

Dec. 16, 1941.

W. H. EVANS

2,266,538

FLAT ELASTIC FEEDING DEVICE FOR ELASTIC ATTACHING SEWING MACHINES

Filed May 1, 1939

2 Sheets-Sheet 1

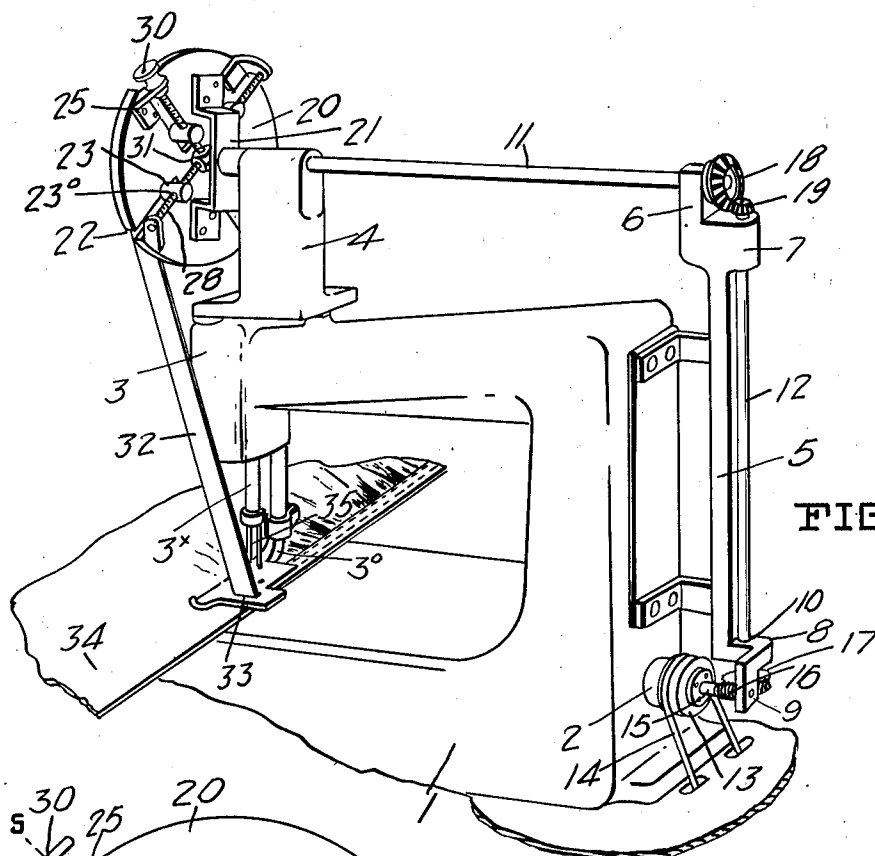


FIG. 1.

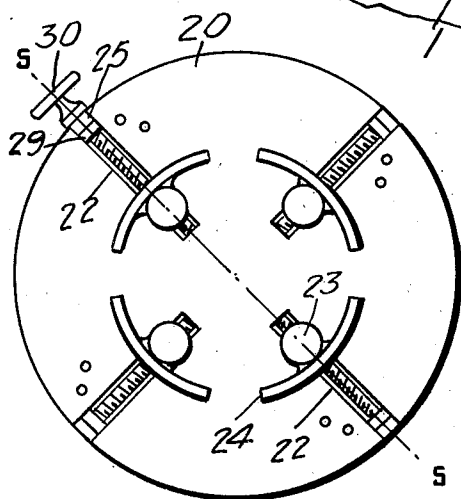


FIG. 3.

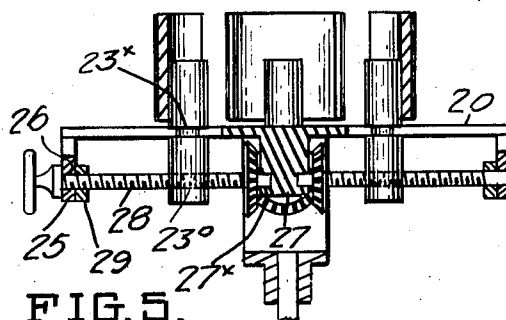


FIG. 5.

INVENTOR
W. H. EVANS.
BY *W. H. Evans*
ATTORNEYS

Dec. 16, 1941.

