Dec. 12, 1961 G. SCHÖLLKOPF 3,012,394

SPINNING AND TWISTING SPINDLES

Filed Feb. 17, 1959

FIG. 1.

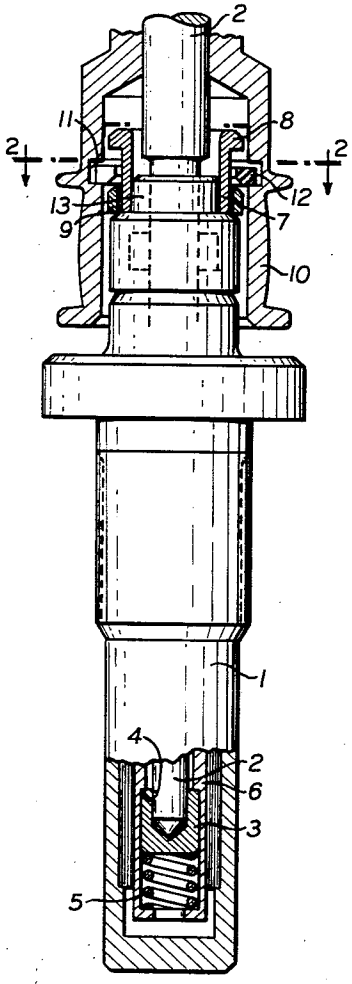


FIG. 3.

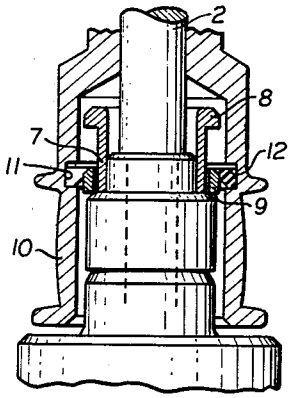


FIG. 4.

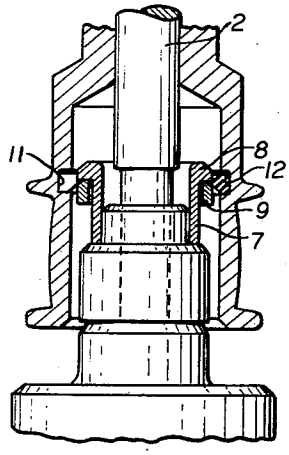


FIG. 2.

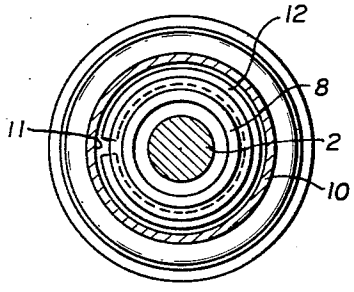
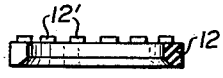


FIG. 5.



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United States Patent Office 3,012,394
Patented Dec. 12, 1961

3,012,394

SPINNING AND TWISTING SPINDLES

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Filed Feb. 17, 1959, Ser. No. 793,739
Claims priority, application Germany Feb. 20, 1958
3 Claims. (Cl. 57—132)

The present invention relates to a holding device for spinning and twisting spindles, which avoids the undesirable lifting of the upper part of the spindle from the lower part of the spindle during change of spools.

Several devices are known which serve this purpose. Generally, they comprise a hook-like or catch-like abutment member disposed on the lower part of the spindle, which abutment member projects over the lower or upper edge of the spindle wharve.

All known holding devices have inherently the drawback, that they are subjected more or less to fly. During the operation, fibers are deposited on the mostly hook-shaped holding devices due to the effect of an air stream created by the fast rotating spindle, which holding devices cannot easily be cleaned because they are on the side opposite to that from which the device is operated.

A main requirement for proper operation of the spindle is to avoid that the holding devices are subjected to the possibility of having fibers deposited thereon due to the created air stream, thus to transfer these devices, if possible, to the inside of the whorl. The known attempts to avoid in this manner the above-stated drawbacks, suffer, however, by the necessity to provide generally complicated and correspondingly expensive devices, which are easily subjected to failure, in order to obtain inside of the whorl a perfectly operating holding device. Yet, these known devices not only require complicated operating conditions, if during normal operation of the spindle an occasional removal of the upper portion of the spindle from the spindle housing is to be avoided during the change of spools, but also chips are released in the known holding devices which are disposed inside of the whorl, which chips interfere with the proper run of the spindles.

It is, therefore, one object of the present invention to provide a holding device for spinning and twisting spindles which is not only of extremely simple structure, but also permits of a surprisingly simple and effective operation. An abutment member, which is normally in the abutting position, is moved merely by lowering of the upper portion of the spindle into a lowered position, at the same time overcoming a spring force which retains the latter in normal positon, so that upon a following upward movement of the spindle in the direction of removing the upper portion from the lower portion of the spindle, a position is achieved wherein the upper portion may slide over an abutment member which prevented before the upward movement.

It is another object of the present invention to provide a holding device, as set forth above, wherein an abutment member is surrounded by a spring member which in its normal position abuts against a flange of the abutment member, and which co-operates with a driver member, the outer measurements of which coincide with those of the flange of the abutment member.

