Nov. 7, 1939. R. H. LAWSON 2,179,015

BOBBIN STAND

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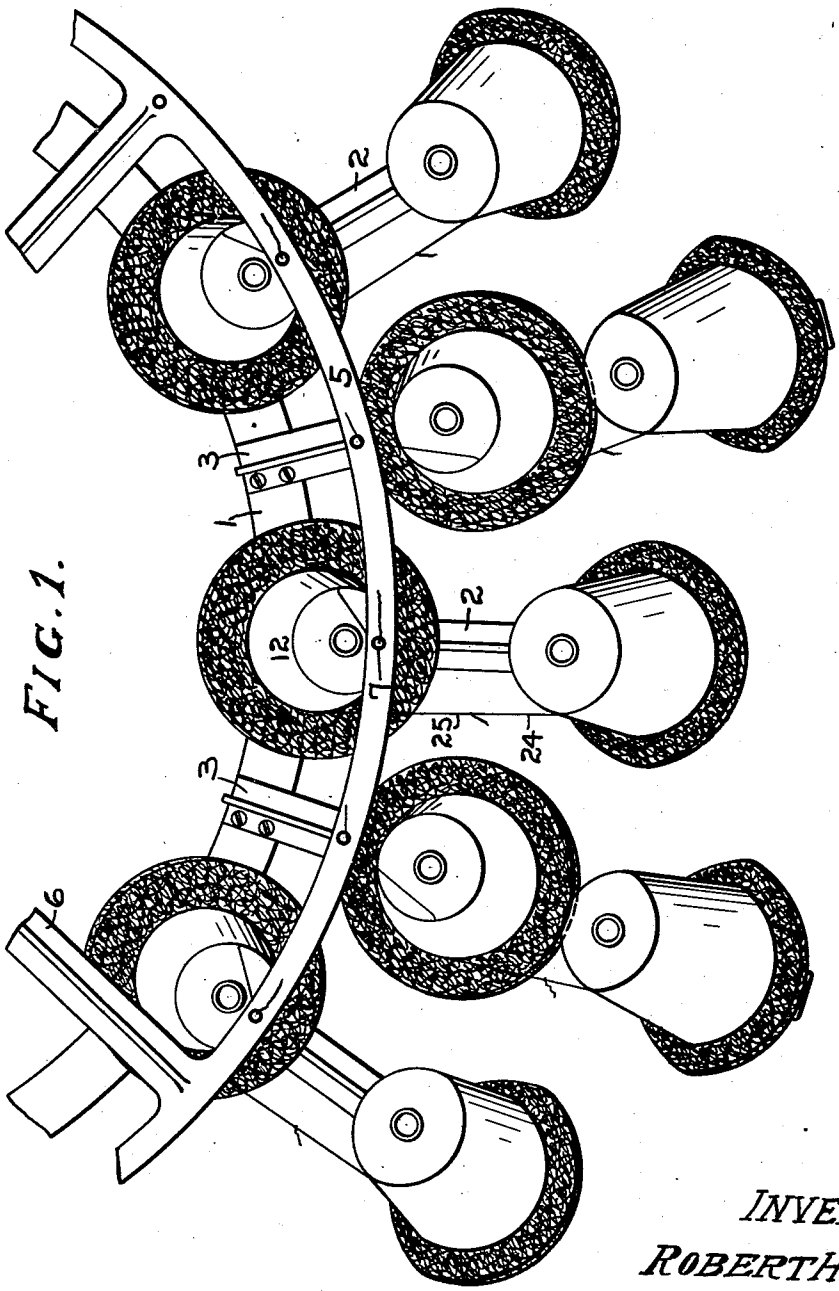


