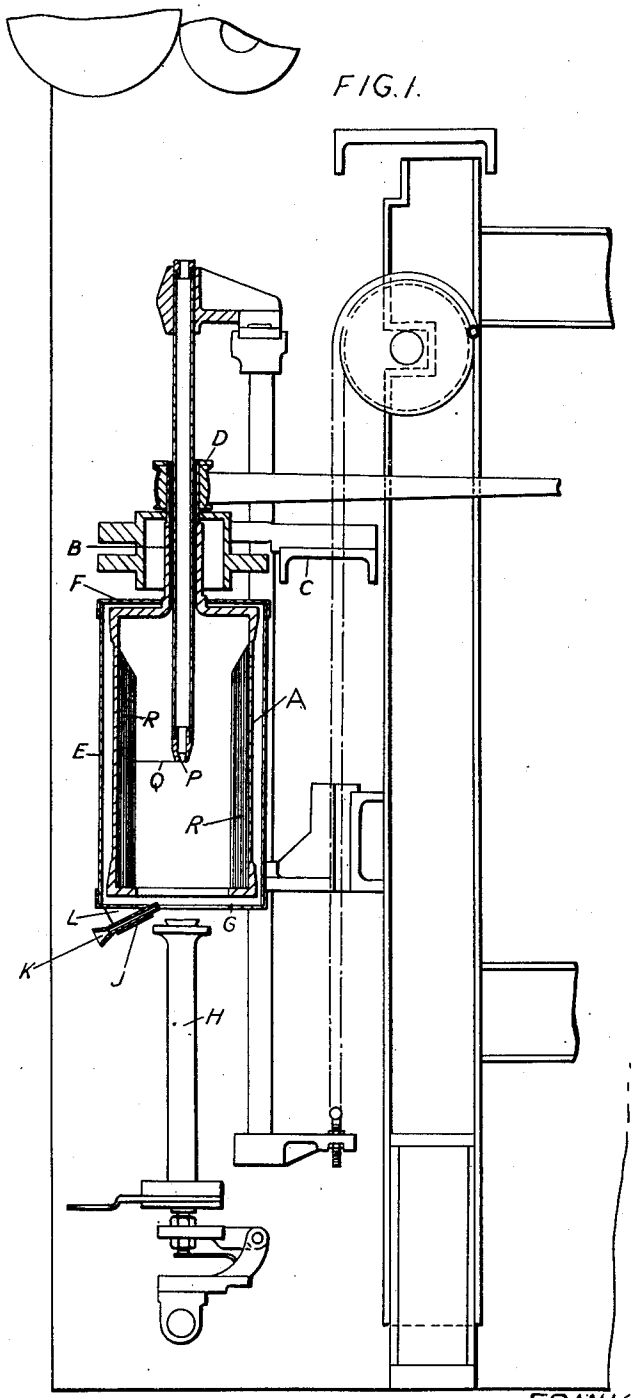
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CENTRIFUGAL SPINNING, TWISTING, AND ANALOGOUS MACHINE

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FIG. 1.



