

April 25, 1939.

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2,155,900

SLUB CATCHER OR YARN CLEANER

Filed May 10, 1937

2 Sheets-Sheet 1

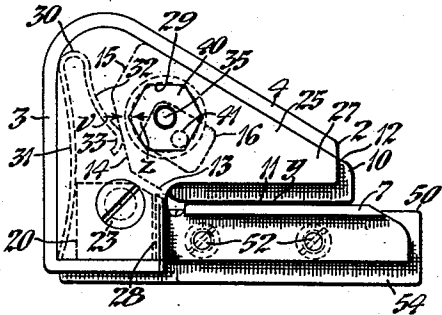


Fig. 1.

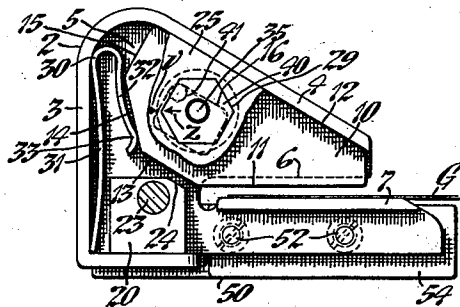


Fig. 2.

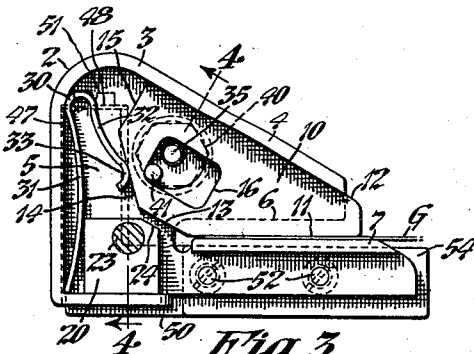


Fig. 3.

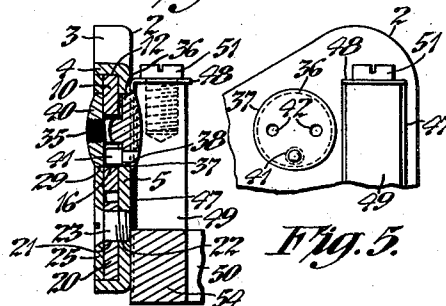


Fig. 4.

Fig. 5.

