with the work sup-

porting surface which is not shown. Under conditions of operation, which occur in sewing together edges of braid in making hats, in which greater feeding grip is desirable along the right hand side of the presser-foot than at the left hand side thereof, the nut 24 is slightly loosened, the presser-foot tilted toward the left as shown in dotted lines in Fig. 2, and the nut 24 tightened to rigidly secure the parts together. Under conditions of operation in which it is desirable to have greater feeding grip at the rear end of the presser-foot, near the needle, than at the front end thereof, the presser-foot is tilted upward at its front end in a manner indicated in dotted lines in Fig. 1.

In the use of a presser-foot secured to its presser-bar by the means of this invention, it sometimes becomes desirable or necessary to remove the foot. This is accomplished by unscrewing bolt 15 and removing the presser-bar extension member with the foot secured thereto. The parts may then be replaced by again securing the extension member to the presser-bar by means of bolt 15. In this manner the presser-foot may be removed and replaced without disturbing the adjustment thereof or requiring readjustment every time it is removed from the machine. This is another important feature and advantage of the invention.

In the construction shown in Fig. 5, the stem 30, which corresponds to the stem 13 in the other figures of the drawing, is an integral part of the presser-bar 31 and an extension thereof. Otherwise the parts in Fig. 5 are the same as in the other views and function in the same manner with the exception that removal of the presser-foot in Fig. 5 requires loosening of the nut 24 to enable the presser-foot shank 17 to be moved sidewise to disengage it from the stem 30 and from between the plates 21 and 22. This loosens said plates so that when the presser-foot is replaced it has to be readjusted to the desired position before the nut 24 is again tightened to secure the parts in the adjusted position. In this respect the construction shown in Fig. 5 is less desirable than that shown in the other views.

What is claimed as new is—

1. Means for securing a presser-foot to a presser-bar, said means including a stem constituting an extension of said presser-bar and passing through an opening in the shank of said presser-foot, and outwardly and inwardly curved engaging surfaces around said stem and relatively movable to permit changing the position of the foot in relation to the stem.

2. Means for securing a presser-foot to a presser-bar, said means including a stem constituting an extension of said presser-bar and passing through an opening in the shank of said presser-foot, outwardly and inwardly curved engaging surfaces around said stem and relatively movable to permit changing the position of the foot in relation to the stem, and means for tightening the engagement of the relatively movable surfaces to hold the presser-foot in a position to which it has been adjusted and for loosening said engagement to permit changing the position of adjustment.

3. Means for securing a presser-foot to a presser-bar, said means including a stem constituting an extension of the presser-bar and passing through an opening in the shank of said presser-foot, and convex and concave engaging surfaces around the stem and relatively movable to permit changing the position of the foot in relation to the stem.

4. Means for securing a presser-foot to a presser-bar, said means including a stem constituting an extension of the presser-bar and passing through an opening in the shank of said presser-foot, convex and concave engaging surfaces around the stem and relatively movable to permit changing the position of the foot in relation to the stem, and a nut screw threaded onto said stem and acting to tighten the engagement of said relatively movable surfaces to hold the presser-foot in a position to which it has been adjusted and for loosening said engagement to permit changing the position of adjustment.

5. The combination with a presser-bar and a presser-foot of a sewing machine, of means for attaching the latter to the former, said means comprising a stem constituting an extension of said presser-bar and passing through an opening in the shank of the presser-foot, clamping elements encircling said stem on opposite sides of said shank and having contiguous relatively movable curved surfaces to permit tilting of said presser-foot in different directions, and means for tightening and loosening said clamping elements.

6. The combination with a presser-bar and a presser-foot of a sewing machine, of means for attaching the latter to the former, said means comprising a stem constituting an extension of said presser-bar and passing through an opening in the shank of the presser-foot, clamping elements encircling said stem on opposite sides of said shank and having contiguous relatively movable convex and concave surfaces to permit tilting of said presser-foot in different directions in relation to said stem, and means for tightening and loosening said clamping elements.

7. The combination with a presser-bar and a presser-foot of a sewing machine, of means for attaching the latter to the former, said means comprising an extension member having a part for attachment to said presser-bar and a stem which passes through an opening in the shank of the presser-foot, clamping elements encircling said stem on opposite sides of said shank, said elements having their contiguous surfaces curved to permit tilting of said foot in several directions, and means for tightening and loosening said clamping elements.

8. The combination with a presser-bar and a presser-foot of a sewing machine, of means for adjustably and removably connecting the latter to the former, said means comprising a stem detachably secured to and forming an extension of said presser-bar and passing through a slot in the shank of said foot, clamping elements on opposite sides of said shank having their contiguous surfaces correspondingly curved to permit tilting of said foot in different directions, and means for tightening and loosening said clamping elements.

HARRY E. SMALLBONE.