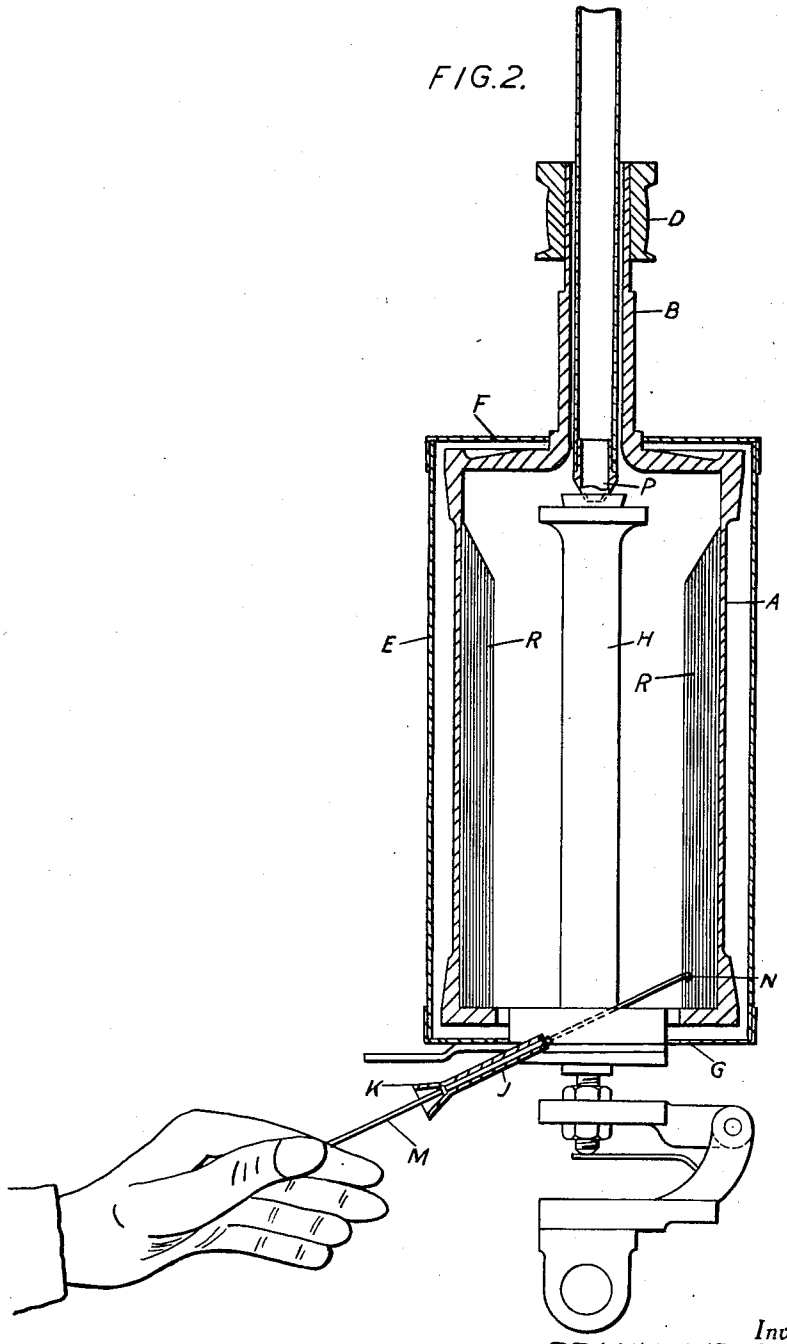
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CENTRIFUGAL SPINNING, TWISTING, AND ANALOGOUS MACHINE

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FIG.2.



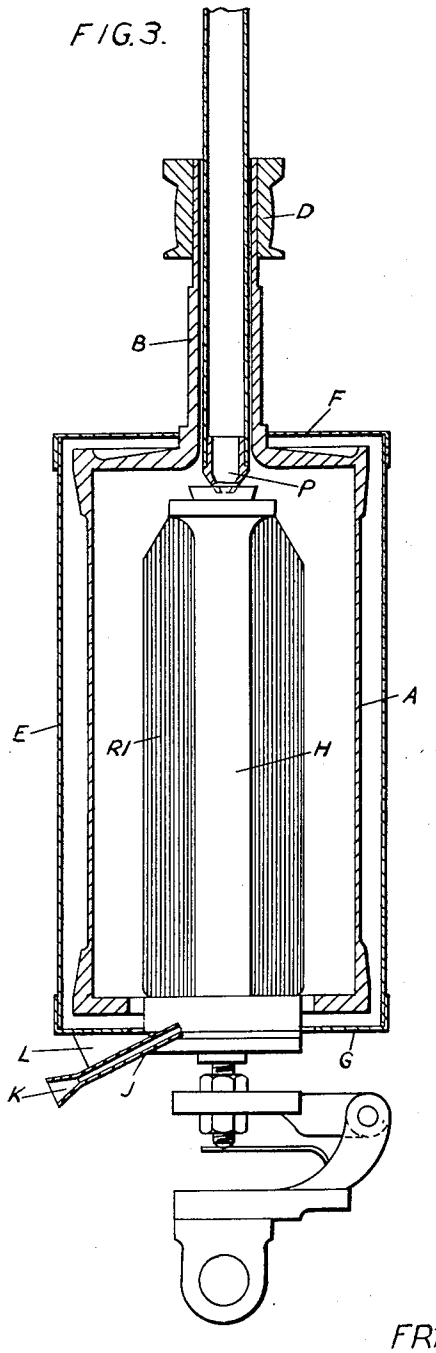
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FIG. 3.



