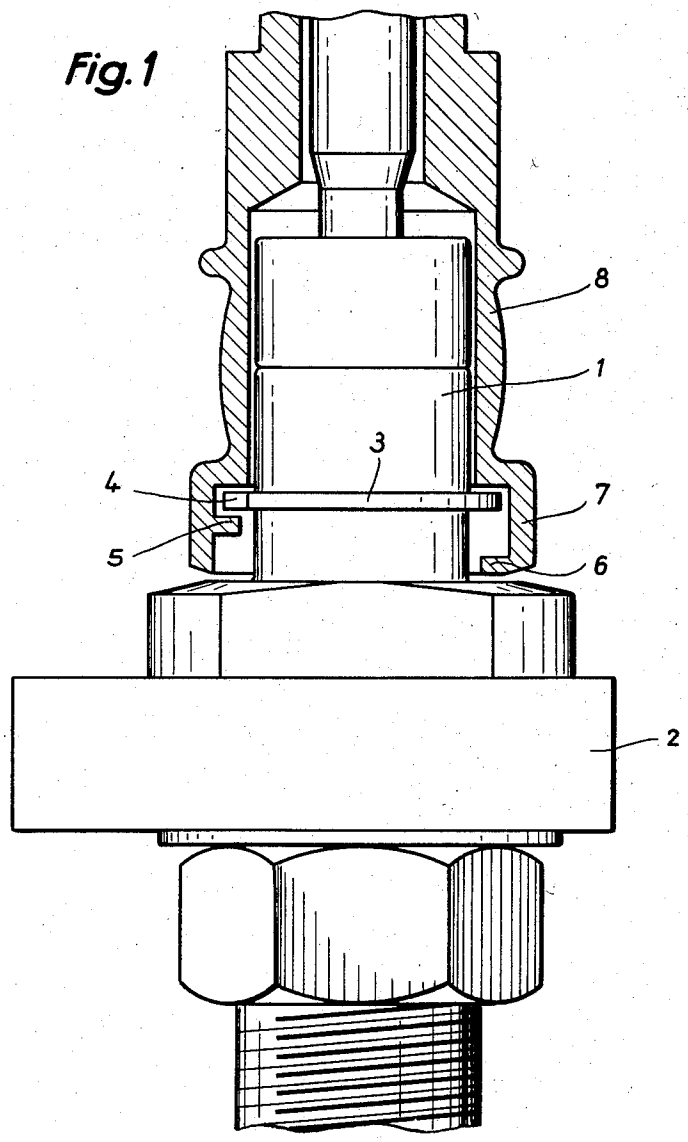
April 28, 1959 E. REISSMÜLLER ET AL 2,883,825

SPINNING OR TWISTING SPINDLE

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Fig. 1



INVENTORS:
E. REISSMULLER
H. GASSNER
BY: Moore & Hall
ATTORNEYS

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Fig. 2

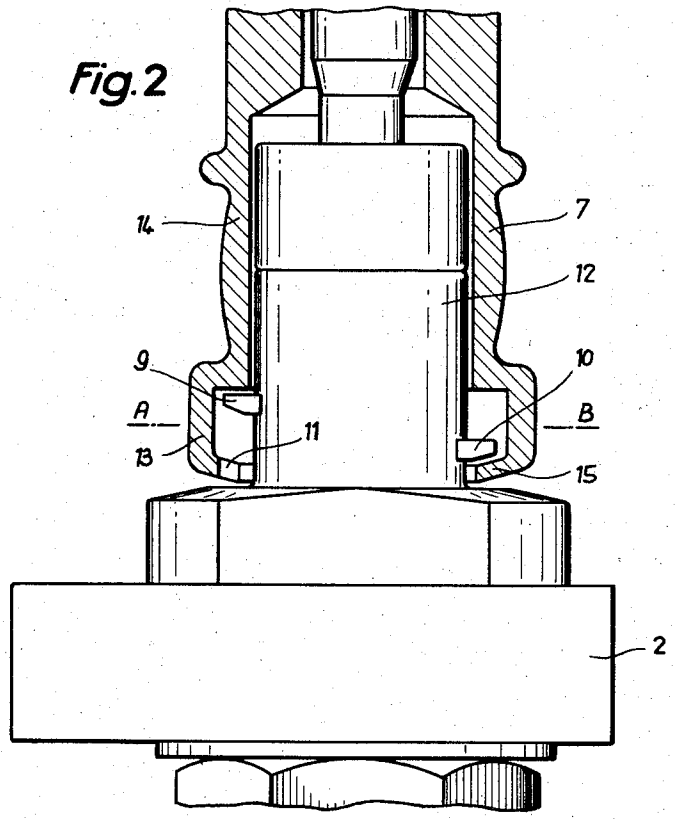
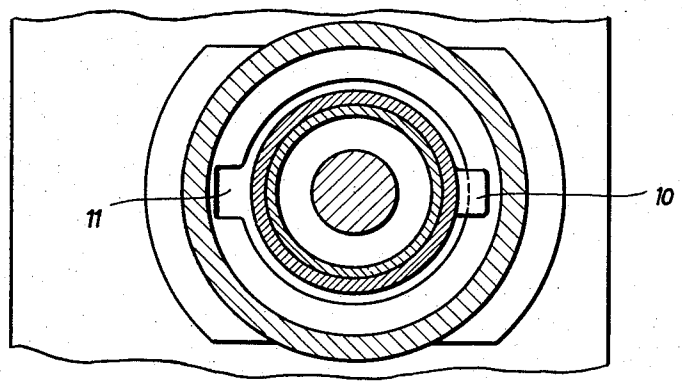


