June 19, 1923. 1,459,135

A. ASHWORTH

YARN CLEANER

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Fig. 1.

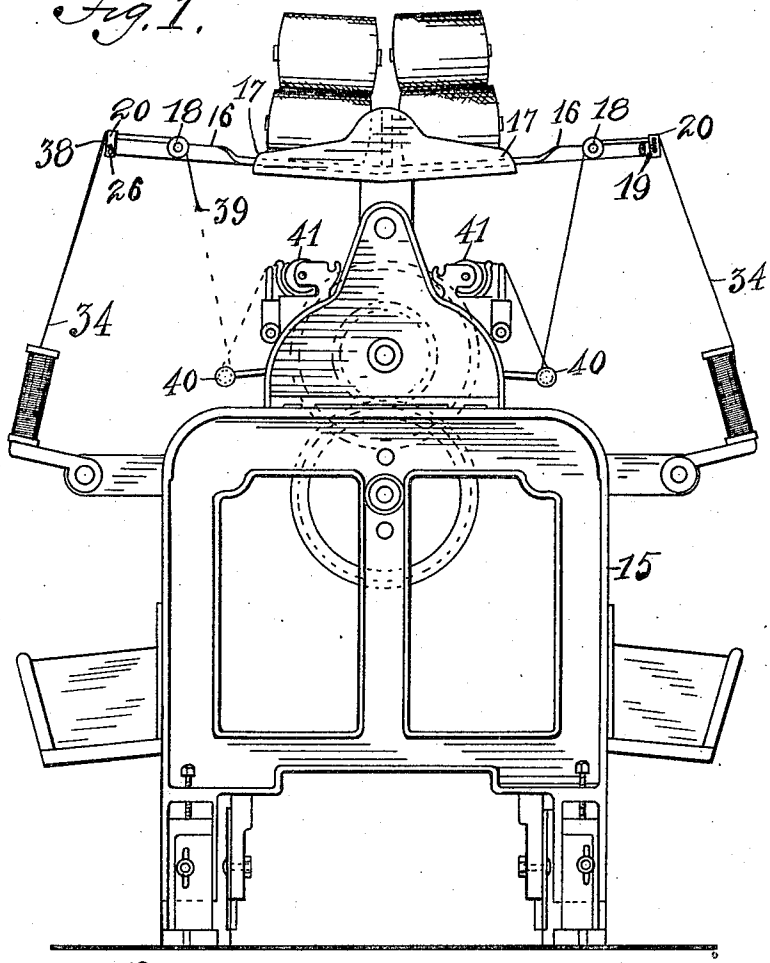
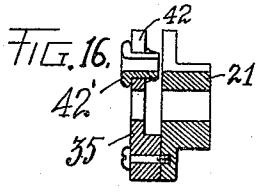


FIG. 16.



