June 21, 1932. F. LUTZ 1,864,453

FEEDING MECHANISM FOR SEWING MACHINES

Filed June 18, 1929 2 Sheets-Sheet 1

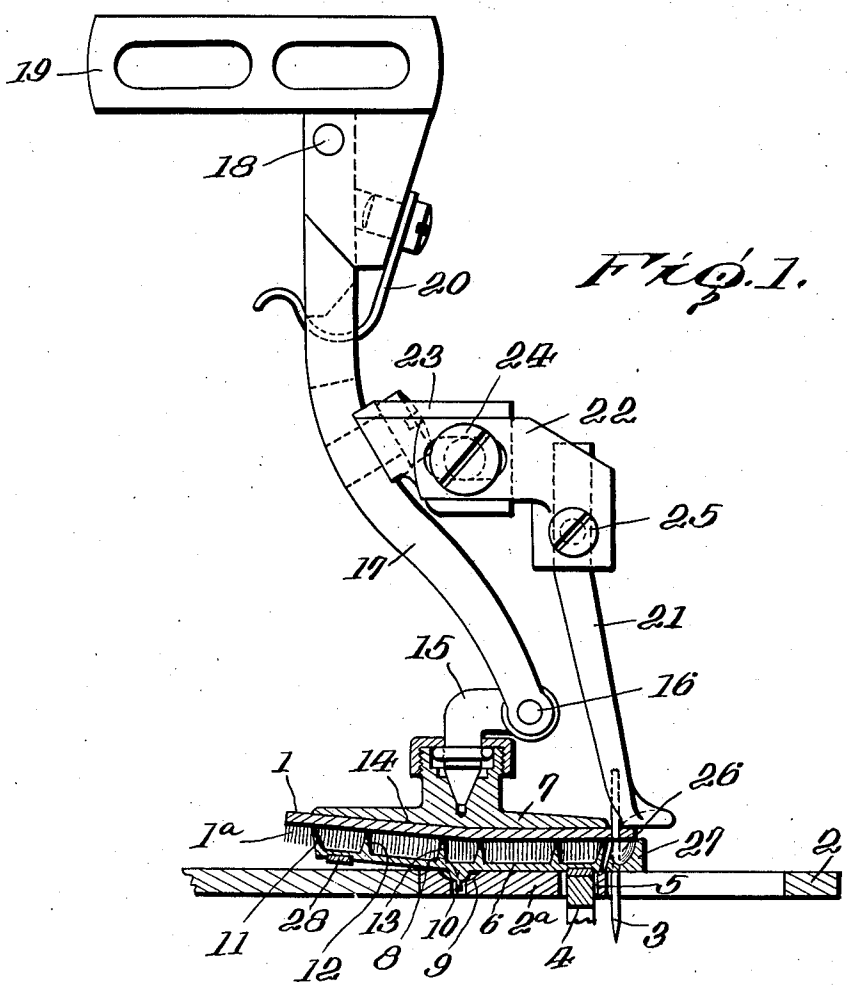
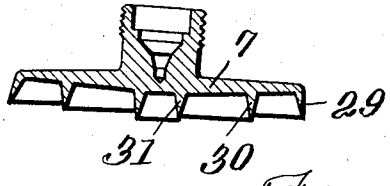


FIG. 1.

FIG. 4.



Inventor
Friedrich Lutz

By Sturtevant & Mason
Attorneys

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FEEDING MECHANISM FOR SEWING MACHINES

