Sept. 13, 1932. A. HOFFMANN 1,877,663

PARAFFIN DEVICE FOR TREATING THREADS

Filed Dec. 21, 1929

Fig:1

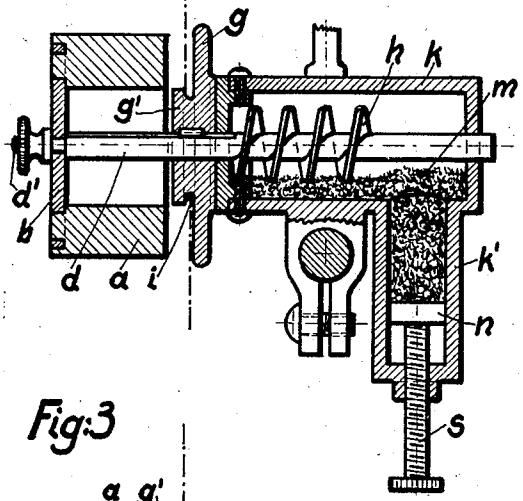


Fig:2

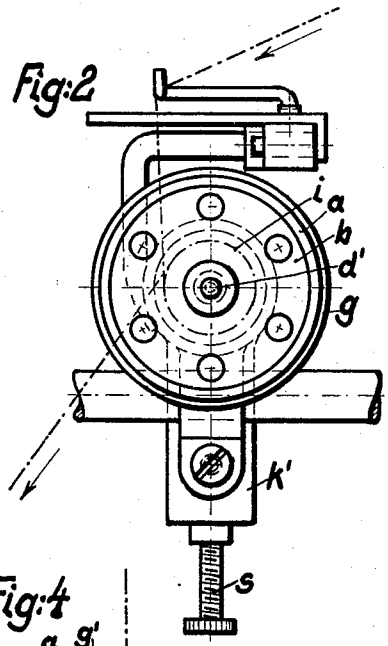


Fig:3

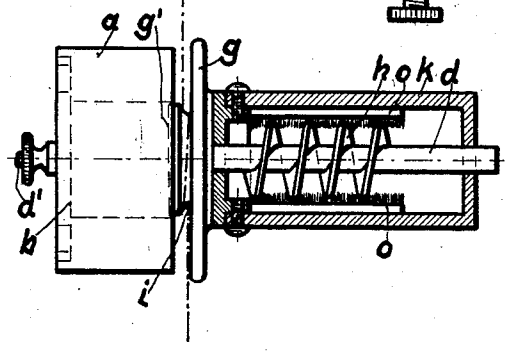


Fig:4

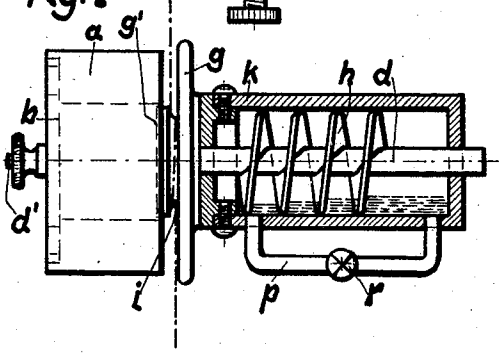
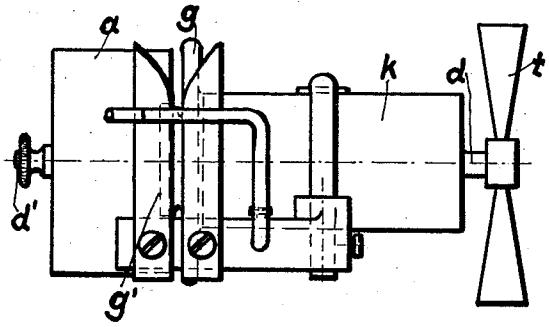


Fig:5



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UNITED STATES PATENT OFFICE

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PARAFFIN DEVICE FOR TREATING THREADS

Application filed December 21, 1929, Serial No. 415,851, and in Germany September 16, 1929.

