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(71) Applicant: **L.G.L. Electronics S.p.A.**
**24024 Gandino (Bergamo) (IT)**

(72) Inventors:
- **Pedrini, Giovanni**
  **24026 Leffe (Prov. of Bergamo) (IT)**
- **Castelli, Rosario**
  **24024 Gandino (Prof. of Bergamo) (IT)**
- **Magoni, Ruggero**
  **24025 Gazzaniga (Prov. of Bergamo) (IT)**

(74) Representative: **Spandonari, Carlo**
**Spandonari & Modiano S.r.l.**
**Corso Duca degli Abruzzi 16**
**10129 Torino (IT)**

## (54) Yarn-braking device for weaving machines

(57) A yarn-braking device for weaving machines comprises a main housing (26) supporting a triad of yarn-guide eyelets (32,34,36) through which passes a weft yarn, and a U-shaped braking member (58) which is fastened to motor means (40) and is arranged astride of the middle eyelet (34). The braking member (58) engages the yarn in its free lengths between the middle eyelet (34) and end eyelets (32,36), thereby causing the yarn to be braked. The end eyelets (32,36) are held by respective axially translatable supports (42,46) which are lockable at predetermined axial positions.

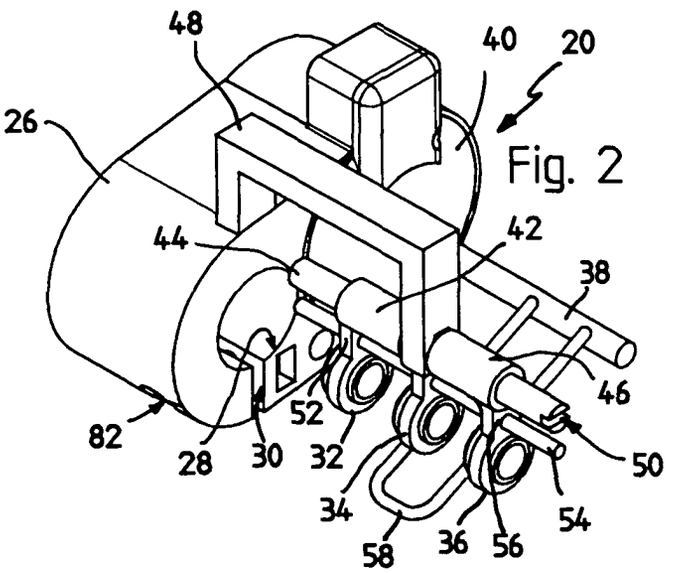


Fig. 2

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## Description

**[0001]** The present invention relates to a yarn-braking device for weaving machines.

**[0002]** A known braking device, as described in the prior Italian Patent of Industrial Invention No. 01303154 of the same applicant, comprises a triad of stationary, coaxial yarn-guide eyelets, which are passed through by the yarn which, in the span between the eyelets, follows a rectilinear path. A rocking lever is fastened to a U-shaped braking member, which is arranged astride of the middle eyelet for engaging the yarn, during braking, on its free lengths between the middle eyelet and the end eyelets. The lever is linked to the rod of a linear motor which, when operated, causes it to rock. The lever, by deviating the yarn from its rectilinear path, causes it to brake due to friction.

**[0003]** Although such known device provides an adequate response in terms of reaction to the rapid variations of mechanical tension of the yarn, however it is unsatisfactory from the point of view of its adaptability to different kinds of yarn. In fact, depending on the degree of'dryness" of the yarn, stronger or weaker braking actions can be tolerated.

**[0004]** Therefore, a main object of the present invention is to provide a yarn-braking device for weaving machines which is adjustable in respect of the kind of yarn, so that stronger or weaker braking actions will be provided depending on the features of the yarn.

**[0005]** Another object of this invention is to provide such device in such a way that it can be easily and quickly adjusted.

**[0006]** A further object of this invention is to provide such device in such a way that it can be manufactured cheaply and easily, as well as by means of known processes and equipment, commonly employed in this field.

**[0007]** The above mentioned objects and advantages, which will better appear below, are achieved by the braking device having the features recited in claim 1, while the dependent claims state other advantageous features.

**[0008]** The invention will now be described in more detail with reference to a preferred, non-exclusive embodiment, shown by way of non limiting example in the attached drawings, wherein:

Fig. 1 is a side view of a weft feeder provided with a braking device according to this invention;

Fig. 2 is a perspective view of the braking device of Fig. 1 during performing, configured for forceful braking actions;

Fig. 3 is an enlarged side view of the braking device of Fig. 1, configured as in Fig. 2;

Fig. 4 is a perspective view of the braking device of Fig. 1 during performing, configured for softer braking actions;

Fig. 5 is an enlarged side view of the braking device of Fig. 1, configured as in Fig. 4.

