Aug. 27, 1929. J. H. PETTIT 1,726,450

DARNER FOOT FOR SEWING MACHINES

Filed Nov. 19, 1927

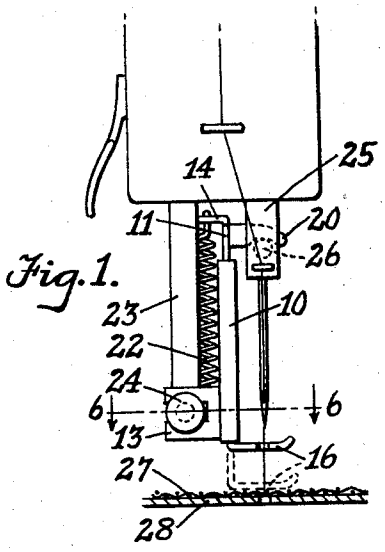


Fig. 1.

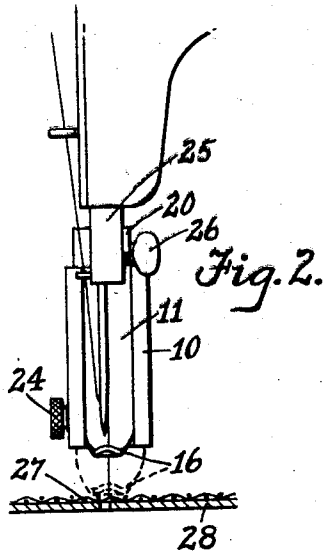


Fig. 2.

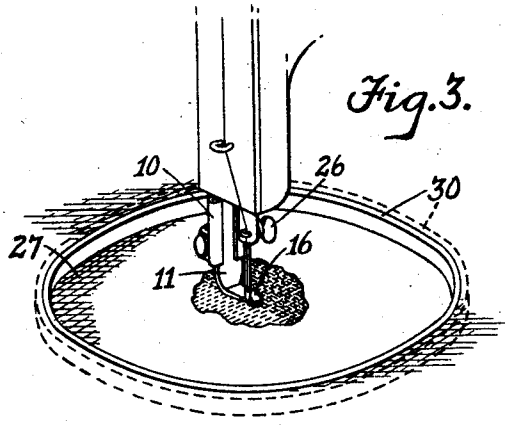


Fig. 3.

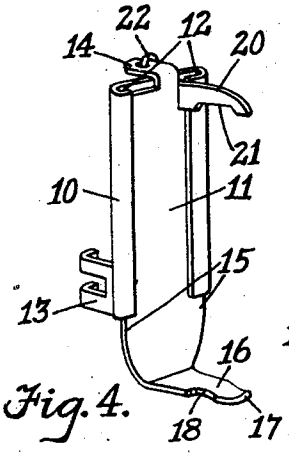


Fig. 4.

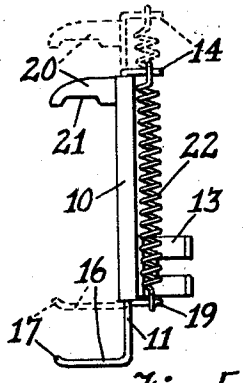


Fig. 5.

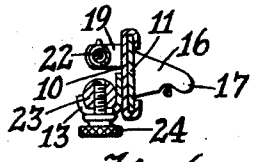


Fig. 6.

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UNITED STATES PATENT OFFICE.

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DARNER FOOT FOR SEWING MACHINES.

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My invention relates to sewing machine attachments and more particularly to a darner foot for use on sewing machines.

The primary object of my invention is to provide an attachment, adapted for use as a darner foot on any of the well known types of sewing machines, which will hold the work while the stitch is being made as the regular presser foot does, and also will release it automatically when the needle approaches the uppermost position in its stroke, so that the work may be shifted thereunder in any direction, as is necessary in such operations as darning, embroidering etc., without danger of breaking the needle.

A further object is to provide a darner foot of the character described which may be fastened to the presser-bar of a sewing machine by means of the usual presser-foot thumb-screw, it being necessary only to remove the usual presser-foot and to substitute the darner-foot therefor.

A further object is to provide a darner foot which is simple and inexpensive in construction, which readily may be applied to the machine for which it is adapted and which offers the least possible obstruction to the operator's view of the work while in operation.

Other objects and advantages will appear hereinafter, and while I show herewith and will describe a preferred form of construction, I desire it to be understood that I do not limit my invention to such preferred form but that various changes and adaptations may be made therein without departing from the spirit of my invention as hereinafter claimed.

Referring to the drawings which accompany this specification and form a part thereof,

Fig. 1 is a fragmentary front view of the face part of a sewing machine head, showing the needle-bar and presser-bar thereof with my darner foot attached to the latter.

Fig. 2 is a side view of the machine parts and darner foot shown in Fig. 1.

Fig. 3 is a view in perspective of the machine parts and darner foot shown in Figs. 1 and 2, illustrating the use of the latter in the operation of darning.

Fig. 4 is an enlarged view in perspective of the darner foot by itself.

Fig. 5 is a rear edge view of the darner foot shown in Fig. 4.

Fig. 6 is a sectional view of the darner foot and presser-bar, taken on line 6—6 of Fig. 1.