Fig. 3



INVENTORS:
E. REISSMULLER
H. GASSNER
BY: Moore & Hall
ATTORNEYS.

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Fig. 4

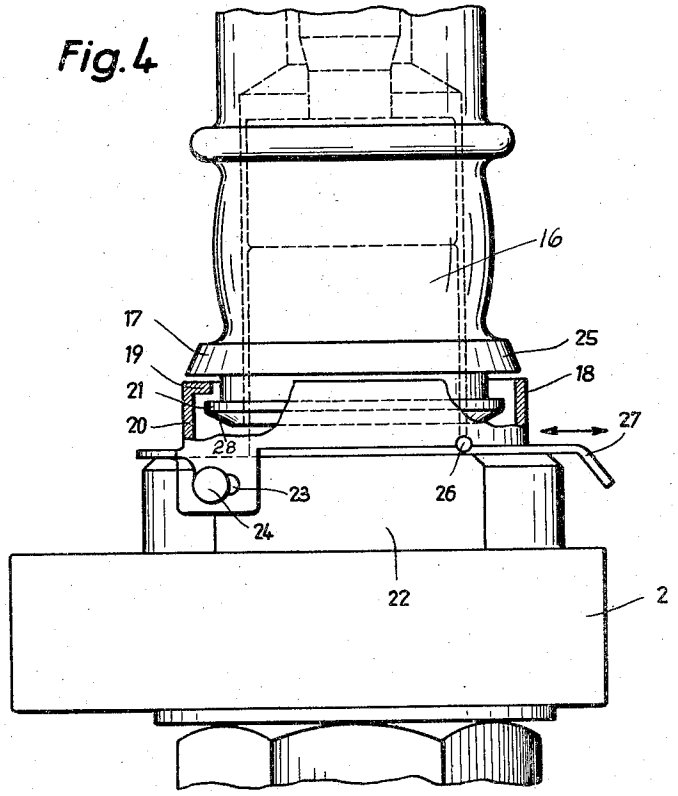
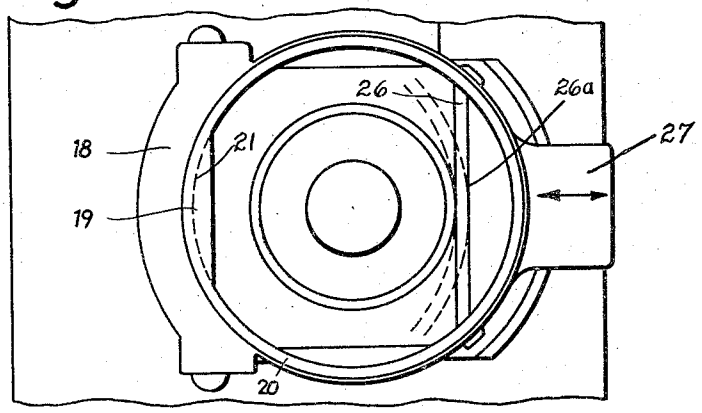


Fig. 5



INVENTORS:
E. REISSMULLER
H. GASSNER
BY: Moore & Hall
ATTORNEYS.

United States Patent Office 2,883,825
Patented Apr. 28, 1959

2,883,825

SPINNING OR TWISTING SPINDLE

Ernst Reissmüller, Hof, Saale, and Hans Gassner, Schweinfurt, Germany

Application December 8, 1954, Serial No. 473,927

4 Claims. (Cl. 57—132)

The present invention relates to a spinning or yarn twisting spindle and, more particularly, to a spindle having an upper section which is retained in position in such a manner that it cannot be inadvertently lifted off the housing of the spindle bearing.