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FIG. 4.

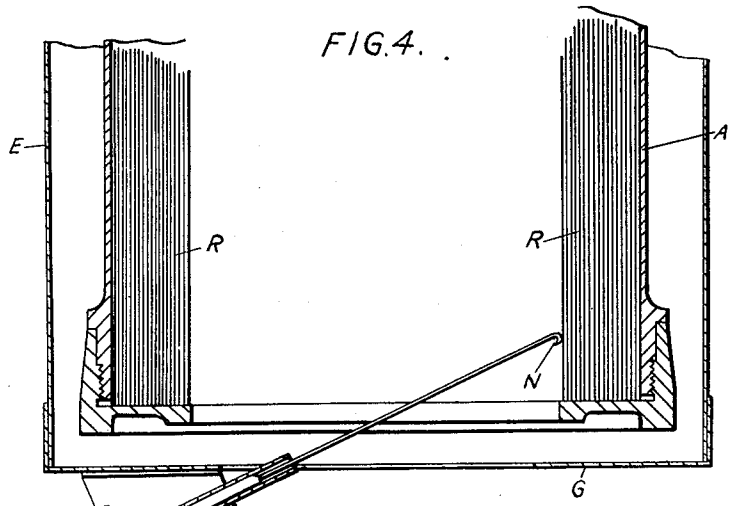
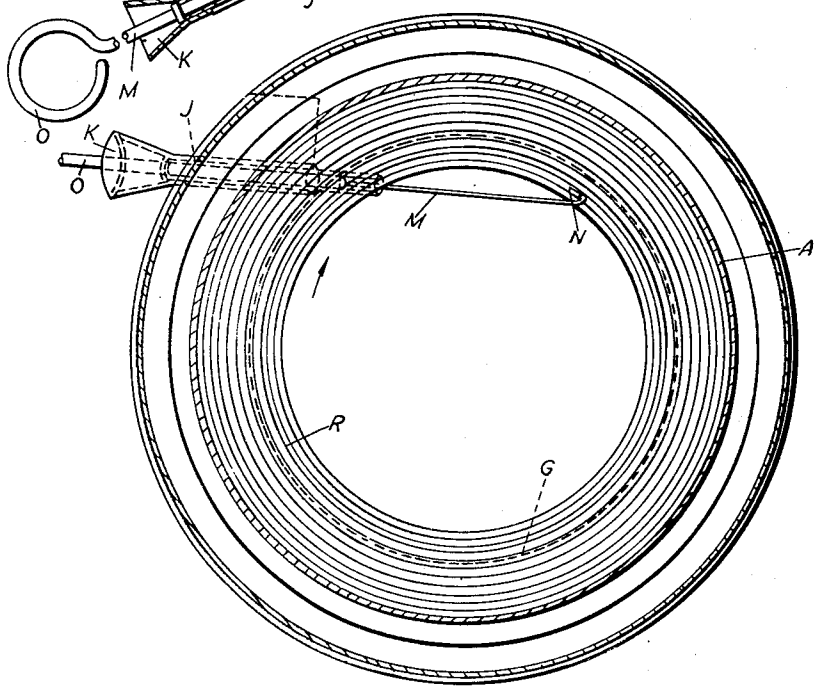


FIG. 5.