Considering the drawings more in detail and in connection with the reference numerals, it will be seen that my darner consists, in the main, of two plates, one movable within the other, a guide-plate 10 and a foot-plate 11, both made of rather heavy sheet-metal. Guide plate 10 is formed of a rectangular piece of the metal, the side edges of which are bent toward each other on the front side of the plate to form opposite longitudinal channels 12 closely corresponding in width to the thickness of foot-plate 11. A split lug 13, adapted to serve as a fastening-lug whereby said guide plate may be attached to a presser-bar, is fixed to the rear side of guide-plate 10, adjacent the lower end thereof, by welding, soldering or riveting it thereon. A relatively small extension on the lower end of guide-plate 10 is bent at right angles thereto to form a lug 19, in spaced relation to split lug 13, said lug 19 being perforated to receive the end of a spring as will presently appear.

Foot-plate 11 is made of a piece of the metal somewhat longer than guide-plate 10, its width being such that its side edges 15 extend into the channels 12 and hold the foot-plate in contact with guide-plate 10 while being free to reciprocate vertically in said channels 12. The lower end of foot-plate 11 is tapered somewhat and is bent at right angles to the body part thereof to form a foot 16, which terminates in a slightly upturned toe 17, said foot having a rounded notch 18 cut in the front side thereof to provide clearance for the needle. A relatively small extension, on the upper end of foot-plate 11 is bent backwardly, at right angles thereto, to form a lug 14 which is in vertical alignment with the similar lug 19 on the lower end of guide-plate 10. A somewhat longer lateral extension on the upper end of foot-plate 11 is bent forwardly, at right angles thereto, to form a lifting arm 20, adjacent lug 14 and just within one edge 15 of the foot-plate, the under side of said arm 20 being cut away, as at 21, to give it a downwardly hooked form. The breadth of said lifting arm extends vertically to give it additional strength. A helical spring 22, under suitable tension, is mounted between lugs 14 and 19, with one of its ends attached to each, so that it tends to hold foot 16 in its lowermost position, with lug 14 serving as a

stop against the upper end of guide-plate 10, when the presser-foot is detached from a machine.

Fastening-lug 13, as shown, is designed for attaching the darner foot to presser bars such as are used in machines of the Singer type. It will be understood that modified fastening-lugs must be provided to adapt it for use on machines of different makes.

The operation of the darner foot will be understood readily by reference to Figs. 1, 2 and 3. The regular presser-foot having been removed from the presser-bar 23 of the machine and the darner foot having been attached thereto, by means of the regular presser foot thumb-screw 24, it will be seen that lifting-arm 20 of the darner foot extends laterally behind the needle bar 25 above and in the path of the needle clamping-screw 26, while foot 16 thereof, when down, rests on the work 27, or on throat plate 28 of the machine, under the influence of spring 22. The spacing of arm 20 from foot 16 is in such relation to the stroke of the needle-bar 25 that clamping-screw 26 engages said arm 20 toward the end of its upward movement and lifts said foot 16 a quarter of an inch, or more, above the throat plate, against the action of spring 22, and foot 16 is brought in contact with throat plate 28, in the downward movement of the needle bar, somewhat before the needle has descended to that point.

When the machine is run, therefore, in the operation of darning, name-writing, embroidering or the like, foot 16 is always pressing on the work before the needle enters it and for an instant after it is withdrawn therefrom, so that any shifting of the work so as to break the needle is out of the question. On the other hand the foot is lifted in each upward stroke of the needle-bar, after the needle is withdrawn from the work, so as to afford ample clearance for shifting it thereunder in any direction. In order to facilitate such shifting the work is fixed between a pair of concentric hoops 30, or some similar device, in the usual way.

Foot 16, being relatively small, makes the operation of darning stockings comparatively easy, because of the fact that with it one readily can get into the foot and even into the heel or toe of the stocking. Furthermore, the front side of the foot 16 is open so that the operator always has a clear view of the work which is being done.

Having thus illustrated and described my invention, I claim:

1. A darner attachment for sewing machines comprising a guide-plate adapted to be attached to the presser-bar of a machine, in place of the regular presser-foot, said guide-plate having opposite vertically disposed channels on the front side thereof; a foot-plate mounted on the front side of said guide-plate so as to reciprocate vertically in said channels; a foot on the lower end of said foot-plate adapted to serve as a presser-foot; a lifting-arm on said foot-plate adjacent its upper end extending laterally therefrom, said lifting-arm being adapted to contact with the clamping-screw of a needle-bar when it approaches its uppermost position, so as to cause the lifting of said foot, and a spiral tension spring connected to said guide-plate and said foot-plate so as yieldingly to hold the latter in its lowermost position, said spring being located on the back side of said guide plate and foot plate, and being secured to lugs projecting from said plates.

2. In combination with a sewing machine, a darner-foot attached to the presser bar thereof, in place of the regular presser-foot, said darner foot comprising a guide-plate with vertical channels; a foot plate mounted on said guide plate so as to reciprocate vertically in said channels; a foot on the lower end of said foot-plate, adapted to serve as a presser-foot; a lifting-arm on said foot-plate, adjacent the upper end thereof, said lifting-arm having its breadth extending in a vertical plane and projecting from the front side thereof into the path of the clamping-screw of the needle-bar, so as to be actuated thereby to lift said foot-plate, and a spiral tension spring connected to said guide-plate and said foot-plate, so as yieldingly to hold the foot of the latter in contact with the work, said guide plate being provided with a lug which projects back of its lower end and said foot plate being provided with a lug which projects rearwardly from its upper end, said spring having its ends secured to said lugs.

JOHN H. PETTIT.