With these and other objects in view, which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

FIGURE 1 is a front elevation of a spindle, designed in accordance with the present invention, and partly in section, shown in normal operative position;

FIG. 2 is a section along the lines 2—2 of FIG. 1;

FIG. 3 is a front elevation similar to that shown in FIG. 1, however, in a position in which the whorl has been lowered and indicating the mounting of the spring on the locking ring;

FIG. 4 is a section similar to that of FIG. 3 indicating the passing of the spring on the flange serving as an abutment; and

FIG. 5 is a section of the spring ring indicating the resilient tongues.

Referring now to the drawing, the spindle, shown by example only, comprises a so-called centering tube mounting which is, however, not the subject matter of the present invention. In the lower part of the spindle housing **1** is disposed the known foot thrust journal for the spindle shaft **2**. The foot thrust journal **3** is pressed against the inner shoulder **4** of the bearing sleeve **6** by means of the pressure spring **5** constituting a resilient member which engages the lower end of the bearing sleeve, whereby the normal position of height of the spindle shaft **2** is determined within the spindle housing **1**.

The abutment sleeve **7** is mounted on the closure disc **13** of the bearing sleeve **6**, which abutment sleeve **7** has at its upper edge a flange **8**, the upper edge of which is chamfered. A driving ring **9** which has some radial play, is mounted on the abutment sleeve **7** prior to its mounting onto the closure disc **13**, which driving ring **9** is easily axially movable between the upper edge of the bearing sleeve **6** and the lower edge of the flange **8** and is normally disposed on the bearing sleeve **6** in a position shown in FIG. 1.

A horizontally disposed inner groove **11** is arranged within the whorl **10**, the groove **11** receiving a slotted spring ring **12** which may consist of a suitable artificial material, the lower inner edge of the ring **12** being slightly chamfered. The spring **12** may be equipped with resilient tongues **12'** (FIG. 5) which are upwardly directed and have a slight inwardly directed resilient effect, which tongues may engage the flange **8** still better than the upper inner edge of the spring ring **12**. The measurements of the spring ring **12** are chosen in such a manner that on the one hand its total peripheral face is disposed inside of the groove **11**, and on the other hand that it has such an inner diameter that it abuts normally on the underface of the flange **8** of the pirn or abutment sleeve **7**.

The upper portion of the spindle shaft **2** is thus always secured against undesirable removal from the spindle housing **1** by means of the flange **8** of the abutment sleeve **7** which cannot be passed by the spring ring **12**.

In order to provide the possibility of removal, the upper portion of the spindle shaft **2** is pushed downwardly simultaneously compressing the helical spring **5**, whereby the spring ring **12** rides on the driving ring **9**, as particularly clearly shown in FIG. 3, and obtains a seat by friction.

If now the upper portion of the spindle shaft **2** is moved upwardly, as shown in FIG. 4 of the drawing, the spring ring **12** which operated as abutment member, may ride now from the driving ring **9** over the flange **8** which formed until now the abutment member, since the outer portion of the driving ring **9** is now flush with the outer edge of the flange **8**, or has even a slightly larger diameter. Upon reinserting of the upper portion of the spindle shaft **2** into the spindle housing **1**, the spring ring **12** rides with simultaneous expansion over the flange **8** of the abutment sleeve **7**, so that the spindle resumes again the operative position shown in FIG. 1.

The principle of the holding device as shown in the drawing and described above, is by no means limited to such spindle shafts. It may rather be applied for a plurality of other devices of which may be mentioned, without limiting thereto, the upper rollers of a ring spinning

machine and flyers, the outer sleeves of which must be removed in a manner similar to that in connection with the upper portion of the spindle, yet even more frequently.

While I have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only and not in a limiting sense, the scope of the present invention being determined by the objects and the claims.

I claim:

1. In a holding device for a spinning and twisting spindle, an abutment sleeve having a flange, a driving ring mounted on said abutment sleeve, a slotted spring ring mounted on said abutment sleeve, said spring ring cooperating wtih said driving ring, the peripheral diameter of the latter at least coinciding with that of said flange of said abutment sleeve, and said spring ring riding onto said driving ring upon forcing downwardly said spindle, simultaneously increasing the diameter of said spring ring, the latter assuming thereby a position permitting passing of said spring ring over said flange of said abutment sleeve upon upward movement of said spindle, and thereby release the latter.

2. The device, as set forth in claim 1, which includes a spindle housing and a whorl having an inner annular

groove and surrounding said spindle and wherein said spring ring is received in said annular groove of said whorl, a bearing sleeve disposed in said spindle housing and having a closure disc, said flange of said abutment sleeve having a chamfered upper edge formation of said flange and said spring ring having a chamfered lower edge formation, and the outer face of said driving member being substantially flush with the periphery of said flange of said abutment sleeve, a helical spring member disposed at the bottom of said spindle housing and retaining said spindle in normal position, and upon lowering of said spindle, said spring ring rides over said flange, due to said chamfered upper edge formation of said flange and said chamfered lower edge formation of said spring ring.

3. The device, as set forth in claim 2, wherein said spring ring has at its upper inner edge a plurality of resilient tongues for resilient engagement with said flange.

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