Dec. 18, 1951 A. F. PIEPER 2,579,011

STRAND GUIDING MEANS FOR WINDING MACHINERY

Filed Dec. 8, 1950

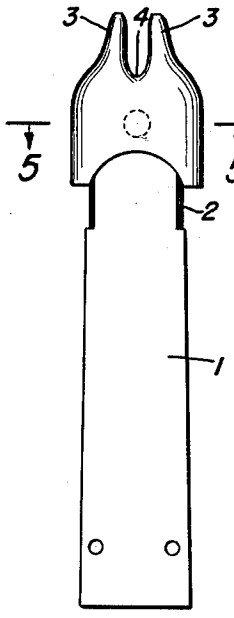


FIG. 1.

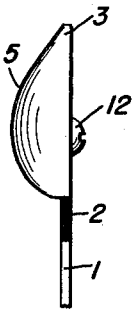


FIG. 2.

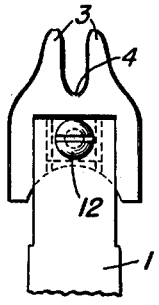


FIG. 4.

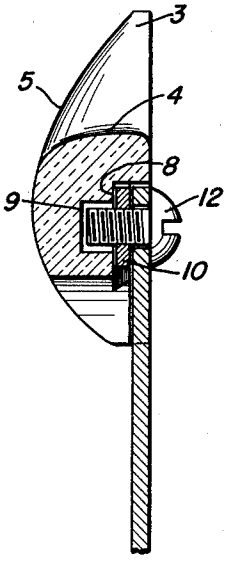


FIG. 3.

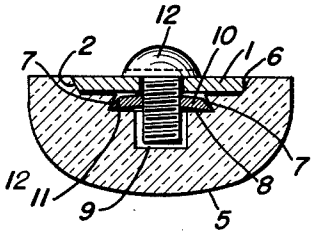


FIG. 5.

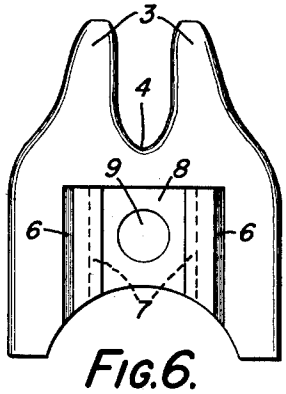


FIG. 6.

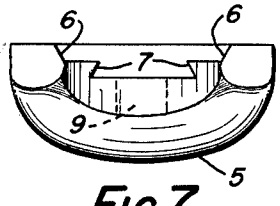


FIG. 7.

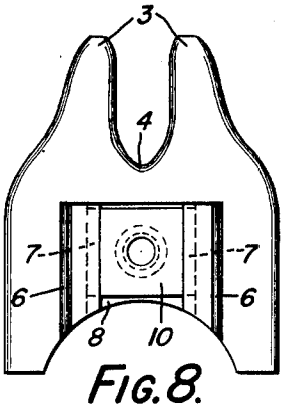


FIG. 8.

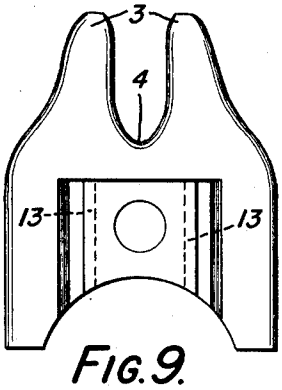


FIG. 9.

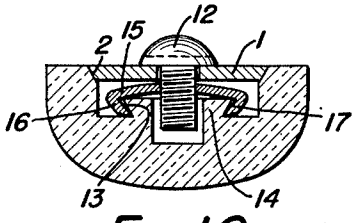


FIG. 10.

