Patented Dec. 18, 1945 2,391,314

UNITED STATES PATENT OFFICE

2,391,314

TENSION FOR NARROW WARE SHUTTLES

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Application July 15, 1944, Serial No. 545,120

5 Claims. (Cl. 139—136)

This invention relates to tensions for narrow ware shuttles and it is the general object of the invention to provide brake means which will stop rotation of the quill when the shuttle comes to rest at the end of its picking stroke.

In the weaving of certain heavy yarns such as spun glass, etc., it is found that the weight of the quill is such that it tends to continue turning after the shuttle reaches its position of rest in the shuttle block with resultant excess unwinding which interferes with proper tension of the weft in the fabric being woven. It is customary to employ brakes having pads which directly engage the yarn on the quills, but these pad tensions are not sufficient to stop rotation of the quill promptly enough. If the pressure exerted by those pad tensions against the yarn is increased sufficiently to stop quill rotation there is resultant damage to the yarn. It is an important object of my present invention to provide a brake which will engage some part of the quill other than the weft or yarn wound thereon and be so controlled that the brake is off during movement of the shuttle through the warp shed but is applied as the shuttle nears the end of its pick laying movement.

Narrow ware shuttles customarily reciprocate between two shuttle blocks which are secured to the lay of the loom, the shuttle passing from one block through its corresponding warp shed and coming to rest in the other block. It is another object of my present invention to provide a lay carried cam or the like so positioned as to engage a shuttle carried friction brake for the purpose of applying the latter against the quill when the shuttle has completed its movement through the warp shed. The brake supplements the usual pad tension and the two friction devices operating conjointly prevent overrunning of the quill and stop its rotation promptly to avoid excess unwinding of yarn.

The aforesaid cam may conveniently be mounted on a shuttle block and in this connection it is a further object of my invention to provide a shuttle block unit including a brake operator, such as the cam.

With these and other objects in view which will appear as the description proceeds, my invention resides in the combination and arrangement of parts hereinafter described and set forth.

In the accompanying drawing, wherein a convenient embodiment of my invention is set forth,

Fig. 1 is a front elevation of a portion of a narrow ware loom lay showing two shuttle blocks and shuttles made according to my present invention,

Fig. 2 is an enlarged plan view of one of the shuttles looking in the direction of arrow 2, Fig. 1,

Fig. 3 is a front elevation looking in the direction of arrow 3, Fig. 2, parts of the shuttle bow being removed to illustrate the quill and the brake,

Fig. 4 is a vertical transverse section on line 4—4 of Fig. 2,

Fig. 5 is a diagrammatic front elevation showing the relation of the brake and quill and an operating cam for the brake while the shuttle is in transit between the blocks shown in Fig. 1,

Fig. 6 is a view similar to Fig. 5 but shows the conditions existing at the end of the shuttle movement with the brake applied,

Fig. 7 is an enlarged diagrammatic view looking at the end of the quill and showing the brake and cam relationship corresponding to the conditions of Fig. 5, and

Fig. 8 is a view similar to Fig. 7 but showing the conditions corresponding to Fig. 6.

Referring particularly to Fig. 1, I have indicated a loom lay 10 on which are mounted right and left shuttle blocks 11 and 12, respectively, separated by a space 13 in which is located the web 14 being woven and its warp threads W. The blocks 11 and 12 are provided with shuttles S and S', respectively, which are reciprocated back and forth horizontally during loom operation. For the purpose of this reciprocation each shuttle may be provided with the customary rack 15 meshing with pinions 16 rotatable in a carrier 17 secured to the lay or associated shuttle block. A guide rail 18 is secured to each block and has a depending tongue 19 which enters a slot 20 in the top of the shuttle as shown more particularly in Fig. 4.

Each shuttle is provided with a horizontal rod 25 on which is rotatably mounted a quill 26 having a barrel 27 on which the weft or filling F is wound between end flanges 28. The quill rotates on the rod 25 to unwind the yarn F and the latter may be trained through any approved form of tensioning mechanism not specifically shown herein and then led through the delivery eye 30 of the shuttle. A pad tension 31 of customary form may be provided for engagement with the weft F, and the eye 30 is located in the bow 32 of the shuttle.

The matter thus far described of itself forms no part of my present invention and may be made according to usual practice. During loom operation the lay 10 swings back and forth in

section of said brake and move the latter into braking relation with respect to the quill.

3. In brake mechanism for a quill carrying a weft supply between flanges thereof and rotatable on a shuttle as the latter approaches the end of a picking stroke thereof while moving in a shuttle block on the lay of a narrow ware loom, a resilient wire brake having pivotal sections substantially parallel to the axis of the quill inserted into the shuttle to define an axis for the brake and having braking sections for said flanges removed from the axis of the brake by a given distance and having also an operating section farther from said axis of the brake than said given distance, said operating section depending from the shuttle and tending normally to be in non-braking position, and a cam fixed with respect to the law under the shuttle when the latter is in said block, said cam operative to engage the operating section of said brake and lift the braking sections thereof into braking relation with respect to the flanges as the shuttle approaches the end of the picking stroke thereof.

