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W. REINERS ET AL
YARN GUIDE
Filed March 14, 1941

Serial No.
383,286
3 Sheets-Sheet 1

Fig. 1

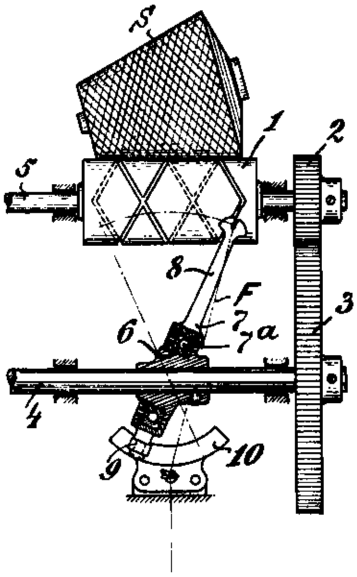

Fig. 2

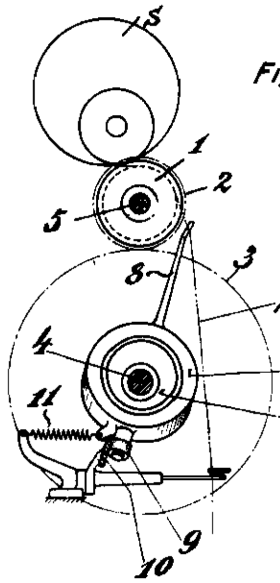

Fig. 3

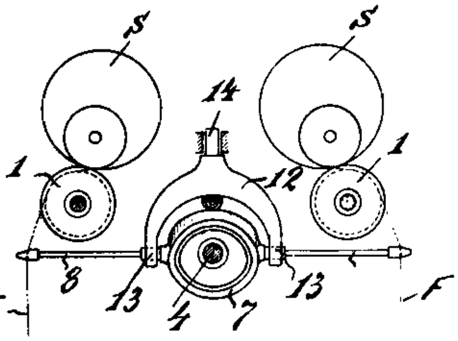

Fig. 4

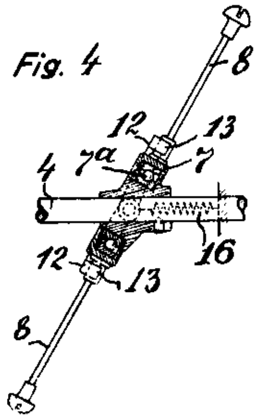

Fig. 5

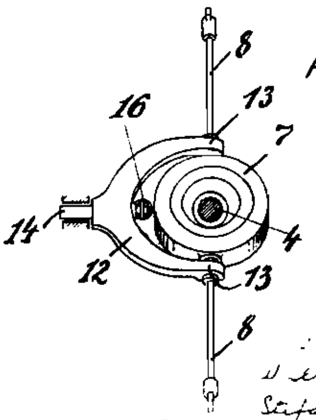

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Fig. 6.

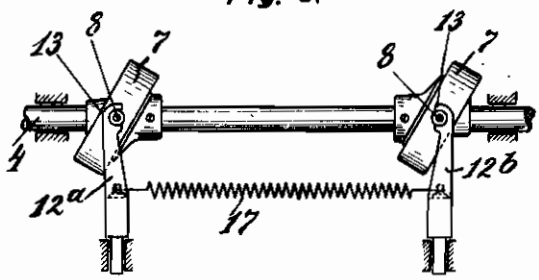


Fig. 7.