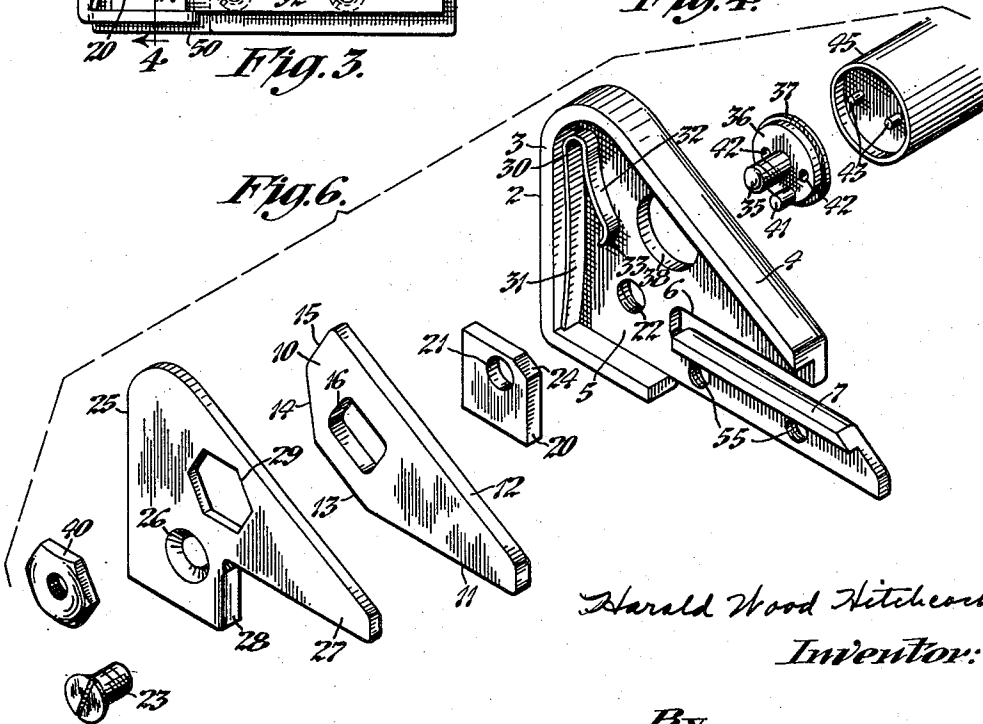


Fig. 6.

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2 Sheets-Sheet 2

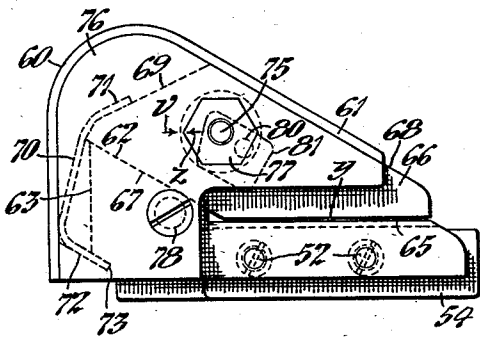


Fig. 7.

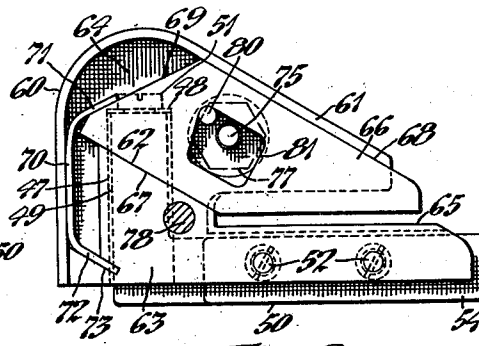


Fig. 8.

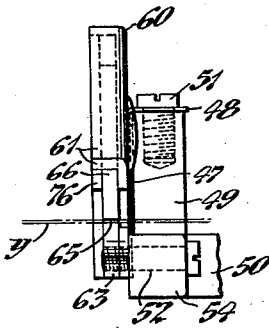


Fig. 9.

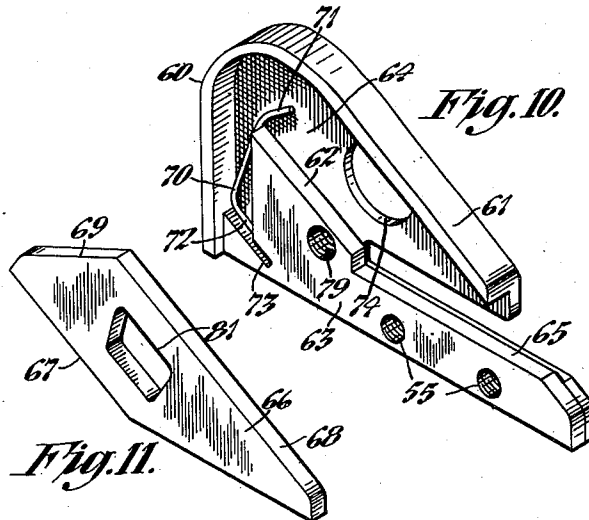


Fig. 11.

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UNITED STATES PATENT OFFICE

2,155,900

SLUB CATCHER OR YARN CLEANER

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Application May 10, 1937, Serial No. 141,795

15 Claims. (Cl. 28—71)

This invention relates to improvements in slub-catchers or yarn-cleaners for removing slubs, bunches, lint, motes and other foreign matter from yarn, thread and like strand materials during winding or other processes of transferring the material in the textile art.