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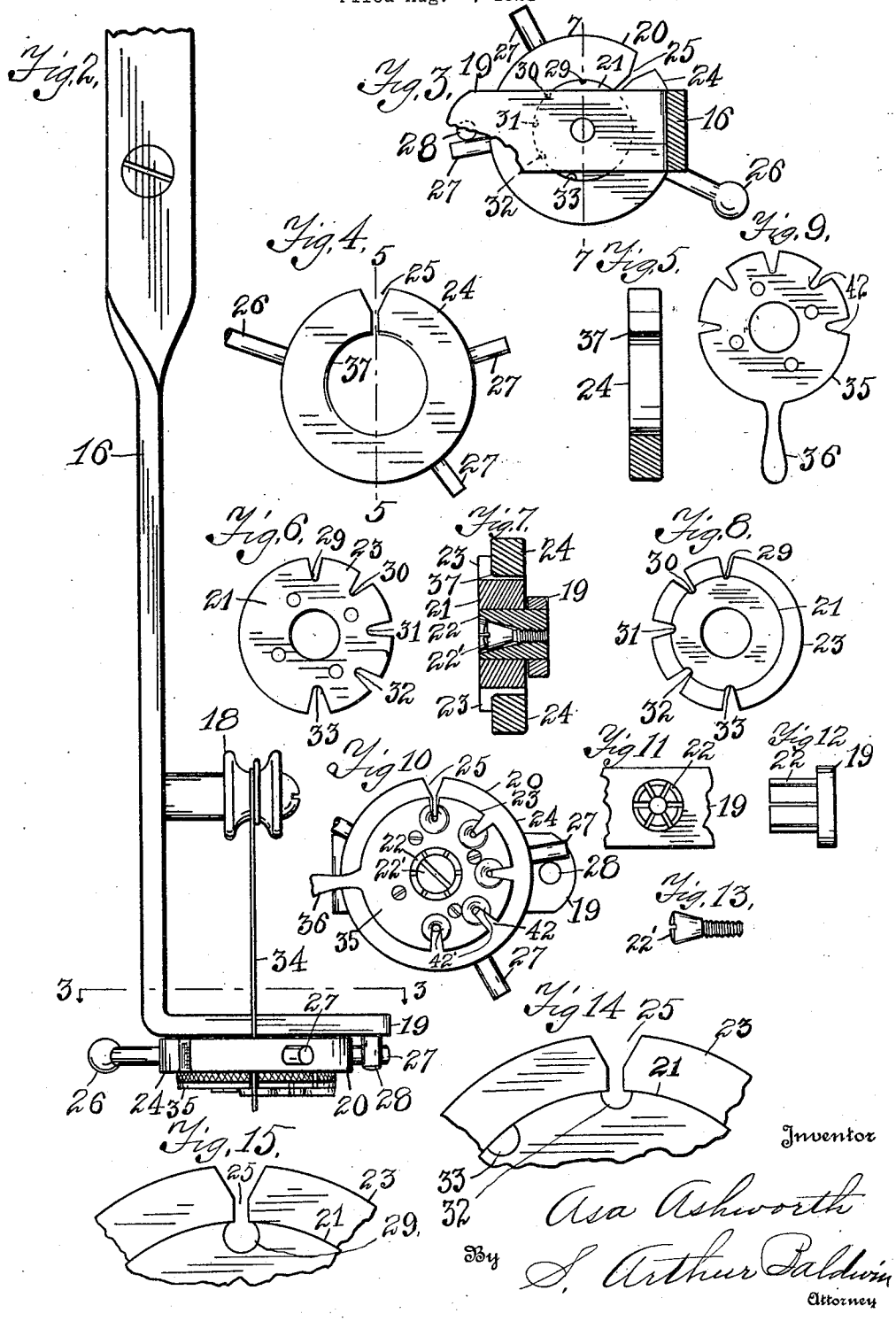

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UNITED STATES PATENT OFFICE.

ASA ASHWORTH, OF SALAMANCA, NEW YORK.

YARN CLEANER.

Application filed August 6, 1921. Serial No. 490,251.

To all whom it may concern:

Be it known that I, ASA ASHWORTH, a citizen of the United States, residing at the city of Salamanca, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Yarn Cleaners, of which the following, taken in connection with the accompanying drawings, is a specification.

The invention relates to devices for removing "slubs", bad piecings, thickened portions, etc., from the yarn. Such thickened portions form bad imperfections in the woven cloth if woven into the fabric.

The object of the improvement is to provide a simple and easily threaded yarn cleaner which will invariably catch the slubs, bad piecings or other imperfections in the yarn, different sized openings being provided for different size threads so that the yarn must be substantially uniform as to size in order to pass through the opening in the slub catcher, which is a fixed tubular opening as to its size so that it cannot be changed by the draw of the yarn, the entrance slot being preferably funnel or Y-shaped at the mouth so that the yarn will enter freely; and the invention consists in the novel features and combinations hereinafter set forth and claimed.