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STRAND GUIDING MEANS FOR WINDING MACHINERY

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8 Claims. (Cl. 242—157)

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This invention relates to strand guiding means for winding machinery, with particular reference to the type of construction that includes a strand guide reciprocable endwise of a cone, cylinder or other support on to which the strand or cord is wound and over which it is guided during the winding operation, and it has for its purpose to afford a guide that can be economically manufactured and which has a longer life and is more efficient than devices heretofore used for the purpose.

Strand guiding heads have generally been made from steel or metal alloys which are open to the objection that after the head is used for a length of time, the cord which travels over the head in contact therewith eventually forms a groove in the head, and it is one of the purposes of the invention to construct the head of such hard durable material as to preclude the possibility of a continuously fed strand in contact with the head cutting a groove into its surface.

In the case of guiding heads made from metal, the head has been generally attached to its supporting bar through a fastening screw extending through the bar and into a tapped opening in the head, which opening extends entirely through the body of the head and to the surface against which the cord or strand engages, resulting in somewhat fraying or wearing the strand as it travels over the surface of the head surrounding the opening, and it is an additional purpose of the invention to eliminate such opening in the surface of the guiding head against which the strand engages and to fasten the head to its supporting bar in a manner that does not require a tapped opening extending through the body of the head.

A more particular object of the invention is to afford a construction that enables producing a guiding head from ceramic material or other very hard substance which is not grooved by continuous travel of a cord or strand in contact therewith, and which does not have an opening extending therethrough to the strand engaging surface.

Still an additional purpose of the invention is to afford means for securing a guiding head of ceramic or other hard material to a supporting bar by interlocking instrumentalities that avoids tapping a hole into the ceramic material, and which secures the ceramic head to its supporting bar tightly and without likelihood of accidental displacement of the head from the bar.

A further object of the invention is to afford fastening means between the supporting bar and

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the guiding head including a nut that interlockingly engages the ceramic head by an endwise sliding movement, the nut being drawn securely into tight engagement with the ceramic head by a screw which extends through the supporting bar, and which when in operative position engages the guiding head to prevent endwise movement of the head in relation to the nut and supporting bar, so that in the event of any slight loosening of the head on the supporting bar, these parts are not inoperatively separated until the fastening screw has been so far removed from the nut as to permit its complete disengagement from the head.

Still an additional purpose of the invention is to afford a structure in which a fastening nut is so constructed and arranged that it can be flexed slightly as it is drawn into engagement with the ceramic head so as to insure tight engagement therewith, while its contact with the head is such as to avoid breaking or fracturing of the interlocking portions of the ceramic material that engage the nut.

To these and other ends, the invention consists in the construction and arrangement of parts that will appear clearly from the following description when read in conjunction with the accompanying drawings, the novel features being pointed out in the claims following the specification.

In the drawings:

Fig. 1 is a plan view of a strand guiding head constructed in accordance with a preferred embodiment of the invention and showing it attached to its supporting bar;

Fig. 2 is a view in side elevation of the same, partially broken away;

Fig. 3 is an enlarged view similar to Fig. 2, with the fastening means and surrounding portion of the head appearing in central section;

Fig. 4 is a rear elevation, partially broken away;

Fig. 5 is an enlarged transverse sectional view on line 5—5 of Fig. 1;

Fig. 6 is an enlarged rear elevation of the head removed from the supporting bar;

Fig. 7 is an enlarged end elevation of the head removed from the supporting bar;

Fig. 8 is an enlarged view similar to Fig. 6, showing the fastening nut in the position it assumes when the head is attached to the supporting bar;

Fig. 9 is an enlarged view in rear elevation of a modified form of head removed from the supporting bar, and

Fig. 10 is an enlarged transverse sectional view similar to Fig. 5, showing the modified form of head attached to the supporting bar.

Referring more particularly to the drawings in which like reference numerals refer to the same parts throughout the several views, 1 designates the supporting bar which is of conventional construction such as employed for holding metal guiding heads in operative relation on a winding machine, the supporting bar including inclined side edges 2 that engage cooperating inclined surfaces on the guiding head as will appear presently.