One object of the invention is to provide a device of the type indicated having oppositely spaced elements or blades forming a slit or opening through which the yarn is drawn with means for adjusting the width of the opening with great precision and accuracy in accordance with different sizes or thicknesses of the strand material to be operated upon.

Another object of the invention is to provide a device of the type indicated having improved means for adjusting it to maintain the opposite edges of the spaced elements in exact parallelism to insure a uniform width of the opening whereby to provide for maximum efficiency of the device as the strand plays back and forth in the opening.

Another object of the invention is to provide a device of the type indicated having automatically-operated means for setting the parts to a gauge inserted therebetween to determine the width of the yarn-opening, after which the parts may be secured in adjusted position.

Another object of the invention is to provide a device of the type indicated having automatically-acting means for adjusting the parts and means for securing them in fixed relationship without disturbing or altering the adjustment thereof.

Another object of the invention is to provide a device of the type indicated which is more convenient to adjust and more efficient in use for the purpose specified.

Further objects of the improvement are set forth in the following specification which describes two different embodiments of the invention, by way of example, as illustrated by the accompanying drawings. In the drawings:

Fig. 1 is a front elevation of one form of the improved slub-catcher or yarn-cleaner showing the parts adjusted for use with a relatively fine yarn;

Fig. 2 is a similar view showing the device with its cover removed and illustrating the movable blade as adjusted away from the fixed blade to permit insertion of a gauge therebetween;

Fig. 3 is a view similar to Fig. 2 showing the movable blade of the device with its edge set against the gauge;

Fig. 4 is a transverse sectional view through the device on line 4—4 of Fig. 3;

Fig. 5 is a fragmentary view of the rear portion of the device showing the head of the adjusting screw;

Fig. 6 is a perspective view of the several parts of the device shown in disassembled relationship;

Fig. 7 is a front view of a modified form of construction of the device;

Fig. 8 is a similar view of this latter form of device shown with the cover removed and the movable blade withdrawn from the fixed blade;

Fig. 9 is an edge view of the device shown in Figs. 7 and 8;

Fig. 10 is a perspective view of the standard or casing for this latter form of device; and

Fig. 11 is a perspective view of the adjustable blade of the device.

The present invention relates generally to that type of slub-catcher or yarn-cleaner comprising oppositely-disposed blades or scraper-elements arranged with their edges in parallel, spaced relationship to provide a slit or opening through which the yarn or other strand draws and having means for adjusting the relative position of the blades or elements to regulate the width of the opening in accordance with the size or thickness of the yarn to be operated upon.

A principal feature of the present improvement resides in the means for adjusting the device whereby, through the manipulation of a single element such as a screw or the like, the scraper-elements are spaced apart to admit a gauge between their edges and then, upon the release of the manually-actuated means, the blades are automatically closed together upon the gauge and thereafter fixedly secured in adjusted relationship by moving the manually-actuated adjusting means to another position. In this way the parts can be secured in adjusted position with the gauge in place between the edges of the scraper-elements so that the adjustment is not altered or disturbed by tightening the adjusting means, and thereafter the gauge may be withdrawn.

Referring to the present drawings, the improved slub-catcher or yarn-cleaner as herein illustrated comprises a main support or standard 2 which may be constructed in the form of a die-casting or as a sheet-metal stamping. In side view the standard 2 has the shape of a right-angled triangle partly bounded by a marginal flange or rim 3 projecting forwardly from its edges as shown most clearly in Fig. 6. The flange 3 extends throughout a portion of the base of the triangle, is continued along its vertical side,

thence curved in an arc and extended downwardly throughout the hypotenuse of the triangle. The upper angular portion 4 of the flange 3 constitutes an inclined guide for the movable element of the slub-catcher as will be later explained. At the base of the frame 2 its main wall or web 5 is formed with a horizontal slot 6 and the lower edge of the slotted portion thickened or widened to provide a flat ledge 7 for the strand to draw across.

