March 17, 1942. G. MARCORA 2,276,408

YARN TENSION DEVICE FOR SHUTTLES

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FIG. 1

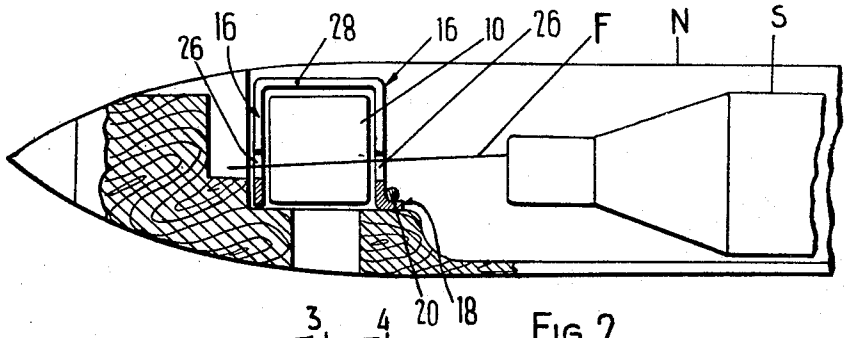


FIG. 2

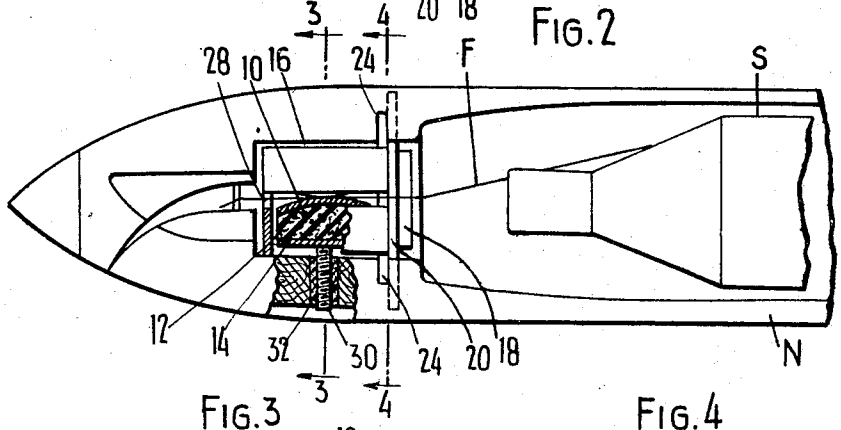


FIG. 3

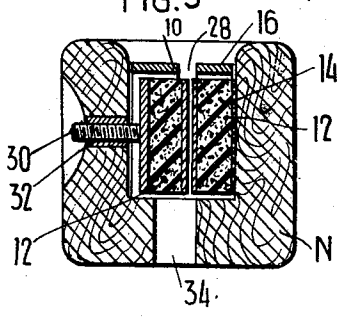
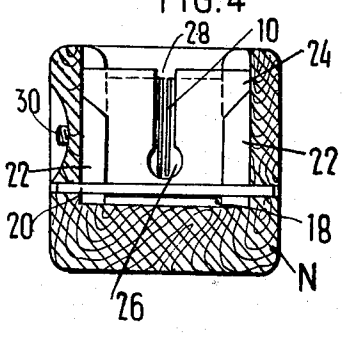


FIG. 4



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YARN TENSION DEVICE FOR SHUTTLES