4. In a narrow ware loom shuttle having rotatably mounted therein a quill having flanges, a brake pivoted on said shuttle for movement about an axis substantially parallel to the axis of the quill and having braking sections for engagement with said flanges parallel to and spaced from the brake axis and having also an opearting part depending from the shuttle, and a stop on the shuttle and spaced a greater distance from the brake axis than said braking sections limiting downward movement of the brake relatively to the shuttle.

5. In a narrow ware loom shuttle having rotatably mounted therein a quill having flanges, a resilient wire brake pivotally mounted on the shuttle and having a part to engage a flange of the quill and an operating part depending from the shuttle, and a stop on the shuttle limiting downward movement of the brake relatively to the shuttle.

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Dec. 18, 1945. W. E. HULSBERG 2,391,315

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Filed Oct. 20, 1941

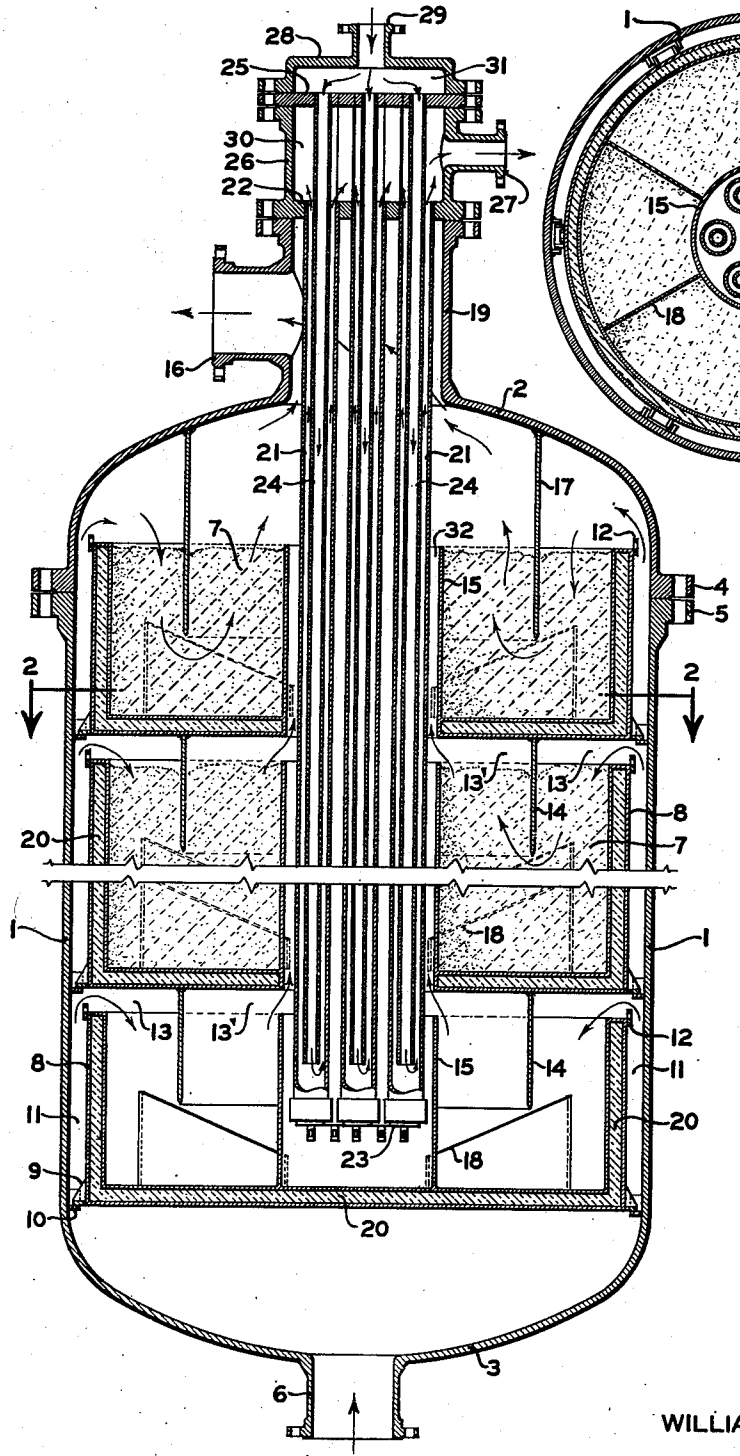

FIG. 1

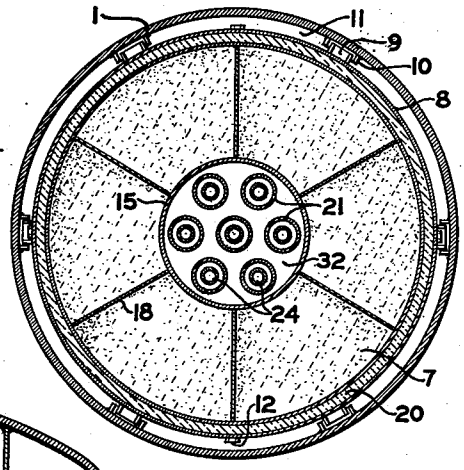

FIG. 2

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