The movable scraper-element 10 of the device is constructed in the form of a flat blade having a lower horizontal edge 11 which is ground or otherwise finished to provide a true, straight surface for contact with the strand. Extending angularly upwardly therefrom is an inclined edge 12 adapted to abut the inner face of the flange 4 on the casing or standard 2 and to slide therealong to adjust the lower edge 11 of the blade 10 toward and away from the ledge 7 on the standard, see Figs. 1, 2 and 3. The rearward portion of the blade 10 is of substantially polygonal shape having an edge 13 inclined upwardly at an angle to the lower edge 11 and lying parallel with the edge 12, then inclined again at 14 and terminating in an edge 15 extending at right-angles to the edge 12. The blade 10 is further formed with a rectangular perforation or opening 16 having its longer edges parallel with the two parallel edges 12 and 13.

A substantially rectangular block or element 20 has its base seated on the lower portion of the flange 3 of the standard 2 abutting the side of the web 5 and is formed with a hole 21 registering with a screw-threaded hole 22 in the standard. The member 20 forms a bearing or seat for a cover 25 which is secured to the casing or standard 2 by a screw 23 in the manner as later explained. As herein shown the upper forward corner of the block or member 20 is beveled off at 24 to provide a clearance between it and the angular edge 13 of the blade 10 to permit the sliding motion of the latter. The cover 25 takes the general shape of the flanged portion of the standard or casing 2 and is provided with a countersunk hole 26 for receiving the beveled head of the screw 23 which passes through the hole 21 in the block 20 and is threaded into the hole 22 in the web 5 of the standard 2. The edges of the cover 25 fit snugly within the rim 3 of the standard or casing 2 while its forwardly-projecting portion 27 is positioned above the slot 6. The lower portion of the cover 25 is cut away and formed with a flange or inwardly-projecting portion 28, the edge of which abuts the web 5 of the casing 2 to close the opening at the rear of the ledge 7.

Referring to Figs. 2 and 3 of the drawings, it will be observed that the adjustable element or blade 10 is positioned within the standard or casing 2 with its longer, inclined edge 12 bearing against the inner face of the guide-flange 4 on the casing and its lower edge 11 positioned in opposite, parallel relation to the top of the ledge 7. The blade 10 is held in this position and urged to slide along the inclined guide-flange 4 by means of a spring 30 pocketed in the casing at the rear of the blade.

The spring 30 is of substantially hairpin shape, having a bowed leg 31 bearing at its ends against the rearward vertical portion of the flange 3 and a shorter, oppositely-bowed leg 32 terminating in an arcuate portion 33, the convex face of which bears against the rearward inclined edge 14 of the blade 10. The form of the spring 30 and

the manner in which it bears against the inclined edge 14 of the blade 10 maintains the upper edge 12 of the blade in abutting relationship with the guide-flange 4 and also tends to slide the blade downwardly to adjust its lower edge 11 toward the top of the ledge 7 on the standard 2. It will be understood, therefore, that if the blade 10 were not restrained from this movement the spring 30 would push or slide it forwardly and downwardly to cause its edge 11 to contact with the top of the ledge 7. The blade 10 is adapted to be withdrawn against the action of the spring 30 to open a space between its edge 11 and the ledge 7 and to be secured in adjusted position by means as next described.

An adjusting screw 35, shown most clearly in Fig. 6, has an enlarged disk-like head 36 of cylindrical form with an annular flange 37 projecting from its periphery. The periphery of the head 36 is adapted to be received in a circular opening 38 in the web or wall 5 of the casing 2 with the flange 37 abutting the face of the web, see Fig. 4. The shank of the screw 35 is threaded to receive a nut 40, shown in detail in Fig. 6, which abuts the forward face of the slidable blade 10 to clamp it against the web 5 of the casing 2; it being understood that the end of the shank projects through the rectangular opening 16 in the blade. The head of the screw 35 carries a crank-pin 41 disposed eccentrically of its axis and adapted to project into the opening 16 in the blade 10 to contact with the rearward edge thereof as shown in Figs. 2 and 3. The head 36 of the screw 35 may be of any suitable form to adapt the screw to be turned with a wrench or screw-driver, and preferably it is provided with a pair of diametrically disposed openings or holes 42 for receiving projections or pins 43 on a socket wrench 45, the end of which is illustrated in Fig. 6. The wrench 45 has a flanged rim which fits around the flange 37 on the head 36 of the screw 35 and with the pins 43 engaged in the holes 42 the screw may be turned to adjust the blade 10 in the manner as later explained.