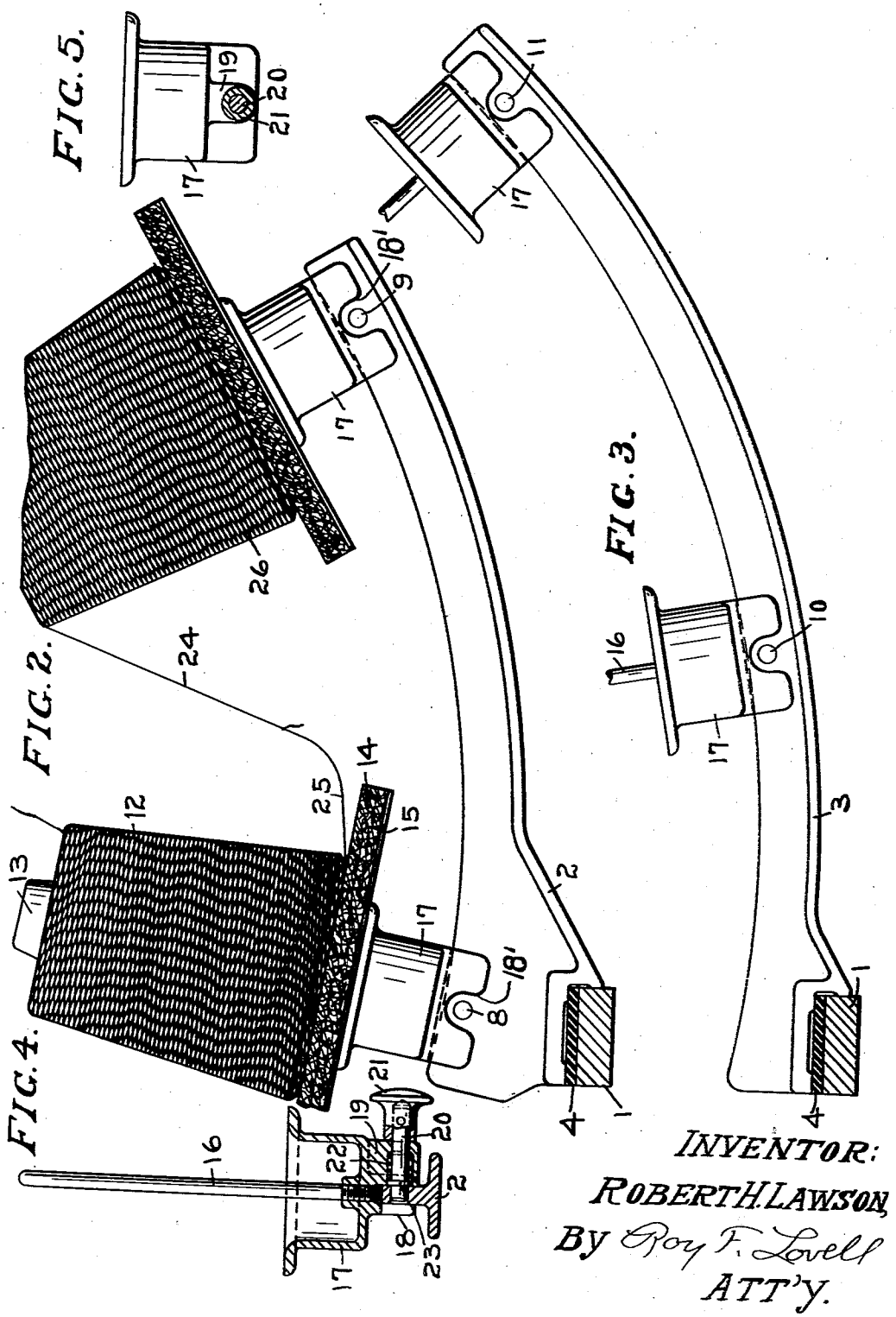
FIG. 1.

INVENTOR:
ROBERT H. LAWSON
BY Roy F. Lovell
ATT'Y.

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INVENTOR:
ROBERT H. LAWSON,
By Roy F. Lovell
ATT'Y.

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2,179,015

BOBBIN STAND

Robert H. Lawson, Pawtucket, R. I., assignor to Hemphill Company, Central Falls, R. I., a corporation of Massachusetts

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6 Claims. (Cl. 242—130)

This invention has to do with bobbin stands or creels for supporting the yarn supply for knitting machines or other machines of similar nature. The particular embodiment of the invention herein illustrated is applicable to a knitting machine of a multi-feed type having a great many separate yarn feeding stations and wherein it is desirable to support more than one yarn supply for each feeding station, further, to support these supplies in such a manner that they will occupy little space, but so that each of the yarns will be drawn from the supply under conditions as near those under which all other yarns are drawn as is possible.

In the drawings:

Fig. 1 illustrates a fragment of the creel showing several yarn supplies as they would appear in plan;

Fig. 2 is an elevation of one of the short arms or brackets used to support yarn cones or other yarn supplies;

Fig. 3 is a similar view of one of the long arms similar to that in Fig. 2, but so arranged that supplies carried by it will be staggered with respect to those carried by the adjoining arm;

Fig. 4 is a sectional view showing in detail the manner in which each support is attached and detached from one of the arms or brackets; and

Fig. 5 shows a further detail of the part of the invention illustrated in Fig. 4.

