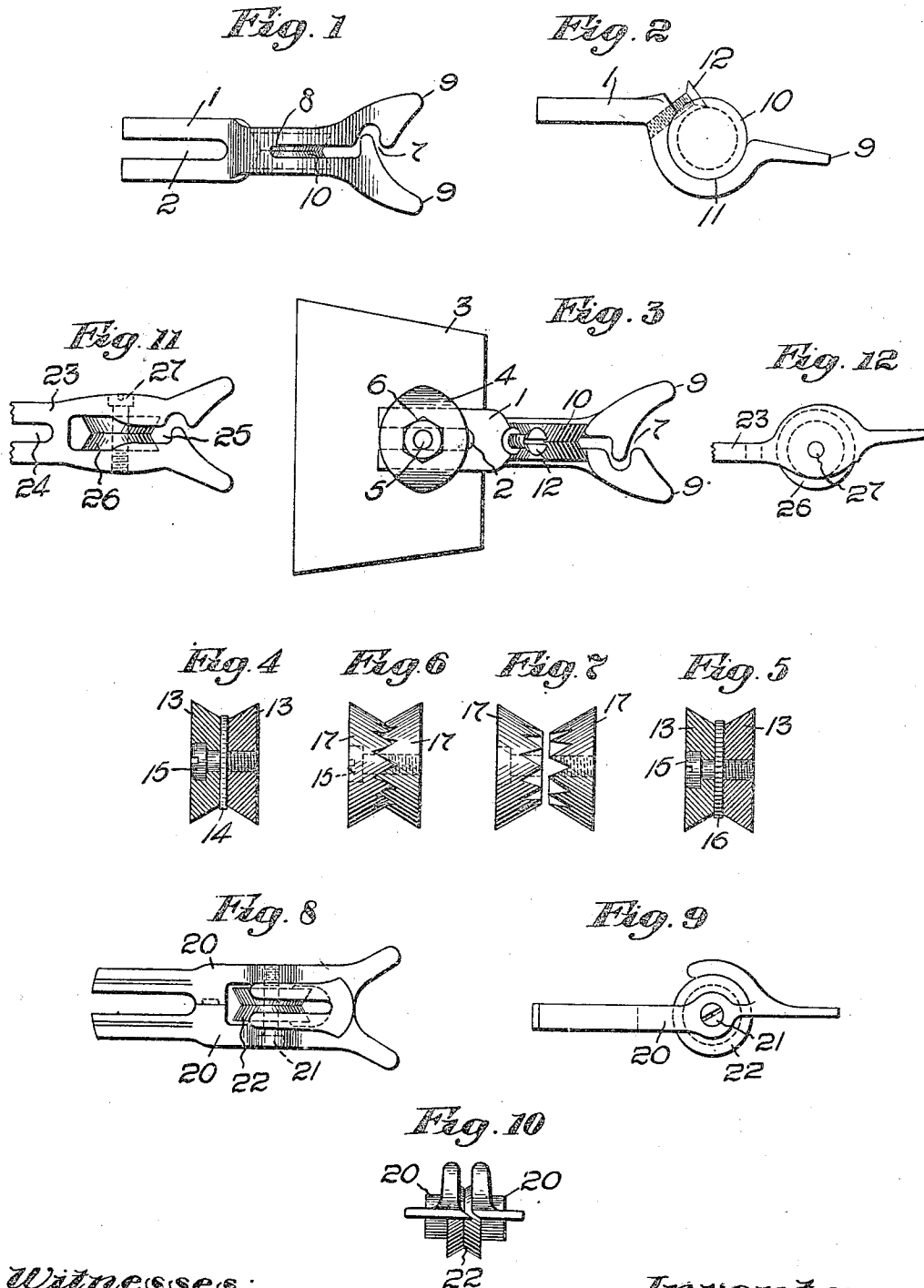


I. E. PALMER.
 THREAD GUIDE.
 APPLICATION FILED FEB. 20, 1909.

952,756.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

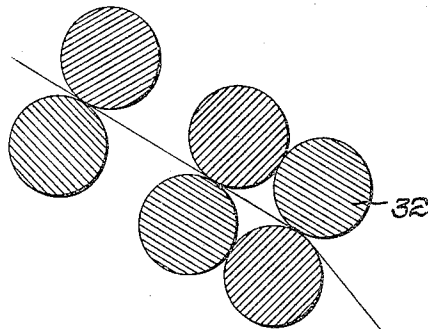


Fig. 13

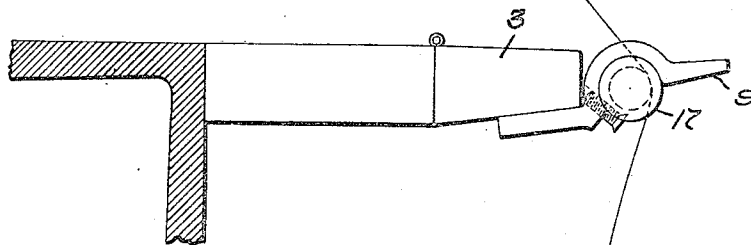
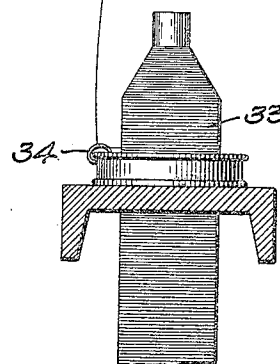
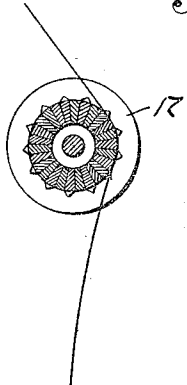


Fig. 14



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UNITED STATES PATENT OFFICE.

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THREAD-GUIDE.

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952,756.

Application filed February 20, 1909. Serial No. 479,048.

To all whom it may concern:

Be it known that I, ISAAC E. PALMER, a citizen of the United States, residing at Middletown, in the county of Middlesex and State of Connecticut, have invented an Improvement in Thread-Guides, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to thread guides for spinning and twisting, and is intended to impart a more even laying and twist particularly to plied and spun yarns, to prolong the life of the guide by providing means whereby when the thread receiving portion of the guide has been worn it may be displaced by an unworn portion, to provide means for cleaning the surface of the thread as it is directed to the spinning or twisting mechanism, and for other purposes which will more fully appear hereinafter.

In order that the principles of the invention may be clearly understood, I have disclosed a single type or embodiment thereof in the accompanying drawings, wherein—

Figure 1 is a top plan view of a thread guide embodying one form of my invention; Fig. 2 is an inverted side elevation thereof; Fig. 3 is an inverted plan view of said guide showing one manner of securing the same to a thread board; Fig. 4 is a vertical sectional view of a modified form