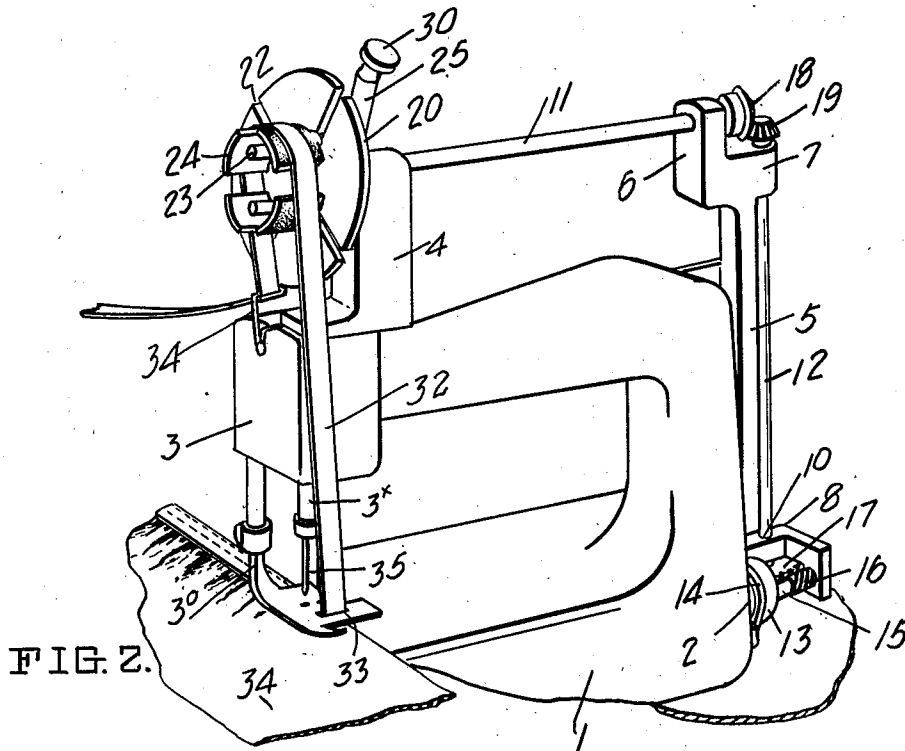
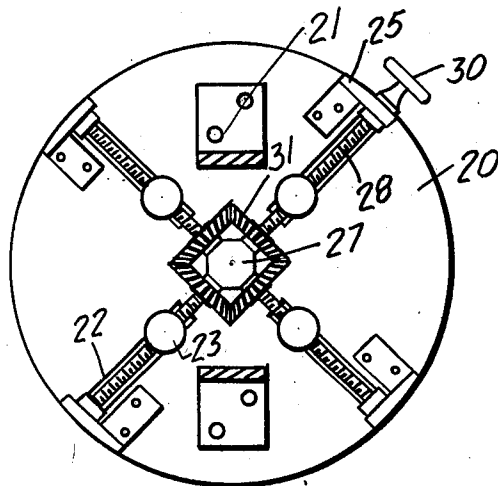
W. H. EVANS

2,266,538

FLAT ELASTIC FEEDING DEVICE FOR ELASTIC ATTACHING SEWING MACHINES

Filed May 1, 1939

2 Sheets-Sheet 2



INVENTOR
W. H. EVANS.
BY *Feltus & Stouffer*
ATTORNEYS

UNITED STATES PATENT OFFICE

2,266,538

FLAT ELASTIC FEEDING DEVICE FOR
ELASTIC ATTACHING SEWING MA-
CHINES

Walter Harry Evans, Waverly, N. Y.

Application May 1, 1939, Serial No. 270,958

3 Claims. (CL 112—2)

This invention relates to a structurally and functionally improved feeding device, and in its more specific aspects aims to provide a unit of this character which may be associated with, or incorporated in, a sewing machine.

Where so employed, it is a primary object of the invention to furnish an apparatus of this character which will be of particular utility in serving to attach an elastic strip to, for example, a body of material, and such attachment establishing a pre-determined relationship of the parts. In other words, a given normal length of strip may be attached to a greater length of material, so that with the elastic strip in normal condition the material will be gathered evenly throughout the entire zone of application of the strip.

A further object of the invention is that of providing a unit of this type, and by means of which an operator may—with minor adjustment—vary the rates of feed of the strip and material, with respect to each other. Accordingly, just the desired degree of gathering may be achieved.

An additional object is that of furnishing an apparatus of this character which will embody relatively few parts, each individually simple and rugged in construction, and these parts operating over long periods of time, with freedom from all difficulties.

With these and other objects in mind, reference is had to the attached sheets of drawings, illustrating one practical embodiment of the invention, and in which:

Fig. 1 is a perspective view of an elastic attaching machine and my feeding device applied thereto;

Fig. 2 is a similar view to Fig. 1 looking towards the opposite side of the device;

Fig. 3 is a front view of the main feed disc;

Fig. 4 is a rear view of Fig. 3; and

Fig. 5 is a sectional view on line 5—5, Fig. 3.

In the drawings like characters of reference indicate corresponding parts in the different figures.

A sewing machine body is indicated by the numeral 1 provided with the usual main drive shaft 2, and the head 3 in which the vertically reciprocating needle bar 3^{*} and presser foot 3^o are held. A bearing member 4 is carried by the head 3 and a bracket member 5 is carried by the body above the drive shaft 2.

The upper end of the member 5 is provided with a horizontal bearing portion 6 and a vertical bearing portion 7.

The lower end of the member 5 is provided with

a bearing portion 8 having horizontal and vertical bearing orifices 9 and 10.

In the bearing member 4 and bearing portion 6 is journaled a shaft 11 and in the bearing portion 7 and orifice 10 of the bearing portion 8 is journaled a vertical shaft 12.

On the driving shaft 2 is secured a drive pulley 13 rotated by the drive belt 14 driven from the main drive of the machine. A stud shaft 15 is secured to and extends axially from the pulley 13 and is provided with a worm 16 rotating with the pulley 13.