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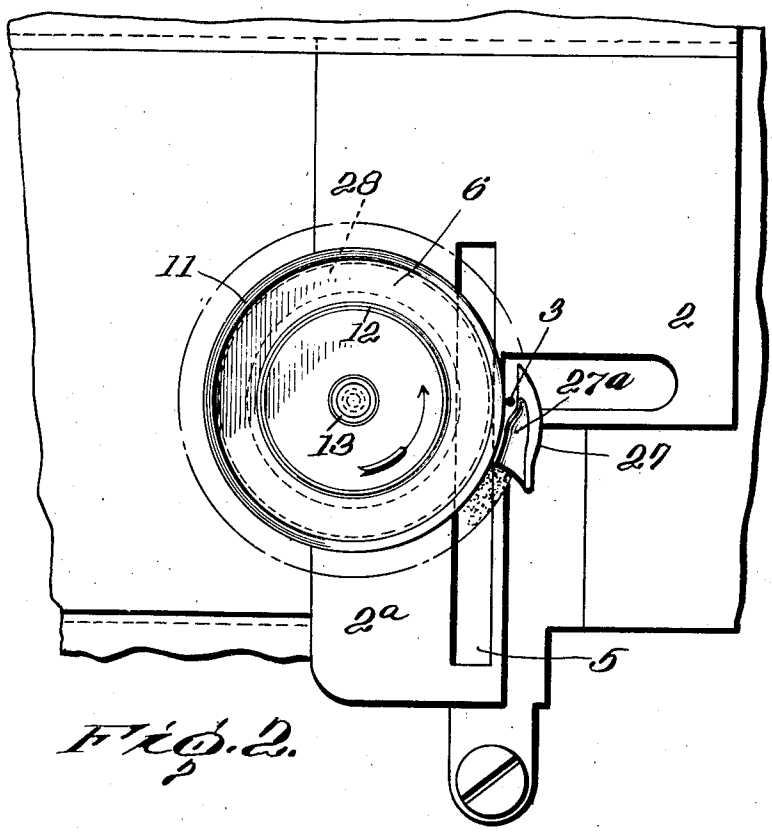


Fig. 2.

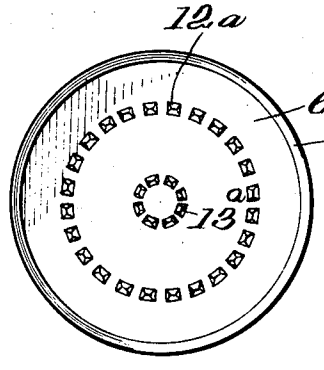


Fig. 3.

Inventor

Friedrich Lutz

By Sturtevant Mason

Attorneys

Patented June 21, 1932 1,864,453

UNITED STATES PATENT OFFICE

FRIEDRICH LUTZ, OF STUTTGART, GERMANY, ASSIGNOR TO UNION SPECIAL MASCHINENFABRIK G. M. B. H., OF STUTTGART, GERMANY

FEEDING MECHANISM FOR SEWING MACHINES

Application filed June 18, 1929, Serial No. 371,936, and in Germany December 29, 1928.

This invention relates to new and useful improvements in feeding mechanisms for sewing machines, and more particularly to a feeding mechanism for directing and feeding an article having a circular or arcuate configuration, which article is provided with a pile surface. It is well known that plush and similar fabrics include a base fabric and a pile surface. In forming an article of such a fabric it is desirable that the pile face be not disturbed, and where the fabric is provided with edge covering stitches, that the pile be laid so that the stitching threads will cover and bind down the same.

An object of the present invention is to provide a feeding mechanism which is particularly adapted for feeding and directing articles made of pile fabric which have a circular or arcuate configuration so that the edge thereof may be covered by edge covering stitches.

In the drawings which show by way of illustration one embodiment of the invention:

Figure 1 is a view in section showing more or less diagrammatically one embodiment of the invention.

Fig. 2 is a plan view of the work support, the feeding and directing devices, and the means for turning down the pile as it is directed to the stitch forming elements.

Fig. 3 is a plan view of the underneath clamping and directing member showing a modified arrangement of the projecting flanges.

Fig. 4 is a vertical sectional view through the upper clamping and directing device showing a further modified form of construction.

In my copending application Serial No. 371,853, filed of even date herewith, I have shown, described and claimed a feeding mechanism which includes a clamping and directing member provided with a cone-shaped underface for holding the article in a manner which permits the article to be fed step by step about its center by a feed dog moving in a right line. The present invention is directed to an improvement in the structure shown in said copending application.