It has been common practice in designing spinning or twisting spindles to provide for the spindle upper section to be lifted off the lower section if necessary. Special retaining means have thus been used to hold the spindle upper section in position while the spindle is in operation. These special retaining means have thus far been embodied in a simple hook arranged to extend externally over the flange of the driving whorl. Whenever it is intended to release the spindle upper section so that it can be lifted, the said hook is swung away from said flange, this being done, for example, by lifting an operating flap. In known prior art arrangements the said retaining hook is disposed to the rear of the spindle position. With these known arrangements, however, it is difficult for the operator of the spinning or twisting frame to observe any accumulation of lint or fibrous material that might interfere with the proper functioning of the spindle.

The above-mentioned deficiency of said known arrangements tends to reduce the quality of the yarn handled, as any accumulation of lint tends to reduce the speed of the spindle, this being reflected in so-called creepage effects produced in the yarn. In many cases the accumulated lint has been found to decelerate the spindle to such an extent that no appreciable strength is left in the yarn. Upon the accumulated lint being removed, the spindle will again function properly for a certain period of time, the yarn spun during such a period being again satisfactory. The reduction in the speed of the spindle and the resulting reduction in yarn tension is not likely, at this stage, to cause the yarn or thread to break, the result being that it is not until the processing of the yarn is continued that the defects in the yarn will be detected.

The accumulation of lint on the spindle retaining hook is enhanced by the hereinbefore mentioned arrangement of said hook to the rear of the spindle, as this arrangement makes it difficult for the spinning frame operator to observe said hooks and thus to detect the accumulation of lint. Moreover, observation of the hook and collecting lint is rendered even more difficult by the spindle drive belt which extends in close proximity to said hook. Cleaning of the hooks is also difficult in view of the above-mentioned design characteristics; since roller bearing spindles require lubrication only after approximately 5,000 hours of operation, it has become common practice, even during major cleaning operations, to leave the spindles in position in their bearings, cleaning of the hooks thus being omitted. It is one object of the present invention to eliminate the above-mentioned drawbacks by providing more suitable spindle retaining means. The invention consists in the provision of mutually offset retaining means on the inside of one end portion of the whorl and on the periphery of the upper end of the spindle bearing housing, which upper end is surrounded by the said end portion of the whorl.

The arrangement according to the invention completely eliminates the collection of lint on parts such as the above-mentioned hooks used in earlier arrangements. The present invention also provides for a particularly effective seal between the two spindle members in that the upper end of the spindle bearing housing has an outwardly extending collar with a recess formed in it, and in that the end portion of the whorl which surrounds the said collar has formed on its inner wall two projections of a width not exceeding the width of the recess formed in the collar of the spindle bearing housing, the said internal projections being mutually offset in an axial as well as a circumferential direction.

Also according to the invention, the end portion of the whorl may have formed therein an outwardly extending rim or flange over which there extends a frame member which is mounted for horizontal sliding movement on the upper end of the spindle bearing housing.

Further objects and features of the invention will become apparent from the following description of several preferred non-limitative embodiments taken in conjunction with the accompanying drawings in which: Figures 1 and 2 respectively illustrate, partly in vertical section, the lower portion of a spindle with the associated upper portion in position; Figure 3 is a horizontal section along the line A—B in Figure 2 with the upper portion removed; Figures 4 and 5 respectively show in side elevation and in plan view an embodiment in which the hereinbefore mentioned horizontally slidable frame member is provided.

With the embodiment shown in Figure 1 the shank **1** of a spindle is mounted, in accordance with common practice, in a spindle bearing housing which is in turn secured to the spindle frame member **2**. The spindle shank **1** has formed on its periphery an outwardly extending collar **3** having formed therein a recess **4**, this recess being of a width such that it permits passage of the projections **5** and **6** which are provided on the inside of a sleeve-like extension **7** of the whorl **8**, said projections being spaced axially and offset 180° in a circumferential direction.

If it is intended to lift the upper portion of the spindle, together with the whorl **8**, from the lower portion, first the projection **5** is passed through the recess **4**, whereupon the upper part of the spindle is rotated 180° so as to enable the projection **6** also to be moved through the recess **4**. After the upper part of the spindle has thus been released, it can be lifted off. To re-install the upper part of the spindle, the above procedure is reversed.

In the embodiment illustrated in Figures 2 and 3, as compared with that shown in Figure 1, the position of the projections **9** and **10** on the one hand and the recess **11** on the other has been reversed. In the present embodiment the projections **9** and **10**, which are spaced apart axially and mutually offset in a circumferential direction, are provided on the housing member **12**. The sleeve-like extension **13** of the whorl **14** ends in an inwardly directed rim or flange **15** which has formed therein the recess **11**.