of adjustable disk or member, having thread cleaning means; Fig. 5 is a similar section of such adjustable disk or member having another form of thread cleaning means; Figs. 6 and 7 are edge views of still another form of adjustable disk or member having a thread cleaning formation; Fig. 8 is a view similar to Fig. 1 of another form of thread guide embodying my invention; Fig. 9 is a side elevation thereof; Fig. 10 is a front elevation thereof; Figs. 11 and 12 are respectively a plan and a side elevation of a further form of my invention; Fig. 13 is a view mainly in side elevation showing the thread guide in use; and Fig. 14 is a detail showing the thread or yarn in its relation to the thread guide.

Thread or yarn guides for spinning and twisting machines have long been used. The most acceptable construction is one formed of wire having suitable provisions for securing it in position. In all constructions

of wire thread guides with which I am familiar and in fact in all constructions of thread guides heretofore used so far as I am aware, even though hardened metal or other hard substance be employed, the thread guide rapidly wears and quickly becomes useless. In the case of wire thread guides, for example, the guide cannot be used after a groove of about one third the diameter of the wire has been worn therein by the thread or yarn. In such event, the wire guide is useless, as it cannot be adjusted or changed to present a new wearing surface.

Thread guides having a freely rotatable disk like member have been invented and thoroughly tested by me. I have found as a result of these tests that the hole through the disk for receiving the pin whereon the disk rotates rapidly becomes enlarged in use, so that the rotatable member runs unevenly and is unsatisfactory. This is true whatever materials be provided.

