Oct. 31, 1961 E. V. PELLETIER 3,006,565

BOBBIN CLUTCH

Filed June 30, 1960

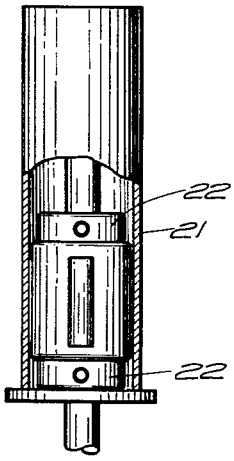


FIG. 1

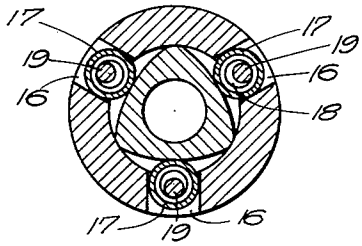


FIG. 2

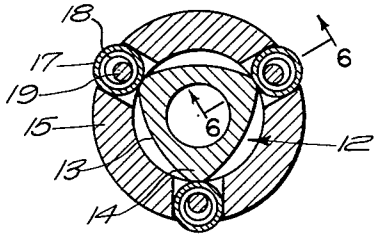


FIG. 3

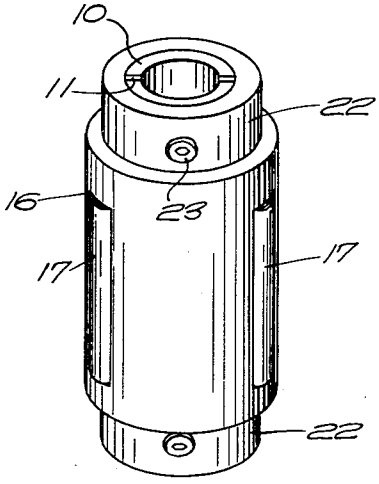


FIG. 4

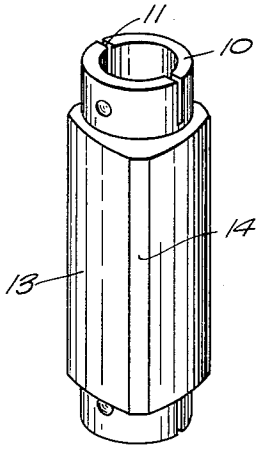


FIG. 5

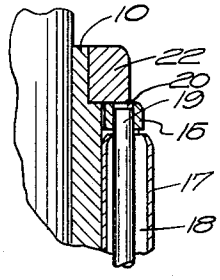


FIG. 6

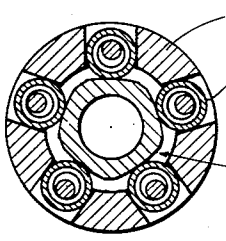


FIG. 7

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BOBBIN CLUTCH

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This invention relates to a clutch for a bobbin or tubular core upon which yarn is wound. It is desirable that some means be provided so that the tubular core of the bobbin may be easily positioned and held on a spindle and rotated by the spindle for winding yarn thereon.

One of the objects of this invention is to provide a clutch which will be easily released and one which will mechanically grip the bobbin when the spindle commences to rotate and thus drive the bobbin core with the spindle.

Another object of this invention is to provide a clutch which when the spindle ceases to rotate will release the bobbin so that it may be easily lifted axially off the spindle.

Another object of this invention is to provide a clutch which may be positioned upon existing spindles and firmly held thereon.

Another object of this invention is to provide a clutch having a minimum number of operating parts and one which may be easily and quickly assembled.

With these and other objects in view, the invention consists of certain novel features of construction as will be more fully described and particularly pointed out in the appended claims.

In the accompanying drawings:

FIG. 1 is an elevation partly in section illustrating a spindle, the clutch of this invention, and a bobbin core gripped thereby;

FIG. 2 is a sectional view through the clutch with the spindle omitted and showing the parts in release position;

FIG. 3 is a view similar to FIG. 2 but illustrating the parts in bobbin core gripping position;

FIG. 4 is a perspective view of the clutch alone;

FIG. 5 is a perspective view of the sleeve portion of the clutch;

FIG. 6 is a fragmental view illustrating the mounting of the tubes in the clutch; and

FIG. 7 is a sectional view similar to FIG. 2 but illustrating a modified form of the invention.

