Jan. 12, 1954 W. J. FISHER ET AL 2,665,857

YARN-SUPPLY CREEL

Filed April 15, 1952 2 Sheets-Sheet 1

FIG. 1.

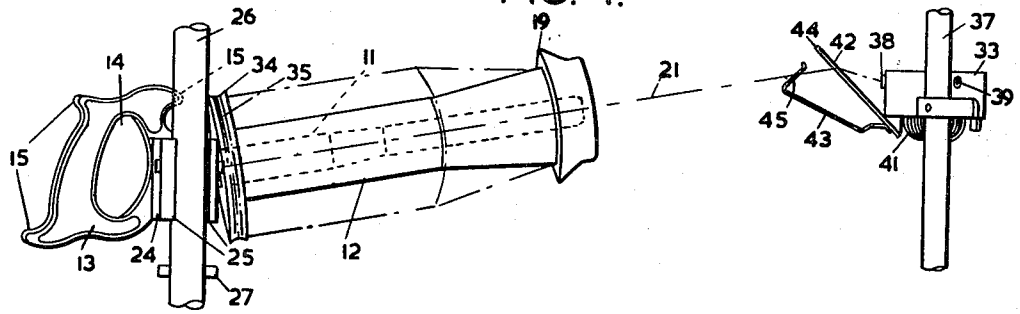


FIG. 2.

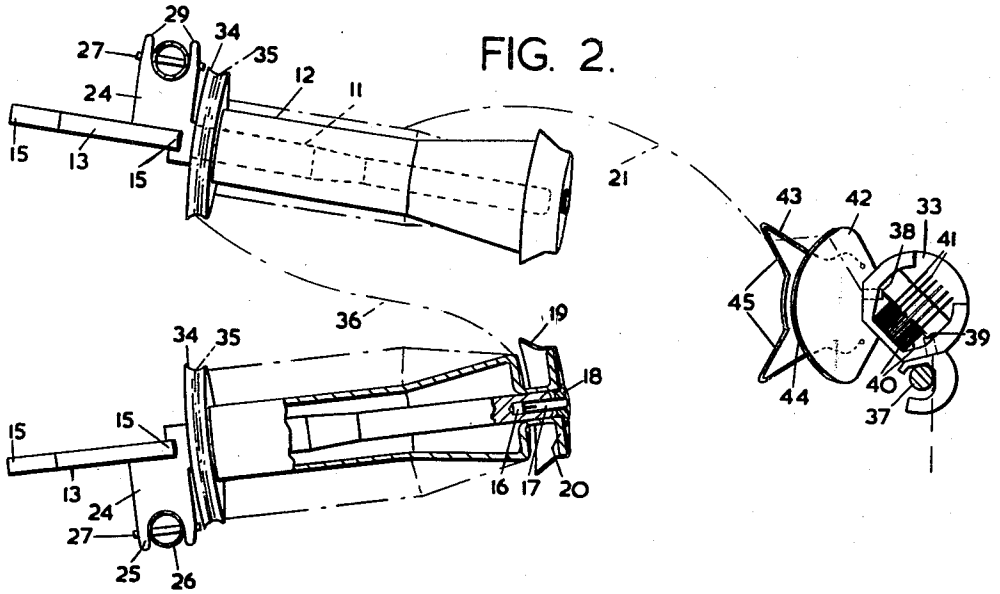


FIG. 3.

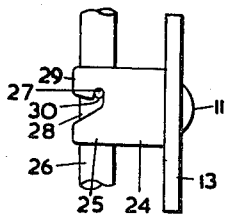


FIG. 4.



FIG. 5.



FIG. 6.



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FIG. 7.