Other constructions of rotatable thread guides, such for example as those wherein the rotatable member is provided with an axle fast therein or integral therewith and received in suitable bearings, present objections in the way of collecting lint and dirt and in the wearing of the parts that render them impracticable in use.

The thread guide embodying my invention presents the advantages of a rotatable disk thread guide with none of its disadvantages. That is to say, it presents the extended thread receiving surface that exists in the rotatable thread guide, but possesses this characteristic to an enhanced degree, inasmuch as in the freely rotatable thread guide all parts are continuously subjected to wear. Furthermore the thread guide herein disclosed is far superior to the wire thread guide above referred to, inasmuch as when a part of its thread receiving surface has become worn it may readily be displaced by an unworn part. It has been practically impossible to provide bent wire thread guides of hardened material owing to the tendency of such material to break where bent. Hardened material of any suitable kind may be employed by me.

In the practice of my invention, I employ a thread guide frame or holder of any suitable construction, such for example as that herein shown, and suitably support thereon a member herein shown as a disk having an

extended thread receiving surface, the said member being normally fixed and presenting but a comparatively small portion of its thread receiving surface to the thread at any one time. The member may be and preferably is circular in character, and preferably its entire periphery presents a thread receiving surface, any part of which may be presented to the thread. When the comparatively small portion of the member that is presented to the thread has become worn, the member may be adjusted and in this embodiment of the invention by slightly turning the same circumferentially so as to present a new and unworn surface. This operation may be repeated until the entire periphery of the member has been utilized to receive and guide the thread. Preferably the member is positioned in a substantially vertical plane, that is—with its periphery in such plane, but if desired it may be otherwise positioned, as for example horizontally, so that the thread may pass from edge to edge of the member instead of peripherally thereof, though this construction is less efficient.

The life of the guide embodying my invention as compared with that of a wire thread guide for example is as the length of the periphery of the disk compared with the diameter of the wire thread guide. Furthermore the member imparts a more even laying and twist to plied or spun yarns and is, in the preferred embodiment of my invention, provided with thread cleaning means. Inasmuch as the member is adjustable to present new portions to the thread, it will be apparent that the thread cleaning surface is itself adjustable, and thus when worn may be replaced by succeeding portions of the member until the entire periphery has been used.

Referring first to the form of the invention shown in Figs. 1, 2 and 3, the thread guide frame which may be of any suitable character, construction and material is represented at 1, it being herein represented as longitudinally slotted at 2. The said frame is adapted to be secured to its support in any suitable manner. In Fig. 3, I have represented a thread board clapper 3, to which the frame 1 is secured by the bent washer 4, bolt 5 and nut 6 in such manner as to permit longitudinal and lateral adjustment. Any suitable supporting means may, however, be provided.

The frame 1 is provided with a threading slot 7, which extends to a suitable distance toward the slot 2 and is in Fig. 1 represented as terminating at the point 8. The thread guiding extensions 9—9 may be provided if desired. I suitably support by means of the frame 1 a member having an extended thread receiving surface of such character as to permit the displacement of the worn portion of said surface and the

presentation of an unworn portion thereof. In said figures, this member is represented as a disk 10 seated in a socketed portion 11 of said frame and normally restrained from rotation by any suitable means, such for example as a screw 12 tapped into the frame as indicated and which when loosened slightly permits the desired circumferential adjustment of the said disk. The disk 10 may be made of any suitable material, such for example as metal, glass or porcelain, but hardened metal has been found preferable in use. Such disk may be of any suitable shape and may be positioned in any desired way to present a portion of its surface to the action of the thread or yarn and in such manner as to permit the displacement of the worn portion of the surface and the substitution of an unworn portion. Preferably the thread or yarn is directed to the member herein shown as a disk in such manner that the thread passes peripherally about the disk to a limited extent. When that portion of the surface of the member over which the thread is first directed becomes worn, the member may readily be adjusted to present a new portion of its surface and the guide may be used until substantially all thread receiving portions of the surface of the member have been utilized.