In order to lift the upper part of the spindle, together with the whorl **14**, from the housing **12** forming part of the lower portion, the recess **11** is first passed over the projection **10**, the whorl then being rotated 180° to permit the recess **11** to be moved past the projection **9**. After the upper part of the spindle, together with the whorl, has thus been released, it can be lifted off. To re-install the upper part of the spindle, the above procedure is reversed.

With the embodiment illustrated in Figures 4 and 5,

the upper part 16 of the spindle is retained in position, together with the whorl 17, by a frame member 18 which is slidably mounted on the lower part of the spindle. With the frame member 18 in its normal position, the inwardly projecting flange 19 of the end of the frame, which end extends at right angles to the direction of movement of the frame, projects over the outwardly extending rim or flange 21 provided on a sleeve-like extension of the whorl 17, thus retaining the upper part 16 of the spindle in position on the lower part, i.e. its associated housing 22. An oblong hole 23 formed in the frame 18 serves to guide said frame on the pin member 24. The upwardly tapered external flange 25 provided on the whorl 17 serves to cover the upper surface of the frame 18 regardless of the position of the latter.

Normally, i.e. in its operative position, as shown in the drawing, the frame 18 is retained in place by a spring clip or flexible wire 26 which bears upon the outer surface of the spindle bearing housing (see Figure 5). Upon application of finger pressure, in a horizontal direction, to the handle or end 27 of the frame 18, the said frame 18 will be moved to the left until the flange 19 of the frame 18 is disengaged from the annular enlargement 21 with the result that the upper part of the spindle is released from the lower part. During this leftward movement of frame 18, spring wire 26 bears against the spindle bearing housing and flexes, as at 26*a*, thereby to impose a resilient restraint against such movement of frame 18. Upon release of pressure on handle 27 (e.g. after the upper part of the spindle is separated from the lower part thereof) flexed spring wire 26*a* returns to its normal configuration 26 thereby snapping frame 18 back to the right into its normal position. To reinstall the upper part 16 it is only necessary to align it with the lower part and to depress the upper part. This will cause the inclined surface 28 of the annulus 21 to move the frame 18 to the left, whereafter the spring clip 26 will again automatically snap the frame back into its normal operative position.

We claim:

1. A selectively separable spinning or twisting spindle having an upper part held against being inadvertently lifted off a lower part thereof comprising an elongated spindle-bearing housing, an elongated whorl disposed substantially coaxial with said housing and closely adjacent thereto, the end portion of said whorl being provided with a first outwardly extending annular projection, a horizontally movable frame being arranged on the upper end of the spindle bearing housing, an annular flange of said frame surrounding said spindle bearing housing, part of said frame extending over said first annular projection and a second outwardly extending annular projection of said whorl disposed above said horizontally movable frame and having a diameter substantially equal to the diameter of said annular flange of said frame, said horizontally movable frame being normally held in position by spring means, said frame with said flange being movable against said spring means

thereby to selectively free said first outwardly extending annular projection of said whorl whereby said whorl may thereafter be lifted from said spindle-bearing housing.

2. A selectively separable spinning or twisting spindle comprising an elongated spindle bearing housing, a substantially tubular frame adjacent the upper end of said housing and substantially coaxial therewith, said frame being mounted for selective movement in a direction transverse to the direction of elongation of said spindle bearing housing, said frame including a projection extending in a plane substantially parallel to said upper end of said housing, an elongated whorl disposed substantially coaxial with said housing and including a portion extending into said tubular frame, said whorl including a first annular flange disposed between said projection and said upper end of said housing whereby said projection normally overlies said first annular flange until said frame is moved in said transverse direction, said whorl including a second annular flange disposed substantially parallel to said first annular flange and overlying the upper end of said substantially tubular frame whereby said second flange inhibits the accumulation of foreign matter adjacent said upper end of said substantially tubular frame, and spring means attached to said movable frame for resiliently urging said frame into a normal preselected position relative to said housing and whorl.

3. The combination of claim 2 including handle means on said frame for selectively moving said frame against the restraint of said spring means.

4. A selectively separable spinning or twisting spindle comprising an elongated spindle shank, a whorl having an elongated sleeve portion surrounding said shank in substantially coaxial relation thereto, said whorl including a pair of annular flanges disposed in spaced substantially parallel relation to one another adjacent the outer surface of said whorl, a substantially tubular frame disposed substantially coaxial to said shank and whorl in surrounding relation to at least a portion of said whorl, said frame including means projecting into the space between said pair of spaced annular flanges, and means supporting said tubular frame for movement in a direction transverse to the axes of said whorl sleeve portion and spindle shank whereby said projecting means may be selectively displaced from the space between said annular flanges, said supporting means including spring means for normally urging said tubular frame into a position wherein said projecting means is disposed in the space between said annular flanges.

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