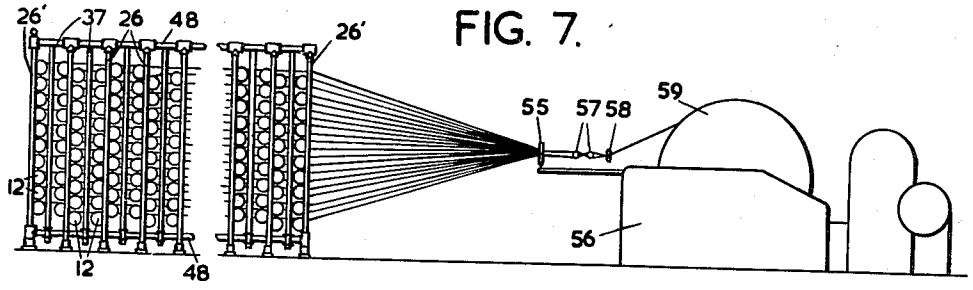


FIG. 8.

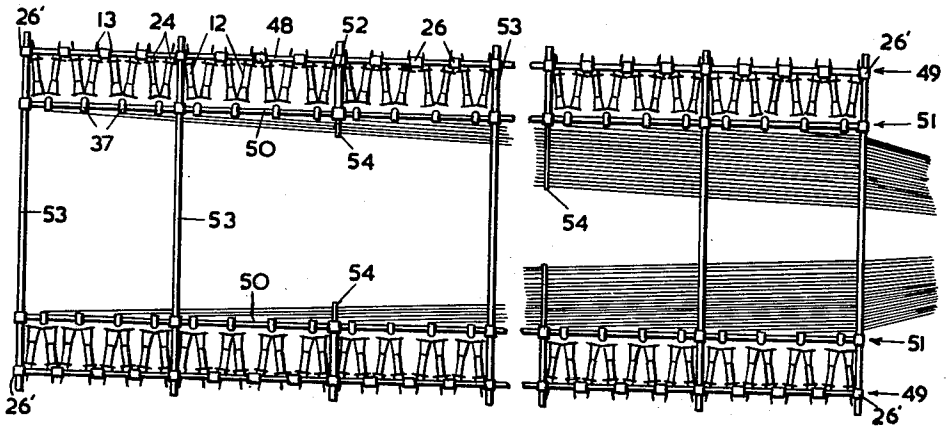


FIG. 9.

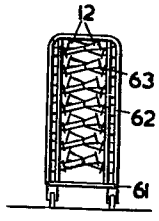
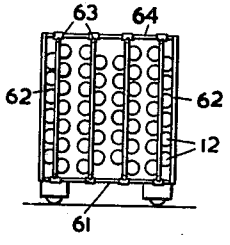


FIG. 10.



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Patented Jan. 12, 1954

2,665,857

UNITED STATES PATENT OFFICE

2,665,857

YARN-SUPPLY CREEL

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Application April 15, 1952, Serial No. 282,352
Claims priority, application Great Britain April 25, 1951

1 Claim. (Cl. 242—131)

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This invention relates to yarn-supply creels, i. e. supporting frames for carrying a number of yarn-supply packages for the simultaneous supply of a number of yarns to a textile operation, such as warping. The invention is especially concerned with creels in which the yarn-guiding and like means are disposed so that the yarn is drawn over-end from supply packages having horizontal or obliquely extending axes.

In creels of this type it is a common and convenient arrangement for the pegs or like holders on which the supply packages are carried to be mounted on brackets that are capable of swinging about a vertical axis at the rear of the creel (e. g. about a vertical rod or pillar forming part of the creel frame) so that when a package is exhausted the peg or holder can be swung back to allow the empty package support to be replaced by a full package from the rear of the creel. This arrangement, however, necessitates a wide horizontal spacing between the packages on the creel, to give the packages room to swing about a vertical axis without colliding with adjacent packages. As a creel may be required to carry many hundreds of packages, this wide spacing materially increases the amount of floor space occupied by the creel and also the proportion of time spent by the operative in walking from one part of the creel to another in comparison with the time spent in actually changing the packages.

