

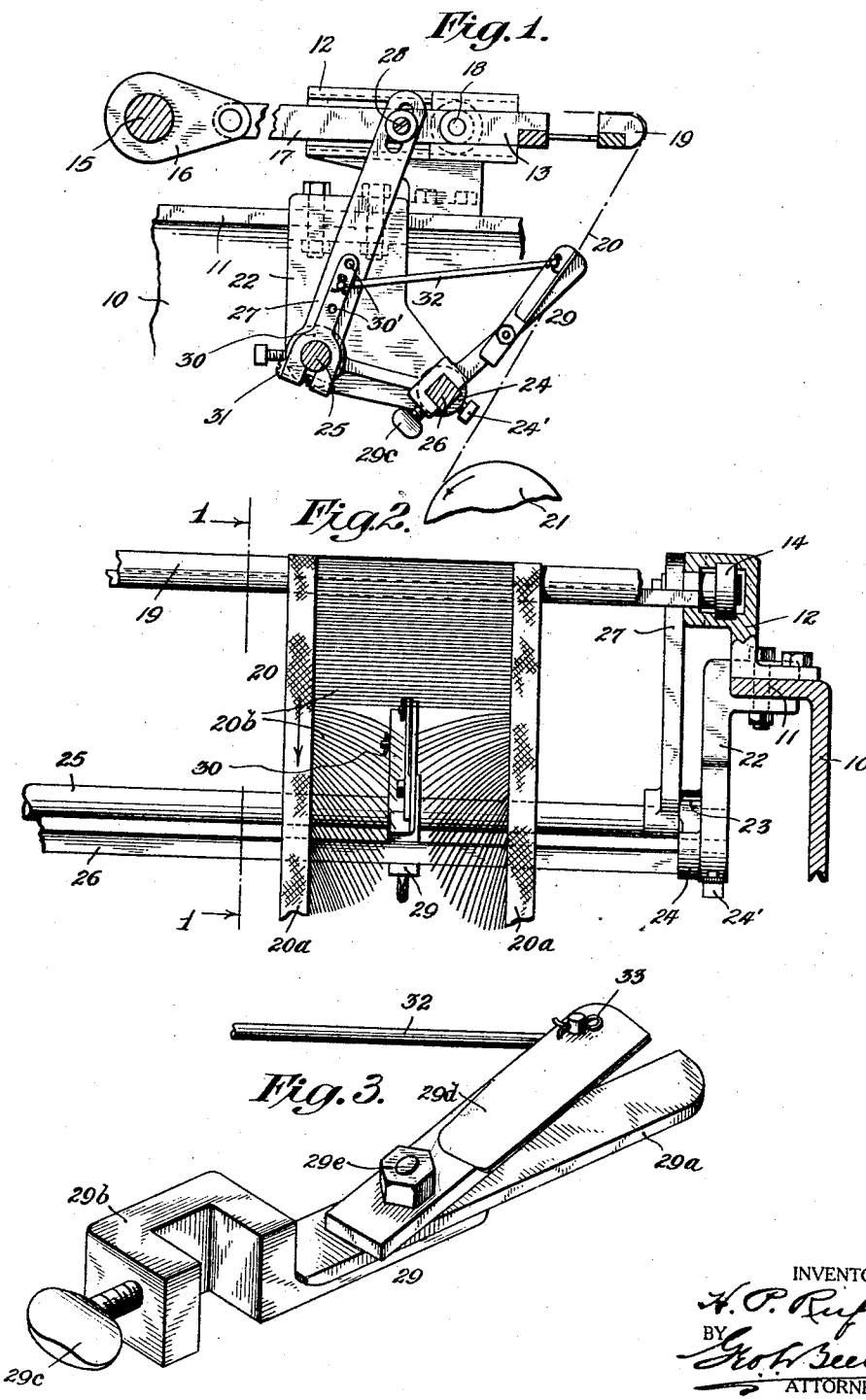
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SHEAR ATTACHMENT FOR FLAT KNITTING MACHINES

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SHEAR ATTACHMENT FOR FLAT-KNITTING MACHINES.

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To all whom it may concern:

Be it known that I, HERMAN P. RUF, a citizen of the United States, residing at New York city, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Shear Attachments for Flat-Knitting Machines, of which the following is a specification:

This invention relates to knitting machines and has particular reference to flat knitting machines, especially in connection with the knitting of fringes.

In the usual practice in the knitting of fringes a fringe unit or what eventually becomes two pieces or strips of fringe is produced, and then as a subsequent operation the unit is split, forming two pieces of fringe. In following this old practice it is the custom to so knit or construct a fringe unit as to embody two spaced strips or selvages across the space between which are extended transversely a series of fringe threads, and during the knitting of the unit in this manner two warp threads are introduced in close parallel relation to each other which serve as a marker for the subsequent splitting or cutting of the fringe, the cutting being effected between the warp threads. Two immediate disadvantages accompany this practice,—first, the warp threads after the cutting operation is done are wasted and consequently entail a considerable loss in material, and secondly, the cutting being performed by an operation subsequent to the knitting operation is troublesome and expensive.

Among the objects of this improvement, therefore, is to effect the cutting of the unit into two independent strips of fringe coincident with the knitting or formation of the unit, thus avoiding the necessity of using and wasting the warp threads above mentioned and also avoiding the necessity for a subsequent cutting operation.