The invention will be best understood by a detailed reference to the drawings forming a part of this application. The fabric to be stitched is indicated at 1 in the drawings, and it includes a base fabric having a pile surface 1*a*. The fabric as shown in Fig. 1 is placed with its pile face extending downward. The work support is indicated at 2. The stitching mechanism which is of any suitable type has not been illustrated, except that the needle is indicated at 3, showing the position of the stitching mechanism. The material is fed by means of a four-motion feeding mechanism which includes a feed dog 4 operating through a slot 5 in the work support 2. As shown in Fig. 1, there is a lower clamping and directing member 6 and an upper clamping and directing member 7. The lower clamping and directing member has its underface formed cone-shaped. At the apex of the cone which is the center of the clamping member, there is a projecting portion 8 which fits within a recess 9 formed in the work support 2. There is also a projecting stem 10 carried centrally of this under clamping member and centrally of the projection 8 which extends into an opening in the work support. This opening and cone-shaped recess are formed in a plate 2*a* which is attached to the work support and which can be changed when different sized clamping and directing members are used for producing articles of different diameter. Projecting upwardly from this cone-shaped under clamping member 6 is a flange 11 located at the edge of the clamping member and projecting upwardly therefrom. This flange tapers towards its upper edge. Located inwardly from the peripheral edge of the under clamping and directing member is a flange or rib 12 which is concentric with the center of the clamping and directing member. This rib or flange 12 likewise is tapered and projects upwardly to about the same height as the flange 11. At the center of the disk is an annular rib or flange 13 which is similarly shaped. The fabric to be stitched is cut to proper shape and size and is then inserted so that the pile face is placed on this under clamping and directing member. These ribs or flanges will project be-

tween the pile threads and engage the base fabric without injuring the pile face.

The article is held on the lower clamping and directing member by the upper clamping and directing member 7 which has a cone-shaped underface 14 conforming to the cone-shape of the under clamping and directing plate. The apex of the upper clamping member engages the article at the center thereof. This upper clamping member is mounted so as to turn freely on a supporting stud 15 which is pivoted at 16 to a bracket arm 17. This bracket arm 17 is in turn pivoted at 18 to a supporting plate 19 which is adjustably attached to the presser bar so as to yield therewith. A spring latch 20 serves to hold the bracket arm 17 in normal position with the upper clamping member clamping the article to be stitched against the lower clamping member.

Also mounted on the bracket arm 17 is a presser foot 21. Said presser foot is mounted for vertical adjustment in a bracket 22 which is in turn mounted for horizontal adjustment in a projecting portion 23 carried by the bracket arm 17. A screw 24 clamps said bracket 22 in its adjusted position, and a screw 25 clamps the presser foot in its vertical adjusted positions in the bracket 22. This presser foot bears on the upper face of the article to be stitched.

Also mounted on the work support 2 is a pile turning guide 27. This pile turning guide 27 has a recess 27*a* in its upper face which is curved and shaped so that the pile is laid back onto the fabric face within the limits of the overedge stitches and thus it is that the overedge stitches cover the edge of the article and also cover and conceal the turned down portions of the pile. The feed dog 4 has a smooth upper face. On the underside of the clamping and directing plate 6 is a recess in which is mounted a leather strip 28. This leather strip is so positioned that the feed dog makes contact therewith and thus it is that the feed dog, by direct engagement with the clamping and directing plate, turns said plate step by step and thus feeds the article to the stitching mechanism. It will be noted that when the clamping members are cone-shaped with the apex of the cone of the lower clamping member at the center of the article being stitched, that portion of the clamping member between the apex and the periphery which is at the stitching point will be substantially parallel with the plane of the work support while the portion diametrically opposite from the apex to the periphery will be at an inclination and spaced away from the work support. This permits a free swinging of the clamping members as the said feed dog raises and lowers and thus it is that a four motion feed dog may be used for rotating the clamping plates without disturbing the clamped portion of the fabric which is being stitched.

In Fig. 3 of the drawings the lower clamping plate 6 is shown as provided with an outer flange or rib 11 which is continuous and unbroken. The rib or flange located inwardly from the peripheral edge is broken away so as to form separated projecting pins or teeth indicated at 12*a* in the drawings. The rib or flange at the center of the disc is likewise broken so as to provide projecting pins or teeth indicated at 13*a* in the drawings. These projecting pins or teeth find their way in between the pile threads so as to engage the base fabric without injuring the pile face.

In Fig. 4 of the drawings, I have shown a modified form of the invention, in that the upper clamping plate 7 is provided with a downwardly projecting rib or flange 29 at its outer edge, an intermediate downwardly projecting rib or flange 30, and an inner annular downwardly projecting rib or flange 31. This form of upper clamping plate is especially useful when it is desired to place a pile fabric for stitching with the pile extending upwardly.

In conjunction with the upper clamping and directing plate 7, a smooth lower clamping plate may be used, or no lower clamping plate at all, as shown in my copending application.

