ATTACHMENT FOR LACE OR FABRIC MAKING MACHINES

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This invention relates to attachments for lace or fabric making machines of the character wherein the warp is advanced a predetermined distance on each operation of the windup tackle of the machine to form a pattern composed of lines of threads extending diagonally of the warp threads and in two directions, with the diagonally arranged threads relatively spaced and extending in a straight course. The invention has for its primary object the provision of an attachment which may be readily adapted to a machine of the above stated character which will arrange the diagonal threads in a wavy or serpentine course, thereby presenting in the fabric or lace a new and artistic pattern which will be attractive and pleasing to view.

With these and other objects in view, this invention consists in certain novel features of construction, combination and arrangement of parts to be hereinafter more fully described and claimed.

For a complete understanding of my invention, reference is to be had to the following description and accompanying drawing, in which:

Figure 1 is an end elevation partly in section illustrating an attachment for a lace or fabric making machine and constructed in accordance with my invention.

Figure 2 is a fragmentary front elevation illustrating the attachment.

Figure 3 is a plan view illustrating an arm and a cam roller carried thereby.

Figure 4 is an end view partly in section showing a modified form of my invention.

Figure 5 is a top plan view illustrating a modified form of my invention.

Figure 6 is a plan view illustrating a fabric made by a machine equipped with my invention.

Referring in detail to the drawing, the numeral 1 indicates a pawl and ratchet mechanism which forms part of a conventional type of a windup tackle (not shown) of a bobbinet or similar weaving machine and 2 indicates a pivotally mounted lever for imparting movement to the pawl and ratchet mechanism when rocked on its pivot by a cam 3 secured to a power shaft 4 of the machine. The parts described are common in machines of the character stated and the windup tackle referred to is for the purpose of advancing the warp a predetermined distance on each operation of the windup tackle and which produces a pattern wherein lines of thread run diagonally of the warp threads with the diagonally arranged lines of thread in a straight course. The diagonally arranged threads are grouped to run in two directions with respect to the warp threads. This pattern is in common use and to produce a pattern as shown in Figure 6 my attachment is adapted to the machine. The attachment is shown at its best in Figures 1 and 2 and may be readily adapted to the machine without alterations to the latter.

The attachment consists of a stand 5 mounted in any suitable manner adjacent the power shaft 4 of the bobbinet or weaving machine and has journals 6 which rotatably support a shaft 7. Secured to one end of the shaft is a cam 8 engaged by a roller 9 journaled on an arm 10. The arm 10 is provided with a clamp 11 for detachably securing the arm to the lever 2 adjacent the roller of the arm. A gear 12 is secured to the shaft 7 and secured to the power shaft 4 is a segmental gear 13 which during its rotation becomes meshed and unmeshed with the gear 12 and thereby imparts to the gear 12 and shaft 7 an intermittent rotation. Thus it will be seen that the cam 8 has a step by step movement. This step by step movement is for the purpose of varying the throw of the lever 2 by the cam 3. By varying the throw or distance of travel of the lever 2 during its different rocking movements by the cam 3 will produce a variable take-up to the warp and consequently cause the diagonally arranged threads when woven with the warp threads to assume a wavv or serpentine course which produces a pattern in the lace or fabric as shown in Figure 6. The diagonally arranged threads being drawn closer to the threads adjacent thereto at some places in the cloth and farther apart in other places of the cloth gives or produces the wavy or serpentine effect to the pattern.

A brake drum 14 is secured to the shaft 7 and surrounding said brake drum is a split brake band 15 supported on the stand 5 by a bracket 16. A bolt 17 is carried by the split ends of the band whereby the latter may be adjusted to increase and decrease its frictional engagement with the brake drum. The brake drum and brake band provide a brake for the shaft 7 for the purpose of preventing the shaft from rotating when the segmental gear 13 is disengaged from the gear 12, thereby maintaining proper timing of the cam 8 with respect to the timing of the cam 3.

Instead of employing the segmental gear 13 and the gear 12, a disc 18 may be secured to the shaft 7 and is provided with circularly arranged pins 19 and secured to the power shaft 4 is a collar 20 having a pin 21 which during the rotation...
of the power shaft is adapted to engage with the pins 19 and impart to the shaft 7 a step by step movement. By varying the number of teeth on the segmental gear 13 or the number of pins 21 on the collar the throw of the lever 2 can be varied.

By referring to Figure 1 it will be seen that the cam 8 by its rotation varies the distance of travel of the roller on the lever 2 against the cam 3 which brings about the variable throw to the lever 2 during each of its movements by the cam 3.

An attachment of the character described is simple in construction and may be readily adapted to a weaving machine of any well known character and will effectively change the design or pattern in the fabric made by said machine without interfering with the speed of operation of the machine and consequently will not interfere with the amount of output of fabric from the machine.

Having described the invention, I claim:

1. In combination with a weaving machine having a warp windup tackle for advancing the warp for a predetermined distance during each operation of the tackle and including a pivotally mounted cam actuated device for operating said windup tackle, a shaft, means for intermittently driving said shaft by the weaving machine, a cam secured to said shaft, an arm secured to said arm and riding on the cam for varying the action of said device on the windup tackle to cause a variable advancement of the warp.

3. An attachment for lace making machines comprising a stand, a shaft journaled on said stand, means for connecting said shaft to a weaving machine for the intermittent rotation of the shaft, a cam secured to said shaft, an arm connected to an operating device of a windup tackle of said machine and contacting the cam for varying the action of said device on the windup tackle to cause a variable advancement of the warp.

4. An attachment for lace making machines comprising a stand, a shaft journaled on said stand, means for connecting said shaft to a weaving machine for the intermittent rotation of the shaft, a cam secured to said shaft, an arm connected to an operating device of a windup tackle of said machine and contacting the cam for varying the action of said device on the windup tackle to cause a variable advancement of the warp, and an adjustable brake connected to said shaft.

5. In combination with a lace making machine including a windup tackle and an operating means therefor to advance the warp a predetermined distance during each operation of the tackle for producing a pattern composed of lines of relatively spaced threads extending diagonally of the warp threads, means operated by the machine and connected to said operating means for varying the action thereof on the windup tackle to arrange the diagonal threads in a serpentine course.

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