More specifically, my invention has in view the provision of an attachment to be used on a standard knitting machine and adapted to operate for the purpose just indicated during the normal and standard operation of the machine.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of

construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a vertical section on the line 1—1 of Fig. 2 showing the general arrangement or relation of the shear attachment to the frame and other parts of the standard machine.

Fig. 2 is a front elevation partly in section indicating the path of the fringe unit while being knitted and severed.

Fig. 3 is a detail perspective of one of the shear devices.

Referring now more specifically to the drawings I indicate several of the parts of a standard flat knitting machine, for the purpose of indicating the nature and operation of my improvement. These parts of the machine include a frame 10 having a horizontal flange 11, one frame member and flange being located at each end of the machine, and each flange carrying a guide member 12 along which one end of the needle bar 13 is guided for reciprocations in a horizontal plane, preferably by use of anti-friction rollers 14. Journaled at the rear of the guides 12 is a rotary shaft 15 having any suitable crank or cam mechanism 16 for actuating one or more connecting rods 17, through which the needle bar is reciprocated, said connecting rods being pivotally attached at 18 to the needle bar.

19 indicates a guide bar, which together with the needle bar represents diagrammatically the knitting mechanism. The strip of knitted work such as a unit 20 of fringe is adapted to operate in a forward and downward direction where it is rolled upon a roller 21. As intimated above the unit 20 comprises two knitted strips or selvages 20^a spaced laterally from each other and between which are extended a series of fringe threads 20^b. This unit, or as many of them as may be knitted at one time according to the capacity of the machine or the character of the fringe, will be guided toward and rolled around the roller 21 at or near the base of the machine.

In the space below the needle bar or between the needle bar and the roller 21, which space is ordinarily unoccupied, I provide my improved shear attachment. For this purpose I employ a bracket 22 at each end of

the machine, the same being clamped ordinarily to the flanges 11 of the frame. Each bracket extends downward from the flange and is provided with two bearings or bosses 23 and 24 in which respectively is journaled a rock shaft 25 and adjustably fixed a supporting shaft 26. To either end of the rock shaft 25 is fixed an arm 27 having pin and slot connection at 28 with the connecting rod 17 on the adjacent end of the machine whereby during the reciprocations of the connecting rods the rock shaft will be given a corresponding oscillation around a horizontal axis.

The supporting rod or shaft 26 is shown preferably rectangular in cross section for easy application thereto and dependable holding of one or more shear units 29, one of these units being employed for each fringe unit 20. The nature of the bar 26 is such that the units 29 may be adjusted lengthwise thereof at any desired points, one for each unit of fringe, and each shear unit may be adjusted at any desired point with respect to the two selvage portions 20^a of each fringe unit so that if desired one portion of the unit may be cut with longer fringe than the other. Each shear unit 29 comprises a fixed blade 29^a rigidly secured to a clamping arm 29^b embracing the bar 26 and clamped thereto by means of a set screw 29^c, and also a movable blade 29^d pivoted at 29^e and having the usual shear action in connection with the fixed blade. For each shear unit I provide an actuator 30 clamped as by means of a binding screw 31 upon the rock shaft 25 and in the same vertical transverse plane as the shear unit to which it relates. The upwardly projecting arm of the actuator is provided with a series of holes 30' through any selected one of which a link 32 is passed while the other end of the link is passed through the movable blade. These ends are suitably fastened by cotter pins 33. It follows that with the oscillation of the arms 27 and rock shaft 25 the actuator 30 will be oscillated synchronously with the reciprocations of the needle bar, and likewise the movable blade of the shear attachment will be oscillated at the same time. The strip or unit of fringe is guided in a direction of the cutting edge of the fixed blade

29^a and so the fringe threads 20^b will be cut while passing between the guide bar 19 and the roller 21. The precise position of the shear attachment may be adjusted by rotation of the supporting bar 26 in its bosses 24 and after being properly adjusted the same will be fixed by means of set screws 24'. It will thus be seen that after the knitting operation is performed as heretofore, but without the warp threads incorporated therein, it will pass toward the roller 21 but will be cut in its movement so that the two separate pieces of fringe will be formed coincident with the usual operation of the knitting machine and without loss of time or material.

I claim:

1. The combination with a flat knitting machine comprising a reciprocating needle bar and means to reciprocate the needle bar including a rotating shaft, of a shear attachment located beyond the knitting mechanism, and actuating means for the shear attachment operated from and synchronously with the operation of the means for reciprocating the needle bar.

2. The combination with a flat knitting machine comprising a frame, a needle bar reciprocating along said frame, a fixed guide bar adjacent to the needle bar, and means including a rotating shaft for reciprocating the needle bar, of a shear attachment located to act upon the knitted unit as it is guided from the guide bar for separating the knitted unit after it leaves the guide bar, and actuating means for the shear attachment operated from the means for reciprocating the needle bar.

3. Mechanism as set forth in claim 2 in which the shear attachment comprises a fixed blade and a blade movably pivoted thereto.

4. Mechanism as set forth in claim 2 in which the shear attachment comprises a rock shaft, a fixed guide bar parallel thereto, a fixed shear blade connected to the bar aforesaid, a pivoted blade, an actuator adjustably connected to the rock shaft, and a link extending between the actuator and the pivoted blade.

In testimony whereof I affix my signature.
HERMAN P. RUF.