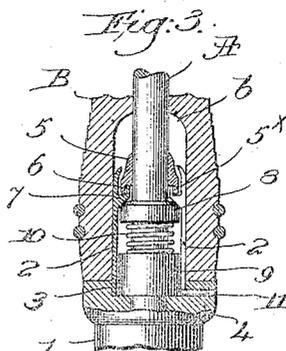
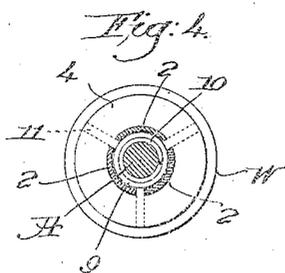
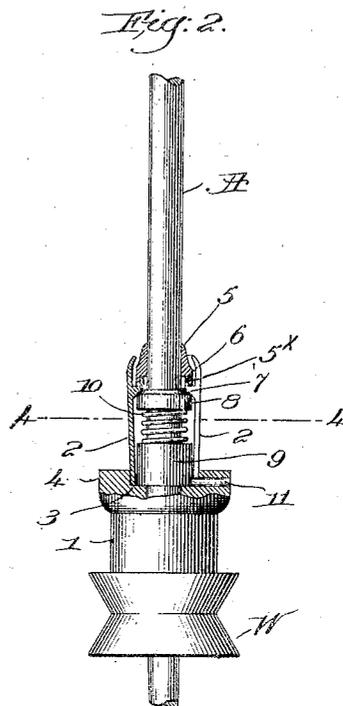
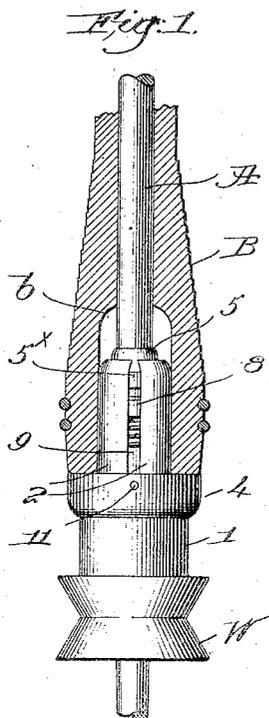


No. 893,760.

PATENTED JULY 21, 1908.

F. H. THOMPSON.
BOBBIN DRIVING MEANS FOR ROTATABLE SPINDLES.
APPLICATION FILED NOV. 1, 1907.



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UNITED STATES PATENT OFFICE.

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BOBBIN-DRIVING MEANS FOR ROTATABLE SPINDLES.

No. 893,760.

Specification of Letters Patent.

Patented July 21, 1908.

Application filed November 1, 1907. Serial No. 400,298.

To all whom it may concern:

Be it known that I, FRANK H. THOMPSON, a citizen of the United States, and resident of Hopedale, county of Worcester, State of Massachusetts, have invented an Improvement in Bobbin-Driving Means for Rotatable Spindles, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of novel and effective bobbin-driving means for rotatable spindles and in spinning, twisting and similar apparatus, whereby the bobbin is accurately centered with relation to the spindle and in consequence will run true and with a minimum vibration.

The bobbin-driving means forming the subject-matter of my present invention partakes to a certain extent of features common to similar apparatus wherein the centrifugal force due to rapid rotation of the spindle is made effective through clutching members to interiorly engage and drive the bobbin, but I have combined therewith means whereby the bobbin is always accurately centered with relation to the spindle.

In order to attain the desired result I provide spring-controlled means to directly engage the inner surfaces of the clutching members and effect outward movement thereof equally, and inasmuch as the engaged inner surfaces of said members are true with relation to each other and with the external or bobbin engaging surfaces of the clutching members the latter are moved outward equally, with uniform force, thereby accurately centering the bobbin when applied to the spindle.

Figure 1 is a side elevation of a sufficient portion of a rotatable spindle provided with bobbin driving means embodying my invention, the lower part of a bobbin being shown in connection therewith, in section; Fig. 2 is a partial section and elevation of the apparatus, omitting altogether one of the clutching members, to more clearly illustrate the construction, the spindle being supposed to be running bare; Fig. 3 is a similar view but with a bobbin applied to the spindle and in operative engagement with the driving means; Fig. 4 is a horizontal sectional view on the line 4-4, Fig. 2.

The rotatable spindle A, attached sleeve 1 having a whirl W, the transversely - segmental clutching members 2 loosely grouped around the spindle and having their lower ends inserted loosely in an annular recess or motion-limiting raceway 3 in the head 4 of the sleeve, and the collar 5 fast on the spindle and having a depending annular flange 5^x, to form a second motion-limiting raceway, for the upper ends of the members 2, may be and are all substantially of well known construction. The said members 2 have formed on their inner sides upturned, segmental parts or projections 6 which enter loosely the upper raceway, the base of each projection being beveled, to present an upwardly and inwardly extended inclined surface 7, and so far as thus described the construction is common to certain forms of centrifugally acting bobbin driving means, the lateral outward movement of the clutching members being limited by the upper and lower raceways, as will be manifest.

The several inclined surfaces 7 are true with each other, and with the external bearing portions of the clutching members, which are adapted to enter the recess *b* in the base of the bobbin B, Figs. 1 and 3, and to internally engage and drive the bobbin in unison with the spindle.

