

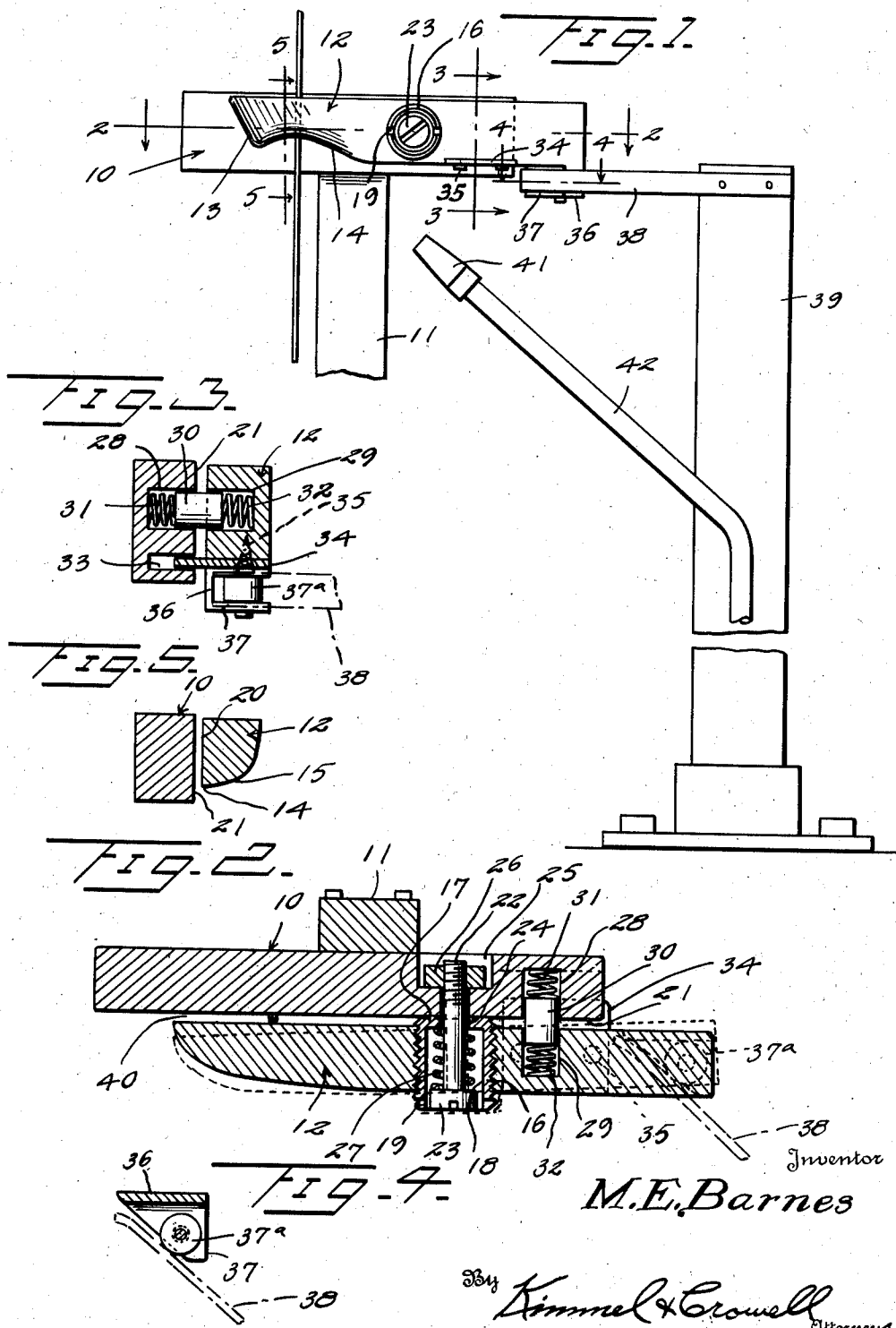
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THREAD GUIDE AND SLUB CATCHER

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THREAD GUIDE AND SLUB CATCHER

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7 Claims. (Cl. 28—64)

This invention relates to yarn winding machine and more particularly to a gauge for the yarn.

An object of this invention is to provide a yarn gauge for a winding machine which is adapted to catch or retain the slub or loose fibers and which is so constructed and arranged that at each revolution of the winding head the gauge will be cleaned.

Another object of this invention is to provide a yarn gauge of this kind which at a selected position or point in the travel thereof with the winding head is adapted to be automatically opened up and subjected to a blast of air, so that the slub accumulating in the gauge will not only be released, but will also be forced out of the gauge. In this manner the slub will not be given an opportunity to collect to any great extent and thus the slub will not tend to break the yarn by binding or crowding the yarn in the gauge as is at present the case.

A further object of this invention is to provide a self-cleaning gauge of this kind which is designed for attachment to a winding machine known to the trade as the Abbott machine, of the type as shown in patents Nos. 1,700,425 and 2,177,680, although if desired it can readily and easily be adapted to other types of machines.

To the foregoing objects and to others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a detail front elevation partly broken away of a combined yarn gauge and cleaning means constructed according to an embodiment of this invention.

Figure 2 is a sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a sectional view taken on the line 4—4 of Figure 1, and

Figure 5 is a sectional view taken on the line 5—5 of Figure 1.

Referring to the drawing, the numeral 10 designates generally a base plate which is adapted to be secured in any suitable manner to an arm 11, which is correlated with and operatively connected with a rotary winding head. The plate

10 is adapted to travel with the head around the machine so as to provide a gauge structure which is movable with the winding head. One type of winding structure with which this invention may be combined is shown in Patent No. 1,644,973, which issued October 11, 1927. It is well known that in winding the yarn on a spindle or bobbin, it is desirable that the yarn be of a predetermined size or diameter and that as much as possible of the loose fibers commonly termed slub be removed from the yarn or thread before the yarn or thread is wound upon the bobbin or spindle.

