March 18, 1969 D. C. PINGITORE ET AL 3,433,192

PRESSER FOOT ASSEMBLAGE

Filed June 12, 1967

Fig. 1.

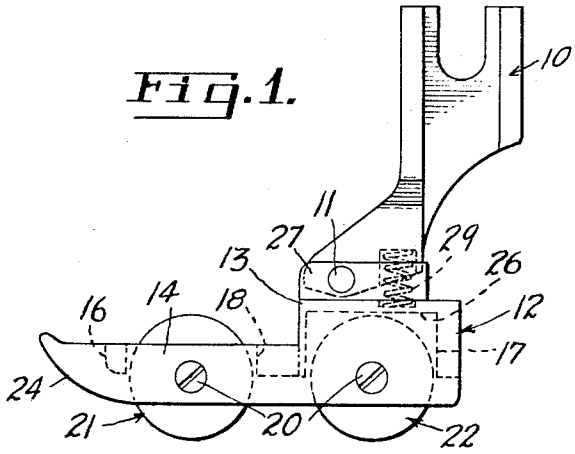


Fig. 2.

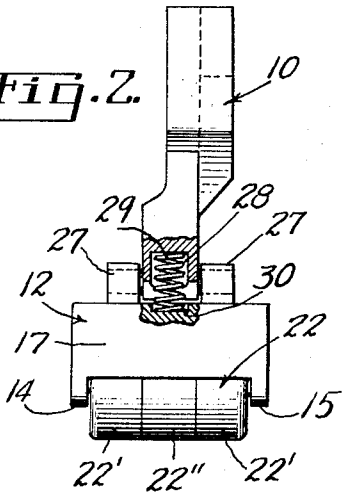


Fig. 3.

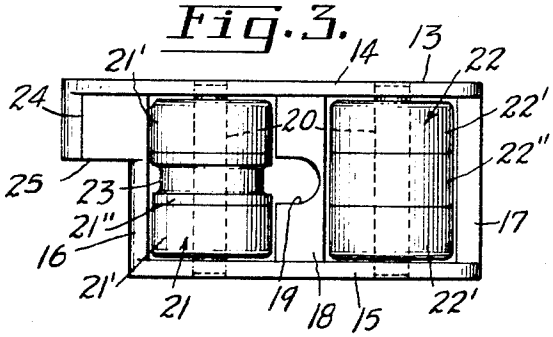


Fig. 4.

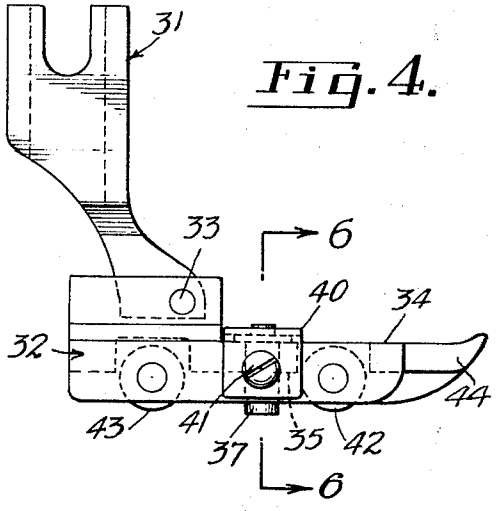


Fig. 5.

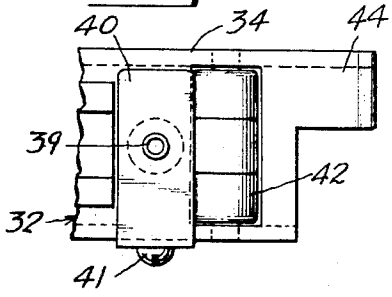
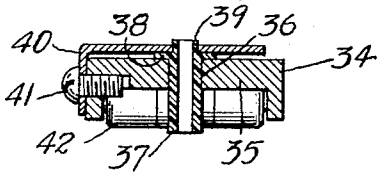


Fig. 6.



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PRESSER FOOT ASSEMBLAGE

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Int. Cl. D05b 29/00, 29/10

ABSTRACT OF THE DISCLOSURE

A presser foot assemblage comprising a channel member, to which is pivoted and tensionally controlled a foot casing rotatably supporting front and rear rollers, between which is the needle operating station, the pivot of said member being above and between the axes of said rollers. The front of the casing has, at one side, an upwardly curved toe portion. Further, each of said rollers, comprising three rollers, collectively control feed of coated or laminated materials beneath said foot casing, the needle station having a yieldably supported needle guide and material stripper element.

Background of the invention

The invention deals with an assemblage of the character defined, wherein the structure of the rollers not only provides the desirable feed of materials of various types and kinds, but also expedites the formation of curved stitchings in the materials and said curved toe portion also provides on the foot a stitch guide.

While assemblages of the kind under consideration are well-known in the art, United States patents which appear to have the closest bearing on the present novel structure are as follows: Haines, Pat. No. 2,669,956, Feb. 23, 1954; Schrader, Pat. No. 2,907,291, Oct. 6, 1959; and Winberg, Pat. No. 2,955,553, Oct. 11, 1960. To applicant's knowledge, the assemblage herein defined appears to be distinctly new in the art.

Summary of the invention

With devices of the type and kind under consideration, a very simple and economical presser foot structure is provided, which alone, and/or with the channel member forming the assemblage, can be produced for a nominal selling price. In uses of the presser foot on very thin and slippery fabrics or materials, the use of the needle guide and material stripper element at the needle station of the presser foot substantially improves stitching operations upon materials of this type and kind.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

FIG. 1 is a side view on an enlarged scale of a presser foot assemblage illustrating the parts in a normal operative position as they would appear in a sewing machine.

