

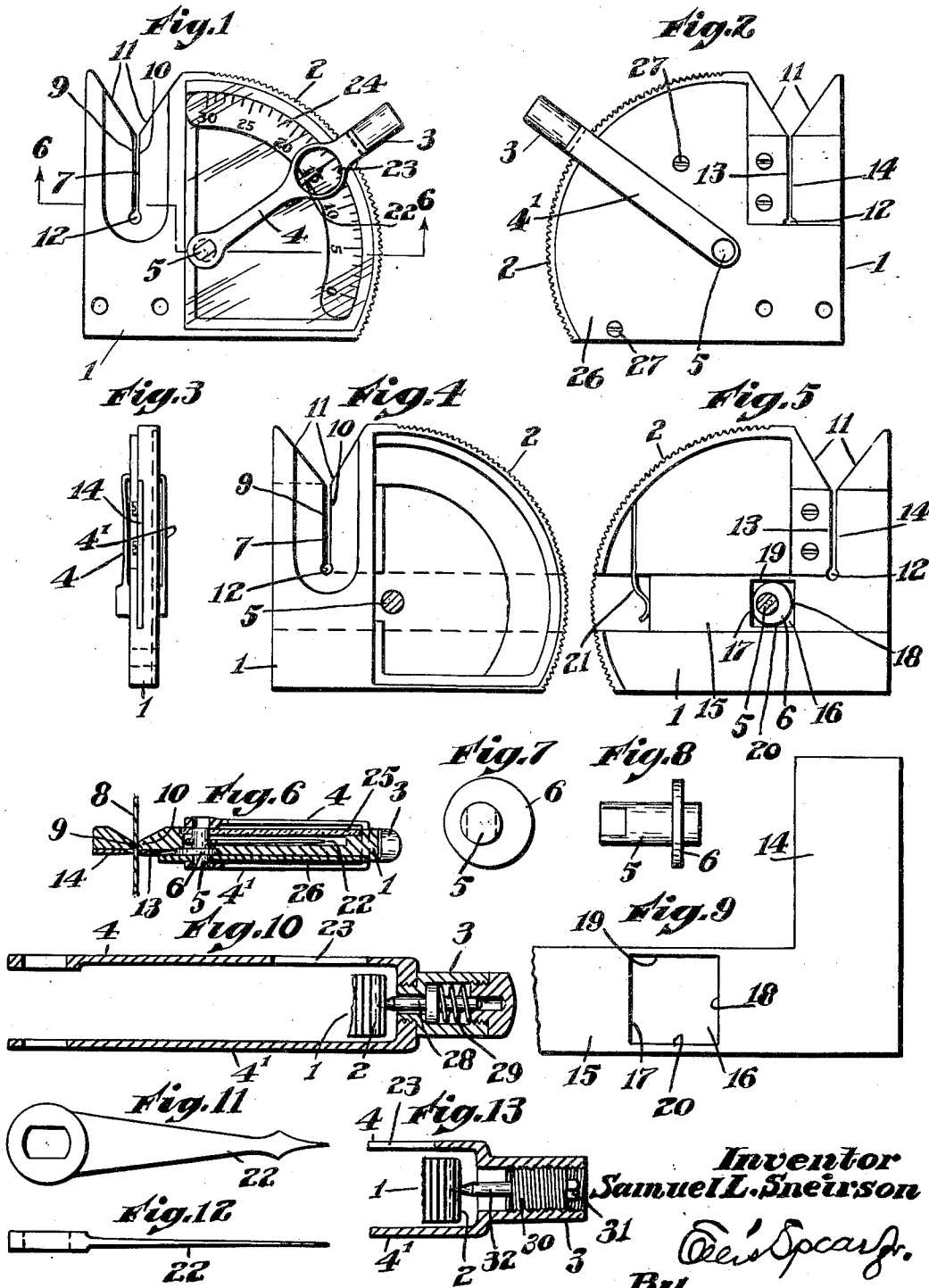
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YARN CLEANER

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YARN CLEANER

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This invention relates to a yarn cleaner and more particularly to a yarn cleaner which is readily adjusted to clean yarn and like of different sizes, and which may be reset and adjusted to compensate for wear.