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FIG. 5

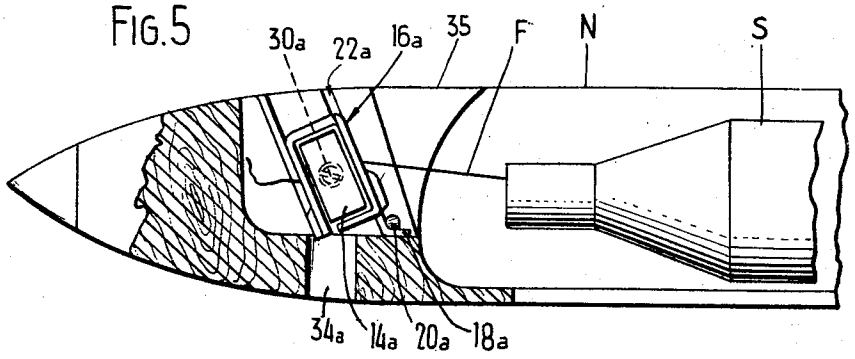


FIG. 6

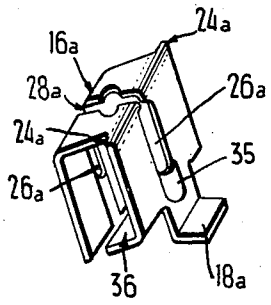


FIG. 7

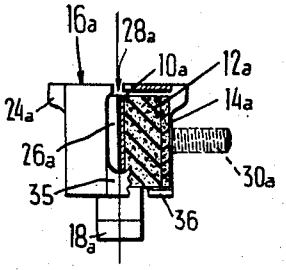


FIG. 8

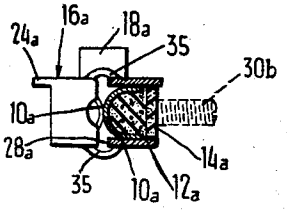


FIG. 9

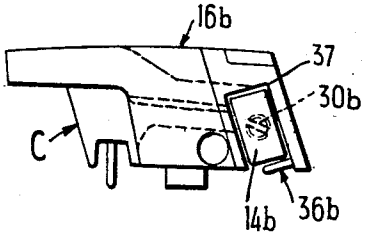
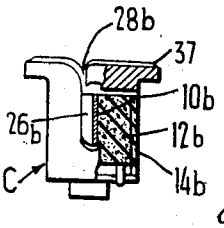


FIG. 10



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UNITED STATES PATENT OFFICE

2,276,408

YARN TENSION DEVICE FOR SHUTTLES

Giovanni Marcora, Tradate, Italy

Application April 15, 1940, Serial No. 329,816
In Italy April 27, 1939

13 Claims. (Cl. 139—218)

The object of the present invention is a yarn-braking device with rubber pads for weaving and spinning machines and the like.

The invention consists in a special convenient solution of the problem of braking the yarn unwinding from weaving shuttles, from bobbin-creels, warp winders, twisters and the like.

In a preferred embodiment there are two rubber-lagged jaws, preferably in foamed-rubber, provided with active surfaces in metal sheet, on whose reciprocal pressure depends the braking action, said action being adjustable.

The invention will be now disclosed with reference to the attached drawing, showing purely an example, limiting in no way the range of the invention, the manner in which the device is applied to a weaving shuttle.

Fig. 1 is a partial, longitudinal section of a shuttle with the incorporated braking device for the weft;

Fig. 2 is a plan view of the same;

Figs. 3 and 4 are sections, respectively along lines 3—3 and 4—4 of Fig. 2;

Fig. 5 is a partially sectioned view of a shuttle with an incorporated alternative convenient embodiment;

Fig. 6 is a perspective view of the strap;

Figs. 7 and 8 are, respectively: a view in front elevation and in plan, with parts removed and cross-sectioned;

Figs. 9 and 10 show the device as applied to the metal part of a shuttle with self-threading eye, with parts removed or cross-sectioned.

The braking device according to the invention, comprises a pair of laminae 10, facing each other: the yarn F unwinding from a spool S or similar (Figs. 1 to 4).

Said laminae are made of a more or less elastic material, hard, as for instance tempered spring steel, properly bent.

Each lamina 10 is fixed by means of a glue or other known adhesives to a rubber lagging 12, preferably of foamed-rubber. On the opposite side of the lamina 10, each pad 12 is covered by a small plate 14 of semi-rigid material, for instance of rubber, leather or the like, so as to obtain an even bearing surface and to favor the adjustment which will be described further on. The pads so composed are retained in the desired position (see Figs. 1 to 4) by a metal strap 16 operating also as a diaphragm for the yarn F and lodged in a cavity of the body of the shuttle N.

Said strap finishes at the bottom with a projection 18 in which engages a pin 20 fixed transversally in the shuttle N so as to prevent the slipping out of said strap.

In order to secure the latter in its position in service; the shuttle has, in close proximity of the cavity wherein is lodged the strap, a number of transverse slots 22, in which engage the wings 24 cut out from said strap 16. This, besides retaining the blocks, protects them from blows and other stresses which might be brought about by the operation of the shuttle; and particularly prevents any tempering with the device by untrained workmen, which might reduce the efficiency of the device.

The strap has also the function of a diaphragm for the yarn F, and to this object, is provided at its ends with holes 26 on a same centre-line, said holes being united together by a longitudinal slot 28 cut along said strap and passing through the centre of holes 26.

In this way the threading of the shuttle is quick and very practical and moreover the conditions for self-threading are provided for with the braking means, should the yarn for any cause get loose.

The braking action brought about by the device specified, is adjustable, by a proper compression of rubber-pad 12. To this object in correspondence to the middle part of the pad 12, is provided at least one screw 30 engaged in the shuttle's body N, through a rubber sleeve 32 applied with glue or other adhesive to the body of the shuttle.

This screw on pressing on the bearing plate 14 compresses more or less the rubber pad 12, thus varying the braking action.

The sleeve 32 wherein screw 30 screws-in, exerts on the latter a braking action, so that said screw cannot get loose under blows or vibrations.

Corresponding to the metal laminae 10 the shuttle N has a hole 34 for discharging the waste fibres forming through the passage of the weft yarn.