To the lower end of the shaft 12 is secured a worm gear 17 with which the worm 16 meshes. The adjacent ends of the shafts 11 and 12 are provided with intermeshing gears 18 and 19. A feed disc 20 is mounted by means of the bracket 21 on the shaft 11, such disc being rotated from the main drive of the machine by means of the previously described worm 16, worm gear 17, shaft 12, gears 19 and 18 and shaft 11 on which the disc 20 is carried.

The disc 20 is provided with radial slots 22 in each of which is slidably mounted a stud 23 to which is secured an arc shaped plate 24. The plates 24 are arranged circularly as clearly shown in Fig. 3 with interspaces between the ends of the plates and form a feeding member for the elastic.

The plates 24 are adjusted radially so as to increase or decrease the spaces intervening between them and therefore vary the circumference of the feeding member to vary the amount of elastic fed during each revolution of the feeding member.

The studs 23 are provided with annular grooves 23^{*} with which the edges of the slots 22 engage so that the studs are slidable longitudinally of the slots. The studs 23 are also provided with diametric internally threaded orifices 23^o.

Brackets 25 are secured to the plate 20 at one side of and at the outer end of each slot 22 and are provided with orifices 26. A bearing boss 27 extends from the centre of the disc 22 having recesses 27^{*}. Externally threaded spindles 28 are mounted in the orifices 26 and recesses 27^{*} and are held from longitudinal movement by the collars 29 secured to the spindles 28 at the inner side of the brackets 25.

A spindle 28 extends through the orifice 23^o of each stud 23 to engage the thread thereof. One of the spindles 28 is provided with an operating knob 30. The inner end of each spindle is provided with a gear 31. Each gear 31 meshes with the corresponding gear of the next adjacent

spindle so that when the knob 30 is turned all the spindles 28 are simultaneously rotated to simultaneously adjust the plates 24 radially to vary the circumference of the feed member and therefore the speed at which the elastic 32 is fed.

The presser foot 30 is provided with a transverse slot 33. A garment 34 is fed beneath the foot 30 and the elastic tape passes through the slot 33 to be stitched to the edge of the garment 34 by the needles 35. The edge of the garment is shirred or gathered automatically by the tension of the elastic. The feed of the elastic is slower than the sewing machine feed and therefore the elastic produces the aforesaid tension causing the garment to gather at its edge as indicated.

By rotating the knob 30 the speed at which the elastic is fed is reduced more or less in relation to the speed of the material forming the garment passing beneath the presser foot.

A further and perhaps the most important advantage is that a garment may be finished to a definite size without any variation. Hitherto garments to which mechanically fed elastic has been attached may vary from nine or ten inches to thirteen or fourteen inches. By my device, when the measuring device is correctly set, it finishes the garment accurately to the required size at every operation without the slightest variation.

The exterior surface of the plates 24 are suitably roughened preferably by securing emery cloth thereto so as to increase the grip on the elastic passing around the feed member.

The elastic also passes through a guide 34 so that it engages a greater proportion of the surface of the feed member.

Thus among others, the several objects of the invention, as specifically aforementioned, are achieved. Obviously, numerous changes in construction might be resorted to without departing from the spirit of the invention, as defined by the claims.

What I claim as my invention is:

1. An apparatus of the character described, including in combination with the presser foot of a sewing machine beneath which the edge of a garment to be sewn is passed, the stitching

mechanism and the main drive shaft of the machine, a vertical shaft, a circular, elastic-feeding device over which elastic is passed in frictional contact therewith, a horizontal shaft carrying the feeding device at the end adjacent the presser foot of the machine, a drive between the opposite end of the horizontal shaft and the adjacent end of the vertical shaft, a further drive between the main drive and vertical shafts, and means for varying the diameter of the circular elastic-feeding device.

2. An elastic attaching apparatus to be associated with a sewing machine having a stitcher bar, presser foot, rotatable driving shaft and means for operatively coupling said foot and bar to operate responsive to rotation of said shaft, said apparatus including a series of arcuate members providing in aggregate a substantially circular-tape-guiding and feeding means to be connected to said shaft and to move in synchronism therewith, said tape being solely in frictional contact with the face of said guiding means and being continuously fed thereby to said presser foot as said shaft rotates and manually operable means extending adjacent the periphery of said guiding and feeding means for simultaneously shifting said arcuate members to provide in aggregate an element of greater and lesser circumference whereby the rate of feed of said tape by said guiding means may be varied without variation in speed of said shaft.

3. An apparatus of the character described, including in combination with the presser foot of a sewing machine beneath which the edge of a garment to be sewn is passed, the stitching mechanism and the main drive shaft of the machine, a vertical shaft, a circular, elastic-feeding device over which elastic is passed in frictional contact therewith, a horizontal shaft carrying the feeding device at the end adjacent the presser foot of the machine, a bevel gear drive between the opposite end of the horizontal shaft and the adjacent end of the vertical shaft, a worm gear drive between the main drive and vertical shaft and manually operable means for varying the diameter of the circular elastic-feeding device.

WALTER HARRY EVANS.