

Sept. 5, 1967

W. PARKER

3,339,862

METHOD OF UNWINDING YARN

Filed April 22, 1965

FIG. 1

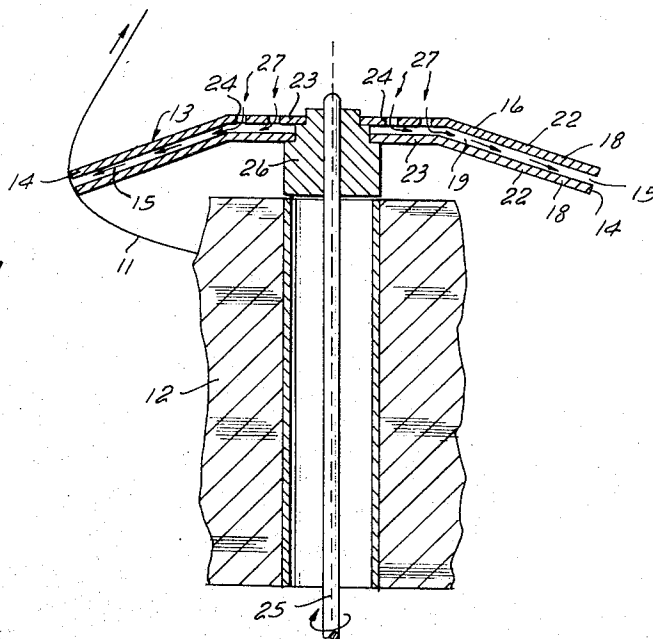
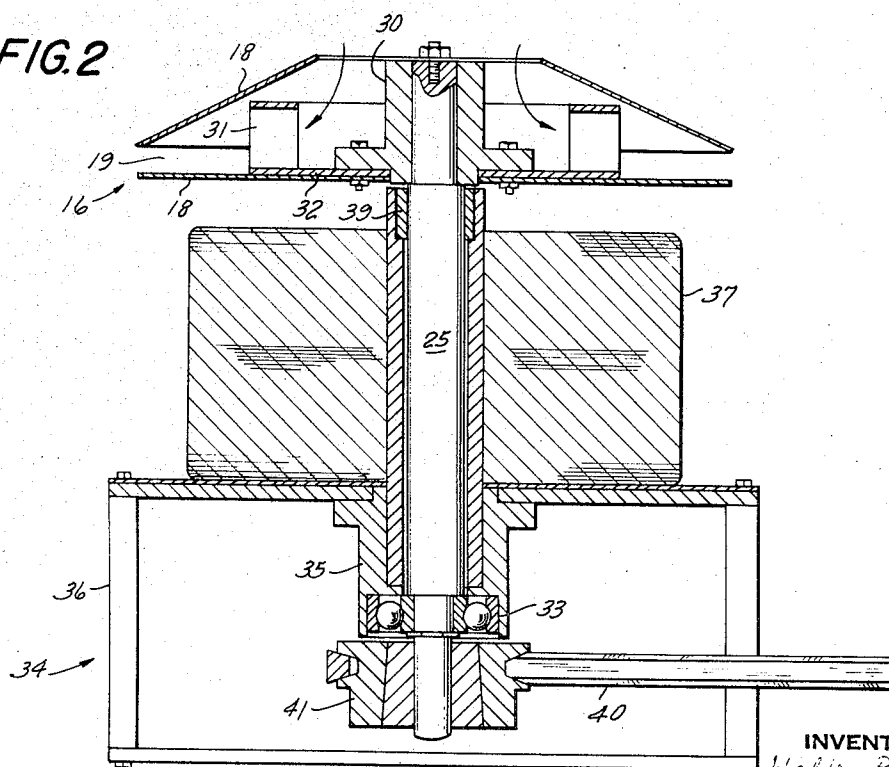


FIG. 2



INVENTOR
Walter Parker
BY
Michael J. Striker
ATTORNEY

1

3,339,862

METHOD OF UNWINDING YARN

Walter Parker, Wilmslow, England, assignor to

Ernest Scragg & Sons (Holdings) Limited

Filed Apr. 22, 1965, Ser. No. 472,377

Claims priority, application Great Britain, Apr. 23, 1964,
16,782/64

4 Claims. (Cl. 242—128)

This invention provides improvements in or relating to textile apparatus.

The invention comprises a method of unwinding yarn from a wound package in which a strand of yarn is removed overend of said package across yarn deflecting means comprising a rim away from which the yarn is urged by a current of air or other fluid. Said rim may be circular and the yarn may be urged around said rim by said current.

The invention also comprises a method of unwinding yarn from a wound package in which a strand of yarn is removed overend of said package across yarn deflecting means comprising a rotating circular rim surrounding an axis in said package from which rim the yarn is urged by a current of air or other fluid which has a motion imparted to its as a result of rotation of said rim such as to urge this yarn around the rim.

The invention also comprises a method of winding yarn from a wound package in which a strand of yarn being removed overend of said package is deflected by a current of air so that the yarn leaves the surface of the package in a direction at or substantially at right angles to said surface and under no or substantially no tension. Said current of air may be rotating.

The invention comprises a method as herein defined, performed on a package of crimped yarn, which may be a dyed package.

The invention also comprises a method as herein defined, performed by apparatus as herein defined.

The invention also comprises apparatus adapted for use in unwinding yarn from a wound package comprising deflecting means comprising a rim and means adapted to cause a current of air or other fluid by which yarn being removed overend from said package is urged in a direction away from said rim. Said rim may be circular and the yarn may be urged around said rim. Said deflecting means may define said circular rim.

Said deflecting means may comprise means adapted to be rotated whereby to cause a current of air or other fluid by which a yarn being removed from said package is urged in a direction away from and around said rim.