It will be noted by reference to Figs. 1 and 6 that the cover 25 is formed with a hexagonal opening 29 which, when the cover is in place, fits over the sides of the nut 40 to hold the latter from turning when the screw 35 is adjusted. In assembling the elements the blade 10 is placed against the web 5 of the standard 2 with the spring 30 bearing against its edge 14, the screw 35 inserted from the rearward side thereof and the nut 40 screwed onto its shank and set up against the blade. The nut is then backed off until the arrow *z* marked thereon will index with the arrow *v* on the cover 25, see Fig. 1, when the latter is applied to the standard 2. With the parts of the device assembled as above explained and shown in Fig. 1 the cover 25 seats against the forward face of the block 20 and is secured in place with its edges within the flange 3 by means of the screw 23, see Fig. 4. The method of adjustment and manner of use of the device in the form as above described are as next explained.

The improved device may be used in any position desired, either with the scraper-blade 10 positioned vertically as indicated in the drawings or disposed horizontally, or at an angle to the horizontal in accordance with the direction in which the strand of yarn or other filament travels during its transfer from a source of supply to a winding machine or other apparatus. The slub-catcher may be mounted on a tension-bracket or other support on the machine and,

as shown in Figs. 3 and 4, it is provided with an L-shaped sheet-metal plate 47 welded or otherwise secured to the rearward face of the standard 2 and formed with a right-angled portion 48 at the top which is fastened to a post 49 on the tension-bracket 50 by means of a screw 51. As a further means of supporting the device, a pair of screws 52, shown in Fig. 3, may be inserted through holes in the horizontal arm 54 of the tension-bracket 50 and screwed into the threaded holes 55 in the web 5 of the standard or casing 2, see Fig. 6.

Assuming that the scraper-blade 10 is set with its edge 11 in spaced relation to the top of the ledge 7, as illustrated in Fig. 1, with the screw 35 tightened to bind it in fixed position against the web 5 of the standard 2, the yarn strand, indicated at 3, draws through the slit or opening between the edge 11 of the blade and the ledge 7 and is permitted to play back and forth therein during its linear traverse therethrough. The forward edge of the ledge 7 and edge 11 of the blade 10 will thus be caused to act to scrape off any slubs, bunches, lint, notes or other foreign matter adhering to the surface of the yarn to clean it of imperfections.

When it is required to adjust the width of the yarn slit or opening for a different size or thickness of yarn, the socket wrench 45 is placed on the head 36 of the screw 35 with its pins 43 engaging the holes 42 in the head. Then, by turning the screw 35 in counterclockwise direction, as viewed from the back of the slub-catcher, the nut 40 will be released from binding engagement against the blade 10 to allow the latter to slide in the standard or casing 2. As the screw 35 is turned in this direction the crank-pin 41 on the head 36 will be carried against the rearward or left-hand edge of the rectangular opening 16 in the blade 10, as shown in Fig. 3, and further turning movement of the screw will cause the pin to act against this edge to force the blade 10 to the left against the tension of the spring 30. In this way the blade 10 is moved upwardly on the standard 2 to withdraw its scraper edge 11 away from the ledge 7 as illustrated in Fig. 2.