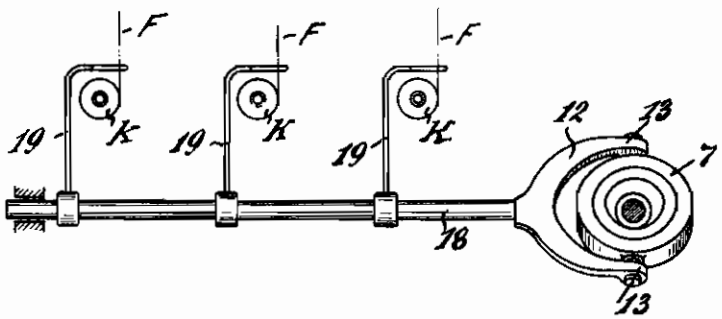
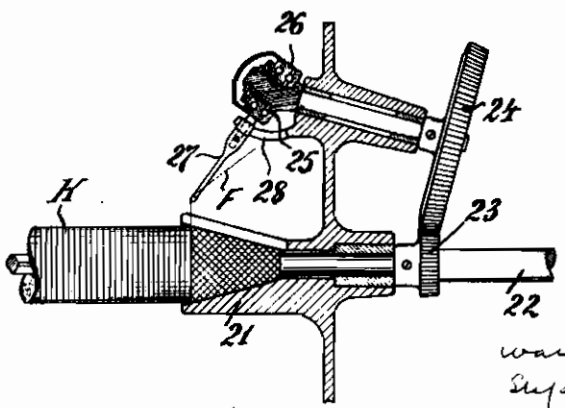


Fig. 8.



Inventors:
Walter Reiners
Stefan Kirst
by Irving Kirsch
Attorney

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Fig. 9.

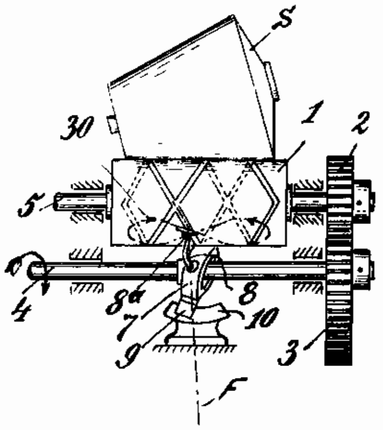


Fig. 10

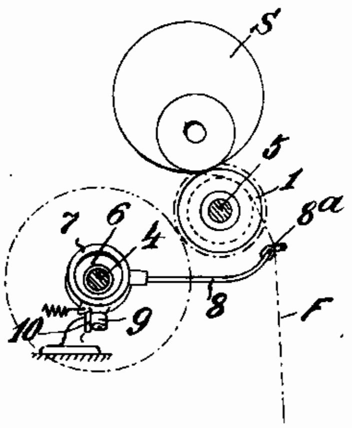
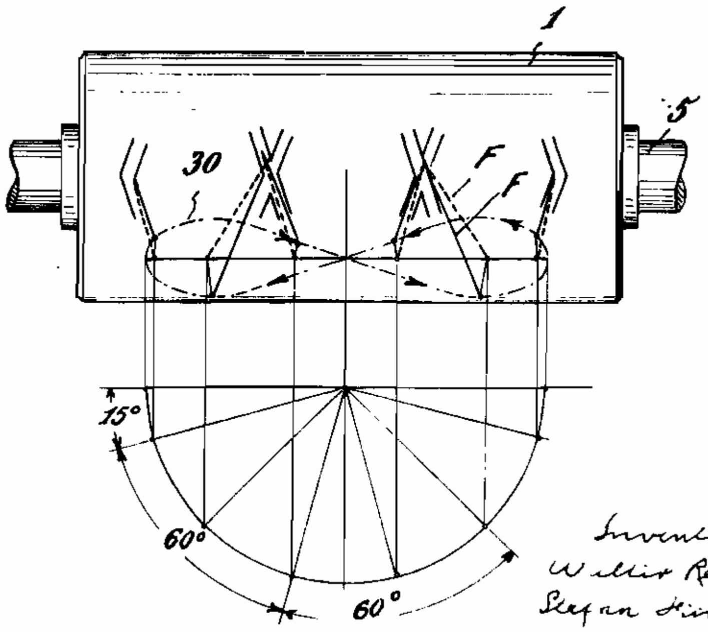


Fig. 11.