In knitting machines or other machines of a similar nature which require several supplies of yarn to be mounted upon the machine in a position wherein yarns may simultaneously be drawn from each of the supplies it is essential that the creel or other device supporting these yarn supplies be constructed to carry a maximum number of the supplies in a space as compact as possible. This is especially true where two yarn supplies are mounted to provide an extra one for the purpose of preventing any stopping of the machine as one supply runs out. These supplies may be tied together in a manner well known in the textile art so that the operator may always have one active supply available for each feeding station on the machine.

These supplies must be arranged so that the yarn being drawn from any one of them will be drawn off the cone or other type of package under exactly the same condition of resistance, tension, etc., as all others. With the particular construction we have shown each of the yarns is drawn from its package in a direction along the axis thereof and it is a further characteristic, and one which has been found important, that the distance through which each yarn travels as well as the number of angles through which it turns, guides through which it passes and other sources of drag or resistance created thereon are identical with respect to each package. The ballooning of each of the yarns will be found to approximate closely that of all the others.

The creel herein illustrated is preferably arranged at such a height on the machine that the operator can easily reach the same while standing on the floor but is high enough to afford no interference at all while working about the machine, nor would there be any interference between this creel and one on an adjacent machine even though the machines were arranged quite close to one another. Each of the supplies is mounted on a spindle having a base provided with a quick detachable means so that a minimum of time and effort will be necessary in changing or replacing any package. The construction is such that alternate short and long brackets are attached to the machine for supporting these supplies or packages, and the arrangement of packages as has been illustrated, provides for staggering the same so that space is thus conserved, more room is provided for attaching and detaching packages and there is practically no chance of interference between any of the running yarns.

Another object of the invention is to provide supports for each pair of yarn packages so that by means of the quick detachable holders the packages can be moved along the supports when it becomes necessary to replace any yarn packages. Normally it is intended to feed the yarn from the inner package or the one which is almost directly under the yarn guide. The outer package will be used for feeding until the machine operator has a chance to replace the exhausted package at which time he will remove the inner, empty holder and will slide the outer package, the one which will then be feeding, into the inner position. The empty holder will be supplied with a full package of yarn and can be replaced on the support in outermost position.

Referring to the figures of drawings, one specific form of the invention will be described. The ring 1, Figs. 1, 2 and 3, is rigidly attached at the upper part of a multi-feed knitting machine or other machine of that type and carries a series of short brackets 2 and long brackets 3 rigidly attached to the ring having a rubber pad 4 inserted between the two for the purpose of providing a somewhat resilient connection for deadening the jar of the machine and preventing any shock

or vibration from affecting the supplies mounted on the bracket or arms themselves. Each of these brackets has been constructed with an inverted T-section, but obviously could be made of other shapes, and it is a particular feature of each of the arms or brackets that it is formed on an arc of a curve swung from a center at the ring 5, Fig. 1, secured to the upper part of the machine by spokes 6 or other suitable supporting means. This ring 5 has a series of porcelain or other yarn guides, one for each knitting station about the machine through which a yarn is drawn from a supply and by means of which the said yarn is guided on its way to the knitting instrumentalities of the machine. It is obvious from the manner in which the brackets 2 and 3 are curved that yarn supplies mounted radially to these arms will have their yarns drawn up through one of the guides 7 in a direction substantially along the axis of the cone or other package. This feature is very essential so that each of the yarns will be drawn over the end of its package under precisely the same conditions and there will not be a tendency for any yarn to catch or to bind on the end of its package more than any other yarn.

The arm 2 has an opening 8 at its inner end and another opening 9 at its outer end, these openings determining the positions in which each of the supplies carried by that arm will be located. Correspondingly the arm 3 has openings 10 and 11 for the same purpose, it being evident however, that the supplies carried by the second arm will be staggered as shown in Fig. 1 relative to those carried by the other arm. Each of the supplies which as herein illustrated are in the nature of cones of yarn 12 carried on the cardboard cores or other supports 13 is mounted on a felt or other pad 14 carried on a base 15 supported in a manner presently to be described.

The base 15 is centered upon a pin or spindle 16 screwed to an annular, cup-shaped element 17 having a projection 18 extending downwardly therefrom and another projecting part extending downwardly and outwardly as shown at 19. This projection at 19 has a spring pressed plunger 20 having a handle or gripping portion 21 which under the influence of spring 22 acting against collar or washer 23 fixed to the plunger maintains the end of the plunger in one of the openings 8—11 until such time as the operator desires to remove the same. The projections 18—19 are formed in such a manner that they straddle the upper web of the arm 2 or 3 as the case may be and thus support the holder and package more or less securely in position. The flange 18 is cut away at the central part as shown at 18'. The spindle 16 may carry the usual conical centering element for the core of the package 13 and it is evident that the felt pad 14 will serve the usual function of preventing the yarn from catching under the bottom of the cone.