A suitable gauge, such as a flat metal strip indicated by the reference character G in Figs. 2 and 3, is placed upon the ledge 7, it being understood that the gauge is of a thickness corresponding to the size or diameter of the yarn to be operated upon. After the gauge G is in position as shown in Fig. 2 the screw 35 is turned in the opposite direction from that first indicated to release the blade 10 to the action of the spring 30. The spring 30 will thereupon slide the blade 10 along the guide-flange 4 to seat its lower edge 11 against the top of the gauge G as illustrated in Fig. 3. Further turning movement of the screw 35 in the same direction will cause its threads to draw the nut 40 against the forward face of the blade 10 to bind the latter against the web 5 of the standard 2 whereof to fixedly secure the blade in its adjusted position as illustrated in Fig. 1. The gauge G can then be withdrawn and the slub-catcher will remain set with the yarn-opening of the correct width to act on a yarn of predetermined size or thickness.

It will thus be seen that only a simple turning movement of the wrench, first in one direction and then in the opposite direction, is required to both adjust the movable scraper-blade to proper position and to clamp it in place to fixedly secure it in adjustment. Since the clamping of

the blade 10 in adjusted position is effected while the gauge G remains between its edge 11 and the ledge 7 an accurate adjustment is secured without the edge of the blade being moved during the tightening operation. It has been determined that the blade can be set with a strip of thin paper inserted between its edge 11 and the top of the ledge 7 as a gauge and after it is clamped in place the paper may be withdrawn, thus demonstrating that the adjustment is minutely accurate and unaffected by the tightening of the parts in adjusted position.

Figs. 7 to 11, inclusive, illustrate a different embodiment of the invention wherein the standard or casing 60 is of somewhat different construction. In this form of the device the casing 60 has an inclined flange 61 similar to the guide-flange 4 of the previously-described construction and opposite this flange is a parallel, inclined guiding face or ledge 62 formed on an integral projecting portion 63 of the standard, or on a separate strip of metal welded or otherwise fastened to the web 64. The projecting portion or strip 63 is formed with a finished upper edge 65 serving as a ledge across which the yarn draws and otherwise the form of the standard 60 is substantially the same as that of the casing 2 illustrated in the previously-described embodiment of the device.

The scraper-blade 66 is of substantially the same shape as the blade 10, previously described, except that it has an extended lower edge 67 parallel with its upper inclined edge 68; the distance between these two edges being dimensioned to adapt the edge 67 to engage the inclined guide ledge or face 62 on the standard 60 with the upper edge 68 flush against the inner face of the guide-flange 61, see Fig. 8. The blade 66 has a rearward inclined edge 69 extending at an obtuse angle to the edge 68 and adapted to be engaged by one leg 71 of a U-shaped wire spring 70. The opposite leg 72 of the spring 70 is held in a slot 73 cut into the strip 63 to anchor it in place. The spring 70 has the same function as that of the spring 30 previously described, that is, to tend to slide the blade 66 downwardly on the standard 60 to carry its lower edge toward the ledge 65. A screw 75 has its head seated in a circular opening 74 in the web 64 of the casing 60 with its shank threaded through a nut 77 held from rotation in a hexagonal opening in a cover-plate 76 which is fitted to the standard 60 and secured in place by a screw 78 screwed into a hole 79 in the projecting portion 63 of the standard 60.

A crank-pin 80 on the head of the screw 75 is adapted to act against the rearward edge of the opening 81 in the blade 66 to slide the latter upwardly on the standard 60 against the tension of the spring 70 as shown in Fig. 8; and as the screw is turned in the opposite direction it permits the spring 70 to slide the blade 66 downwardly to adjust its lower edge against a gauge, not shown, to regulate the size of the yarn-opening. As in the construction of the device first described, the turning of the screw 75 in the last-named direction acts to tighten the nut 77 against the blade to clamp it in place after it has been automatically adjusted against the gauge by the action of the spring 70. It will be understood from the above that the last-described embodiment of the invention operates in the same manner as that previously described, the turning of the screw 75 in one direction serving to move the blade 66 to adjust its lower edge away from

the fixed ledge 65, and the opposite turning motion of the screw causing the blade to be adjusted against the gauge and thereafter tightened in place to preserve its adjustment unchanged.