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Patented Aug. 22, 1950 2,520,078

UNITED STATES PATENT OFFICE

2,520,078

CENTRIFUGAL SPINNING, TWISTING, AND ANALOGOUS MACHINE

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Application March 3, 1949, Serial No. 79,467
In Great Britain March 18, 1948

6 Claims. (Cl. 57—34)

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This invention relates to centrifugal spinning, twisting and analogous machines, and it has for its object to enable the unwinding of the material already laid in the affected container or yarn holder to be initiated with facility and rapidity and the material already spun in the container to be recovered in the event of the breakage of a strand during the spinning or other operation.

According to the invention, in the event of the breakage of a strand during the operation of a centrifugal spinning, twisting or analogous machine, the unwinding of the mass already spun in the affected container is initiated by the application of a flexible instrument tangentially into contact with, and co-directionally with the movement of, the inner surface of the annulus of spun material in the rotating container, whereby a surface coil of the material is detached from the annulus of spun material and an end is created which is held stationary until the rotation of the container causes the initiation of the unwinding on to an empty stationary bobbin inserted into the container for that purpose.

The aforesaid instrument may consist of a flexible feeler of wire which may be formed at its contacting extremity with a hook, and this feeler may be applied to the annulus of spun material with or without the employment of means for guiding and/or supporting it during its application.

When guiding means for the feeler is employed this means may consist of a tube suitably supported and disposed tangentially in relation to the bore of the container co-directionally with the rotary movement thereof, the outer end of the tube being preferably flared.

This guide tube may be mounted in such manner that the feeler may be capable of application for both a left-hand and a right-hand twist, or a separate tube may be utilised appropriate to each respective twist.

For example, each spindle unit may be provided adjacent to the open end of the corresponding container with one or more guide tubes for the flexible wire feeler each of which tube or tubes may be carried by a forwardly projecting bracket or suitable shape borne by an appropriate fixed rail, or, in the case in which a spinning or like container is encircled by a concentric stationary shroud closed at one end and having an apertured cover at the other, the guide tube or tubes may be secured to or adjacent to the apertured cover of the shroud.

If desired, the guide tube or tubes may be supported by a swivel mounting adapted to enable

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each tube to be aligned in the requisite direction for the application of the feeler to the bore of the annulus of spun material.

In the accompanying drawings the invention is illustrated, semi-diagrammatically and by way of example, as applied to a centrifugal spinning machine having inverted cup-shaped spinning containers each of which is encircled by a concentric stationary casing or shroud in order to eliminate air disturbance.

Figure 1 represents a vertical section of a portion of a spindle unit showing a container in the process of being filled with spun material;

Figure 2 is a similar view after a breakage of the thread has occurred and after the elevation of an empty bobbin into the affected container and the insertion of the aforesaid feeler into contact with the inner surface of the annulus of spun material;

Figure 3 is another similar view after the spun material has been transferred to an empty bobbin and the feeler has been withdrawn;

Figure 4 is a fragmentary vertical section; and,

Figure 5 is a sectional plan view of the container of Figure 2, both the latter figures being drawn to an enlarged scale.

A is an inverted cup-shaped spinning container having an integral neck B which is supported in known manner in a ball bearing (not shown) carried by a fixed rail C, the container being tape driven in the usual way through the medium of a whorl D secured at the upper end of the neck B.

Surrounding the container A is a concentric casing or shroud E which is held stationary by a bracket (not shown) projecting from a fixed part of the machine frame, this casing or shroud being closed at its upper end by a cover F and having at its lower end an apertured or annular cover plate G through which a bobbin H can pass when elevated into the container A.