The machine is particularly adapted for forming such articles as powder puffs or the like which are circular in outline. By my improved feeding and clamping mechanism, this article may be guided and directed so as to produce an article which is of substantially perfect circular outline and the edge of the article is covered with overedge stitches.

It is obvious that minor changes in the detail of construction and arrangement of parts may be made without departing from the spirit of the invention as set forth in the appended claims.

I claim:

1. A feeding mechanism for sewing machines including a feed dog and cooperating members for clamping and directing the article being stitched, said feed dog being disposed relative to one of said clamping members so as to engage and intermittently turn the same about a fixed center, one of said members having projecting ribs on its fabric engaging face.

2. A feeding mechanism for sewing machines including a feed dog and cooperating members for clamping and directing the article being stitched, said feed dog being disposed relative to one of said clamping members so as to engage and intermittently turn the same about a fixed center, one of said members having a cone-shaped face and projecting ribs on the fabric engaging face thereof.

3. A feeding mechanism for sewing machines including a work support, a feed dog, and cooperating members for clamping and directing the article being stitched, said feed dog being disposed relative to one of said clamping members so as to engage and intermittently turn the same about a fixed center, said clamping and directing members having their adjacent faces formed cone-shaped with the apex of each cone at the center of rotation of said members.

4. A feeding mechanism for sewing machines including a work support, a feed dog, and cooperating members for clamping and directing the article being stitched, said feed dog being disposed relative to one of said clamping members so as to engage and intermittently turn the same about a fixed center, said clamping and directing members having their adjacent faces formed cone-shaped with the apex of each cone at the center of rotation of said members, one of said members having projecting ribs on the fabric engaging face thereof.

5. A feeding mechanism for sewing machines including a work support, a feed dog, cooperating members for clamping and directing the article being stitched, and means whereby said clamping and directing members are caused to turn about a fixed center by the action of the feed dog, said clamping and directing members having their adjacent faces formed cone-shaped with the apex of each cone at the center of rotation of said members, one of said members having a non-metallic strip attached thereto with which said feed dog makes contact for turning the clamping and directing members.

6. A feeding mechanism for sewing machines including a work support, a feed dog, cooperating members for clamping and directing the article being stitched, and means whereby said clamping and directing members are caused to turn about a fixed center by the action of the feed dog, said clamping and directing members having their adjacent faces formed cone-shaped with the apex of each cone at the center of rotation of said members, one of said members having concentric spaced ribs on the fabric engaging face thereof.

7. A feeding mechanism for sewing machines including a work support, a feed dog, cooperating members for clamping and directing the article being stitched, means whereby said clamping and directing members are caused to turn about a fixed center by the action of the feed dog, said clamping and directing members having their adjacent faces formed cone-shaped with the apex of each cone at the center of rotation of said members, and means for supporting said clamping and directing members whereby the same may yield and move up and down with the feed dog.

8. A feeding mechanism for sewing machines including a work support, a feed dog, cooperating members for clamping and directing the article being stitched, means whereby said clamping and directing members are caused to turn about a fixed center by the action of the feed dog, said clamping and directing members having their adjacent faces formed cone-shaped with the apex of each cone at the center of rotation of said members, means for supporting said clamping and directing members whereby the same may yield and move up and down with the feed dog, and a presser foot bearing on the fabric adjacent the clamping and directing members and movable up and down therewith.

9. A feeding mechanism for sewing machines including a work support, a feed dog, cooperating members for clamping and directing the article being stitched, means whereby said clamping and directing members are caused to turn about a fixed center by the action of the feed dog, said clamping and directing members having their adjacent faces formed cone-shaped with the apex of each cone at the center of rotation of said members, means for supporting said clamping and directing members whereby the same may yield and move up and down with the feed dog, a presser foot bearing on the fabric adjacent the clamping and directing members and movable up and down therewith, and a pile turning guide carried by the work support and disposed so as to turn down the pile to be covered by the overedge stitches.

10. A feeding mechanism for sewing machines including a work support, a feed dog located beneath the work support, cooperating members for clamping and directing the article being stitched disposed above said work support and overlying said feed dog, whereby said feed dog will intermittently engage the clamping members for turning the same about a fixed center, and whereby said clamping members will be held from movement through contact with the work support during the idle movements of the feed dog.

In testimony whereof, I affix my signature.

FRIEDRICH LUTZ.