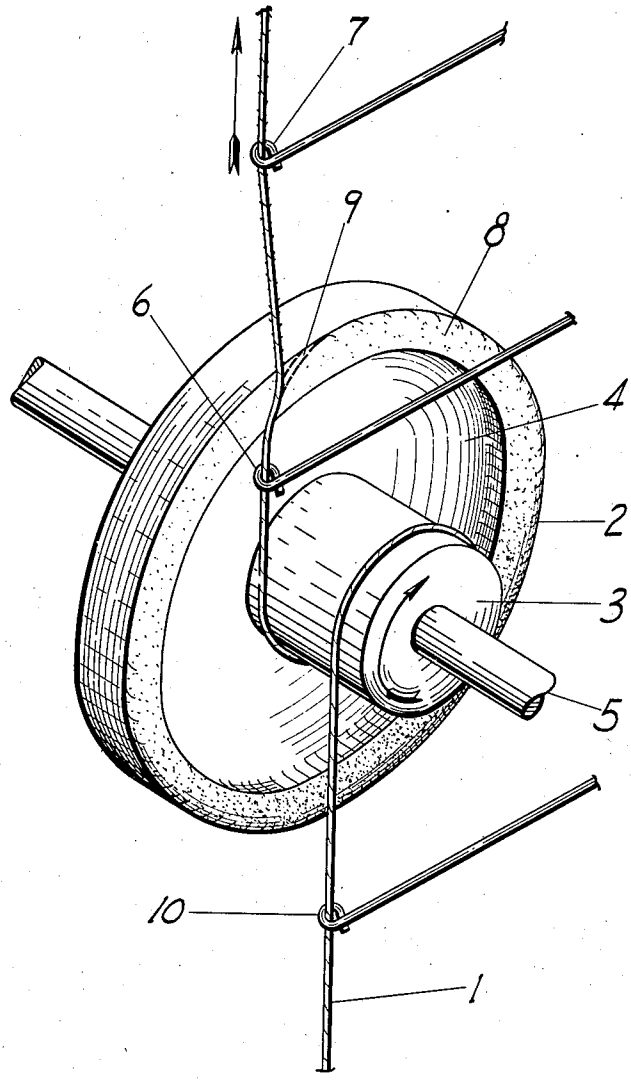
May 6, 1941. F. W. KOSTER 2,241,206

APPARATUS FOR THE PRODUCTION OF BROKEN FILAMENT YARN

Filed June 1, 1940



INVENTOR.
FREDERICK WILLIAM KOSTER.
BY Thomas R O'Malley
ATTORNEY.

Patented May 6, 1941

2,241,206

UNITED STATES PATENT OFFICE

2,241,206

APPARATUS FOR THE PRODUCTION OF BROKEN FILAMENT YARN

Frederick William Koster, Meadville, Pa.

Application June 1, 1940, Serial No. 338,306

3 Claims. (Cl. 19—1)

This invention relates to improvements in methods and apparatus for the production of broken filament yarn.

The present invention has for its principal object to provide improved methods and apparatus for the production of broken filament yarn from yarn comprising continuous filaments.

Other objects and advantages will be apparent from the following description and accompanying drawing in which a preferred embodiment of the invention is shown.

In accordance with the present invention traveling yarn comprising continuous filaments is passed over a freely revolvable roller having a hub portion and a member of larger diameter that is provided with an abrasive surface adjacent its periphery. The traveling yarn is passed around the hub portion causing the roller to revolve and is withdrawn from the roller across the abrasive surface. The peripheral speed of the hub portion is substantially the same as the rate of travel of the yarn while the portion having the abrasive surface, being of greater diameter, has a higher peripheral speed. Filaments of the yarn become engaged in the abrasive surface and tend to be carried around but are deviated from this path when withdrawn. The action of withdrawing the yarn from the abrasive surface, taken with that of the abrasive surface moving relative to the yarn, causes filaments to be cut or broken and an abrading operation is obtained. The extent of the abrading operation and the appearance of the resulting yarn depend upon the extent of contact of the yarn with the abrasive surface. Accordingly means are provided whereby the extent of contact of the yarn with the abrasive surface may be varied so that yarns of different character may be produced.

The invention may be used with any type of apparatus or process wherein the yarn travels between two points.

In the drawing reference character 1 indicates yarn comprising continuous filaments passing to the roller indicated generally by reference character 2. The roller comprises the hub portion 3 fixed to a cylindrical member 4 of larger diameter and is mounted to freely rotate upon the shaft 5. The diameter of the cylindrical member may be several times that of the hub portion. The face of the cylindrical member next to the hub is provided with an abrasive surface 8 adjacent its periphery. The portion of the cylindrical member having the abrasive surface may be rounded or beveled. The traveling yarn is directed to the hub portion by the guide means 10 and is withdrawn from the roller through the guide means 6 and 7. The guide means 6 and 7 are so positioned that the yarn being withdrawn from the roller passes across the abrasive surface. The position of the guide means 6 and 7 may be readily adjusted laterally of the roller by means not shown, but which would be obvious, so as to vary the extent of the path of the yarn across the abrasive surface.

In the operation of the device the traveling yarn passes around the hub portion causing the roller to rotate, and is withdrawn from the roller across the abrasive surface. Filaments of the yarn become engaged in the abrasive surface and tend to be carried around by the surface in a path indicated by the dotted line 9 until deviated from that path by the yarn withdrawing means. The action of the yarn withdrawing means in deviating the yarn from its path across the abrasive surface and the action of the abrasive surface moving relative to the yarn, cause filaments to be cut or broken and a uniform abrading operation is obtained.

The invention may be used with yarn traveling in the opposite direction to that shown or in any other direction by merely adjusting the positions of the guides so that the yarn is directed to the hub portion and is drawn across the abrasive surface.

While a preferred embodiment of the invention has been shown it is to be understood that changes and variations may be made without departing from the spirit and scope of the invention as defined by the appended claims.

What I claim is:

1. An apparatus for producing broken filament yarn comprising a revolvable member having a hub portion and a portion of larger diameter, the portion of larger diameter having an abrasive surface adjacent its periphery, means for directing a traveling yarn around the hub portion to rotate the member with the abrasive surface having a peripheral speed greater than the rate of travel of the yarn and means for withdrawing the yarn from the member across the abrasive surface.

2. An apparatus for producing broken filament yarn comprising a freely revolvable member having a hub portion and a portion of larger diameter, the portion of larger diameter having an abrasive surface adjacent its periphery, means for directing a traveling yarn around the hub portion to rotate the member with the abrasive surface having a peripheral speed greater than the rate of travel of the yarn and means for

withdrawing the yarn from the member across the abrasive surface.

3. An apparatus for producing broken filament yarn comprising a revolvable member having a hub portion and a portion of larger diameter, the portion of larger diameter having an abrasive surface adjacent its periphery, means for directing a traveling yarn around the hub portion to rotate the member with the abrasive surface having a peripheral speed greater than the rate of travel of the yarn, means for directing the yarn across the abrasive surface and withdrawing the yarn from the member in a direction deviating from the path of the yarn on the abrasive surface.

FREDERICK WILLIAM KOSTER.