**[0009]** With reference to Fig. 1, a generic weft feeder 10 comprises a motor housing 12 to which a stationary cylinder 14 is attached. A swivel arm 15, which is operated by a motor housed in motor housing 12, winds a plurality of yarn loops F on cylinder 14, thereby forming a weft reserve.

**[0010]** A braking device 20, shown in more detail in Figs. 2-5, is supported at the end 22 of a stationary arm 16 projecting from motor housing 12 parallelly to the axis of cylinder 14. In order to fasten the breaking device to arm 16, the end 22 of the latter is radially bent towards the axis of cylinder 14, and supports a hollow stud 24 on which a main housing 26 of device 20 is clamped. To this purpose, main housing 26 has a cylindrical cavity 28, whose diameter matches with stud 24, providing a seat for the stud. The wall of cylindrical cavity 28 has a longitudinal opening 30, and braking device 20 is secured on stud 24 by a fastening screw, which is inserted in a tangential hole 82 made on an edge of opening 30 and engages a corresponding threaded hole made on the opposite edge.

**[0011]** Braking device 20 comprises a triad of coaxial yarn-guide eyelets 32, 34, 36, through which passes weft yarn F, and a U-shaped braking member 58 which is radially fastened to the driving shaft 38 of a rotary motor 40, and is arranged astride of middle eyelet 34 for engaging yarn F, during braking, in its free lengths between middle eyelet 34 and end eyelets 32, 36, thereby causing the yarn to be braked by friction.

**[0012]** According to this invention, a pair of threaded bushes 42, 46 supporting respective end eyelets 32, 36, are supported at the opposite counter-threaded ends of a spindle 44 which is pivotally supported, about its middle section, on a bracket 48 attached to main housing 26. Middle eyelet 34 is fastened to bracket 48. A pair of retaining rings 60 are mounted on spindle 44 at the opposite sides of bracket 48 for axially locking the spindle. The ends of a rod 54, which is parallel to spindle 44 and integral with middle eyelet 34, engage respective holes made on the necks 52, 56 of end eyelets 32, 36, which necks connect the eyelets to respective bushes 42, 46. Rod 54 is adapted to guide the translation, while preventing the rotation, of end eyelets 32, 36. The head of spindle 44 has a groove 50 which is engageable, for adjusting the position of the eyelets, by a screwdriver (not shown).

**[0013]** By operating spindle 44, the axial distance between the eyelets can be changed, so that the deviation provided by the U-shaped braking member 58, and consequently the entity of the braking action, will be adjusted.

**[0014]** It has been found in practice that the invention solves the stated object, by providing a weft-yarn break-

ing device which can be configured for forceful or soft braking actions, depending on the kind of yarn. Moreover, such braking device is easy and quick to adjust, by means of a common screwdriver or another suitable tool, as it will be obvious to the person skilled in the art.

**[0015]** The embodiment described herein can be modified in different ways within the scope of the present invention, and all the details can be replaced with other technically equivalent elements. For example, spindle 44 could be provided with a knob for easier adjustment of the device. Moreover, as will be obvious to the person skilled in the art, rod 54 can be replaced with other retaining guides adapted to prevent the rotation of the end eyelets around the axis of the spindle, with respect to the main housing. Rotary motor 40 which operates braking member 58 could be replaced with an assembly provided with a linear motor and linkages of the kind described in the above mentioned prior patent.

**[0016]** In practice, the materials used, provided that they are compatible with the specific use, as well as the dimensions and the shapes may be different, depending on the requirements.

## Claims

1. A yarn-braking device for weaving machines, comprising a main housing (26) supporting a triad of yarn-guide eyelets (32, 34, 36), through which passes a weft yarn (F), and a U-shaped braking member (58) which is fastened to motor means (40) and is arranged astride of the middle eyelet (34) for engaging the yarn (F), during braking, in its free lengths between the middle eyelet (34) and end eyelets (32, 36), thereby causing the yarn (F) to be braked by friction, **characterized in that** at least one of the end eyelets (32, 36) is held by an axially translatable support which is lockable at a predetermined axial position.

2. The device of claim 1, **characterized in that** both said end eyelets (32, 36) are held by respective axially translatable supports.

3. The device of claim 2, **characterized in that** said axially translatable supports consist of a pair of threaded bushes (42, 46) engaging the opposite counter-threaded ends of a spindle (44) which is pivotally supported on said main housing (26).