In proceeding with this invention, I have provided a sleeve of a size to slidably fit over a spindle and have slotted this sleeve at its opposite ends so that by pressure upon the slotted portions, these portions may be forced against the spindle to hold the sleeve firmly thereon. This sleeve carries, either integrally therewith or otherwise fixed thereto, cam surfaces and about these cam surfaces there is located a shell with axially extending openings, in number corresponding to the number of cam surfaces which are provided. In each of these openings, there is located a tube which is of such a size that it may pass through the opening. The tube, however, has a rather large bore and a pin extends through the tube and is of such a size as to permit free movement of the tube with reference to the shell and sleeve and yet the pin prevents the tube from escaping through the slot in the shell. Thus, a relative movement of the shell and sleeve causes the cams to force the tubes outwardly so as to grip the bobbin, and as rotation of the spindle ceases, a slight movement of the shell with reference to the sleeve releases the bobbin so that it may be axially lifted from the spindle. Collar members at either end of the shell serve to hold the shell in position on the sleeve and also serve as a means for contracting the sleeve so that it will grip the bobbin.

With reference to the drawings the sleeve is designated generally **10** which is slotted as at **11** at its opposite ends. Intermediate these ends, the sleeve is enlarged to provide cam surfaces **12** which may be integral with the sleeve, thus providing a mid cam portion **13** of shortest radius and closest to the axial center and end portions **14** of longest radius or at a greater distance from the axis of the sleeve. A shell **15** embraces the sleeve intermediate its ends so as to embrace the cam surfaces **12**. This shell is provided with longitudinal slots **16** symmetrically spaced and of the same number as the number of cam surfaces **12**. In each of these slots I have located a tube **17** which has a bore **18** so as to provide a rather thin wall. These tubes are of a size to pass through the slot **16** unless confined, and in order to confine these tubes in position, there is a pin **19** which extends through each opening **20** at the top and bottom of the shell at the ends of the slot **16** inwardly from its outer periphery. These pins are much smaller than the bore **18** and extend into and through this bore, thus preventing the tubes from escaping through the slots although permitting them considerable freedom of movement from the innermost position to the outermost position. At the innermost position the tubes outer surfaces are either flush or inward of the outer peripheral surface of the shell, whereas in the outer position they project substantially beyond the outer periphery of the shell as in FIGURE 3.

In order to hold the shell in position on the sleeve and also hold the pins **19** in place, I have provided collars **22** at either end of the shell which embrace the slotted parts of the sleeve and overlies the ends of the openings **20** thus preventing the pins from escaping. A screw **23** extends through each of the collars **22** in a position to engage the sleeve at the slotted portion so that upon turning up these screws **23**, the sleeve is contracted at this slotted portion. These screws also serve to hold the collars **22** in position and hold the shell in position on the sleeve. Although these collars are at either end of the shell, they do not snugly abut the shell, thus allowing the shell freedom of movement.

As rotation of the spindle occurs, the tubes are forced outwardly until they grip a bobbin core designated **21** being forced against the bobbin core by the cam surfaces. However, as soon as rotation ceases, then a reverse rotation of the bobbin and shell will cause the tube **17** to release the bobbin and it may be readily lifted from the clutch and spindle.

In FIG. 7 I have illustrated five tubes **17** in a sleeve **15'** and five cam surfaces **12'** for actuating these tubes, and it will be readily apparent that any selected number of symmetrically spaced tubes in slots with a corresponding number of cam surfaces on the sleeve may be provided.

I claim:

1. A bobbin clutch comprising a sleeve to receive a spindle, means to secure the sleeve to a spindle, a plurality of symmetrically disposed cam surfaces carried by said sleeve, a shell coaxial with and embracing the

sleeve and cam surfaces and provided with a plurality of axially elongated slots corresponding to the number of said cam surfaces, a cylindrical tube in each slot, each tube being of a size to pass through each slot and disposed with its axis generally parallel to the axis of said sleeve and shell, each tube having an axial bore, pins fixed in said shell, one pin entering the bore of each tube, said pins each being of a size smaller than said bore whereby relative movement of the tubes and shell may occur and yet the outward movement of the tubes is limited when engaged and urged outwardly by said cam surfaces due to relative rotation of said shell and sleeve.

2. A bobbin clutch as in claim 1 wherein the sleeve is split at its opposite ends forming portions which extend beyond each end of said shell, and a collar embracing said split portion at each end of the shell to hold the collar on said sleeve and to in turn retain the shell in position.

3. A bobbin clutch as in claim 2 wherein the ends of each pin are in openings in the shell and the collars prevent the pins from escaping axially.

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