It is an object of the present invention to provide a form of package-carrying peg and, for use in conjunction therewith, a yarn-supply creel of simple and inexpensive construction in which, while ready access is obtainable to the packages for the purpose of replacing them when exhausted, the above disadvantage is overcome or substantially reduced.

According to the present invention a package-carrying peg for use in yarn-supply creels comprises a shank for entering the bore of a package, a fitment at one end of said shank adapted to co-operate with a mating fitment on a creel to hold the peg removably and replaceably in a fixed position on said creel, and a hand-grip at said end of said shank to facilitate handling of said peg and the removal and replacement thereof. A yarn-supply creel according to the invention for use in conjunction with package-carrying pegs of the kind defined above comprises a fixed frame-work, and a plurality of fitments arranged in rows and columns and each adapted to mate with the fitment on one of said package-carrying pegs, said columns being

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spaced from each other by a distance less than the axial length of the packages to be carried by said pegs. In a creel of this kind, when a package is exhausted, the peg on which it is mounted can be detached and withdrawn directly to the rear of the creel without swinging into contact with adjacent packages, so that the horizontal spacing of the packages on the creel need be little more than that required to accommodate the widest part of the package and to allow the free over-end unwinding of the yarn therefrom. The arrangement also makes easier the use of packages of increased length which would require so much space for swinging as to render their use on a creel with pivoted pegs uneconomic.

The invention is of particular importance in relation to creels of the kind in which the packages are mounted in pairs adapted to supply yarn alternately through a common yarn guide. In creels of this kind it is usual to arrange the packages of each pair so that their axes intersect at their common guide. According to a further feature of the creel of the present invention, the fitments for receiving package-supporting pegs are mounted in pairs each provided with a common guide presenting a generally horizontal guiding edge, the axes of the pegs of each pair intersecting at a point beyond the common guide. By this arrangement it is unnecessary for the packages of each pair to converge sharply towards one another, and it becomes possible for their bases to be more closely spaced. The advantages of this arrangement are made possible by the principle feature of the invention, except for which a wide spacing of the bases of the packages would be necessary in any case.

It is a common practice, in the replacement of empty package supports by full packages in creels of the general type with which the invention is concerned, to supply the full packages on a trolley carrying a frame-work to which are fixed package-carrying pegs for holding the fresh packages. The trolley is filled with packages at the winding or twisting-and-winding machine on which the packages are wound and the packages are transported on the trolley to the creel. According to a further feature of the present invention, a package-supply trolley for use in conjunction with the creel of the invention comprises a frame-work and a plurality of fitments similar to those on the creel and spaced from one another so as to accommodate pegs in accordance with the invention carrying

yarn packages. This enables the packages at the winding machine to be placed directly on the pegs on which they will be carried in the creel, to be mounted on the supply trolley and transported to the creel, and there to be mounted on the creel in place of a package-carrying peg bearing an empty package support.

The procedure outlined above eliminates an operation of handling the packages and results not only in an economy of labour but also in a reduction in the liability to damage of the yarn on the surface of the packages. The provision of a hand-grip at the base of the package reduces the tendency of the operative to handle the package at the point of balance, halfway along the length of the package, where manual contact is liable to damage the yarn. Although, when large packages are employed, they may approach the maximum convenient weight that can be handled by an operative with one hand, the tendency, when once they have been fitted to a peg having a hand-grip, is to handle them by the two ends rather than by the middle.

By way of example, one form of package-carrying peg in accordance with the invention, and a yarn supply creel adapted to receive it, will now be described in greater detail with reference to the accompanying drawings, in which:

Figure 1 is a side elevation of the peg showing its relationship to the members of the creel frame,

Figure 2 is a plan showing a pair of pegs of the kind shown in Figure 1,

Figure 3 shows as a detail the attachment of the peg to the creel,

Figures 4, 5 and 6 show alternative forms of cross-section of the shank of the peg,

Figure 7 is a diagrammatic side elevation of a yarn supply creel in accordance with the invention, showing its relationship to a warping device,

Figure 8 is a plan view of the creel of Figure 7, and

Figures 9 and 10 are a side elevation and end elevation respectively of a servicing trolley for use in conjunction with the creel.

