

E. G. RIDER.
EXPANSION MANDREL.
APPLICATION FILED JAN. 24, 1919.

1,327,445.

Patented Jan. 6, 1920.

Fig. 1.

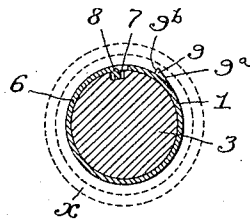
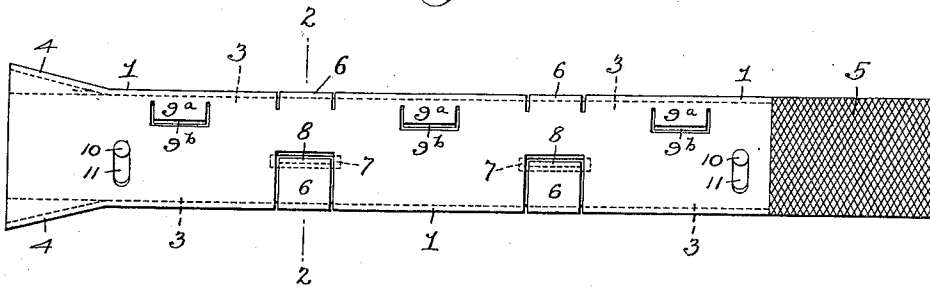


Fig. 2.

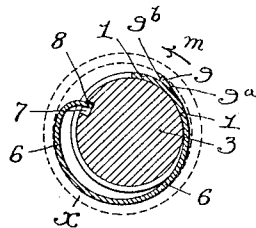


Fig. 3.

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UNITED STATES PATENT OFFICE.

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EXPANSION-MANDREL.

1,327,445.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ERNEST G. RIDER, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Expansion-Mandrels, of which the following is a specification.

My invention relates to expansion mandrels, such, for instance, as are used to hold cardboard tubes upon which yarn is being wound, the object of my invention being to construct a mandrel of this type in such a way that it may be readily caused to grip the tube and prevent rotation thereof, to release the same for removal, or to grip the tube in such a way as will prevent rotation thereof in one direction but permit it in the reverse direction.

This object I attain in the manner herein-after set forth, reference being had to the accompanying drawing, in which

Figure 1 is a top or plan view of a mandrel constructed in accordance with my invention;

Fig. 2 is a vertical section of the same on the line 2—2, Fig. 1, and

Fig. 3 is a view, similar to Fig. 2, but illustrating the parts in their expanded positions.

A mandrel embodying the features of my invention consists primarily of a tubular body 1, within which is rotatably mounted a rod 3. One end of the tubular body 1 is preferably expanded, as at 4, to properly center the cardboard tube when it is applied to the mandrel, and the opposite end of the rod 3 is preferably provided with a knurled or roughened head 5 by which it may be readily grasped and rotated.

The tubular body 1 is, at intervals, slotted to form spring fingers 6 and the rod 3 is, at similar intervals, provided with notches 7 into which project inward ends 8 of the spring fingers 6.

When the rod 3 occupies the position in reference to the tubular body 1 shown in Fig. 2, the spring fingers 6 are flush with the outer face of the tubular body and a cardboard tube α may be readily slipped into position over the mandrel. As soon as the tube α is in position, the rod 3 is rotated and the action of the notches 7 upon the ends 8 of the spring fingers 6 forces said

spring fingers outwardly until they securely grip the inner face of the tube α , as shown in Fig. 3. The frictional grip of the inner face of the tubular body 1 upon the surface of the rod 3 is of such strength that, although said rod may be readily rotated by hand, the elasticity of the spring fingers 6 will be insufficient to dislodge the parts from the positions shown in Fig. 3.

At times it may be desirable to so support the tube α that it will be prevented from rotating in one direction but free to rotate in the reverse direction. To accomplish this, the tubular body 1 is slotted, at intervals, between the spring fingers 6, to form lugs 9, which, when struck up, as shown in Figs. 2 and 3, present, in one direction, inclined faces 9^a, and, in the opposite direction, abrupt faces 9^b. When the spring fingers 6 are expanded, as shown in Fig. 3, they draw the inner face of the tube α against the lugs 9 and, while the tube α may rotate in the direction of the arrow m any attempt to rotate the tube in the reverse direction will be prevented by the abrupt faces 9^b of the lugs 9 which will bite into the inner face of the tube. It is, of course, understood that when this mounting of the tube α is desired, the spring fingers 6 are expanded merely enough to cause the inner face of the tube to bear against the lugs 9, but not sufficiently to cause said spring fingers to grip the inner face of the tube with such force as will prevent rotation thereof in either direction.

In order to control the degree of rotation, in either direction, of which the rod 3 is capable, said rod has, projecting from it, pins 10 (Fig. 1) which engage with slots 11 in the tubular body 1. Contact of the pins with the ends of these slots serves to prevent too great an amount of rotation, in either direction, of the rod 3 within the tubular body 1.

I claim:

1. The combination, in a mandrel, of a tubular body slotted to form a spring finger integral with said tubular body, and means contained within said tubular body and co-acting with said integral spring finger to project the same outwardly.

2. The combination, in a mandrel, of a tubular body, a spring finger thereon, a

rod rotatably mounted therein, and means whereby said rod, when rotated, is caused to act upon said spring finger so as to project the same outwardly.

5 3. The combination, in a mandrel, of a tubular body slotted to form a spring finger, and a notched rod rotatably mounted in said tubular body, said spring finger having an inturnd end engaging the notch in said
10 rod.

4. The combination, in a mandrel, of a body, a spring finger thereon, means for projecting said spring finger outwardly, and a longitudinally disposed lug on said body,
15 said lug presenting in one direction an inclined face and in the other direction an abrupt face.

5. A mandrel having a tubular body slotted at one point to form a spring finger

and at another point to form a lug which has an inclined face and an abrupt face. 20

6. The combination, in a mandrel, of a tubular body slotted at one point to form a spring finger and at another point to form a lug, and means for projecting said spring
25 finger outwardly, said spring finger being so located in respect to said lug that, when projected, its point of greatest projection is substantially diametrically opposite the position of the lug. 30

7. An expansion mandrel having upon its outer face a longitudinally disposed lug, said lug presenting in one direction an inclined face and in the other direction an abrupt face. 35

In testimony whereof, I have signed my name to this specification.

ERNEST G. RIDER.