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THREAD-ADVANCING REEL
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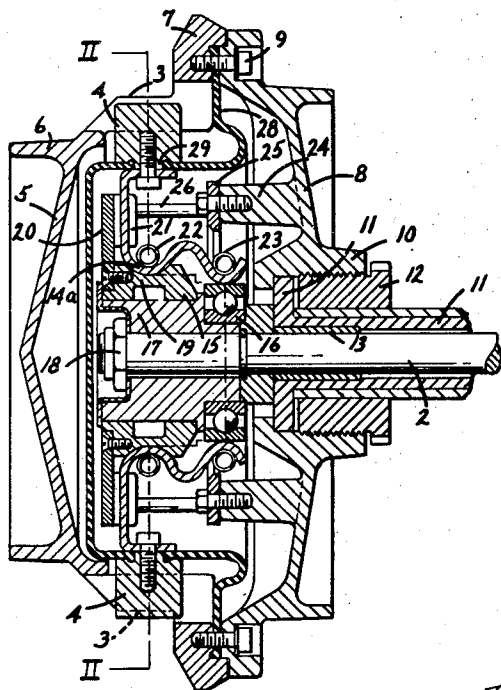


Fig. 1.

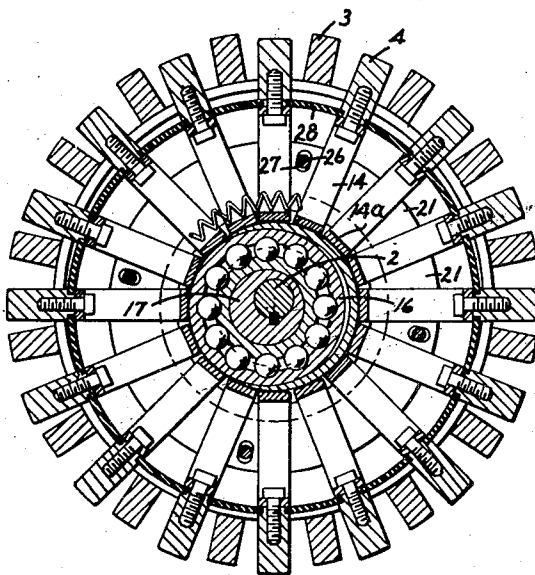


Fig. 2.

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THREAD-ADVANCING REEL

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7 Claims. (Cl. 28—71.7)

1 This invention relates to thread advancing reels which may be used for the production of a yarn store which is continuously advanced axially of the periphery of the reel, during which time it may be subjected to fluid treatment in the manner and for the purposes conventional in the art. The main object of the present invention is to provide an improved reel of as simple construction as possible. This has the purpose of rendering reels of the type disclosed more economical and hence more commercially practicable when it is desired to employ a reel of short axis of cantilever form, such as may be adapted to replace a godet and associated lap-displacing guide. Other objects and advantages of the invention will be apparent from the drawing and description thereof hereinafter.

In the drawing, which is illustrative of the invention,

Figure 1 is a transverse cross-section of a preferred embodiment of the reel, and

Figure 2 is a section on line II—II of Figure 1.

As shown, the reel is mounted for rotation about a fixed shaft 2 and comprises two sets of thread-carrying bars 3 and 4 respectively.

The set of bars 3 may be in the form of a cylindrical cage closed at one end by the reinforcing plate 5, provided with an annular rim 6 adapted to receive excess thread thrown off the bars of the reel. The cage has a flange 7 extending outwardly from the periphery of the bars and disposed away from the plate 5. The cage is secured to a web or plate 8 by means of cap screws 9. The hub 10 is secured to the driving spindle 11 by means of a nut 12. A bushing 13 is provided between the spindle 11 and the fixed shaft 2 and is so constructed that the bars 3 are concentric with and rotate about the axis of shaft 2.

The bars 4 are secured to supporting elements 14 which extend downwardly therefrom and are held against bearing elements 15 and 16 which are spaced axially from each other and are carried rotatably upon a central block or bushing 17 fixedly secured to the shaft 2 by means of nut 18. The bearing surfaces of the central sleeve 17 which carry the bearing members 15 and 16 are eccentric with respect to the axis of shaft 2. Preferably, the eccentricity of the axis of bearing member 15 is close to 90° from the eccentricity of the axis of member 16 with respect to the shaft 2. The bearing member 15 may be provided with an arcuate groove comprising a plurality of seats 19 for receiving the complementarily formed convex portion 14a of the supporting elements 14.

