

March 14, 1933.

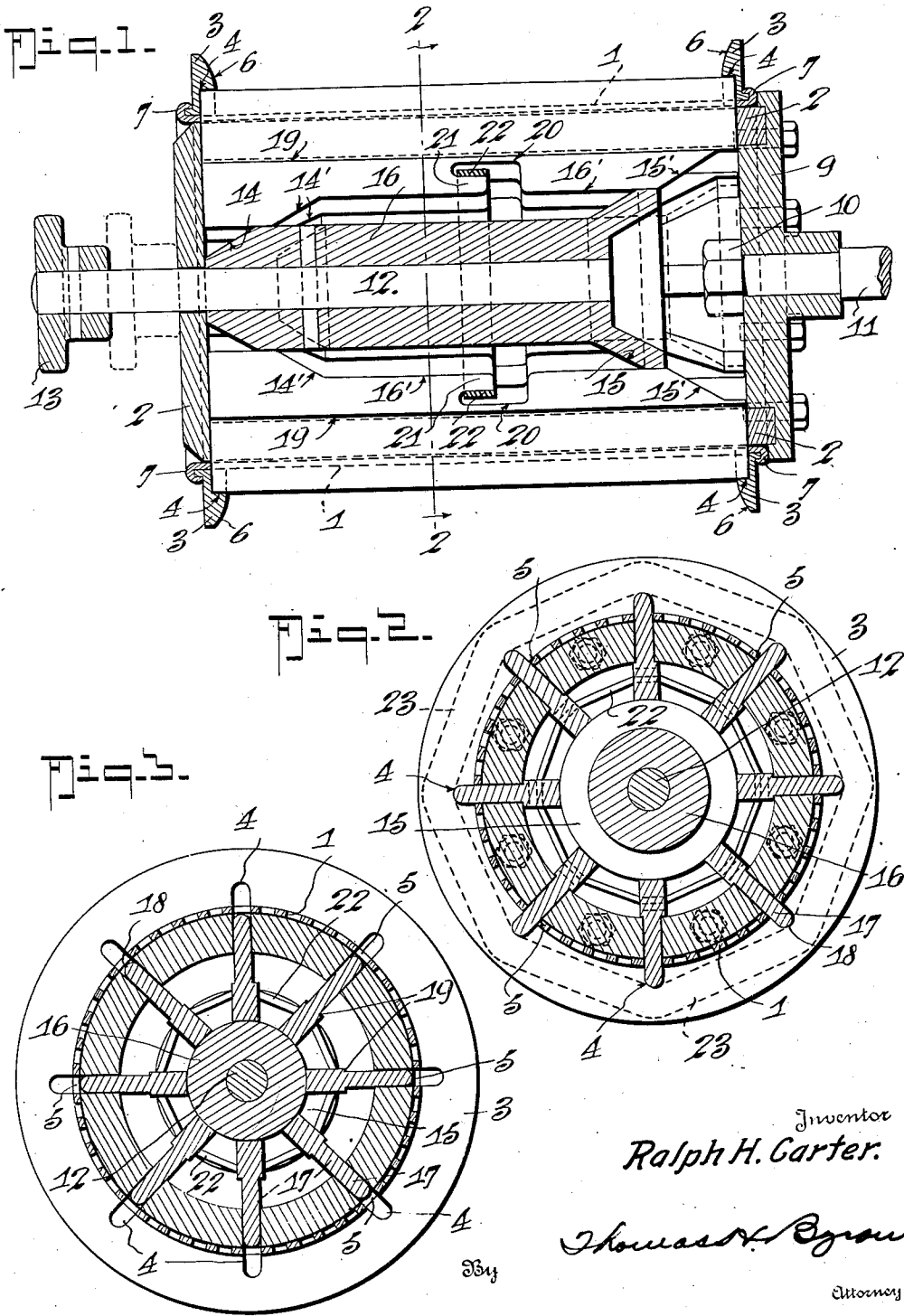
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1,901,226

FLANGED SPOOL AND HOLDER THEREFOR

Filed July 13, 1932

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6.

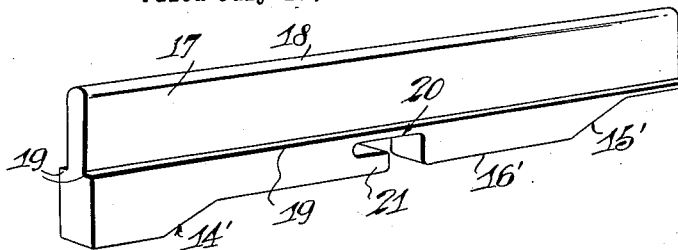


Fig. 4.