This invention relates to paraffin devices such as are employed to impart flexibility to threads of yarn and the like. These devices, as a rule, are connected to the reel or bobbin winding machines so as to simultaneously act as thread tensioning means, and an absolutely even rotation of the paraffin body in contact with the thread is required for this reason and to ensure an even application of paraffin to the thread.

The invention, therefore, has for its main object the provision of means which will provide the required even rotation of the paraffin body and a consequent even application of paraffin, as well as a uniform tensioning action on the thread, whereby unregular winding and breaking of thread is greatly eliminated.

Another object of the invention is the provision of means to obtain a self-adjusting tensioning of the thread in a manner that, at the commencement of the winding operation, the tension is practically equal to zero, so that the thread may freely wind onto the reel or bobbin.

These and other objects of the invention are obtained by the paraffin body being mounted upon its turning axle in a rigid, immovable relation thereto, but so as to render both, the paraffin body and its turning pin capable of movement in axial direction; means being provided to thereby produce an even but variable pressure of the paraffin body on the thread.

The accompanying drawing illustrates several modifications of the invention by way of example. In the drawing

Fig. 1 is a longitudinal section through a paraffin device according to the invention.

Fig. 2 is a front elevation thereof.

Figs. 3, 4 and 5 are plan views, partly in section, of modified arrangements of the pressure applying means shown in Fig. 1.

Referring to Fig. 1 *a* is the roller-shaped paraffin body which is cast to be rigid with its face plate *b*. The said face plate is provided with a central bore through which is passed the threaded end *d'* of the shaft *d*, a milled nut serving to hold the parts together in mutually fixed relation. The tensioning wheel *g* which is arranged to work in conjunction with the paraffin body *a* is mounted upon the shaft *d* by means of a key and keyway connection so as to always take part in the rotation of the latter, but so that the shaft *d* is able to be displaced in longitudinal direction through the said wheel *g*. The hub *g'* of the wheel *g* is provided with a circumferential groove *i* around which the thread to be treated is passed.

It is evident that for the reason of the metallic face plate *b* being securely embedded in the paraffin substance, the paraffin body *a* and the tension wheel *g* are caused to rotate in unison, so that the paraffin body wears evenly all over its front surface and to thereby effect an even tensioning or braking action on the thread.

The rigid connection between the paraffin body *a* and its supporting shaft renders it possible to so devise the paraffin apparatus, that at the commencement of the winding operation the thread passing between the body *a* and the wheel *g* will be subjected to little or no tension, which tension would only progressively be caused to attain the desired strength. This object may be arrived at in several ways.

In Fig. 1, for example, the shaft *g* is extended and provided with a conveyor spiral *h* adapted to rotate in a cylindrical casing *k* partially filled with a granular substance, such as shot *m* for example. The rotation of the shaft *d* with its worm conveyor *h* causes the substance *m* to be moved against the end wall of the casing adjacent the wheel *g*, while at the same time a pull is exerted on the shaft *d* in the opposite direction.

The pulling action on the shaft *d* and, therewith, the pressure between the paraffin

body *a* and the disc *g* may be altered by the following means. A depending shaft *k'* is arranged in connection with the cylindrical casing *k*, within which a piston *n* may be moved up and down as by means of a screw spindle *s*. The said shaft, like the casing *k*, is filled with granular material and, according to the position of piston *n*, more or less of the material will be allowed to remain in the casing *k* so that the spindle turns accordingly more or less deep within the said material and thus varies the pressure of the contact between the two members *a* and *g*. Instead of the granular material a brush *o*, as shown in Fig. 3, or any other means of resistance may be used to impede the rotation of the worm conveyor.

As another alternative the cylindrical casing may partly be filled with a liquid which is moved by the worm *h* and eventually conveyed to the space behind the worm through a tube *p*. By means of a cork, valve, or the like, *r*, the cross section of the tube may be throttled or increased, so as to thereby alter the pressure between the members *a* and *g*. (Fig. 4.)