In the textile and other arts employing yarns of various kinds, it is important that the yarn be of substantially uniform size throughout and that it be cleaned and free from lint, and enlarged portions known generally in the trade as slubs.

Heretofore in practical processing, one common practice has been to provide a separate cleaner plate having the correct size of guiding and cleaning slot or aperture for each size of yarn. After a period of use the guiding or gauging edges become worn and at times become worn to an irregular or somewhat saw tooth form, and no means are provided for resetting the cleaning and guiding edges. It then becomes necessary to remove the worn cleaner plate and replace it. To replace an old cleaner or to change to one of a different size involves a certain amount of trouble and the expenditure of time. In accordance with another practice, where the entire cleaner and guide plate is not replaced, an attempt has been made to obtain a degree of adjustability by providing a guide or cleaning slot or aperture in which one of the guides is fixed in position by screws or the like in such a way that slight movement of the guide may be obtained to vary the size of the slot or aperture. However, such an arrangement is rather crude, inconvenient and uncertain, and does not provide, with convenience and certainty, the adjustability desired.

One of the objects of the present invention is to provide a readily adjustable yarn cleaner and gauging device which will overcome the objections and difficulties above referred to inherent in the devices usually employed in practice, and which will have additional new and distinctive advantages thereover in convenience of application and precision and definiteness in adjustability to different sizes of yarns and to compensate for wear.

A further object of this invention is to provide a yarn cleaner in which either one or both of the cleaner guides may be conveniently replaced when worn out.

A further object is to provide in a yarn cleaner, an adjustable means by which a visible index may be afforded in adjusting the yarn aperture to any size or to compensate for wear.

A further object is to provide in a readily adjustable yarn cleaner means for securely fixing

or locking the control means in position to prevent accidental displacement and to prevent unauthorized persons from varying the adjustment.

In general the above objects are accomplished by providing a plurality of independently movable guides, a manually controlled means, and motion transmitting means or connection interposed between the manual control and one of the relatively adjustable guides, said manual control preferably having a position fixing means and a graduated index or scale associated therewith for convenience and definiteness in setting the yarn guides to a particular size of yarn.

One selected embodiment is shown and described in the accompanying drawing and following description for purposes of illustration, it being understood that various changes and modifications in detail construction and arrangement of parts may be made without departing from the invention as claimed.

Fig. 1 is a front elevation of the yarn cleaner.

Fig. 2 is a rear elevation of the yarn cleaner.

Fig. 3 is a side view of Fig. 1.

Fig. 4 is a front elevation with the graduated index and manual control adjusting arm and index removed.

Fig. 5 is a rear plan with the back cover removed, so as to show one of the detachable guides, one of relatively adjustable guides, together with the actuating connection between the manual control and the adjustable guide.

Fig. 6 is a section looking in direction of arrows on line 6—6 of Fig. 1.

Fig. 7 is an enlarged elevation of the cam actuating member for the adjustable guide.

Fig. 8 is a side view of Fig. 7.

Fig. 9 is an enlarged elevation of the adjustable guide.

Fig. 10 is an enlarged section of the manually controlled arm, and showing a fragment of the notched edge of the frame and showing a spring pressed detent engaging the notched edge for fixing the arm in position.

Fig. 11 is an enlarged elevation of the indicator.

Fig. 12 is a top plan of Fig. 11.

Fig. 13 is an enlarged section of a modified form of locking means in the manually controlled arm, for preventing adjustment by unauthorized persons.

As shown in the illustrated form the yarn cleaner comprises a main body or supporting frame 1 which may be of any suitable form. One portion of the frame is shown as a quadrant having a notched or knurled arcuate perimeter 2 which is adapted to cooperate with a position fix-

ing (Fig. 10) or locking (Fig. 13) mechanism, to be hereinafter more fully described, carried in the head 3 of a manually actuated arm 4 which is pivotally mounted in the frame 1 on a stud 5 having an eccentric cam 6 the purpose and function of which will hereinafter be more fully described.