It will be observed from the foregoing that the present invention provides a most ingenious and novel construction of slub-catcher or yarn-cleaner having automatically-operated means for adjusting the relative position of the scraper-elements when the clamping means is released, and further means for securing the parts in fixed position without disturbing the adjustment. The present device therefore accomplishes an improved result over similar devices heretofore used wherein the tightening or clamping means acts on the adjusting screw or other adjustable element in such manner that unless extreme care is used it will alter or disturb the adjustment as the parts are clamped in position.

The present device is simple in construction with its adjusting means more convenient to operate than in previously-used devices and so arranged as to insure against improper or inaccurate adjustment. For this reason the device is more efficient in use for the purpose specified.

While the improved device is herein shown and described as embodied in two preferred forms of construction, it is to be understood that modifications may be made in the form and construction of its parts without departing from the spirit or scope of the invention. Therefore, without limiting myself in this respect, I claim:

1. A slub-catcher or yarn-cleaner comprising relatively movable members arranged to form an opening through which a strand of yarn or the like is adapted to feed, manually-operable means for relatively adjusting said members to widen the opening therebetween, means operative upon release of the manually-operable means for relatively adjusting said members to close them against a gauge inserted in the opening therebetween, and manually-operable means for securing said members against relative movement toward or away from each other.

2. A slub-catcher or yarn-cleaner comprising relatively movable members arranged to form an opening therebetween through which a strand of yarn or the like is adapted to feed, resilient means for relatively adjusting said members to close them against a gauge inserted in the opening therebetween, and manually-operable means for securing said members against relative movement toward or away from each other.

3. A slub-catcher or yarn-cleaner comprising relatively movable members arranged to form an opening therebetween through which a strand of yarn or the like is adapted to feed, manually-operable means for relatively adjusting said members to widen the opening for the insertion of a gauge therein, resilient means for relatively adjusting said members to close them against the gauge, and means for securing said members against relative movement toward or away from each other.

4. A slub-catcher or yarn-cleaner comprising opposed members forming an opening through which a strand of yarn or the like is adapted to feed, manually-operable means for adjusting the relative position of said members to widen the opening therebetween, automatically-operated means for adjusting the relative position of said members to narrow the opening, and means co-operating with the manually-operated means to

secure the members against relative movement toward or away from each other.

5. A slub-catcher or yarn-cleaner comprising a plurality of elements relatively adjustable to provide an opening therebetween through which a yarn or the like is adapted to feed, resilient means for relatively adjusting said elements to narrow the opening, and manually-operable means movable in one direction to relatively adjust the elements to widen the opening and in the opposite direction to release the elements and secure them in immovable relationship.

6. In a device of the type indicated, the combination of a support having a surface across which a yarn or the like is adapted to feed, a member movable on said support and having a yarn-engaging surface opposed to that on the support and forming an opening therebetween through which the yarn is adapted to feed, manually-operable means for moving said movable member to widen the opening, resilient means for moving said movable member to narrow said opening, and means for securing the movable member against movement toward or away from the yarn-engaging surface on the support.

7. In a device of the type indicated, the combination of a support provided with a surface across which a yarn or the like is adapted to feed, a scraper-element adjustable on said support and provided with a yarn-engaging surface adapted to form an opening between it and the surface on the support, manually-operable means for moving said scraper-element in a direction to widen the opening between its yarn-engaging surface and the surface on the support, a spring for moving the scraper-element to adjust its yarn-engaging surface toward the surface on the support, and means for clamping the scraper-element in immovable position on the support.