The arrangement illustrated in Fig. 5 shows the shaft *d* to be extended through the casing *k* and provided with a propeller *t* the blades of which are so arranged as to exert a pull on the shaft *d* by its rotation and to thereby draw the paraffin body into contact with the wheel *g*.

What I claim is:—

1. A paraffin device for treating thread, comprising a paraffin body, a thread tensioning wheel, a longitudinally displaceable shaft, means to rigidly fix said paraffin body upon said shaft, and means on the shaft for increasing the pressure of the paraffin body on the thread.

2. A paraffin device for treating thread, comprising a paraffin body, a thread tensioning wheel, a longitudinally displacing shaft, means on the shaft operative to thrust the shaft axially, and a metal plate at one end of the shaft and rotatable therewith to which the paraffin body is rigidly attached.

3. A paraffin device for treating thread, comprising a paraffin body, a longitudinally displaceable shaft, a metal plate fixed to one end of said shaft and having said paraffin body fixed thereto, a thread tensioning wheel upon said shaft adjacent the paraffin body, means such as a key and keyway to render said shaft longitudinally displaceable in said tensioning wheel, a hub to said tensioning wheel, a thread guiding groove circumferencially arranged in said hub, the thread thereby serving as a driving means to rotate said tensioning wheel together with its shaft and the paraffin body rigidly attached thereto, and means on the shaft operative to thrust the shaft axially.

4. A paraffin device for treating thread, comprising a casing, a rotary shaft displaceably supported by and passing through said casing, a paraffin body rigidly attached to the external end of said shaft, a thread tensioning wheel upon the shaft between said casing and the paraffin body, and means in connection with the inner end of the shaft to produce a sliding movement, while rotating, of the shaft and the paraffin body attached thereto in the direction of the thread tensioning wheel.

5. A paraffin device for treating thread, comprising a casing, a shaft displaceably supported by and passing through said casing, a paraffin body rigidly attached to the external end of said shaft, a thread tensioning wheel upon said shaft between the casing and the paraffin body, a hub to said tensioning wheel and a circumferential groove therein, a thread guided in said groove so as to thereby rotate the tensioning wheel and the shaft, conveyor means on the portion of the shaft in the casing, and material in the casing which slightly obstructs the rotation of the shaft and thereby causes a resilient pull on the shaft, and the paraffin body attached thereto, in the direction of the thread tensioning wheel.

6. A paraffin device for treating thread, comprising a casing, a shaft displaceably supported by and passing through said casing, a paraffin body rigidly attached to the external end of said shaft, a thread tensioning wheel upon said shaft between the casing and the paraffin body, a hub to said tensioning wheel and a circumferential groove therein, a thread guided in said groove so as to thereby rotate the tensioning wheel and the shaft, conveyor means on the portion of the shaft in the casing, material in the casing which slightly obstructs the rotation of the shaft and thereby causes a resilient pull on the shaft, and the paraffin body attached thereto, in the direction of the thread tensioning wheel, and means to vary the pull exerted on the shaft and the paraffin body attached thereto.

7. A paraffin device for treating thread, comprising a casing, a shaft displaceably supported by and passing through said casing, a paraffin body rigidly attached to the external end of said shaft, a thread tensioning wheel upon said shaft between the casing and the paraffin body, a hub to said tensioning wheel and a circumferential groove therein, a thread guided in said groove so as to thereby rotate the tensioning wheel and the shaft, a worm conveyor on the portion of the shaft within the casing, a depending shaft-like extension chamber fitted to said casing, granular material in said casing and in the extension thereof, and a movable piston in the extension chamber to regulate the depth

of material in which the worm conveyor is desired to turn.

8. A paraffin device for treating thread comprising a paraffin body, a thread tensioning wheel, a shaft on which the paraffin body is secured and on which the thread tensioning wheel is splined, and means on the shaft operative to thrust the said shaft axially during its rotation and operative to gradually increase the tension of the thread.

In witness whereof I affix my signature.

AUGUST HOFFMANN.