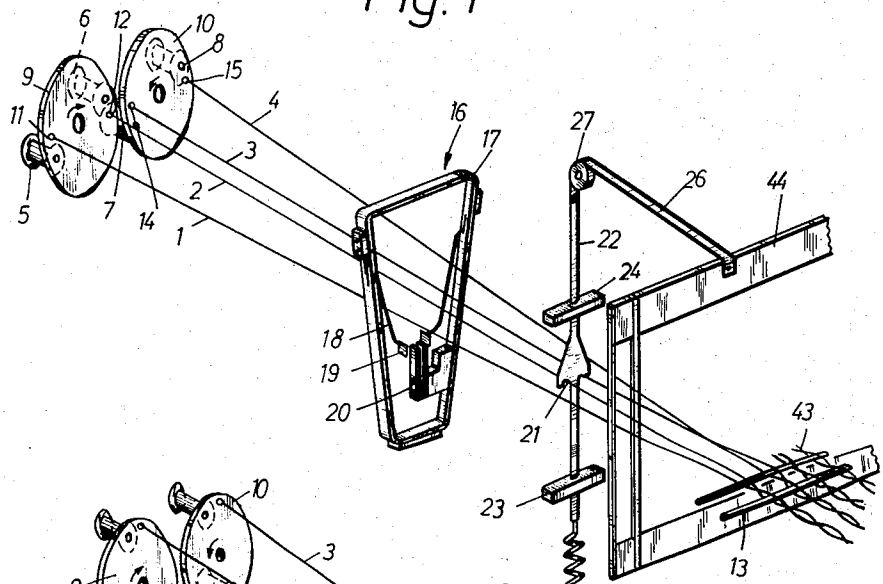
Dec. 26, 1967 H. FLÜHMANN 3,360,011

DEVICE FOR BINDING FABRIC EDGES

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Fig. 1



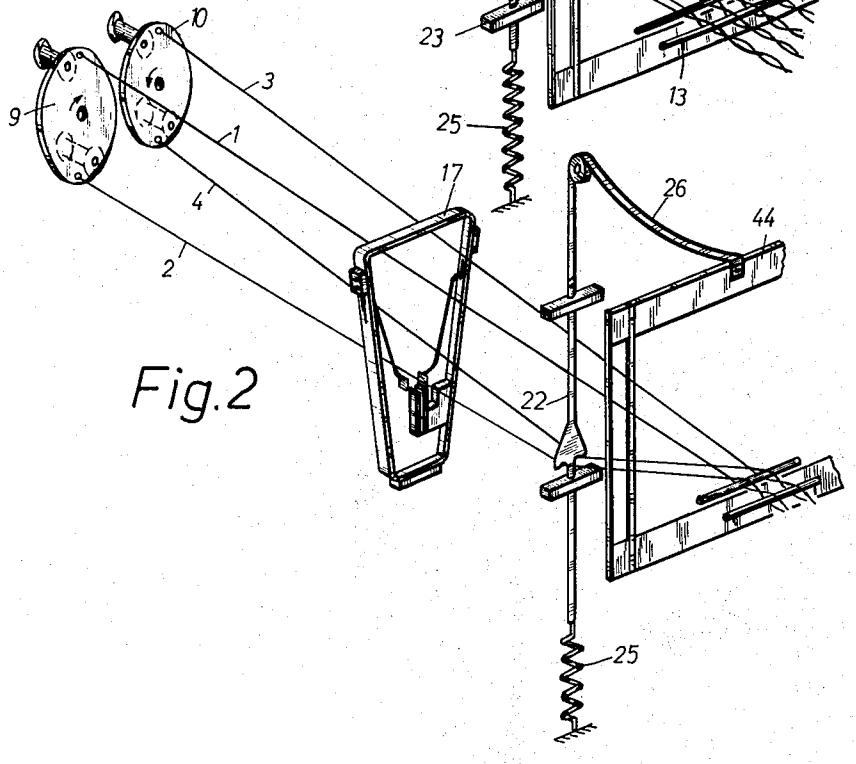


Fig. 2

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Fig. 3

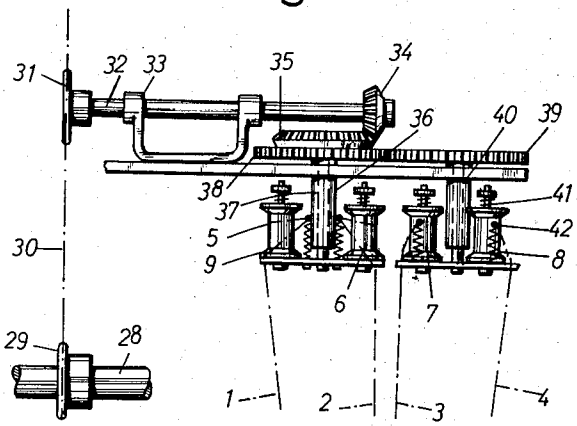


Fig. 4

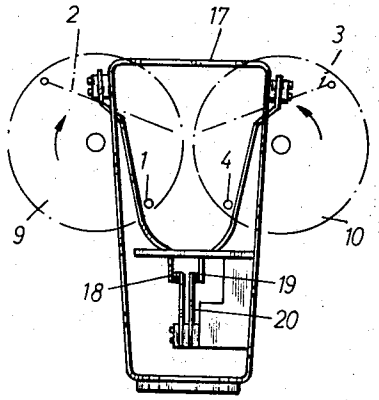
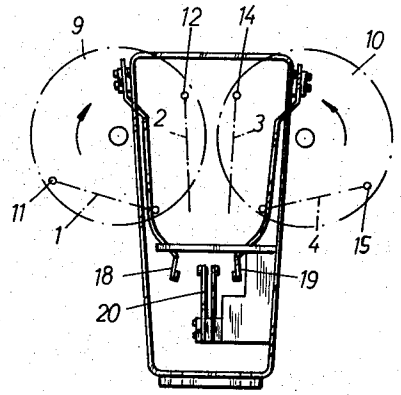


Fig. 5



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3,360,011

DEVICE FOR BINDING FABRIC EDGES

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Claims priority, application Germany, May 22, 1965, M 65,338
6 Claims. (Cl. 139—54)

The present invention concerns a turning device for binding fabric edges in a loom.

Turning devices are known in which the plying or twisting of the turning threads are effected by turning dics. Each of these turning discs carries two thread bobbins the threads of which are passed through eyes offset with regard to each other by 180°. The axes of said are arranged transverse to the warp threads. Thus during a revolution of the said discs, the eyes move back in the direction of the comb reed. In view of this movement, the turning threads each time become loose and are tensioned again. In order to impart a uniform tension on the said threads, means such as tension springs are provided for equalizing the thread tension. At high rotary speeds, it is difficult to provide tension equalizers which are adapted properly to regulate the thread tension at high speeds. It occurs that the thread return pull is not effected properly which in turn brings about faults in the goods and can cause disorders.

It is, therefore, an object of the present invention to provide a turning device for binding the edges of fabrics in a loom, which will overcome the above mentioned drawbacks.

It is another object of this invention to provide a device as set forth in the preceding paragraph, which will assure a constant tension for the turning threads.

These and other objects and advantages of the invention will appear more clearly from the following specification in connection with the accompanying drawings, in which:

FIG. 1 represents a device according to the present invention with open contacts and push hook or lifter.

FIG. 2 shows the device of FIG. 1 with lowered push hook or lifter and closed contacts.

FIG. 3 is a top view of the drive for the turning discs.

FIG. 4 shows a thread regulator device with closed contacts.

FIG. 5 shows the device of FIG. 4 in front view with open contacts.

According to the present invention, it is preferred to arrange the axes of the two turning discs substantially parallel to the warp threads. In view of such an arrangement, the threads passing from the eyes of said discs to the edge of the goods describe cones, the generatrix of which is formed by the turning thread. In this way, it will be assured that the thread length will be the same in each position and also the thread tension will remain constant. Furthermore, in view of this arrangement, the return springs which frequently cause disorders can be omitted.

According to a practical realization of the present invention, the two turning discs may be driven so as to move in counter direction with regard to each other. This has the advantage that the weft threads are firmly tied up so that it is not necessary, in contrast to heretofore known devices, to turn the turning disc forwards and backwards. These heretofore known arrangements can be realized only at relatively high expenses.

In order to be able to hold the shed open longer for the passage of the shuttle, a push hook or lifter is provided for holding down the respective lower threads of the rotating shed. This hook or lifter is for instance, by

means of an elastic band or the like, passed over a reversing roller connected with the sley and is loaded by an elastic member as for instance a tension spring or the like.

Furthermore, according to the present invention, the turning threads are passed through a thread regulator the movable contact members of which are controlled by the threads conveyed into the lower shed. It is by the movement of these threads that the contacts are opened, however, the contacts remain closed when a thread has broken. With a closed circuit, the loom is then stopped in a manner known per se. Such thread controls for the turning threads have heretofore not been suggested.