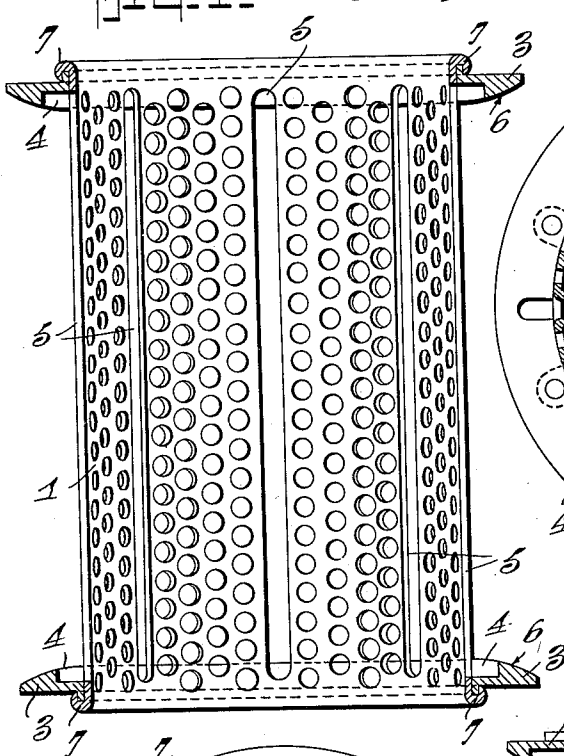
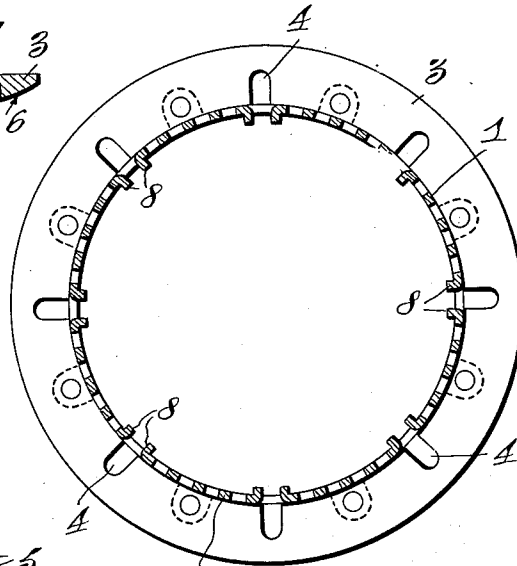


Fig. 7.

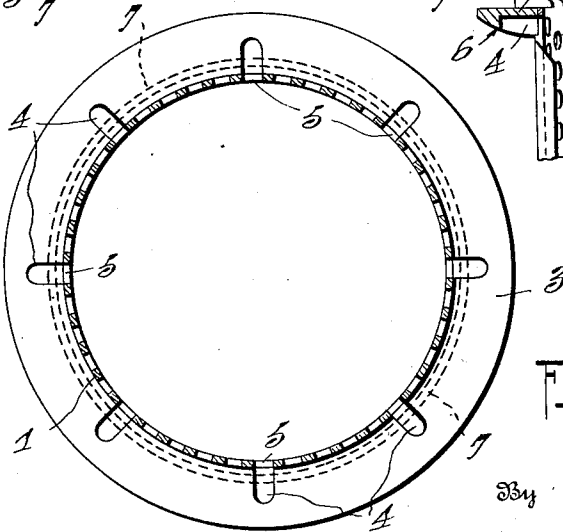
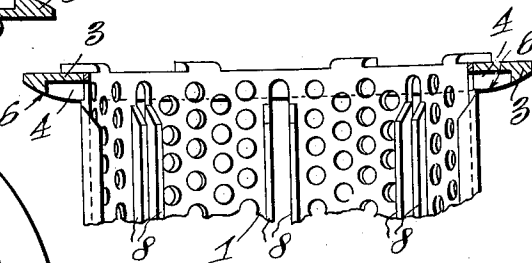


Fig. 8.

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UNITED STATES PATENT OFFICE

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FLANGED SPOOL AND HOLDER THEREFOR

Application filed July 13, 1932. Serial No. 622,349.

In the manufacture of artificial filaments, especially by the wet spinning process, the filaments are wound directly upon spools. While upon these spools the filaments are usually wet treated either by the vacuum or pressure washing system and dried.

One object of the present invention is to provide a spool and holder therefor which may be used in the process noted above.