The strand guiding head is formed of very hard material, preferably fired ceramic material such as known in the trade as "Heanium," and includes spaced prongs 3 between which the cord or strand passes at the base of the recess 4, and an uninterrupted convexly curved surface 5 on one side over and against which the cord engages as it travels thereon to an adjacently positioned cone or cylinder, as well known in the winding machine art.

On its opposite side, the ceramic head is provided with a positioning recess defined by oppositely inclined surfaces 6 which engage the above mentioned inclined surfaces 2 on the supporting bar 1 when the latter is arranged in the positioning recess, flush with the outer rear surface of the guiding head, as shown in Figs. 3, 4, and 5.

Beneath the positioning recess, the guiding head is provided with a locking recess defined by opposite inclined or undercut walls 7 which preferably converge outwardly as shown in Fig. 5, the bottom of the locking recess being defined by a surface 8 which is provided with an opening 9 for a purpose that will appear presently.

Located within the locking recess is a relatively thin and somewhat flexible metal fastening nut 10 provided with opposite inclined surfaces 11 which are inclined to the bottom of the recess at a sharper angle than the aforementioned inclined walls 7 of the recess. As a result of this construction, the inclined surfaces 11 of the fastening nut when in final position engage the inclined walls 7 of the locking recess only at the base of the recess where the ceramic material is strongest and offers greatest resistance, and the inclined surfaces on the nut are slightly spaced from the adjacent inclined walls of the recess above the base thereof, permitting the nut to be flexed slightly in an upward direction at its central portion when the fastening screw is turned tightly, while at the same time engaging the ceramic head securely at the base of the locking recess.

The fastening nut 10 is initially arranged in the locking recess by an endwise sliding movement from the open outer end of the recess, see Fig. 6. After the fastening nut is arranged in the locking recess of the guiding head as just described, the supporting bar is positioned over the fastening nut in engagement with the positioning recess. A fastening screw 12 is then attached through an opening provided in the supporting bar for the purpose and brought into threaded engagement with the nut 10 and turned until the fastening nut is flexed slightly and the parts are thus securely attached. When in this position, the innermost and projecting end of the fastening screw 12 enters the opening 9 of the ceramic head and thus holds the head against endwise movement relative to the nut and supporting bar which might otherwise take place upon slight loosening of the fastening screw.

When the ceramic head is initially positioned on the supporting bar, the inner surface of the supporting bar is spaced somewhat from the bottom of the positioning recess and the outer surface of the nut is spaced somewhat from the inner surface of the supporting bar, while the nut is of sufficiently thin construction to permit slight flexing when the fastening screw is turned down tightly, so that when the parts are finally secured, the nut is interlocked with the inclined walls of the locking recess in the ceramic material at the base of the recess or at the bottoms of the inclined walls of the ceramic body while the central portion of the nut is flexed somewhat outwardly toward the supporting bar and its outer surface remains slightly spaced from the inner surface of the supporting bar. This construction insures a tight engagement between the ceramic head, the fastening nut, the screw, and the supporting bar. To remove the head from the supporting bar, it is only necessary to loosen and remove the fastening screw 12 which holds the supporting bar and head together, after which the nut 10 can be removed from the locking recess in the ceramic head by an endwise sliding motion.

In Figs. 9 and 10, there is illustrated a modified form of construction in which the locking recess in the ceramic body is provided with inclined walls 13 provided on opposite sides of a central portion 14 while the fastening nut 15 includes downwardly and inwardly bent portions 16 at its opposite edges, said portions 16 having inclined surfaces 17 which are inclined at sharper angles to the base of the recess than the inclined walls 13 of the recess so that the inclined surfaces on the nut engage the adjacent inclined walls of the recess only at the base of the recess and are spaced therefrom above the base of the recess, thus permitting the fastening nut 15 to be flexed somewhat at its central area when tension is applied, without likelihood of fracturing or breaking the central portion 14 of the ceramic body. Except for the variation in the form of the fastening nut and the cooperating inclined surfaces of the ceramic head, the structure and operation of the modified form of Figs. 9 and 10 is the same as that already described in connection with Figs. 1 to 8 inclusive.