Inventors.
Willi Reiners
Stefan Hirst
by [illegible]
Attorneys

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ALIEN PROPERTY CUSTODIAN

YARN GUIDE

Walter Reiners and Stefan Fürst, Munchen-Gladbach, Germany; vested in the Alien Property Custodian

Application filed March 14, 1941

The invention relates to a yarn guide which is fixed on a ring carrying out a drunken movement and ensured against individual rotation. To the yarn guide, oscillation is thus imparted owing to the drunken movement. In the known arrangements, the ring, which is mostly disc-shaped, is mounted on a separate shaft which extends coaxially with the shaft carrying the oblique disc from which the drunken or oscillating movement is derived. Occasionally it is found also that the two shafts are arranged mutually displaced in order that the stroke can be adjusted. But in any case a number of articulations, connecting pieces and the like are required to enable the power transmission.

Compared herewith, the ring which carries the yarn guide or the yarn guides is mounted, according to the invention, on a circular disc or in a circular groove which in turn is obliquely mounted in the driving shaft. In this arrangement, not only the second shaft is omitted but also any additional element for transmitting the oscillating movement upon the yarn guide. Consequently any desired speed at absolutely silent movement can be imparted to the yarn guide. In the construction according to the invention it is further possible for the first time, to impart an oscillating movement by means of oblique discs to any number of yarn guides, especially to the known auxiliary yarn guides in winding machines with driving drums having crossed grooves.

The mounting of the ring according to the invention is known as such. But in the known cases of employment it serves for quite other purposes.

Over the ring an oscillating bow grips, according to the invention, cardan-like, which means cross-hinge-like, the oscillating axis of this bow extending through the centre of disc or groove, whereby an especially simple securing against turning is attained, especially also when two yarn guides are arranged opposite the one to the other as known. As the stressing of the ball bearings owing to the drunken movement as such would take place in two axial directions, the invention provides further an one-sided preliminary tensioning of the bearing, so that the bearing is loaded only in one axial direction and thus any leakage in the bearing is avoided.

The arrangement of the oscillating bow enables besides also the actuation of several yarn guides from one and the same oblique disc in such a manner that the yarn guides are arranged on the correspondingly lengthened oscillating shaft of the bow.

According to the invention, yarn guide, axis of the driving shaft and of the guide roller may be situated in the same plane or in different planes which intersect in the axis of the driving shaft. In the latter instance the yarn guide carries out a 8-shaped movement, whereby, when the yarn guide is used as auxiliary yarn guide, the moving of the yarn on the crossing points of the grooves is favored.

Several embodiments of the invention are illustrated by way of example in the accompanying drawing, in which:

Figs. 1 and 2 show in top plan view and side elevation the arrangement of a yarn guide on a ring gripping over the oblique disc.

Figs. 3 to 5 different arrangements of the guiding of the yarn guides by means of a ring gripping over the oblique disc and mounted in an oscillating bow, the oscillation axis of which extending through the centre of the oblique disc,

Fig. 6 shows the loading of two oscillating bows by one and the same spring,

Fig. 7 the arrangement of several yarn guides on the shaft of an oscillating bow,

Fig. 8 an other mounting of the ring on the oblique disc,

Fig. 9 in front elevation an other form of construction,

Fig. 10 is a side elevation of Fig. 9, and

Fig. 11 shows in elevation on larger scale the grooved drum.

As shown in Figs. 1 to 6, the yarn guide serves as auxiliary yarn guide in quick traverse winding frames in which the yarn laying is effected by means of the known driving drum having crossing grooves, whereas the embodiments illustrated in Figs. 7 and 8 explain the employment of the yarn guide on cop winding machines.

The cross-wound bobbin S is driven by means of the grooved drum 1 through the intermediary of the toothed wheels 2, 3 from the shaft 4, which shaft serves at the same time for driving the yarn guide or yarn guides. The shaft 4, the shaft 5 for the grooved drum, or both drums may be common for several winding points.

The hub of the oblique disc 6 is keyed on shaft 4, a ring 7 bearing, with intersection of a ball bearing 7a, on said disc, the yarn guide 8 and, in the extension of its axis passing through the centre of disc 6, a guide roller 9 are mounted. The roller 9 is pressed by a spring 11 against a guide piece 10, said spring preventing further the ring 7 from turning in the direction of rotation of the oblique disc 6. The laying of the yarn F by means of the yarn guide 8 and grooved

drum 1 is effected in a generally known manner.