Another object of the present invention is to provide a spool on which filaments may be spun, the circumference of which may be incremented, before the filaments are wound thereupon, and the circumference of which may be lessened before the wet treating and drying steps.

Another object of the present invention is to provide a spool of the type set forth which will aid in the production of evenly shrunk and flame-free yarn. When certain yarns are made up into fabrics, and dyed, a series of stripes called the "flame" or "zebra" effect results. When these objections are not present, the yarn is said to be "flame free".

Other objects will become apparent from a study of the following specification and of the accompanying drawings, in which

Fig. 1 is a longitudinal cross sectional view of the spool and holder;

Fig. 2 is a sectional view taken on the lines 2—2 of Fig. 1, and showing the blades of the spool holder in outward position;

Fig. 3 is a view similar to Fig. 2 showing the blades in retracted position;

Fig. 4 is a side elevational view in cross section of the spool itself.

Fig. 5 is an end view of the spool;

Fig. 6 is a perspective view of one of the blades to be used; and,

Figs. 7 and 8 are segmental views of modifications.

As shown in Fig. 1, a spool is composed of an outer perforated and slotted shell or tube 1 and two end portions 2—2. These end portions are provided with outwardly extending flanges 3, these flanges being provided with recesses or openings, 4. The spool is slotted in a plurality of places as at 5, eight slots being shown in the drawings. It is to be understood, however, that it is not wished that

the present invention be limited to eight slots, and that the use of eight slots here is merely illustrative. The slots 5 extend the full length of the spool and terminate only within a portion of the flanges 3, as is clearly shown by Fig. 4. These flanges 3 are provided with tapered or curved faces 6, the utility of which will be brought out later. These flanges 3 may be gripped on the spool by turned-over portions 7, as indicated, may be rolled directly on the spool in its manufacture, or provided in other ways. Slots 5, as shown, for example, in the modification shown in Figs. 7 and 8, may be turned in, as at 8, to provide a strengthening rib for the spool. This rib also acts to guide and at the same time locates the spool directly over the blades which are used in increasing the circumference of the supporting device on which spinning takes place.

The spool holder and mechanism for supporting the blades are shown in Fig. 1. This holder comprises a base section 9, secured, for example, by a nut 10, to the spindle portion 11 of the machine. A core 12 may be moved inwardly or outwardly by manipulation of a knob 13. This core portion is provided with tapered faces 14 and 15, and a cylindrical portion 16. The blade 17 has rounded outer edges to prevent damage to yarn spun thereon 18 and shoulders or stops 19 which prevent it from passing entirely through the slot 5. The outer face of the blade is tapered at 14' and 15', straight at 16', and it will be noted that 14', 15' and 16' correspond exactly to the tapered faces and the straight edge of the core, 14, 15, and 16. As shown in the drawings, when the knob 13 is pulled outwardly the tapered and straight edge portions 14, 15 and 16 are no longer in contact with the faces 14', 15' and 16'. When the knob 13 is pressed inwardly, a given distance, the tapered portions come in contact with one another. It is thus seen that by pressing the knob still further inwardly the blades will all be allowed to contact with the tapered faces of the core and thus will recede through the slots. These blades are each provided with an L-shaped slot 20 which forms a projection 21. An elastic means 22

is provided and engages the projection 21 of each of the blades 17. This shows that the elastic means 22 tends to hold the blades downwardly or in contact against the core at all times. In operation, the knob 13 is pressed inwardly and the elastic means 22 tends to hold the blades closely against the core 12. In this position the core faces 14, 15 and 16 will be in contact with the blade faces 14', 15' and 16'. The spool is placed over the holder and rotated until the slots 5 coincide in position with the portion of the blades 17. The knob 13 is then pulled outwardly and as the faces 14 and 15 pass outwardly from the faces 14' and 15', the blades 17 will be forced through the slots 5 and will be held in that position owing to the fact that the tapered part of core passes the tapered face of the blade a certain extent. The filaments 23 are then wound upon the surfaces 18 thus provided.

It will be noted, as is clearly shown in Fig. 2, that the filament body builds up here, in the shape of an octagon, so that the filaments themselves do not come in contact with the face 1 of the spool. Of course if six blades are used, the shape of the thread build will be a hexagon, etc. A filament body slightly deeper than the depth of the groove 4 and the flange 3 is usually wound upon the spool. The thread guide used is adapted to make a stroke which is slightly longer than the spool surface between the flanges and thus lay the yarn snugly against said flanges. The tapered portions 6 of the flange 3 act to prevent mutilation of the filaments, and also, when the blades are retracted, the surfaces 6 act to hold the yarn body concentric on the spool. After the yarn body is wound, the knob 13 is pushed inwardly and the elastic 22 causes the blades to recede and resume a retracted position. The spool may then be removed from the holder.