The yarn from the top of a cone as illustrated at 24 will be knotted to that at the bottom of the companion cone as shown at 25 so that when the yarn from cone 12 is completely drawn from that cone the knitting will continue with yarn being drawn from the companion cone 26. This practice assures that the machine never stops as a result of yarn running off any particular cone and it is not essential for the operator to watch each machine closely so as to replace an exhausted supply as quickly as he can. In actual practice several yarns might run out and then be replaced at one time.

The operator may replace the inner, empty supply and allow the machine to continue drawing yarn from the outermost supply if he so desires, but it is intended that the inner cones be the ones which normally feed to the machine. This assures that the supply will remain more stationary not being affected by possible vibration of the arms 2 and 3.

If the yarn being drawn from cone 12 runs off that cone the machine will immediately start drawing from cone 26, but when the operator replaces the exhausted supply with a new one, it is preferable that the holder for cone 12 be removed as previously explained and that cone 26 be moved down the arm until it occupies the position which was occupied by the cone 12. When it has been locked in that position, the other holder may be replaced at the outer end of the arm having a fresh supply of yarn thereon, the top end of which will be tied to the lower end of the running yarn as explained with reference to the cones 12 and 26. Of course, it is possible that the exhausted cone may be replaced on the holder and the outer supply of yarn allowed to feed to the machine until it becomes exhausted. The first mentioned scheme is preferable since when it is used, there is no necessity for leaving a sufficient space between the arms and other packages to insert a full supply of yarn. The empty holder can be removed in some instances whereas it could not be replaced with a full supply thereon. The provision for sliding one of the holders along the curved arms and for replacing the alternate package at the outer end of the arm, overcomes that difficulty.

The particular example herein given shows a construction adapted for use wherein two staggered rows of yarn supplies have been provided. It is quite evident that the arms 2 and 3 might be extended in either direction and that other rows of packages could be mounted thereon, the feeding of the yarn being quite satisfactory and under practically indentical conditions for each row of packages. This applies up to a condition wherein the yarn might tend to fall from the package under its own weight.

The invention has been described with respect to a knitting machine of a particular type, and with more or less specific terms, but it is apparent that many changes could be made without departing from the original concept of invention as defined in the appended claims.

I claim:

1. In a machine of the type described, a bobbin stand for supporting a plurality of yarn packages including a supporting ring, a series of arms projecting from said ring, alternate arms carrying yarn packages staggered relatively to those carried by the other arms, a guide in the vertical plane of each arm through which the yarn is to be drawn, the said arms being curved to support packages at the same distance from the guide and in such a manner that the axis of any package if extended, would pass substantially through the guide.

2. A bobbin stand for machines of the type described including a plurality of curved arms projecting from a support, a ring carrying a plurality of yarn guides above said arms, each guide being individual to an arm, the construction being such that the axes of all yarn packages mounted on the arms will pass substantially through the yarn guides individual thereto.

3. A bobbin stand for machines of the type described including a supporting ring, a plurality

of arms projecting from said ring and adapted to carry more than one yarn package, the length of alternate arms being varied so as to stagger the packages carried thereon for the purpose described.

4. In a machine of the type described, a bobbin stand for supporting a plurality of feeding yarn packages in staggered relationship including a supporting ring, a plurality of arms projecting radially from said ring and curved in a vertical plane, supporting elements for individual packages and quick detachable means for connecting said supporting elements to the arms.

5. A bobbin stand for machines of the type described including radially disposed supports for a plurality of feeding yarn packages, a guide for each yarn through which the yarn is threaded, holders for the packages detachably connected to said supports, the supports being constructed so that a holder and package may be moved along the same from one position to another, the support being curved and so disposed with respect to the yarn guide that as the position of a package is changed by moving it along the support, the feeding relation of the yarn package will not be changed with respect to the guiding element through which the yarn is threaded, either as to distance from the element or angular disposition towards it.

6. A bobbin stand for knitting machines including a supporting ring, means projecting radially from said ring and adapted to carry more than one feeding yarn package, a guide common to those yarn packages carried by each radially projecting means and through which the yarn is threaded, yarn packages mounted in staggered relationship on adjacent projecting means, quick detachable means for securing said packages to the projecting means whereupon the relative positions of packages may be changed, the construction of the projecting means being such that when the position of a package is changed along its respective projecting means and radially to or from the ring the distance from the common guiding element through which the yarn is threaded will not be materially changed.

ROBERT H. LAWSON.