In the drawings, Figure 1 is an end elevation of the winding machine for the yarn, showing the slub catchers on each side with the yarn broken on one side by a slub entering the catcher. Fig. 2 is a top plan view of the slub catcher mechanism showing the yarn as it passes through the same. Fig. 3 is a sectional view at line 3—3 in Fig. 2 showing a rear elevation of the slub catcher with the closed or locked small yarn opening therethrough, the Y-shaped threading opening being turned away from said yarn opening, thereby closing the same. Fig. 4 is a detail elevation of the cleft ring; and Fig. 5 is a sectional view of said cleft ring at line 5—5 in Fig. 4 showing the construction and arrangement of said ring. Fig. 6 is a front elevation of the grooved round central portion of the slub catcher; and Fig. 7 is a sectional view of the same at line 7—7 in Fig. 3 showing the grooved opening for the yarn as it is drilled through the edge portion of the same so that when the outer ring is placed upon the same, it closes and perfects the shape of said yarn opening; and Fig. 8 is a rear elevation of said inner portion showing five graduated yarn openings thereon. Fig. 9 is a plan view of the hardened steel guide plate for the yarn which is attached on the front of the central grooved portion. Fig. 10 is a front elevation of the slub catcher head mounted upon the support bar, the outer ring being turned into the threading position and showing the preferred semi-circular shape of said yarn openings; and Fig. 11 is a front elevation; and Fig. 12 is a side elevation of the split or expanding sleeve support for said central grooved portion; and Fig. 13 is a side elevation of the conical headed expanding screw for attaching the parts of the yarn cleaner in the adjusted position. Fig. 14 is an elevation of enlarged segments of the outer ring and round central portion showing the preferred formation of the peripheral half round hole for the yarn to draw through, and the entrance to the same; and Fig. 15 is a similar view showing a modification of said hole for the yarn. Fig. 16 is a sectional view of the central plate and guide plate attached thereto showing the preferred manner of attaching or fastening the porcelain eyelets in said guide plate.

Like characters of reference refer to corresponding parts in the several views.

The numeral 15 designates the winding machine for the yarn which has the spool holders and winding mechanism on opposite sides in the usual manner, except that I attach the support bars 16 to the rack 17 at each side so as to give said support bars 16 great rigidity as they extend out from said rack 17 and allow the operators to stand erect in piecing up ends.

The support bars 16 have the preferably porcelain guide and tension spools 18 attached thereon in line with the slub catcher opening for the yarn. The outer end 19 of each bar 16 is turned at an angle to support thereon the slub arresting mechanism 20, which consists of the ring plate 21 which fits around the slotted or expanding sleeve 22 to receive the expanding screw 22′ for attachment to the end 19 of the support bar 16. The ring 21 is provided with a flange 23 to hold the outer severed ring 24 in position which rotatively fits around said collar 21.

The ring 24 has the Y-shaped cleft 25 therein for threading the yarn into the yarn hole or groove in the central ring 21. The Y-shaped opening 25 is shaped so as to invariably guide the yarn into said opening without catching before entering the yarn hole. The ring 24 has the handle 26 for manually turning the same, which handle is so placed as to automatically turn said ring 24 back to the locking position and assists in holding the same in said locking position. The ring 24 is also provided with the spaced stop pins 27 which engage the opposite sides of a stop pin 28 on the angular end 29 of the support bar 16 to thereby limit and guide the rotative movement of the ring 24 so that when said ring is turned by the handle 26, it is accurately stopped with said Y-shaped opening in exact position over the slotted opening to the yarn hole in the central ring portion 21.

The central ring 21 has a plurality of drilled grooves or holes 29, 30, 31, 32 and 33 across the periphery of the rear portion of the central plate 21 with the slot extending from said drilled openings to the periphery of the flange 23, said holes or openings being drilled across the rear portion of the piece 21 or so near its periphery as to be easily slotted into, yet form a smooth hole when closed by turning the ring 24. The semi-circular shaped crosswise groove on the periphery of ring case 21 is preferred since the yarn naturally flattens down slightly as it enters the sizing of calipering opening which has been designated a yarn hole, hence does not need a round opening, though a round opening as shown in the modification in Fig. 15 would serve the purpose, indeed, other shaped openings might be used, as for example a V-shape or diamond shape, without departing from my invention since they would serve the purpose in sizing or calipering and cleaning the yarn.

It is apparent that the constant draw of the yarn 34 through the yarn hole wears upon the metal, hence a guide plate 35 with the number of preferably porcelain lined notches 42 provided for the yarn holes which is shown in the present construction as five, is provided, which plate 35 is attached by means of suitable screws upon the face of the plate 21 in alinement with the different yarn holes or grooves in said plate 21, said plate 35 being made of extremely hardened steel so that said guide plate 35, which has a handle 36 for turning the same and the central plate 21 in adjusting said plate to the opening 25, will last for quite a lengthy period of time, after which it can be renewed at small cost. The yarn openings wear smooth through constant passage of the yarn. The steel being of about glass hardness makes an almost ideal guide plate and provides means for the quick adjustment of the central ring 21 to the yarn hole of the required size.