A tube J having a flared outer end K is secured by a fin L in an inclined position upon the lower face of the annular cover plate G, the inner end of the tube directed tangentially of the aperture in said cover plate, and M is a flexible wire feeler the forward end of which is formed with a hook N and the rearward end of which terminates in a ring O whereby the feeler may be grasped by the hand of an operative.

P is a vertically traversable tubular yarn guide of known kind and Q (Fig. 1) is the length of yarn extending from the lower end of the guide P to the annular spun mass R already laid in the container A.

It is assumed in Figure 1 that the spinning

operation is in progress and that the container has been partially filled with an annulus of spun material R when a breakage occurs and that the container is rotating in the direction of the arrow in Figure 5.

As soon as the breakage is observed the operative elevates the bobbin H into the container A and inserts the feeler M into the guide tube J as shown in Figures 2, 4 and 5, bringing the hook N on the feeler into light contact with the inner surface of the annulus R the effect of which is to dislodge a surface coil of the material whereby an end is created which is held until it becomes lapped round the empty bobbin H and initiates the unwinding of the annulus R on to the bobbin H as shown at R1 in Figure 3.

It is to be understood that the bobbin H shown in Figures 1, 2 and 3, is one of a series carried by a common rail extending longitudinally of the machine, on one or both sides thereof, and provided with known means for raising and lowering the bobbins collectively.

The invention is not limited to the embodiment hereinbefore described and illustrated in the accompanying drawings but it is equally applicable to centrifugal spinning, and like machines having containers of the upright type open at the top and each supported from below by a bearing.

What I claim is:

1. In a centrifugal spinning, twisting and analogous machine including a revolving spinning container into which an annulus of material is spun, the provision of at least one guide tube directed towards said annulus of material, said tube being located approximately in tangential relation to and externally of an open end of said annulus, and a flexible hooked member adapted to be passed through said guide tube into contact with the bore of said annulus of spun material.

2. In a centrifugal spinning, twisting and analogous machine including a revolving inverted open-ended spinning container into which an annulus of material is spun, the provision of at least one guide tube directed towards the lower end of said annulus of material, said tube being located approximately in tangential relation to and externally of said open end of said annulus, and a flexible hooked member adapted to be passed through said guide tube into contact with the bore of said annulus of spun material.

3. In a centrifugal spinning, twisting and analogous machine including an inverted revolving spinning container into which an annulus of material is spun, the provision of means for initiating the unwinding of said spun material in the event of a breakage of the material, comprising, a flexible hooked member adapted to be brought into contact with the interior of said annulus of spun material to dislodge a coil thereof, and means disposed tangentially of an end of said annulus to guide said instrument thereinto.

4. In a centrifugal spinning, twisting and analogous machine including an inverted revolving open-ended spinning container into which an annulus of material is spun, the provision of means for initiating the unwinding of spun material from said annulus in the event of a breakage of the material, comprising, a flexible hooked member adapted to be brought into contact with the interior of said annulus to dislodge a surface coil thereof, and a tube disposed tangentially of the open end of said annulus to guide said instrument thereinto.

5. In a centrifugal spinning, twisting and analogous machine including an inverted cup-shaped revolving spinning container into which an annulus of material is spun, the provision of means for initiating the unwinding of said spun material in the event of a breakage of the material, comprising, a flexible hooked member adapted to be brought into contact with the interior of said annulus of spun material to dislodge a coil thereof, and means disposed substantially tangentially of an end of said annulus to guide said hooked member thereinto.

6. In a centrifugal spinning, twisting and analogous machine including an inverted cup-shaped revolving open-ended spinning container into which an annulus of material is spun, the provision of means for initiating the unwinding of spun material from the annulus in the event of a breakage of the material, comprising, a flexible hooked member disposed externally of and adapted to be brought into contact with said annulus to dislodge an interior surface coil thereof, and a tube disposed substantially tangentially of the lower end of said annulus to guide said instrument thereinto.

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