Referring to Figures 1 and 2, the package-carrying peg comprises a shank 11 adapted to receive a yarn package or bobbin 12. Attached to the base of the shank is a hand-grip 13 similar in form to a conventional saw handle, i. e. in the form of a closed oval 14, with its major axis slightly inclined from the vertical, and provided with projecting spurs 15 of a form suitable to afford a grip comfortable and convenient to the fingers of the hand in several different positions. This form of handle enables the pegs to be easily removed and replaced in the creel in a high position, e. g. above the shoulder level, in an intermediate position, or in a low position, e. g. below knee level.

The shank of the peg may be solid as shown in Figure 2 or it may be in the form of a hollow tube as shown in Figure 4, or of cruciform section as shown in Figure 5, or of Y-section as in Figure 6, to give strength and rigidity with low weight. The end of the shank may be bored, as shown at 16, to receive a short spindle 17 extending from a plug 18 fitting in the end of the bobbin 12 and carrying a smooth edged balloon cap 19 covering the top flange 20 of the bobbin 12. The smooth edge of the balloon cap 19 serves, when necessary, to guide the yarn 21 being drawn over-end from the bobbin 12.

Between the hand-grip 13 and the shank 11 is disposed the fitment 24 for securing the peg in a fixed position on a creel. The fitment 24 is formed on one side as a vertical channel 25 adapted to fit round a tubular pillar 26 constituting a vertical member of the creel frame. The pillar 26 is provided with mating fitments in the form of short pins 27 protruding from the front and rear of the pillar. The pins 27 fit into slots 28 extending in a generally horizontal direction, as shown in Figure 3, from the edges 29 of the channel 25. Each slot 28 terminates in an upwardly directed notch 30 which drops over the pin 27 and positions the package-supporting peg with certainty. The fitment 24 is fixed to the shank 11 so that, on the creel, the shank is inclined slightly upwards from the horizontal, e. g. at an angle of about 10° as shown in Figure 1.

The pegs of the invention are mounted on the creel in pairs, one such pair being shown in Figure 2. The pins 27 in the pillars 26 are set slightly obliquely, so that the pegs of each pair converge slightly towards one another. One peg of each pair, the upper peg shown in Figure 2, has the fitment 24 on the left-hand side of the shank 11 and hand-grip 13, and the other has the fitment 24 on the right-hand side. The packages 12 on each pair of pegs serve alternately to supply yarn drawn over-end from one or other of them, to a tension device 33. For this purpose, the lower flange 34 of each bobbin is grooved for the reception of a length of yarn 35 constituting the portion of yarn first wound on the bobbin and adapted to serve as a transfer tail for attachment to the portion of yarn last wound on the other bobbin of the pair as indicated at 36. When the bobbin which is supplying yarn (the upper bobbin as shown in Figure 2) is exhausted, yarn continues automatically to be supplied from the second bobbin of the pair, the transfer tail 35 serving as a connection between them. The first bobbin can then be replaced by a full bobbin, the transfer tail of the second bobbin being tied on to the outer end of the yarn on the new first bobbin.