The apparatus may comprise a rotatable member affording said rim and adapted to be rotated about an axis in a package from which yarn is to be unwound. Said rotatable member may be of frusto-conical form.

Said rotatable member may comprise walls defining a fluid passage adapted on rotation of said member to convey air or other fluid to said rim from a location spaced inwardly from said rim. Said walls may have parallel conical portions and parallel plane portions having at least one fluid inlet. Between said walls may be supported vanes, circular cylindrical pins or other members adapted to impart, on rotating said rotatable member to impart a rotational movement to the air or other fluid.

Said rotatable member may be adapted to be mounted on a rotatable spindle. The invention also comprises apparatus as herein defined comprising a rotatable spindle. Said spindle may be adapted to be rotated with an angular velocity equal to the greatest angular velocity with which yarn is to be removed from a package.

The invention also comprises a textile machine comprising apparatus as herein defined. Said machine may com-

2

prise drive means adapted to rotate the spindle or spindles. Said textile machine may be adapted to wind a package with uniform density.

Two embodiments of apparatus and a method according to the present invention will now be described with reference to the accompanying drawings in which:

FIG. 1 is a schematic sectional elevation of a first embodiment and

FIG. 2 is a schematic sectional elevation of a second embodiment.

The apparatus (FIG. 1) adapted for use in unwinding yarn 11 from a wound package 12 comprises deflecting means 13 comprising a rim 14 and means adapted to cause a current 15 of air or other fluid by which yarn 11 being removed overend from said package 12 is urged in a direction away from and around said rim 14.

Said deflecting means 13 define said circular rim 14, and comprise means adapted to be rotated whereby to cause a current of air or other fluid by which said yarn 11 being removed from said package 12 is urged in a direction away from and around said rim 14. The apparatus comprises a rotatable member 16 affording said rim 14 and adapted to be rotated about an axis (indicated by the dashed line) in a package 17 from which yarn 11 is to be unwound. Said rotatable member 16 is of frusto-conical form and comprises walls 18 defining a fluid passage 19 adapted on rotation of said member 16 to convey air or other fluid to said rim 14 from a location 21 spaced inwardly from said rim 14.

Said walls 18 have parallel conical portions 22 and parallel plane portions 23 closing the smaller ends of said conical portions 22 and the uppermost plane portion 23 has a plurality of fluid inlets 24.

Between said walls 18 may be supported vanes, circular cylindrical pins, or other members (not illustrated) adapted to impart, on rotation of said member 16, a rotational movement to the air or other fluid.

The walls 18 may be respectively frusto-conical and flat (FIG. 2) so as to form a passage 19 which tapers towards the periphery of the walls, the taper being such that the area of a circumferentially extending section through the taper is the same for all radii to the taper. Between the walls 18 there may be a plurality of blades 31 adapted on rotation of the member to impel air outwardly through the passage 19. The blades 31 may be the blades of a centrifugal air impeller member 30 secured to the flat wall 18.

The rotatable member 16 may be supported on a spindle 25 rotatable in a rolling bearing 33 supported on base structure 34. The base 34 may comprise a generally cylindrical block 35 secured to a frame 36 adapted to support a yarn package 37 the former 38 of which surrounds the spindle 25. A sliding bearing 39 is between the upper end of the former 38 and the rotatable spindle 25. Conveniently, the lower end of the spindle 25 has a wharve 41 adapted to be frictionally driven by the belt 40.

Said rotatable member 16 is mounted on a mounting hub 26 on a rotatable spindle 25. Said spindle 25 is adapted to be rotated with an angular velocity equal to the greatest angular velocity at which the yarn 11 is to be removed from a package.

In use of the apparatus in a method of unwinding yarn from a wound package, a strand of the yarn 11 is removed overend of said package across said rim 14 away from and around which the yarn 11 is urged by a current of air or other fluid caused by the rotation of the rotatable member 16. The yarn 11 leaves the surface of the package 12 in a direction at or substantially at right angles to said surface and under no or substantially no tension.

The method is adapted to be performed on a package of crimped yarn, especially a dyed package.

3

The method is particularly advantageous where it is desired to unwind yarn from a supply package such as an Astralon (registered trademark) muff which characteristically has some of its yarn trapped by adjacent yarn on the package.

The apparatus can be incorporated in a textile machine comprising drive means adapted to rotate the spindle or spindles. The drive means may be arranged to rotate the spindle or spindles with an angular velocity equal to the greatest angular velocity at which the yarn is to be removed from the package.

What I claim is:

1. A method of unwinding yarn from a wound yarn package in which a strand of yarn is removed overend of said package across yarn deflecting means having a rim, comprising the step of directing a current of fluid against the yarn during unwinding thereof and in such a direction as to move the unwinding yarn away from said rim.

2. A method as defined in claim 1, wherein said step comprises imparting to said current of fluid a first component of movement of such direction as to space the yarn from said rim, and a second component of movement different from said first component and of such

4

direction as to at least aid in unwinding of the yarn from the package.

3. A method as defined in claim 2, wherein the yarn is removed from said package in a predetermined direction, and wherein said second component of movement of said current of fluid entrains consecutive portions of the yarn for movement spaced from said rim and in a substantially circular path coaxial with said predetermined direction.

4. A method as defined in claim 2, wherein said package has a surface which is constituted by the convolutions of the yarn on the package and from which the yarn is being withdrawn, and wherein said first component of movements is of such magnitude as to cause the unwinding yarn to leave said surface in a direction at least substantially at a right angle to said surface.

References Cited

FOREIGN PATENTS

1,151,902 2/1958 France.

LEONARD D. CHRISTIAN, *Primary Examiner*.