It is now apparent that the Y-shaped threaded opening 25 can be turned opposite the drilled opening or groove 29, 30, 31, 32 or 33 according to the size of the yarn, said drilled openings being from about sixty-four thousandths of an inch for silk thread to about thirty-two thousandths of an inch for coarse warp thread, the yarn holes in between being graded between these two maximum and minimum sizes though any desired size of yarn hole may be made without departing from my invention.

The ring 24 is freely rotative upon the central ring 21 which is firmly attached on the ends 19 so that said ring can be manually turned into alinement with the desired notched and drilled opening. The yarn 34 is then quickly and easily passed into the notch 25 and drilled opening 29, 30, 31, 32 or 33, according to the size of said yarn, after which the ring 24 is turned to the locking position as shown in Fig. 3, leaving the yarn in the desired size closed hole or drilled yarn opening in position on the angular end 19 of the support bar 16. The inner edge 37 of the ring 24 is rounded slightly, as shown, so as not to cut or wear upon the yarn as it runs swiftly through the yarn cleaner, giving the yarn hole a slight funnel shape as shown in Fig. 7.

It is now obvious that when a thickened portion or slub as shown at 38 in Fig. 1 attempts to pass through the small drilled hole of the correct size for the size yarn, it will be instantly stopped and the yarn 34 will break down as shown at 39, permitting the operator to break out the slub or thickened portion and retie or draw a knot in the yarn, rethreading the slub arrester and passing the thread over the guide spool 18 and down around the porcelain spool or pulley 40 and thence up to the winding mechanism 41.

The preferred form of the drilled yarn hole 29, 30, 31, 32 or 33 is shown in the enlarged view in Fig. 14, which shows the Y-shaped guide slot 25 in the ring 24 and the same size slot through the flange 23 of the round central ring 21. The upper stop pin 27 is so placed in relation to the stop pin 28 that said slots are stopped in perfect alinement. All entrances to holes or openings of any shape for the yarn should be rounded or slightly funnel-shaped so as not to roughen the yarn as it passes through or over the same, yet sufficiently angular to guide the yarn accurately in threading and passing the yarn through the combination yarn caliper and cleaner.

The guide plate 35 is preferably cut away across a segment of the under side of the same covering the guide notches or grooves

42 and lined with the porcelain eyelets 42′, which eyelets are sealed therein on the inner side of the same as shown in Fig. 16.

What is claimed as new is:

1. In combination with a rotatable member having a series of thread eyes and an inlet for each, a vitreous lining for each eye, and a rotatable lock having a thread passage movable onto and out of register with the inlets.

2. In combination with a support and a member having spaced thread eyes, and an inlet for each, means to rotatably mount the member on the support, a handle for the member to rotate same, and a lock for the inlets having a thread passage adapted to register with a selected inlet.

3. In combination with a support and a member having spaced thread eyes and an inlet for each, an expansible sleeve connected to the support and on which said member is rotatably mounted, a screw having a tapering head to expand the sleeve against the member to lock the latter against turning, and a movable thread lock for the eye inlets.

4. In combination with a support and a member having a series of thread eyes and an inlet for each, means between the member and support to rotatably connect the member to the support, a screw for locking the member against rotation, and a movable thread lock for the eye inlets.

5. In combination with a support, a circular plate rotatably connected to the support and having thread eyes with an inlet for each, and a guide plate having notches removably and rigidly connected to a side face of the circular plate with its notches alined with the eyes of the first named plate.

6. In combination with a member having a series of guide eyes each provided with an inlet, a removable member connected to the first named member and having vitreous lined notches in register with said eyes and inlets thereof.

7. In combination with a member having a series of guide eyes each provided with an inlet, means to rotatably mount said member and to hold same rigid and against rotation, a member having a series of notches each provided with a vitreous lining for register with the respective eyes and inlets thereof, and means to removably and rigidly attach the second member to the first member.

8. In combination with a member having a series of guide eyes each provided with an inlet, means to rotatably mount said member and to hold same rigid and against rotation, a member having a series of notches for register with the eyes of the first member, a lock having a thread passage movable into and out of register with a selected eye to open and close the inlet thereof, and a handle borne by each member to operate same.

In testimony whereof I have affixed my signature in the presence of two witnesses.

ASA ASHWORTH.

Witnesses:
HARRY G. ASHWORTH,
THEO. THOMAS HAAG.