In the embodiment shown in Figs. 3 to 6, open bearing eyes 13 of an oscillatable bow 12 engage over the yarn guides 8 extending from opposite sides of the ring 7, the pivot point 14 of said oscillatable bow being journalled perpendicularly to the shaft 4 and so that its axis extends through the centre of disc 7. A spring 16 exerts a pull upon the oscillatable bow 12 and therewith upon the ring 7 or the ball bearing 7a carrying the yarn guides, so that a one-sided preliminary tension is produced. Fig. 3 shows how the transmission of the drunken movement known as such can be utilized for the simultaneous actuating of two yarn guides which cooperate with grooved drums mounted on opposite sides.

The preliminary loading of the oscillatable bows 12 or of the ball bearing 7a can be simplified, as illustrated in Fig. 6, in that every two oscillatable bows 12a and 12b are coupled by the same spring. This is possible without any difficulty if the bows with their open bearing eyes directed the one towards the other or the rings 7 are pressed now from the right and then from the left over the oblique disc 6, as in this instance the preloaded axial forces balance the one the other.

The derivation of the oscillating movement of any number of yarn guides from one and the same oblique disc is illustrated in Fig. 7. The pivot pin 14 of the oscillating bow 12 is, with this object in view, replaced by a shaft 18 of corresponding length on which the yarn guides 18 are fixed. These yarn guides serve for building up cops K which according to the progressing building up are axially pushed away in usual manner by the yarn guides. This arrangement may be applied in a similar manner also for quick traverse winding frames, that is in such machines in which the traverse winding spindles are mounted at right angles to the longitudinal axis of the machine and parallel the one at the side of the other. It is then immaterial whether the corresponding cross-wound bobbins are driven by circumferential friction, as shown in Figs. 1 and 2, or by direct spindle drive.

Another mounting of the yarn guides than in the above described embodiments is illustrated in Fig. 8 for a tubular cop winding machine. From the winding spindle 22 the oblique disc 25 is driven through the intermediary of spur wheels 23, 24, and the ring 26 carrying the yarn guide 27 is clamped between ball bearings, said ring, similar as in the embodiment illustrated in Figs. 1 and 2, sliding along a guide 28 and being thereby secured against turning. The yarn guide 27 moves over the slit of the pointed funnel 21 also in a generally known manner.

The embodiment shown in Figs. 9 and 10 corresponds substantially to that shown in Fig. 1 and 2, with the exception however that the shaft 4 is situated below shaft 5 but displaced in lateral direction, and the yarn guide 8 is not located in the plane determined by shaft 4 and roller 8 but laterally adjacent the ring 7 in a plane which intersects in the axis of shaft 4 with the plane determined by shaft 4 and roller 8. The eye 8a of the yarn guide 8 is in this embodiment bent upwards in the direction to the drum 1. In this manner it is attained that the eye 8a moves along an 8-shaped curve 30, as shown in Figs. 9 and 11, the accuracy of the yarn guiding being increased thereby particularly at the passing over the crossing points of the grooves. In Fig. 11 the yarn positions due to the yarn guide 8 at different points of intersection of the grooved drum are shown so that the dash lines indicate the position of the yarn F without utilisation of the additional movement 30 and the full lines that position into which the yarn is brought by the yarn guide 8 when the same carries out the 8-shaped additional movement, which shows that the yarn securely passes the point of intersection, so that it is possible to operate at higher speed without the danger of a wrong moving of the yarn. The ratio of transmission between yarn guide 8 and grooved drum 1 is 1:3; at 60° rotation of the yarn guide 6, the grooved drum 1 therefore carries out a rotation of 180°, which means the way up to the next following crossing. The left hand and right hand extreme position has been reached by the yarn guide by 15° sooner than the yarn in the grooved drum.

WALTER REINERS.
STEFAN FÜRST.