A slotted aperture 7 through which the yarn 8 is passed is formed by the guides 9, 10 formed integral with the frame. The open end of the yarn aperture or slot preferably terminates in an outwardly tapering mouth or lead 11 to facilitate the leading of the yarn in the aperture 7. Preferably the other or inner end of the yarn aperture 7 terminates in an enlarged circular aperture 12 which facilitates freeing and clearing the main aperture 7 of lint or slubs there collected.

The actual cleaning and gauging of the yarn passed through the slot 7 is performed not by the fixed integral guides 9, 10 but by a pair of relatively adjustable cleaning guides 13, 14, the edges of which extend beyond the edges of the integral guides 9, 10.

Preferably the yarn cleaner guides 13, 14 are made relatively adjustable to accommodate yarn of different sizes and to compensate for wear, by having one of the cleaner guides 14, for example, so arranged as to be movable and adjustable relative to the other guide 13 which preferably may be detachably fixed in position by screws or other suitable means. Such a construction makes possible the ready replacement of either one or both of the functioning yarn cleaner guides 13, 14. If desired other arrangements may be employed to effect the relative adjustability between the cleaner guides such for example as where both of the guides are movable. If desired the relatively fixed guide 13 integral with the frame may be used with the adjustable guide 14 to form the yarn cleaning slot.

The movement of the adjustable guide 14 is effected by the motion transmitting connection which is actuated by the manual controlled member or arm 4. In the illustrated form shown the guide 14 is provided with a projecting portion 15 which is shown as a portion integral with the guide 14. The two portions 14 and 15 form a flat plate of generally L shape, it being understood however other arrangements and forms may be used. A cam receiving aperture 16 is formed in the portion 15 of the movable guide 14, and is of such form and size as to receive the eccentric cam 6 which is eccentrically mounted on the stud 5. The cam 6 and the plate 15 are preferably of substantially the same thickness (see Fig. 6) which forms a neat compact feature of construction. Preferably the width of the aperture 16 in the portion 15 of the guide is such that sides 17 and 18 contact with opposite sides of the eccentrically mounted cam 6. In this way a positive movement of the guides 14, 15 is effected in either direction. The other two sides 19, 20 of the aperture are preferably spaced a greater distance apart to accommodate the enlarged eccentric portion of the cam 6, as the arm 4 is moved to rotate the stud 5 through a portion of a revolution.

If desired a spring 21 may be suitably disposed so as to cooperate with the portion 15 of the guide 14 to take up any lost motion, or wear of parts, and thus maintain constant contact between the cam 6 and the side 17 of the aperture. The spring 21 is particularly useful if the distance between the sides 17, 18 of the aperture 16 is greater than the diameter of the cam 6. As shown, the end of the spring 21 is fixed in a slot in the frame 1

but other desired arrangement may be used for locating the spring.

The movement of the stud 5 for actuating the cam 6 is effected through the bifurcated arm 4 having its ends mounted upon the opposite ends of the stud 5. Preferably the stud 5 is flattened in one or more planes and the apertures in the arm 4, 4¹ and the indicator 22 correspond in shape thereto so as to move with the stud. The arms 4, 4¹ straddle the frame 1 and are connected at their outer ends by the bridging handle or knob 3.

The arm 4 located on the front face of the frame is preferably provided with an aperture 23 through which the pointer or indicator hand 22 may be observed in its relation to the graduated dial 24 which is preferably provided on the front face of the frame. The indicator hand 22 is mounted on the stud 5 so as to rotate therewith and indicate in cooperation with the dial 24 the extent or size of the yarn cleaning aperture between the cleaner guides 13, 14.

A transparent covering 25 (Fig. 6) for the front face of the frame is preferably disposed between the arm 4 and the indicator hand 22. The covering 25 is provided with a bearing aperture to receive the stud 5.