Referring now to the drawings in detail, FIG. 1 shows the turning threads **1**, **2**, **3**, **4** on the rotatably journalled bobbins **5**, **6**, **7** and **8**. The bobbins **5** and **6** are rotatable on the turning disc **9**, and the bobbins **7** and **8** are rotatably journalled on the turning disc **10**. The axes of discs **9** and **10** extend substantially parallel to the warp threads **43** and the discs rotate in the directions of the arrows shown in FIG. 1. The threads **1** and **2** extend from bobbins **5** and **6** through eyes **11** and **12** to the fell at the edge of the goods **13**. The threads **3** and **4** which pass through eyes **14** and **15** or disc **10** likewise extend to the edge **13** of the goods. Between the discs **9** and **10** and the fell of the goods there is interposed a thread regulator device **16**. The device **16** comprises a frame **17**, two movable contacts **18** and **19** and a fixed contact **20**. In view of the turning of discs **9** and **10**, always two threads pass outwardly and disengage the contacts as shown in FIGS. 1 and 5. The two inner threads **2** and **3** engage the recesses **21** of a push hook or lifter **22** which is guided by guiding means **23** and **24** and is pulled downwardly by a tension spring **25**. An elastic band **26** guided by a roller **27** has one end connected to the hook or lifter **22** while its other end is connected to the sley **44**. In view of the reciprocatory movement of sley **44**, hook or lifter **22** is moved upwardly and downwardly. The turning threads are allowed to be retained in the lower shed position during the initial movement of the sley away from its rearmost position inasmuch as the elastic band **26** has a certain slack as indicated in FIG. 2. FIG. 3 shows the drive for the two discs **9** and **10**. By means of main shaft **28** of the loom, a sprocket wheel **29** with chain **30** and a sprocket wheel **31** are driven and thus also shaft **32**. Shaft **32** is journalled in bearing means **33** and has one end provided with bevel gear **34** which meshes with a bevel gear **35** of the type the size of bevel gear **34**. Bevel gear **34** is journalled in a bearing **36** and drives the rotating disc **9**. Bevel gear **35** with its shaft **37** supports a spur gear **38** which meshes with a spur gear **39** of the same size whereby through the intervention of shaft **40**, the turning disc **10** is rotated in opposite direction to turning disc **9**. FIG. 3 also indicates how the bobbins **5**, **6**, **7** and **8** with the turning threads are journalled. A helical spring **41** acting as brake takes care of the corresponding thread tension inasmuch as it presses the bobbin against disc **9** or disc **10** and thus brings about a certain frictional connection. The thread or threads are passed through a spring eye **42** which brings about a certain thread equalization. It is only then that they pass through eyes **11**, **12**, **14** and **15** to the edge **13** of the goods.

FIG. 4 shows the two threads **2** and **3** in their intermediate position which means that the contacts **18**, **19** and **20** are closed. When the threads **1** and **4** are moved outwardly, they act upon the resilient contact members **18** and **19** and disengage the same from the fixed contact member **20**.

The device according to the present invention furnishes an arrangement which, particularly with smooth warp

material such as silk, rayon or other synthetic fibers forms a fixed edge which makes it possible to finish the resulting goods on tenter frames.

It is, of course, to be understood that the present invention is, by no means, limited to the particular arrangement shown in the drawings, but also comprises any modifications within the scope of the appended claims.

What is claimed is:

1. A device for binding an edge of a fabric being woven in a loom comprising; a pair of rotatable discs each having a pair of bobbins thereon and each disc having thread eyes therein for the threads from the respective said bobbins displaced from each other 180°, said threads leading from said bobbins through said eyes to the loom edge of the fabric being woven, said discs being mounted on axes which are substantially parallel to and coplanar with the warp threads of the fabric, and means for rotating said discs and in timed relation to the operation of the loom continuously and in unison so the threads leading therefrom to the fabric will alternately occupy upper and lower positions and will twist at the edge of the fabric.

2. A device according to claim 1 in which said discs rotate in respectively opposite directions.

3. A device according to claim 1 which includes a vertically reciprocable member moveable in timed relation to the operation of the loom and operable to hold the lower threads leading from said discs in the lower side of the shed of the loom.

4. A device according to claim 3 in which guide means is provided guiding said member in the vertical direction, resilient means connected to said member and biasing it in the downward direction, and actuating means connecting said member with the sley of the loom to cause upward movement of said member when the sley moves toward the fell of the fabric.

5. A device according to claim 4 in which said actuating means comprises a flexible element connected at one end to said member and at the other end to said sley, and a support roller above said member over which said element is entrained.

6. A device according to claim 1 in which a stop motion device in the form of a thread regulator is interposed between said discs and the edge of said fabric, said regulator having a frame through which said threads lead, a pair of normally closed contact means in the frame, and means operated by a respective thread from each disc for opening a pertaining one of said contact means at least during the interval that said respective threads are in the range of their lower position.

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