In Figs. 1, 2 and 3, the member is represented as a disk having a grooved face. Such grooved formation so acts upon the yarn or thread as to provide a more even laying and twist to plied or spun yarns. It is apparent, however, that the character of the thread receiving surface of the member may be varied as found suitable. I contemplate also the provision of a thread guide having a thread cleaning formation. Although I have in the present embodiment of the invention represented the member 10 as provided with such formation, yet it is apparent that this feature of my invention may be utilized in thread guides of other types. The thread cleaning formation referred to is of such character as to cause it to extract from the thread or yarn the protruding fibers or certain of them and to remove foreign matter or lumps, so as to present a smoother yarn or thread for use. Such thread cleaning formation may be of any suitable character, and is intended to act upon the yarn or thread while it is spinning or twisting about the thread guide.

Referring to Fig. 4 wherein I have represented the thread cleaning formation as utilized in connection with the adjustable thread guiding member, the said member is represented as a grooved disk formed of the two parts 13—13 embracing between them a disk 14 having a slightly roughened edge, the several parts being tightly secured together by a screw 15 which may in Figs. 4, 5, 6 and 7 be the screw that normally holds the disk

from rotation. The disk 14 may be of any suitable material and may be provided with any suitable thread cleaning formation. For example, the body of the disk 14 may be

5 of card board or any other metallic or non-metallic substance, to the edge of which may be applied in any suitable manner suitable thread cleaning material, such for example as emery, particles of glass or other
10 material serving to catch projecting fibers or imperfections of the thread or yarn.

It is apparent that the thread cleaning function of my guide may be embodied in structures not containing the other features
15 of my invention.

In Fig. 5, I have represented a slightly different form of my invention wherein the intermediate disk 16 is provided with rip saw teeth, the points thereof being directed
20 slightly rearward with respect to the direction of movement of the yarn or thread.

Any other suitable thread cleaning means may be provided. For example, in Figs. 6 and 7, I have shown a disk composed of
25 members 17—17 provided upon their inner faces with teeth 18, which interengage when the members of the disk are secured together by the screw 19 in such manner that the edges of the teeth engage the yarn or
30 thread as it is passed thereover and remove the fibers or certain of them. The interengaging edges of the teeth give a serpentine course to the yarn or thread as it passes over them during the spinning or twisting
35 operation, and therefore this serves to round the thread and clean it thoroughly.

Although I have represented the thread cleaning portion of the guide as employed in connection with a disk having a grooved
40 surface, it is apparent that it may be used with disks having other surface formations, and in fact may be employed entirely apart from the adjustable thread guiding member herein disclosed.

45 In Figs. 8, 9 and 10, I have represented a somewhat different form of frame consisting of the two members 20—20 secured together by screw 21 and laterally clamping between them so as to hold the same normally from
50 rotation, a thread guiding member 22 which may be of any suitable character and may be provided if desired with a thread cleaning formation. By slightly loosening the screw 21, the member 22 may be circum-
55 ferentially adjusted when worn so as to present a new surface.

In Figs. 11 and 12, I have represented a form of my invention wherein the thread guide frame 23 is preferably unitary but
60 slotted as represented at 24 to receive means to fasten the frame in place and also slotted as indicated at 25 to receive the disk 26 which is normally restrained from rotation by the screw 27. When a portion of the
65 periphery of the disk has become worn, the

screw 27 may be loosened to permit the partial rotation of the disk. If desired, this form of thread guide may be provided with a thread cleaning formation.

In Fig. 13, I have indicated the thread
70 guide in its usual relation to the delivery rolls 32, bobbin 33 and traveler 34. In said figure, as well as in Fig. 14, the yarn or thread 35 is represented as passing along the groove of the thread guide. The twist
75 imparted by the mechanism to the yarn or thread extends upward past the thread guide, and hence said yarn or thread is subjected to the action of the cleaning formation of the guide while in a groove thereof.
80

It is apparent from the foregoing description that a thread guide constructed in accordance with my invention possesses marked advantages over thread guides now in use. The adjustment of the thread re-
85 ceiving member so as to present a new portion of its surface upon the occurrence of wear, results in a great lengthening of the life of the guide as has previously been explained. Moreover the character of the
90 guide is such as to result in a more even laying and twisting of plied and spun yarns, and yarns and threads are, if the thread cleaning formation be provided, cleared of projecting fibers or the like to a
95 substantial extent.