4. The device of anyone of claims above, **characterized in that** it comprises retaining guides (54) adapted to guide the translation of the end eyelets (32, 36) about the main housing (26), while preventing their rotation.

5. The device of claim 4, **characterized in that** said retaining guides comprise a rod (54), which is parallel to the spindle (44) and integral with the middle eyelet (34), and whose ends slidably engage respective holes made on the end eyelets (32, 36).

6. The device of anyone of claims above, **characterized in that** said spindle (44) is provided of engaging means on its head, which are engageable by a tool for rotating the spindle (44).

7. The device of claim 6, **characterized in that** said engaging means consist of a groove (50) which is engageable by a screwdriver.

8. The device of anyone of claims above, **characterized in that** said motor means are a rotary motor (40) attached to main housing (26), said braking member (58) being radially fastened to the motor shaft (38) of said rotary motor.

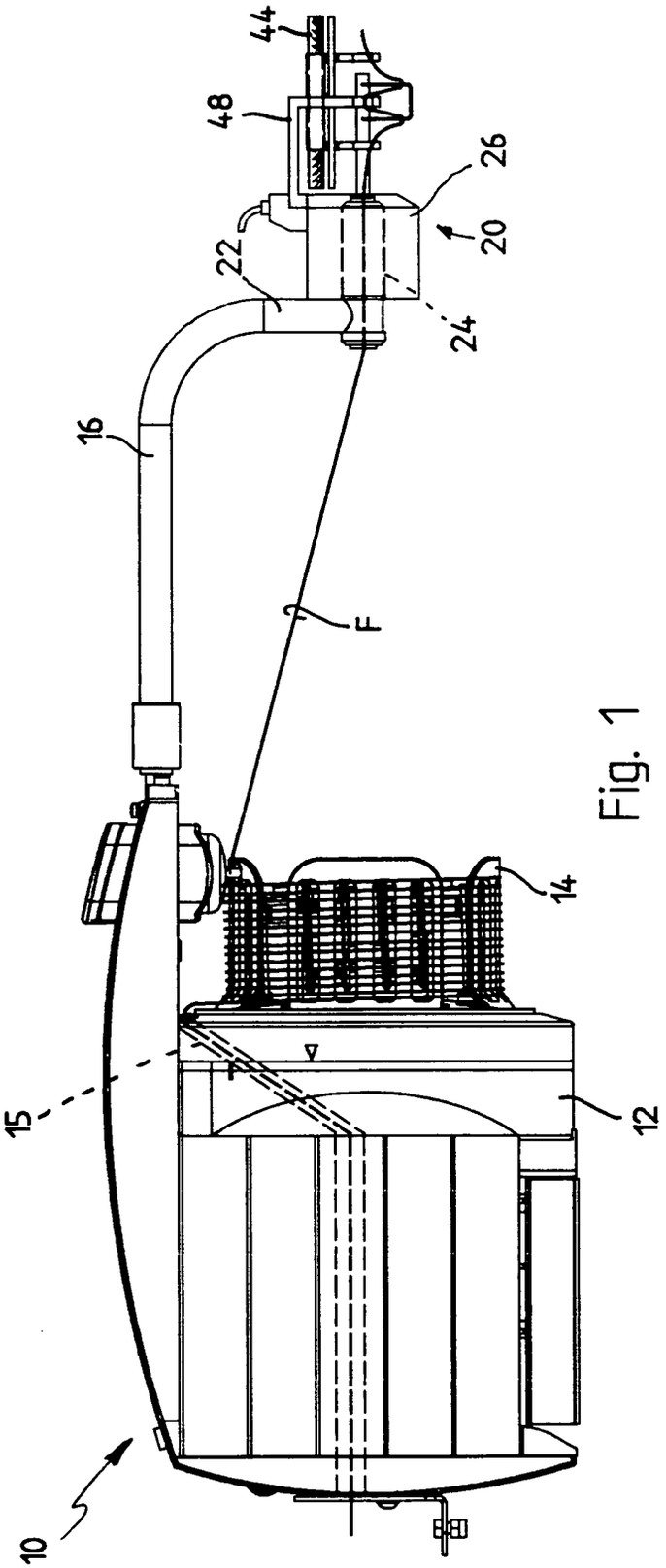


Fig. 1

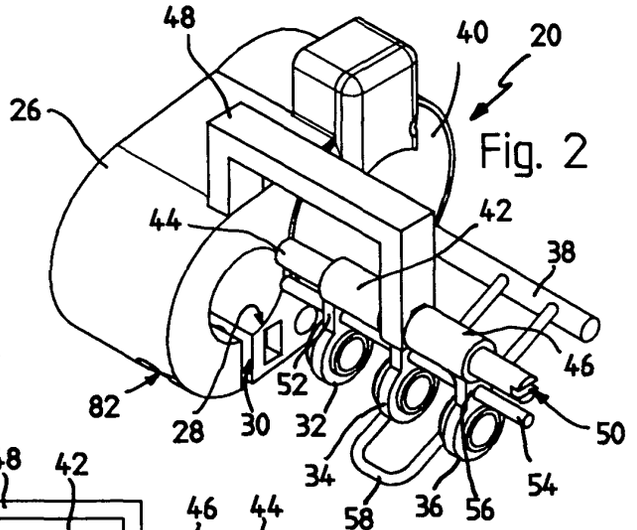


Fig. 2

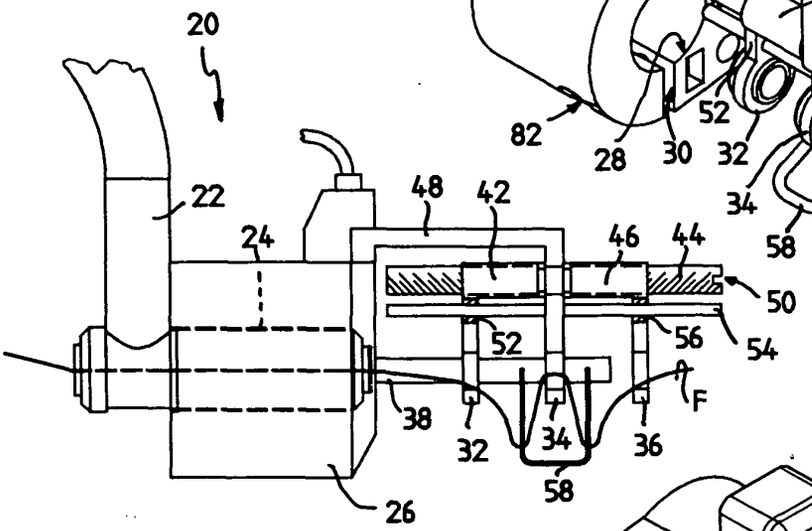


Fig. 3

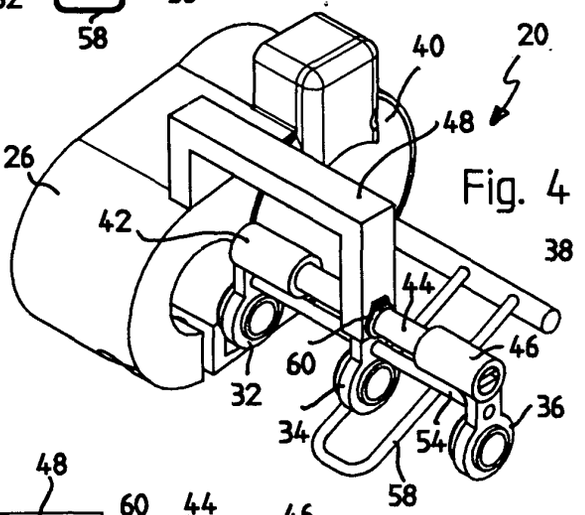


Fig. 4

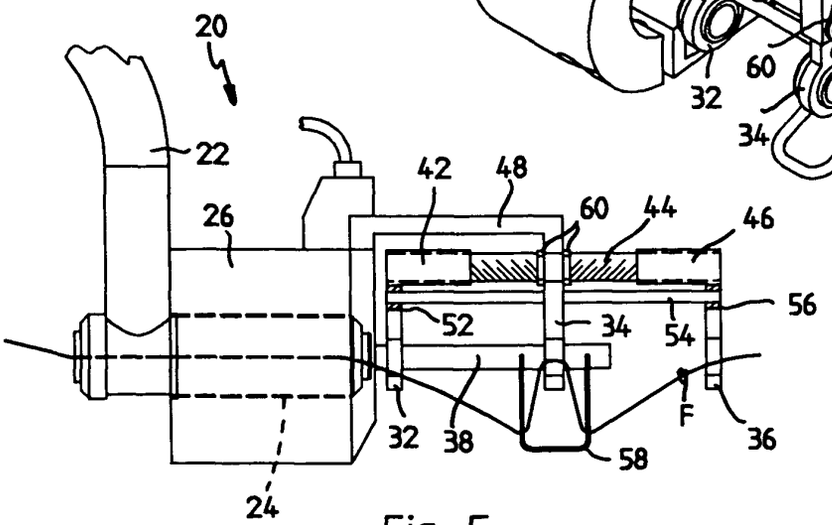


Fig. 5