FIG. 2 is a rear view of the assemblage, with parts of the construction broken away and in section.

FIG. 3 is a bottom plan view of the structure, omitting part of the background showing.

FIG. 4 is a view, similar to FIG. 1, but viewed from the opposed side of the assemblage and illustrating a modification.

FIG. 5 is a partial top plan view of the structure seen in FIG. 4; and

FIG. 6 is a section on the line 6—6 of FIG. 4.

In FIGS. 1 to 3, the assemblage comprises a foot supporting channel member **10** pivoted, as seen at **11**, to a presser foot **12**, comprising a generally rectangular casing **13**. The casing **13** is defined by side walls **14, 15** joined by front and rear walls **16, 17** and an intermediate wall **18** defining a needle station. The wall **18** is apertured at **19** for clearance of the needle of a sewing machine. Mounted in the walls **15, 16** are pin axes **20** for front and rear rollers **21, 22**, preferably of plastic material, such as nylon. The axes **20** are, in the construction shown, screws having lefthand threads in the wall **14**. This structural arrangement facilitates replacement of the rollers **21** and **22** from time to time. In the present showing, the rollers **21, 22** are formed by two outer rollers **21', 22'** and intermediate rollers **21", 22"**. The roller **21"** is grooved, as seen at **23**, FIG. 3, for needle clearance. The wall **16** has, at one side, an upwardly curved toe part **24**, providing a stitch guide, as at **25**.

The casing **13** has a raised top wall **26** forming a chamber for the roller **22**, the roller **21** operating between walls **16** and **18**. On the wall **26** are raised bearing strips **27**, note FIG. 2, forming supports for the pivot pin **11**, as clearly seen in FIG. 1. The roller end of the member **10** fits between the strips **27** and includes a socket **28** for a coil spring **29** seating in a recess **30** in the wall **26**, note FIG. 2.

The assemblage in FIGS. 1 to 3 is primarily for use with laminated or piled fabrics, the rollers **21, 22** projecting well below the lower surfaces of the casing **13**. In FIGS. 4 and 6 is shown a modified assemblage adapted for use on thin materials where the feed of the material is found difficult, if not impossible. This assemblage comprises a member **31** and a presser foot **32**, generally similar to **10** and **12**, respectively. The pivot of **31** on **32** is seen at **33**. A spring, similar to the spring **29**, will be employed, but no attempt has been made to show the latter to simplify the illustration. The casing **34** differs from **13** primarily in the structure of the wall **18** and, in FIG. 6, the wall of **34** is shown in section at **35** in defining the needle station. Centrally of **35** is an aperture **36**, in which is slidably mounted a material stripper and needle guide element or tube **37**, also preferably of plastic material. On **37** is a flange **38** seating on the wall **35**, thus limiting downward movement of **37** and a reduced end **39** is arranged in an aperture of a spring plate **40**. The plate **40** is fixed to one side wall of the casing **34** by a screw **41**, partially threaded in the wall **35**, as seen in FIG. 6. It will appear, from FIGS. 4 and 6, that the lower end of the tube **37** is normally below the surface of the rollers **42** and **43**, generally similar to the rollers **21** and **22**. However, the grooving of the forward roller **42** or the intermediate part thereof for needle clearance is not essential. The forward end of the casing **34** has a toe portion **44**, similar to **24** in FIGS. 1 to 3.

In FIGS. 4 to 6, the rollers **42, 43** are smaller in diameter than the rollers **21, 22** in dealing with relatively thin materials. With some forms of materials, the needle will have a tendency to draw the material upwardly between the rollers. This is checked by the pressure or element **37** which will strip the material from the needle in each stroke thereof. In this action, the tube **37** will be raised against the action of the spring plate **40**, which immediately depresses the material for the next successive stitching operation.

With both forms of construction shown, the rollers, as at **21, 22, 42, 43** will maintain the desirable lay of the material adjacent the needle station of the foot and, by providing the arrangement of three rollers in each roller assemblage, what may be defined as a differential action is provided varying the speed of rotation of the

outer rollers, particularly in the curved or rounded stitching operations on the materials as passed beneath the foot of the assemblage.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A presser foot assemblage comprising a support channel member, a presser foot, a pivot coupling said member and foot, the foot comprising a casing having side, front and rear walls and an intermediate wall defining a needle station, spaced axis means mounted in said side walls at each side of said station, front and rear rollers mounted on said means and arranged between said front and intermediate walls and said rear and intermediate walls respectively, said front wall of the casing having an upwardly curved toe part, the rear of the casing having a top wall portion, and a spring arranged between said member and the top wall portion of said casing.

2. An assemblage as defined in claim 1, wherein said axis means comprises screws threaded into one side wall of the casing.

3. An assemblage as defined in claim 2, wherein said screws have left-hand threads.

4. An assemblage as defined in claim 1, wherein each roller is defined by two outer rollers and an intermediate roller.

5. An assemblage as defined in claim 4, wherein one of said intermediate rollers is grooved.

6. An assemblage as defined in claim 1, wherein the wall of said needle station supports a vertically movable needle guide element, tensional means for supporting said element in depressed position, and the lower end of said element being normally positioned below the surfaces of said rollers.

7. In an assemblage of the character defined, a presser foot comprising a casing having joined spaced side walls, front and rear rollers mounted in said casing between said side walls, said rollers having pin-like axes mounted in the side walls, the casing having, between said rollers, a transverse wall defining a needle station, the forward end of the casing having an upwardly curved toe part, the upper rear portion of the casing having bearing means for pivotal support of a channel member therewith, means provided at said station for yieldable support of a material stripper and needle guide element, and each of said rollers being defined by two outer rollers and an intermediate roller.

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