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FLYER FOR SPINNING MACHINES

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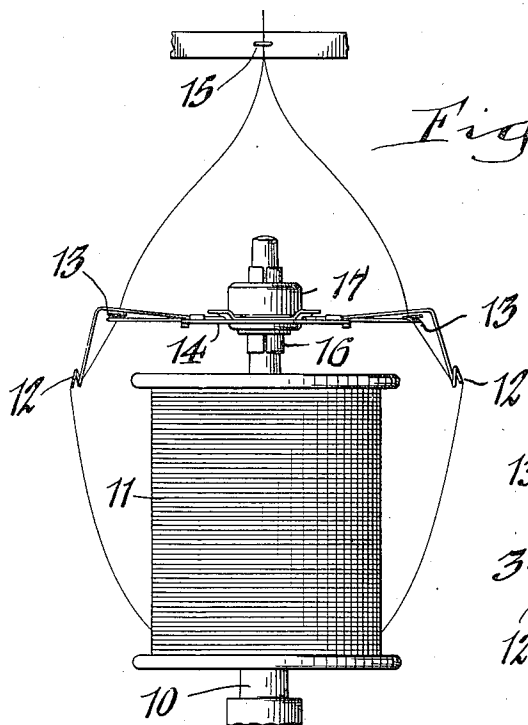


Fig. 1.

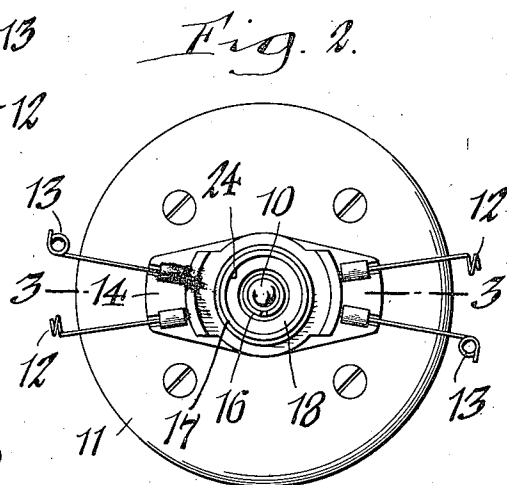


Fig. 2.

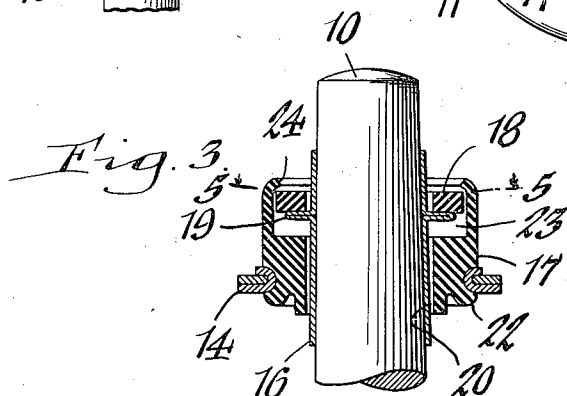


Fig. 3.

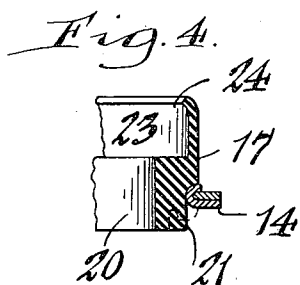


Fig. 4.

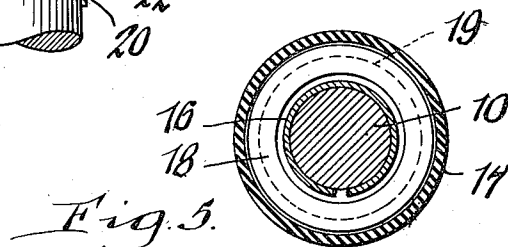


Fig. 5.

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UNITED STATES PATENT OFFICE

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FLYER FOR SPINNING MACHINES

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8 Claims. (Cl. 117—26.5)

This invention relates to certain new and useful improvements in the flyers employed in connection with spinning machines.

One of its objects is to provide a flyer of this character having a freely gyrating bearing and having effective means for cushioning the shocks incident to sudden changes in thread-tension.

Another object of the invention is the provision of a simple, inexpensive and efficient flyer having self-contained means for permitting a cushioned axial as well as lateral movement of the flyer-bearing relative to its spindle-attaching sleeve in response to any pull exerted by the thread in unwinding from the take-off bobbin, thereby rendering the flyer flexible and adapting itself to the work required of it.

Other features of the invention reside in the construction and arrangement of parts herein-after described and particularly pointed out in the appended claims.

In the accompanying drawing:—

Figure 1 is a side elevation of a bobbin and spindle showing my improved flyer associated therewith. Figure 2 is an enlarged top plan view thereof. Figure 3 is an enlarged cross section taken substantially in the plane of line 3—3, Figure 2. Figure 4 is a fragmentary cross sectional view of the bearing member of the flyer. Figure 5 is a horizontal section taken on line 5—5, Figure 3.

Similar characters of reference indicate corresponding parts throughout the several views.

This invention is applicable to spinning machines of well known construction, 10 indicating the bobbin-spindle and 11 the take-off bobbin mounted thereon. The thread or yarn from the bobbin extends upwardly through the eyes of the usual flyer wires 12 and 13 mounted on a holder or wire base 14, and thence guided upwardly through a guide or centering eye 15 to a take-up spool (not shown).