The second embodiment illustrated by Figs. 5 and 8, provides for placing the strap 16a within the shuttle N in a position inclined by 35° to 50°, slipping it in the slots 22a, cut into the shuttle, by its wings 24a.

A pin 20a engaging an inclined projection 18a of the strap 16a fixes the latter to the shuttle.

The braking surfaces are formed by arched laminae 10a embracing elastically a couple of rubber pads (foamed rubber) 12a, having at their backs a flexible plate 14a glued to them for the object already stated above. The foamed-rubber pads 12a and the arched laminae 10a are placed within the strap 16a and are retained in it by its walls and by bottom wings 36.

In the middle position the walls of the strap 16a have slot 26a affording a passage for the yarn and on threading-in, the latter enters between the braking surfaces passing through a slot 28a connecting the two slots 26a. The inclined position of the strap 16a facilitates considerably the threading of the yarn.

The strap 16a is obtained conveniently under the die-press which cuts it out from sheet metal, bends it and forms the projections 35 which re-

inforce the part and allow the waste to discharge through hole 34*a* of the shuttle.

When the shuttle is self-threading, the inclined position of the pads with braking surfaces is designed as illustrated in Figs. 9 and 10, namely, an inclined eye 37 is cut in the body C in which eye are placed said pads retained by pegs 36*b* fixed in the back part of body C.

The braking action is adjusted, similarly to what has been shown above, by a screw 30*b* fixed to the body of shuttle N through a rubber sleeve for preventing any loosening of the screw during the operation of the shuttle.

The strength of the shuttle is improved by applying the present device, as it eliminates other cuts in the body of the shuttle which diminishes its strength, thus reducing the number of breakages, particularly in shuttles of the so called "hygienic pattern."

From the above it is apparent that the weft-yarn F threads readily between the metal laminae 10; a slight pull of the yarn is sufficient to get it wedged in the diverging part of the laminae and introduce it between the same. This happens also automatically when the yarn, due to any accidental cause, leaves the seat of its braking.

The device according to the invention, may be applied or incorporated in any pattern of shuttle, or creel, weft winder, and so on after proper adaptations according to the case under consideration.

It should be understood that, in practice, the details of design and construction as also the scope, may vary without thereby exceeding the limits of the invention and therefore the patent's protection.

What is claimed is:

1. A braking device for yarn in weaving and spinning machines or the like, especially for weaving shuttles, comprising two foamed-rubber pads facing each other, with convex active surfaces and curved metal plates covering said pads whereby the yarn can run between the two convexities of the aforesaid surfaces and be braked by the reciprocal pressure of the said plates, said pressure being regulable.

2. A braking device for shuttles, including a strap, and two foamed-rubber pads retained in position by said strap and arranged one against the other, with curved contact surfaces and provided with metal plates and means for adjustably pressing one pad against the other.

3. A braking device according to claim 2, characterized by the fact that the pads are arranged at an inclination to the longitudinal axis of the shuttle so that the line of contact between the two curved surfaces is inclined towards the point of the shuttle.

4. A braking device for shuttles, comprising a metallic shuttle eye, two foamed-rubber pads with curved surfaces covered by metal plates arranged in a hollow of the said shuttle eye, and a means for regulating the reciprocal pressure of the aforesaid pads.

5. A braking device according to claim 4, characterized by the fact that the pads are arranged at an inclination to the longitudinal axis of the shuttle.

6. A braking device as claimed in claim 1, characterized in that said plates are formed of tempered steel and secured to the adjacent faces of the pads by adhesive, and a semi-rigid material covering the opposite faces of said pads.

7. A braking device as claimed in claim 1, characterized by the provision of a metallic strap retaining said pads in position and constituting a diaphragm for the yarn.

8. A braking device as claimed in claim 1, characterized by the provision of a metallic strap retaining said pads in position and constituting a diaphragm for the yarn, and projections on said strap, certain of said projections being secured to the shuttle body and another of said projections being engaged by a pin fastened to the shuttle body.

9. A braking device as claimed in claim 1, characterized by the provision of a metallic strap retaining said pads in position and constituting a diaphragm for the yarn, said strap having openings in the opposed walls thereof and a slot connecting said openings.

10. A braking device as claimed in claim 1, characterized by the provision of means for varying the pressure applied by said pads, said adjusting means including a rubber sleeve fitted in the body of the shuttle, and a screw adjustably fitted in said sleeve and engaging the adjacent pad.

11. A braking device as claimed in claim 1, characterized by the provision of a strap retaining said pads in position and disposed at an inclination of from 35 to 50 degrees within the shuttle body, and bottom projections for retaining the pads.

12. A braking device as claimed in claim 1, characterized by the provision of a strap for retaining the pads in position and reinforcing projections providing for ready discharge of the waste.

13. A braking device as claimed in claim 1, characterized by the provision of a supporting strap for said pads formed by a metallic eye and an inclined slot.

GIOVANNI MARCORA.