An annular plate 20 has a plurality of radially

2 extending axially projecting lugs 21. The radial portions of the supporting elements 14 work slidably within the guideways formed between adjacent lugs 21, thereby limiting angular movement of the bars 4 relative to the bearings 15 and 16. Garter springs 22 and 23 hold the base of the supporting elements 14 in contact with the bearing members 15 and 16 respectively.

A plurality of bosses 24 extending inwardly of the plate 8 carry the ring 25 supporting a plurality of pins 26 which project into apertures 27 in the plate 20. The apertures 27 are elongated radially sufficiently to allow for the relative eccentricity of the pins 26 to the plate 20 during rotation thereof.

A flexible seal 28, such as rubber, synthetic rubber, or the like, is secured to the flange 7 by means of cap screws 9 and to the bars 4 which have bosses 29 adapted to protrude through suitable openings in the seal 28. As shown in the drawing, the seal is entirely closed at one end and forms a tight housing about the driving parts and the bearings associated therewith, while permitting relative movement of the second set of bars 4.

In operation, spindle 11 is driven, thereby driving the concentric cage of bars 3. The rotation of the concentric cage is transmitted to the eccentrically mounted bars by means of pins 26 engaging slots 27 in the plate 20 and by virtue of the guiding lugs 21 carried by the plate 20 which prevent lagging of the bars 4. During rotation, bars 4 alternately protrude and recede from the general periphery of the concentric cage of bars 3 and during such protrusion each bar 4 is rocked generally about an axis at the center of curvature of the curved foot portion 14a by virtue of the fact that bearing 16 is eccentric with respect to bearing 15. Because of the eccentric relationship between bearings 15 and 16 and the shaft 2 the rocking motion picks up a yarn winding from a given position longitudinally of the bars 3 but deposits such winding in an advanced position longitudinally of the bars 3.

45 Although a cantilever form of reel is shown, that is one which is supported at one end only, the reel construction is adaptable also to reels supported at both ends and capable of supporting a great number of windings spaced longitudinally of the bars thereof. As appears from the drawing and description thereof, the reel is of simple and inexpensive construction and therefore most advantageously adaptable for use when a small number of turns are to be handled thereby.

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It is understood that changes and variations may be made without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A thread advancing reel comprising a set of spaced bars rotatable about an axis; a second set of spaced bars interdigitating with the bars of the first set; means for supporting the second set of bars rotatably on an axis of rotation displaced from that of the first set comprising two axially spaced bearing members, each having an axis of rotation displaced from the axis of rotation of the first set of bars and from that of the other, supporting elements for the bars of the second set resting against both bearing members and slidable relative thereto, guide means slidably engaged by the supporting elements for limiting the angular movement of the second set of bars relative to the bearing members; and means for rotating the bars whereby such rotation rocks the bars of the second set with respect to their supporting means to effect alternate protrusion and recession thereof with respect to the bars of the first set and to thereby advance windings of thread carried on the reel axially thereof.

2. A thread advancing reel comprising a set of spaced bars rotatable about an axis; a second set of spaced bars interdigitating with the bars of the first set; means for supporting the second set of bars rotatably on an axis of rotation displaced from that of the first set comprising two axially spaced bearing members, each having an axis of rotation displaced from that of the other and from the axis of rotation of the first set of bars, supporting elements for the bars of the second set resting against both bearing members and slidable relative thereto, means for holding the supporting elements against the bearing members, guide means slidably engaged by the supporting elements for limiting the angular movement of the second set of bars relative to the bearing members; and means for rotating the bars whereby such rotation rocks the bars of the second set with respect to their supporting means to effect alternate protrusion and recession thereof with respect to the bars of the first set and to thereby advance windings of thread carried on the reel axially thereof.