The filaments on the spool is then a self supporting mass similar to a pot spun cake around the spool body and cover the same to a depth just exceeding the depth of the grooves 4 in the flanges 3. It will thus be seen that in the event the vacuum washing system is used, there will not be a tendency for the liquid to flow through the groove 4 rather than through the filaments 23. The filaments, therefore, are allowed to shrink evenly during the treating and drying processes so that a more even shrinkage is produced. This production of a more even shrinkage serves to preclude to a greater or lesser extent the production of filaments which possesses flame effects and tends towards the production of filaments with more even drying qualities.

The method of operating the knob 13 may of course be changed, by arrangement of the tapering face portions, so that it will cause the blades to be retracted when pulled out-

wardly, rather than when pushed inwardly. It is intended that this, and other slight alterations in the structure and operation of the device equivalent to those shown herewith, should be covered, and it is desired that the present invention be limited only by the scope of the appended claims.

What is claimed is:

1. In combination, a collapsible spool holder with blades associated therewith, and a spool portion provided with flanges, slotted throughout its length to a distance sufficient to extend into the flanges of said spool.
2. In combination, a collapsible spool holder with blades associated therewith, and a spool portion for use in winding yarn, said spool portion being provided with flanges, and slotted throughout its length to a distance sufficient to extend into the flanges of said spool, said flanges tapering towards their outer edges to support the wound yarn when the blades are retracted.
3. In combination, a spool holder including blade-like elements adapted to be projected outwardly, and a spool, said spool having a flange at either end, slots running lengthwise of the spool and extending into the flange and positioned so as to coincide with the position of the above noted blade-like elements, said blades and slots being of sufficient length to extend partly into the said flanges when the said blade-like elements are in projected position.
4. In combination, a spool holder including blade-like elements adapted to be projected outwardly, and a spool, said spool having a flange at either end, slots running lengthwise of the spool and positioned so as to coincide with the position of the above noted blade-like elements, said blades and slots being of sufficient length to extend partly into the said flanges when the said blade-like elements are in projected position, said flanges being provided with openings coinciding with the ends of the slots, and adapted to accommodate the blades when they are in projected position.
5. In combination, a spool holder including blade-like elements adapted to be projected outwardly, and a spool, said spool having a flange at either end, slots running lengthwise of the spool and positioned so as to coincide with the position of the above-noted blade-like elements, said blades and slots being of sufficient length to extend partly into the said flanges when the said blade-like elements are in projected position, said flanges being provided with openings coinciding with the ends of the slots, and adapted to accommodate the blades when they are in projected position, said flanges being provided with surfaces adapted to limit the outward motion of said blades when they are being projected.
6. As an element of an expansible spool

holder, a blade, said blade being provided with a rounded upper surface, shoulders extending from either side of the blade, the lower longitudinal edge of the blade having a portion cut away to form a tongue.

7. As an element of an expansible spool holder, a blade, said blade being provided with a rounded upper surface, shoulders extending from either side of the blade, the lower longitudinal edge of the blade having a portion cut away to form a tongue, said tongue adapted to be gripped by a resilient means.

8. In a spool holder, in combination, a fixed portion, and a movable portion, said movable portion comprising a cylindrical center portion flanked by two tapered end portions, said holder having associated therewith a series of blade-like elements adapted to be projected outwardly by a movement of said movable portion, a spool having flanges at either end thereof, comprising a slotted surface, the slots extending sufficiently far to pass partly into said flanges and said blade-like elements being adapted to extend through said slots.

9. In a spool, in combination, a cylindrical shell-like portion, a turned extension at either end of the cylindrical portion, separately formed flanged portions, said flanged portions being secured in position at the ends of the cylindrical body portion by said extensions, and a plurality of slots running longitudinally of the spool body and extending into said flanges, said flanges being cut away adjacent said slots.

10. In a spool, in combination, a cylindrical shell-like portion for use as a winding surface for newly-extruded artificial filaments, a turned extension at either end of the cylindrical portion, separately formed flange portions, said flanged portions being secured in position at the ends of the cylindrical body portion by said extensions, and a plurality of slots running longitudinally of the spool body and extending into said flanges, said flanges being cut away adjacent said slots, and being formed with tapering inner faces, the flanges being thicker at the bottom than at the outer edges, whereby the position of the spooled filaments may be controlled after the winding of the filaments upon the spool is completed.

In witness whereof I affix my signature.
RALPH H. CARTER.