The functioning parts of the cleaner are protected and enclosed by a removable back or cover 26 which may be removably fixed in position on the back of the frame by screws 27, 27 (Fig. 2). The rear cover is preferably provided with a bearing aperture to receive the end of the stud which extends therethrough and on which the arm 4 is mounted.

As a means of maintaining the manually controlled guide adjusting arm in relatively fixed adjusted position, a detent 28 is pressed by a spring 29 against the notched or knurled edge 2 of the frame, (Fig. 10). The spring and detent parts are carried in the cap or handle portion 3 of the arm 4, 4¹. In certain instances in the yarn cleaning operation it is desirable to have the manual actuating control arm more securely locked in position so that the operator of the machine is not tempted to enlarge the yarn cleaning slot or aperture to pass a slub or other enlarged obstruction on the yarn, instead of removing or cutting out the slub and re-tying the yarn. In such instance an arm lock such as that shown in Fig. 13 may be employed in which a plug 30 is shown threaded in the cap portion 3 and a head 31 of special form is provided for the plug, said head 31 being recessed or countersunk below the rim of the cap 3 so as to be inaccessible except to an authorized person having the necessary tool or wrench. The stem 32 engages the notched edge 2 of the frame and securely locks the arm 4, 4¹ and the guide 14 controlled thereby in a fixed position.

While one preferred form has been shown and described it is understood that various changes and modifications in arrangement and details of construction may be made without departing from the spirit and scope of the invention as defined in the appended claims.

What I therefore claim and desire to secure by Letters Patent is:—

1. A yarn cleaner comprising a frame base, a pair of relatively adjustable yarn guides adapted to receive yarn as it is guided therethrough, a graduated dial, an indicator arm adapted to cooperate with said dial, means for adjustably fixing the arm in relation to the graduated dial, means cooperating with the indicator arm for

actuating one of the relatively movable yarn guides, whereby said yarn guides may be readily adjusted to receive a yarn of given size as indicated by the position of the indicator arm on the graduated dial.

2. A yarn cleaner comprising a frame, a pair of yarn guides, one of which is adjustable, adapted to receive yarn as it is passed therethrough, a graduated indicator, an indicator arm pivotally mounted in the frame and adapted to register with the graduated indicator and a connection between the indicator arm and the movable yarn guide for varying the distance between yarn guides.

3. A yarn cleaner as defined in claim 2 in which said connection includes an eccentrically mounted cam so disposed as to engage the movable guide and control the movement thereof in either direction.

4. A yarn cleaner comprising a base frame, a pair of relatively adjustable yarn guides adapted to receive yarn as it is passed therethrough, an arm pivotally mounted in the frame and a connection between the arm and the movable guide for varying the distance between yarn guides, and a locking means associated with the arm engaging the frame to hold the guides in fixed adjusted relation.

5. A yarn cleaner comprising a frame, a pair of spaced gauge plates mounted in the frame and forming an aperture adapted to receive the yarn, one of said plates being movable and adapted to vary said yarn aperture, said plate having an aperture therein, a graduated dial, an indicator arm adapted to cooperate with said dial, an eccentric cam actuated by the indicator arm, said cam being mounted at the point of pivotal support of the indicator arm, said cam being disposed in said aperture in the movable gauge plate to actuate said plate, whereby the size of the yarn guide aperture may be adjusted by movement of the arm.

6. A yarn cleaner comprising a frame, a plurality of yarn guiding plates, one of which is adjustable, adapted to receive and gauge yarn as it is passed therethrough, a guide actuating means mounted on the frame for pivotal movement thereon, one of said guides including a movable plate slidable in the frame, said plate including two portions substantially normal to each other, one portion having a yarn guiding edge and connecting means interposed between the actuating means and the other portion of the guide.

7. A yarn gauge as defined in claim 6 including resilient means cooperating with the movable guide to maintain the arm, guide and connecting means in proper functioning relation.