3. A thread advancing reel comprising a set of spaced bars rotatable about an axis; a second set of spaced bars interdigitating with the bars of the first set; means for supporting the second set of bars rotatably on an axis of rotation displaced from that of the first set comprising two axially spaced bearing members, each having an axis of rotation displaced from the axis of rotation of the first set of bars, supporting elements for the bars of the second set resting against both bearing members and slidable relative thereto, one of the bearing members having an annular groove with an arcuate bottom surface and each supporting element having a convexly curved portion slidably engaging the arcuate surface of the bearing member, means for holding the supporting elements against the bearing members, guide means slidably engaged by the supporting elements for limiting the angular movement of the second set of bars relative to the bearing members; and means for rotating the bars whereby such rotation rocks the bars of the second set with respect to their supporting means to effect alternate protrusion and recession thereof with respect to the bars of the

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first set and to thereby advance windings of thread carried on the reel axially thereof.

4. A thread advancing reel comprising a set of spaced bars rotatable about an axis; a second set of spaced bars interdigitating with the bars of the first set; means for supporting the second set of bars rotatably on an axis of rotation displaced from that of the first set comprising two axially spaced bearing members, each having an axis of rotation displaced from that of the other and from the axis of rotation of the first set of bars, supporting elements for the bars of the second set resting against both bearing members and slidable relative thereto, one of the bearing members having an annular groove comprising a plurality of arcuate seats and each supporting element having a complementary arcuate portion slidably engaging one of the seats, means for holding the supporting elements against the bearing members, guide means slidably engaged by the supporting elements for limiting the angular movement of the second set of bars relative to the bearing members; and means for rotating the bars whereby such rotation rocks the bars of the second set with respect to their supporting means to effect alternate protrusion and recession thereof with respect to the bars of the first set and to thereby advance windings of thread carried on the reel axially thereof.

5. A thread advancing reel comprising a set of spaced bars rotatable about an axis; a second set of spaced bars interdigitating with the bars of the first set; means for supporting the second set of bars rotatably on an axis of rotation displaced from that of the first set comprising two axially spaced bearing members, each having an axis of rotation displaced from that of the other and from the axis of rotation of the first set of bars, supporting elements for the bars of the second set resting against both bearing members and slidable relative thereto, one of the bearing members having an annular groove comprising a plurality of arcuate seats and each supporting element having a complementary arcuate portion slidably engaging one of the seats, spring means for holding the supporting elements against the bearing members, guide means slidably engaged by the supporting elements for limiting the angular movement of the second set of bars relative to the bearing members; and means for rotating the bars whereby such rotation rocks the bars of the second set with respect to their supporting means to effect alternate protrusion and recession thereof with respect to the bars of the first set and to thereby advance windings of thread carried on the reel axially thereof.

6. A thread advancing reel comprising a set of spaced bars rotatable about an axis; a second set of spaced bars interdigitating with the bars of the first set; means for supporting the second set of bars rotatably on an axis of rotation displaced from that of the first set comprising two axially spaced bearing members, each having an axis of rotation displaced from that of the other and from the axis of rotation of the first set of bars, supporting elements for the bars of the second set resting against both bearing members and slidable relative thereto, one of the bearing members having an annular groove comprising a plurality of arcuate seats and each supporting element having a complementary arcuate portion slidably engaging one of the seats, spring means for holding the supporting elements against the bearing members, guide means having radial guideways slidably engaged by the sup-

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porting elements for limiting the angular movement of the second set of bars relative to the bearing members; and means for rotating the bars whereby such rotation rocks the bars of the second set with respect to their supporting means to effect alternate protrusion and recession thereof with respect to the bars of the first set and to thereby advance windings of thread carried on the reel axially thereof.

7. A thread advancing reel comprising a set of spaced bars rotatable about an axis; a second set of spaced bars interdigitating with the bars of the first set, a fixed shaft, a spindle rotatable on the shaft for driving the bars of the first set about its axis; two axially spaced bearing members, each having an axis of rotation displaced from the axis of rotation of the first set of bars and from that of the other, said bearing

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members being carried by the fixed shaft, supporting elements for the bars of the second set, spring means for holding the supporting elements in slidable engagement with the bearing members, guide means rotatable with one of said bearing members having radial guideways slidably engaged by the supporting elements for limiting the angular movement of the second set of bars relative to the bearing members.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,386,249	McDermott	Oct. 9, 1945