The tension device 33 is mounted symmetrically between the bobbins 12 of the pair, and is carried on a vertical rod 37 constituting a vertical member of the creel frame. The tension device is of the type described in U. S. Patent No. 2,585,097 and comprises an input guide 38 and an output guide 39, the yarn 21 in passing from 38 to 39 passing over a series of horizontal pins 40. Between the pins 40 are a series of light, smooth rings 41 through which the yarn passes, the rings 41 hanging on the yarn 21 as the yarn passes over the pins 40, and so causing the yarn to follow a zigzag path whereby it is suitably tensioned. Attached to the tension device 33 is an oblique guide plate 42 to which in turn is secured a bent wire guide member 43. The curved edge 44 of the plate 42 constitutes a generally horizontal yarn-guiding edge. The member 43 comprises two straight yarn-guiding sections 45, one for each bobbin of the pair. The yarn 21 passes over the section 45, over the guiding edge 44 of the plate 42, and thence to the input guide 38 of the tension device 33. This arrangement makes it unnecessary for the axes of the shanks 11 to converge sharply so as to meet at the common guide edge 38, and enables the packages 12 to be closely spaced at their bases and to converge only slightly, so that their axes intersect beyond the tension device 33.

The creel of which the pillar 26 and the rod 37 form part may be of any size appropriate to the use for which it is intended. A form of creel suitable for wrapping is shown in Figures 7 and

8. A long series of the pillars 26 are secured together at the top and bottom by horizontal members 48 to form a rear chase, or package chase 49. An equal number of rods 37 are similarly secured by horizontal members 50 to constitute a front chase, or tension chase 51. The package chase 49 and the tension chase 51 are secured together by cross members 52, 53 to constitute a frame, and two such frames arranged face-to-face constitute the creel, the alternate cross members 53 extending from one frame to the other so as to connect them together. Each frame is thus readily accessible from the rear for the replacement of package-supporting pegs bearing exhausted bobbins with pegs bearing full bobbins. Each of the pillars 26, except the end pillars indicated at 26', is adapted to receive package-carrying pegs, one above the other, on opposite sides thereof alternately. Thus, the pegs on each pillar 26 serve the tension devices 33 of two different vertical rods 37, while each tension device is served by a pair of pegs on two different pillars 26. The vertical spacing of the tension devices 33 on the rods 37 is twice that of the pins 27 on the pillars 26. This arrangement enables the packages to be disposed very compactly in the creel, and greatly reduces the size of the creel.

The yarns leaving the output guides 39 (Figures 1 and 2) of each tension device 33 proceed in a direction nearly parallel to the length of the creel and are guided at intervals by combs 54 of suitable length. On reaching the end of the creel the yarns are all led to the collecting reed 55 of a warping device 56 and proceed as a sheet, over and under lease rods 57 to the traversing comb 58 of the warping device by which they are led to the reel 59 of the device.

As indicated above, when one package of each pair of packages 12 on the creel is exhausted the empty package, complete with its package-carrying peg, is removed and replaced by a fresh peg carrying a full package. In order to facilitate this operation a servicing trolley may be provided, of the kind shown in Figures 9 and 10. The trolley comprises a wheeled base 61 having

handles 62 at each end for convenient manipulation, and carrying a frame-work consisting of vertical members 63 connected together by horizontal members 64. The vertical members 63 are similar in character to the pillars 26 of the creel, being provided with fitments in the form of projecting pins similar to the pins 27 described with reference to Figures 1 and 2. This enables yarn packages, complete with package-carrying pegs, to be mounted on the trolley and brought to the creel, where they are exchanged with pegs on the creel carrying empty packages.

Having described our invention, what we desire to secure by Letters Patent is:

A yarn-supply creel comprising a fixed framework, a plurality of fitments mounted on said framework in rows and columns and arranged in pairs of which each fitment is horizontally spaced from the other, a plurality of yarn-guide eyes, one common to each pair of fitments and mounted on said framework opposite the middle of said pair, a plurality of detachable package-carrying pegs adapted for mounting on said fitments so that the centre-lines of the pegs on each pair of fitments converge towards but intersect beyond their common yarn-guide eye and, between each pair of pegs and its yarn-guide eye, a generally horizontal guiding edge of a form adapted to guide a yarn through one of two points, one in alignment with each of said pegs, said edge being adapted to permit the lateral passage of a yarn from one of said points to the other.

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THOMAS ECCLES.

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