Having thus described one illustrative embodiment of my invention, I desire it to be understood that although specific terms are employed, they are used in a generic
100 and descriptive sense and not for purposes of limitation, the scope of the invention being set forth in the following claims.

1. A yarn or thread guide for spinning or twisting machines comprising a frame hav-
105 ing side members and a longitudinally slotted end, whereby it may be secured in position, a yarn or thread disk having means to mount the same in said frame and normally to restrain the same from rotation with the
110 axis of rotation normal to a longitudinal axis of said side members, said disk being provided with a superficial thread cleaning formation.

2. A yarn or thread guide for spinning or twisting machines comprising a frame, a pair of tapered disks having laterally projecting teeth at their small ends, and means for securing said disks to the frame with
120 said teeth interengaged to present a thread cleaning formation.

3. A yarn or thread guide for spinning or twisting machines comprising a frame adapted for attachment thereto, a guiding
125 disk held as an entirety by said frame in fixed position and peripherally grooved to receive, sustain and guide the yarn or thread and to permit the yarn or thread to spin or twist in said groove, the latter being provided with a thread cleaning formation
130

to the action of which the yarn or thread is subjected while spinning or twisting in said groove.

4. A yarn or thread guide for spinning or twisting machines comprising a frame adapted for attachment thereto, a guiding disk held as an entirety by said frame in fixed position and peripherally grooved to receive, sustain and guide the yarn or thread and to permit the yarn or thread to spin or twist in said groove, the lateral walls of said groove being provided with a thread cleaning formation to the action of which the yarn or thread is subjected while spinning or twisting in said groove.
5. A yarn or thread guide for spinning or twisting machines comprising a frame adapted for attachment thereto, a guiding disk held as an entirety by said frame in fixed position and having a peripheral groove of fixed lateral extent in operation to guide and sustain the yarn or thread and permitting it to pass longitudinally along the same without imparting lateral tension and to spin or twist therein, the said groove having a thread cleaning formation to the action of which the yarn or thread is subjected while passing along and spinning or twisting in said groove.
6. A yarn or thread guide for spinning or twisting machines comprising a frame adapted for attachment thereto, a guiding disk supported by said frame and peripherally grooved to receive, sustain and guide the yarn or thread and to permit the yarn or thread to spin or twist in said groove, the latter being provided with a thread cleaning formation to the action of which the yarn or thread is subjected while spinning or twisting in said groove.
7. A yarn or thread guide for spinning or twisting machines comprising a frame slotted at one end for adjustable attachment to the machine, a guiding disk supported by

said frame in advance of said slotted end and peripherally grooved to receive, sustain and guide the yarn or thread and to permit the yarn or thread to spin or twist in said groove, the latter being provided with a thread cleaning formation to the action of which the yarn or thread is subjected while spinning or twisting in said groove.

8. A yarn or thread guide for spinning or twisting machines comprising a frame slotted at one end for adjustable attachment thereto and slotted at its other end for the introduction of the yarn or thread, a guiding disk held as an entirety by said frame in fixed position between the slotted ends thereof and peripherally grooved to receive, sustain and guide the yarn or thread and to permit the yarn or thread to spin or twist in said groove, the latter being provided with a thread cleaning formation to the action of which the yarn or thread is subjected while spinning or twisting in said groove.

9. A yarn or thread guide for spinning or twisting machines comprising a frame having spaced side members and a longitudinally slotted end, whereby it may be secured in position upon the machine, a yarn or thread disk peripherally grooved to receive, sustain and guide the yarn or thread and to permit the same to spin or twist in said groove as it passes to a receiving spindle and having means to mount the said disk in said frame between said side members thereof and normally to restrain the same from rotation with the axis of said disk normal to the longitudinal axis of said side members.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ISAAC E. PALMER.

Witnesses:

FRED E. FOWLER,
GEO. C. HAINS.