The flyer body, to which the wire-base 14 is attached, is preferably in the form of a self-contained unit consisting of an anchoring sleeve or journal 16 adapted for frictional engagement with the tapered end of the spindle 10, a bearing member 17 loosely fitted on the sleeve to revolve thereon, and a loosely-disposed or floating washer or cushioning element 18 arranged between the sleeve and the bearing member. Intermediate its upper and lower ends the journal-sleeve has an annular flange or thrust shoulder 19, which, in conjunction with the cushioning element 18, serves to support and limit the axial displacement of the bearing member 17 on the sleeve.

The bearing member is preferably made from

a non-metallic material, such as a fiber composition or the like, which eliminates the necessity of using oil or grease to lubricate it, and whose lower portion has an opening 20 freely encircling the corresponding portion of the sleeve below its flange 19. At its lower end the bearing member is reduced in diameter to provide an attaching neck 21 to which the wire-base 14 is fitted, the lower edge of such neck being upset or rolled over the adjoining bottom side of the base, as indicated at 22 in Figure 3, to securely anchor said base to the bearing member. The upper portion of the bearing member 17 is hollowed out or counter-bored to provide an annular space, socket or compartment 23 about the companion flanged portion of the sleeve 16 and is of a depth to permit of a limited axial displacement of the bearing member relative to the sleeve. Loosely fitted in the compartment 23 and encircling the sleeve, with its bottom side resting on the sleeve-flange 19, is the freely-floating washer or cushioning element 18 which is preferably made of a fiber composition similar to that of the bearing member 17. The upper marginal end of the latter is curled or bent over to form an annular retaining flange or shoulder 24 which overhangs the washer and constitutes the means by which the bearing member is held in suspension from the sleeve 16. By this construction, the bearing member is free to gyrate about the attaching sleeve and to move axially or vertically of the spindle, being limited in its upward movement by the bottom of the bearing-compartment 23 abutting against the sleeve-flange 19 and in its downward movement by the bearing-flange 24 abutting against the washer or cushioning element 18. The washer, being free of the sleeve and the bearing member, is permitted to move independently thereof to adapt itself to any axial or lateral movement of the bearing member in response to the pull exerted on the thread during the spinning operation. Furthermore, if the friction between the washer and the sleeve-flange 19 is greater than that between the washer-periphery and the bearing member, the washer will turn with the spindle without affecting the flyer-speed. On the other hand, if the reverse of these conditions takes place, then the washer-speed is increased to the flyer-speed.

In the twisting of fine threads at high spindle-speed, controlled low tension is necessary. My improved flyer construction embodying the floating washer or cushioning element 18 automatically effects this control by cushioning the shock of sudden tension due to the thread holding to the take-off bobbin 11 and particularly the sud-

den shocks incident to the vertical movement of the flyer-body on the journal-sleeve 16. The threads, in paying off from the bobbin, follow the turns on the bobbin and rake over them and sometimes the take-off end lodges or lays between adjoining thread-turns on the bobbin, resulting in a sudden tightening or pull on the thread between the bobbin and the flyer. The thread thus caught is suddenly released, at which turn the floating washer 18 imparts a cushioning effect to the displaced flyer to absorb the shocks created by the sudden release of the caught thread.

I claim as my invention:—

1. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle and having a thrust shoulder thereon intermediate its ends, a bearing member mounted on the sleeve and having a socket therein about said thrust shoulder, and a freely-floating element disposed within said socket about the sleeve and engageable with said shoulder.

2. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle and having a thrust shoulder thereon intermediate its ends, and a bearing member mounted on the sleeve and including an independent, relatively movable element engageable with said shoulder.

3. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle and having a thrust shoulder thereon intermediate its ends, a bearing member mounted on the sleeve and having a socket therein about said thrust shoulder whereby a limited axial movement of the bearing member relative to the sleeve is permitted, and a cushioning element freely fitted in said socket about the sleeve between said thrust shoulder and the opposing end of said bearing member.

4. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle and having a thrust shoulder thereon intermediate its ends, an axially displaceable bearing member mounted on the sleeve and having a socket therein about said thrust shoulder, the bottom of said socket being adapted to abut said shoulder to limit and cushion the upward displacement of the bearing member on the sleeve, and freely-floating means in

the upper portion of said socket above the sleeve-shoulder for limiting and cushioning the downward displacement of the bearing member on the sleeve.

5. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle and having a thrust shoulder thereon intermediate its ends, an axially displaceable bearing member mounted on the sleeve and having a socket therein about said thrust shoulder, the bottom of said socket being adapted to abut said shoulder to limit and cushion the upward displacement of the bearing member on the sleeve, and a washer loosely fitted in said socket and about said sleeve above the thrust shoulder thereof for limiting the downward displacement of the bearing member on the sleeve.

6. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle and having a thrust shoulder thereon intermediate its ends, an axially-displaceable bearing member mounted on the sleeve and having a socket therein about said thrust shoulder, the bottom of said socket being adapted to abut said shoulder to limit and cushion the upward displacement of the bearing member on the sleeve and the upper end of said socket terminating in an inwardly-directed shoulder, and a washer loosely fitted in said socket and about said sleeve between said sleeve-shoulder and said socket-shoulder.

7. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle, a bearing member mounted thereon and having a reduced neck, and a flyer-wire base fitted to said neck and anchored thereto by up-setting said neck.

8. A flyer for spinning machines and the like, comprising a journal-sleeve adapted for attachment to a bobbin-spindle, an axially-displaceable bearing member loosely mounted thereon and having an attaching neck at one end and a socket in its other end, a flyer-wire base fitted to said attaching neck, and a freely-floating element disposed within said socket about said sleeve for limiting and cushioning the displacement of the bearing member on the sleeve.

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