8. A yarn cleaner comprising a frame, including an arcuate edge, and an enlarged yarn lead adjacent one end of the arcuate edge, a pair of relatively adjustable yarn guides adapted to receive and gauge yarn as it is passed therethrough, said yarn lead communicating with the aperture between the relatively adjustable guides, an arm mounted at one end for pivotal movement in the frame, locking means mounted in the other end of the arm adapted to engage the edge portion of the frame to maintain the arm in fixed position, motion transmitting means interposed between said arm and one of said guides, whereby the size of the yarn guide aperture may be adjusted by movement of the arm.

9. A yarn cleaner is defined in claim 8 in which

the motion transmitting means includes a cam movable with the arm.

10. A yarn cleaner comprising a frame having a yarn slot open at one end, a plurality of relatively adjustable yarn guides, one of each of said guides being disposed adjacent opposite sides of said yarn slot, a yarn guide or gauge adapted to receive yarn as it is guided therethrough, a dial, an indicator adapted to cooperate with said dial, means for adjustably fixing the relation between the dial and indicator, means cooperating with one of the indicator and dial members for actuating one of the relatively movable yarn guides, whereby said yarn guides may be readily adjusted either to receive a yarn of given size corresponding to that indicated by the position of the indicator on the dial, or to adjust the guide to compensate for wear.

11. A yarn cleaner comprising a frame having a yarn guiding slot therein, a plurality of relatively adjustable yarn guides disposed adjacent the slot, one of the guides being adjustably mounted in the frame, and the other guide being detachably fixed therein to facilitate replacement, a guiding means for the adjustably mounted guide to effect movement thereof in a direction normal to the yarn guiding slot, without any lateral movement in a direction parallel to said yarn guiding slot, means for moving said adjustable guide including a member rotatably mounted in the frame and an eccentric connection between said rotatable member and the movable guide.

12. A yarn cleaner comprising a frame having a slotted yarn aperture, an arcuate notched edge, and an enlarged yarn lead adjacent one end of the arcuate edge and leading to the slotted yarn aperture, a pair of yarn guides, one of which is adjustable, adapted to receive and gauge yarn as it is guided therethrough, an arm mounted at one end for pivotal movement on the frame, locking means mounted in the other end of the arm adapted to engage the notched edge portion of the frame to maintain the arm in fixed position, motion transmitting means interposed between said arm and one of said guides, whereby the size of the yarn guide aperture may be adjusted by movement of the arm.

13. In a slub catcher or yarn cleaner, the combination of a substantially flat frame, a blade detachably mounted thereon in the same plane as the frame, a second flat blade slidably mounted for movement in the frame in the plane of the first blade, said second blade including a portion presenting an edge parallel with the edge of the first blade and an offset portion in the same plane substantially normal to the portion first named slidably guided in said frame to vary the distance between the edges of said blade, and eccentric means rotatably mounted in the frame for movement about an axis normal to the frame, said eccentric means engaging the offset portion of the second blade which is slidable in the frame, to actuate the second blade to vary the opening between said blades.

14. In a slub catcher or yarn cleaner, the combination of a substantially flat frame, a fixed blade detachably mounted thereon in the same plane as the frame, a second flat blade slidably mounted in the frame in the same plane as the first blade, said second blade being flat throughout and in the same plane and having an integral offset portion slidably guided in the frame, an eccentric cam actuating means rotatably mounted in the frame and engaging the offset portion

of the flat blade to vary the opening between the blades.

15. A slub catcher and yarn cleaner as defined in claim 14 and a rear flat cover detachably secured to the frame, said cover serving to conceal the parts and retain the second blade in functioning position in sliding relation to the frame, and to serve as a bearing for one end of the eccentric cam means rotatably mounted in the frame.

16. A slub catcher and yarn cleaner as defined in claim 14, a detachable rear cover, said rotary eccentric means passing transversely through the frame, the offset portion of the second blade and the rear cover, with the concentric bearing in the frame and rear cover, and the eccentric portion in engagement with the second blade, said second blade being retained in position between the rear cover and frame.

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