8. In a device of the type indicated, the combination of a support provided with a surface across which a yarn or the like is adapted to feed, a scraper-element movably mounted on the support and having a yarn-engaging surface adjustable toward and away from that on the support, a spring for moving the scraper-element to narrow the opening between the yarn-surface of said element and the surface on the support, manually-operable means movable in one direction to move the scraper-element against the action of the spring to widen the opening and movable in the opposite direction to permit the spring to adjust the scraper-element to narrow the yarn-opening, and means actuated by the manually-operable means to clamp the scraper-element against movement on the support.

9. In a device of the type indicated, the combination of a support provided with an edge adapted to act on a yarn or the like drawing thereacross, a scraper-element movable on the support and having a yarn-engaging edge arranged in opposite parallel relation to the first-mentioned edge, a spring for moving said movable element to adjust its edge toward the edge on the support, a manually-operable element rotatable in one direction to move the scraper-element to adjust its edge away from the edge on the support, and means cooperating therewith upon movement of said manually-operable means in the opposite direction to clamp the scraper-element in immovable position.

10. In a device of the type indicated, the combination of a support provided with an edge across which a yarn or the like is adapted to draw, a movable scraper-element having an edge op-

posed to the edge on the support to form an opening through which the yarn is adapted to feed, means for guiding the scraper-element to maintain its edge in parallel relation to the edge on the support during its movement toward and away therefrom, resilient means for moving the scraper-element to adjust its edge toward the edge on the support, and means for securing said scraper-element against movement on the support.

11. In a device of the type indicated, the combination of a support provided with an edge across which a yarn or the like is adapted to feed, a scraper-element slidable on the support and formed with an edge opposed to the edge thereof to provide an opening through which the yarn is adapted to feed, eccentric means for sliding the scraper-element to withdraw its edge from the edge on the support, said eccentric means being operable in the opposite direction to release the scraper-element, and a spring for sliding the scraper-element to adjust its edge toward the edge on the support when said element is released by the eccentric means.

12. In a device of the type indicated, a support having an edge across which a yarn or the like is adapted to feed, a scraper-element slidable on the support and having an edge opposed to the edge thereof, a screw having eccentric means operating on the scraper-element to slide the latter to withdraw its edge from the edge on the support, resilient means for moving the scraper-element to adjust its edge toward the edge on the support, and means cooperating with the screw to clamp the scraper-element in fixed position upon release of the eccentric means.

13. In a device of the type indicated, a support having a surface across which a yarn or the like is adapted to feed and formed with a guiding face inclined to the plane of said surface, a scraper-element mounted on said support and having a surface opposite to the yarn-engaging surface thereof to form an opening therebetween and a surface inclined thereto for engaging the

inclined guiding face of the support, manually-operable means for sliding the scraper-element longitudinally of the guiding face on the support to widen the yarn-opening, resilient means for sliding the scraper-element in the opposite direction to narrow the opening, and means for securing the scraper-element in fixed position on the support.

14. In a device of the type indicated, a support having an edge across which a yarn is adapted to feed, a scraper-element movable on the support and formed with an edge opposite the yarn-engaging edge on the latter to provide an opening therebetween, said scraper-element being formed with an orifice, a spring acting against the scraper-element to move it to narrow the opening between its edge and the edge on the support, a screw having a bearing in the support and provided with an eccentrically-disposed pin engaging the edge of the orifice in the scraper-element to move the latter to widen the yarn-opening, and a nut on the screw for clamping the scraper-element against the support to secure it in adjusted position.

15. In a device of the type indicated, a support having an edge across which a yarn is adapted to feed, a scraper-element movable on the support and formed with an edge opposite the yarn-engaging edge on the latter to provide an opening therebetween, said scraper-element being formed with an orifice, a spring acting against the scraper-element to move it to narrow the opening between its edge and the edge on the support, a screw having a bearing in the support and provided with an eccentrically-disposed pin engaging the edge of the orifice in the scraper-element to move the latter to widen the yarn-opening, a nut on the screw for clamping the scraper-element against the support to secure it in adjusted position, and a cover secured to the support and having an opening for receiving the nut to prevent it from turning on the screw.

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