While the invention has been described with reference to certain structural embodiments, it is not confined to the precise details herein disclosed and this application is intended to cover such other modifications or changes as may come within the spirit and purposes of the improvement and the scope of the following claims.

I claim:

1. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned inclined walls of the locking recess and positionable therein by an endwise sliding movement, and a fastening screw extending through the aforesaid opening in the

supporting bar and having threaded engagement with said fastening nut, the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting to limit movement of the supporting bar and nut endwise of the recess.

2. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite outwardly converging inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned converging inclined walls of the locking recess and positionable therein by an endwise sliding movement, and a fastening screw extending through the aforesaid opening in the supporting bar and having threaded engagement with said fastening nut, the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting to limit movement of the supporting bar and nut endwise of the recess.

3. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head of ceramic material having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite outwardly converging inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned inclined converging walls of the locking recess and positionable therein by an endwise sliding movement, and a fastening screw extending through the aforesaid opening in the supporting bar and having threaded engagement with said fastening nut, the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting to limit movement of the supporting bar and nut endwise of the recess.

4. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head of ceramic material having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned inclined walls of the locking recess and positionable therein by an endwise sliding movement, and a fastening screw extending through the aforesaid opening in the supporting bar and having threaded engagement with said fastening nut, the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting

to limit movement of the supporting bar and nut endwise of the recess.

5. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned inclined walls of the locking recess and positionable therein by an endwise sliding movement, the inclined surfaces on the nut being at a sharper angle to the base of the locking recess than the inclined walls of the recess whereby they engage said walls at the base of the recess and are spaced therefrom above the base of the recess, and a fastening screw extending through the aforesaid opening in the supporting bar and having threaded engagement with said fastening nut, the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting to limit movement of the supporting bar and nut endwise of the recess.

6. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head of ceramic material having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned inclined walls of the locking recess and positionable therein by an endwise sliding movement, the inclined surfaces of the nut being at a sharper angle to the base of the locking recess than the inclined walls of the recess whereby they engage said walls at the base of the recess and are spaced therefrom above the base of the recess, and a fastening screw extending through the aforesaid opening in the supporting bar and having threaded engagement with said fastening nut, the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting to limit movement of the supporting bar and nut endwise of the recess.

7. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite outwardly converging inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned converging inclined walls of the locking recess and positionable therein by an endwise sliding movement, the inclined surfaces on the nut being at a sharper angle to the base of the locking

recess than the inclined walls of the recess whereby they engage said walls at the base of the recess and are spaced therefrom above the base of the recess, and a fastening screw extending through the aforesaid opening in the supporting bar and having threaded engagement with said fastening nut the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting to limit movement of the supporting bar and nut endwise of the recess.

8. Strand guiding means for winding machinery comprising a supporting bar having an opening adjacent one end thereof to receive a fastening screw and a strand guiding head of ceramic material having a convex uninterrupted surface on one side thereof, the opposite surface of the head having a positioning recess defined by opposite side walls engaging side edges of the supporting bar and a locking recess beneath the positioning recess and defined by opposite outwardly converging inclined walls, a metal fastening nut having opposite surfaces inclined in the same direction as and interlockingly engaging the aforementioned converging inclined walls of the locking recess and positionable therein by an endwise sliding movement, the inclined surfaces on the nut being at a sharper angle to the base of the locking recess than the inclined walls of the recess whereby they engage said walls at the base of the recess and are spaced therefrom above the base of the recess, and a fastening screw extending through the aforesaid opening in the supporting bar and having threaded engagement with said fastening nut, the bottom surface of the locking recess beneath said nut having an opening to receive the projecting portion of the fastening screw and acting to limit movement of the supporting bar and nut endwise of the recess.

ALPHONSE F. PIEPER.

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