I utilize the surfaces 7 to effect equal outward movement of the clutching members thereby accurately center the bobbin, and to this end I slidably mount an expander or collar 8 on the spindle between the collar 5 and the usual enlargement 9 at the lower ends of the clutching members, and preferably the top of the expander is slightly beveled, as shown in the drawing.

A spiral spring 10 is coiled around the spindle between the enlargement 9 and the expander 8, to normally elevate the latter and press its beveled edge against the inclined or beveled surfaces 7, as clearly shown in Figs. 2 and 3, thereby effecting equal outward movement of all the clutching members 2, such movement being limited by the motion-limiting means when the spindle is running bare, as in Fig. 2.

When the bobbin is applied to the spindle the upper ends of the members 2 are pressed inward as they enter the recess or chamber *b*, the surfaces 7 acting to depress the expander

8 against its spring 10, but while the several
clutching members are independent of each
other it will be seen that they are acted upon
equally by the spring - controlled expander
5 and hence the bobbin will be accurately cen-
tered on the spindle. As the bobbin is thus
properly centered it runs truer and with a
minimum of vibration, and whether or not
the bobbin be applied accurately the device
10 is self-centering, for the spring-controlled
means acts equally and simultaneously upon
all the clutching members of the group.

The spring is light, relatively speaking, as
it will be obvious that the work required of it
15 is to center the bobbin, and the centrifugal
action of the clutching members may or may
not act in conjunction with the spring to ef-
fect the requisite driving engagement with
the bobbin.

20 The construction is very simple and cheap
to manufacture, and it is thoroughly efficient
in operation.

As is usual in bobbin driving means of this
general type the clutching members are later-
25 ally separated by pins 11, driven radially
into the head of the whirl-sleeve, the said
members being also rotated positively with
the spindle.

Having fully described my invention, what
30 I claim as new and desire to secure by Let-
ters Patent is:—

1. The combination with a rotatable spin-
dle, of elongated bobbin-clutching members
rotatable therewith and adapted to interi-
35 orly engage a bobbin, spring - controlled
means movable longitudinally with relation
to and directly engaging the inner surfaces
of the clutching members near their upper
ends to effect equal outward movement
40 thereof and accurately center the bobbin,
and means carried by the spindle to coöper-
ate with said clutching members and limit
such outward movement thereof.

2. The combination with a rotatable spin-
45 dle, of elongated bobbin-clutching members
rotatable therewith and adapted to interi-
orly engage a bobbin, motion-limiting race-
ways on the spindle, with which the upper
and lower ends of said members coöperate
50 loosely, and spring-controlled means mov-
able longitudinally with relation to and di-
rectly engaging the inner surfaces of and ef-
fecting equal outward movement of the
clutching members.

3. The combination with a rotatable spin-
55 dle, of elongated bobbin-clutching members
rotatable therewith and adapted to interi-
orly engage a bobbin, each member having
an upwardly and inwardly tapered internal
60 surface, spring-controlled means to engage
said surfaces and thereby effect equal out-
ward movement of the clutching members to

accurately center the bobbin, and means to
limit such outward movement.

4. The combination with a rotatable spin- 65
dle, of elongated bobbin-clutching members
rotatable therewith and adapted to interi-
orly engage a bobbin, each member having
an upturned, interior projection beveled at
its base, a collar fast on the spindle and hav- 70
ing an annular depending flange extending
outside of said projections, permitting lim-
ited lateral movement of the upper ends of
the clutching members, and a spring-con- 75
trolled collar slidable on the spindle and en-
gaging the beveled bases of the projections
to move outward and equally the upper ends
of the clutching members.

5. The combination with a rotatable spin- 80
dle, of elongated bobbin-clutching members
rotatable therewith and adapted to interi-
orly engage a bobbin, each member having
an upwardly and inwardly tapered internal
surface, spring-controlled means to engage 85
said surfaces and thereby effect equal out-
ward movement of the clutching members
to accurately center the bobbin, and annular,
motion-limiting raceways on the spindle, to
loosely coöperate with the upper and lower 90
ends of the clutching members.

6. The combination with a rotatable spin-
dle, of elongated, transversely - segmental
bobbin clutching members rotatable there-
with and adapted to interiorly engage and
drive a bobbin, each member having an up- 95
turned, internal projection beveled at its
base, a motion-limiting raceway on the spin-
dle into which the projections enter loosely,
to limit lateral and prevent upward move-
ment of said members, and a spring-con- 100
trolled, movable expander to engage the
beveled faces of said projections and effect
equal outward movement of the clutching
members.

7. The combination with a rotatable spin- 105
dle, of elongated, bobbin-clutching members
rotatable therewith and adapted to interi-
orly engage a bobbin, and automatically-
acting centering means movable longitudi-
nally with relation to and to directly engage 110
the inner surfaces of and effect equal and si-
multaneous outward movement of all the
clutching members, to accurately center the
bobbin with relation to the spindle, the cen-
tering means engaging the clutching mem- 115
bers near their upper ends.

In testimony whereof, I have signed my
name to this specification, in the presence of
two subscribing witnesses.

FRANK H. THOMPSON.

Witnesses:

GEORGE OTIS DRAPER,
ERNEST W. WOOD.