While gauges of several types have been constructed for forming the yarn into a predetermined diameter and size these gauges frequently become clogged with the slub or loose fibers and cause a breaking of the yarn. It is in order to provide a means whereby the slub or loose fibers may be periodically removed from the gauge that I have provided a combined gauge blade and yarn cleaning member generally designated as 12. The blade 12 is formed at its forward end with an inclined nose 13 and with a concave cutout 14 on the leading or forward face thereof. The blade 12 is inclined outwardly and upwardly, as at 15, from the leading inner edge 14 thereof and in normal operation the arcuate portion 14 comprises a cleaning member for removing the loose fibers or slub from the yarn and these loose fibers may be forced outwardly along the inclined face 15.

The blade 12 has threadably mounted there-through at a point substantially centrally of the forward and rear ends thereof a threaded bushing 16 formed with an inner wall 17 and a cylindrical bore 18. The outer edge of the bushing 16 is provided with a pair of diametrically opposed kerfs or slots 19 for receiving a tool by means of which the bushing 16 may be adjusted relative to the blade 12 in order to position the inner face 20 of the blade 12 in the desired spaced relation with respect to the forward face 21 of the base plate 10.

A bolt comprising a shank 22 and a head 23 is extended through an opening 24, which is formed in the inner wall 17 of the bushing 16, the head 23 of the bolt being of substantially a smaller diameter than the bore 18, so that the blade 12 may have a limited rocking movement with respect to the base plate 10. The opening 24 in the inner end wall 17 is sufficiently larger in diameter than the diameter of the shank 22 so that the bushing 16 may rock to a limited degree with respect to the shank 22. The base plate 10

is formed with a recess or socket 25 in its rear side within which the nut 26 of the bolt is adapted to be countersunk.

A spring 27 is disposed about the shank 22 of the bolt and one end of the spring 27 engages against the inner side of the head 23 and the other end of the spring 27 bears against the outer side of the end wall 17. In this manner the bushing 16 with the blade 12 may be yieldably adjusted to yieldably hold the blade 12 against rocking movement relative to the plate 10.

The plate 10 at one side of the shank 22 and adjacent the rear end of the base 10 is formed with a recess or socket 28 opening through the forward face 21 of the plate 10. The blade 12 is also formed with a recess or socket 29, which confronts the socket or recess 28 and a cylindrical plug 30 is loosely mounted in the two confronting sockets or recesses 28 and 29. A spring 31 is disposed within the socket or recess 28 and bears against one end of the plug 30. A second spring 32 is positioned in the socket or recess 29 and bears against the opposite end of the plug 30 so as to thereby coact with the spring 31 in maintaining the plug 30 partly in the socket 28 and partly in the socket 29. In this manner the plug 30 will provide a means for holding the blade 12 against circumferential movement about the bolt shank 22 and will also provide a means for yieldably urging the operating or gauge end of the blade 12 in the direction of the gauge face 21 of the plate 10 to the limit permitted by the loose coupling between the bushing 16 and the head 23 of the bolt, and also the tension of the spring 27 against the inner wall 17 of the bushing 16.

The base plate 10 is provided in its forward working face 21 adjacent the plug 30 with an elongated slot 33. A guide plate 34 is fixed by fastening means 35 to the blade 12 and has one portion thereof loosely engaging in the slot 33, so as to coact with the plug 30 in holding the blade 12 against rotary movement about the shank 22 while permitting the limited rocking movement of the blade toward or away from the working face 21 of the plate 10. The blade 12 at its rear or inner end is formed with a laterally offset lug 36, which is provided with an ear 37 and a roller 37a is rotatably mounted between the ear 37 and the inner side of the lug 36. An elongated flat spring 38 is mounted on a stationary support or standard 39, which is disposed in such a position that the free end of the spring 38 will contact with the roller 37a at each circuit of the cleaning device and winding head in order to rock the blade 12 on the bolt shank 22 as shown in dotted lines in Figure 2. The rocking of the rear end of the blade 12 toward the plate 10 will cause the opposite or forward working end of the blade 12 to be swung away from the working face 21 of the plate 10, thereby widening the gauge space 40 between the two gauge members 10 and 12. The widening of the space 40 by rocking of blade 12 under the action of the spring 38 will loosen any fibers or slug, which packs up in the space 40 between the plate 10 and the blade 12.

At substantially the same time that the spring 38 rocks the blade 12 to a released position, an air blast is adapted to be projected from a nozzle 41 as shown in Figure 1 in the direction of the arcuate cleaning face 14 of the blade 12. This blast of air will force out any loose fibers or slug which remains between the plate 10 and the blade 12,

and as this air cleaning operation is effected at each revolution of the winding head and the gauge member, there will not be sufficient time for an undue amount of slub or loose fibers to pack up in the gauge space 40.

The air nozzle 41 is adapted to be connected to an air supply pipe 42 and if desired the air ejected from the nozzle 41 may be so correlated with the circulation of the winding head that the air from the supply pipe 42 will be normally cut off during the major portion of the circulation of the winding head, but will be turned on or communicated with the nozzle 41 at the time the spring 38 is in operative engagement with the releasing lug or finger 36.

In the use and operation of this combined gauge and yarn cleaning means, the base plate 10 with the blade 12 is adapted to be mounted on the winding head and the bushing 16 is adapted to be adjusted endwise with respect to the blade 12, so as to position the inner working face of the blade 12 in the desired spaced relation with respect to the working face 21 of the base plate 10. The spring 38 with the standard 39 are positioned in the path of the circulation of the lug 36 carried by the blade 12 so that when the roller 37a contacts with the spring 38 the tension of the spring 38 will effect an opening or widening of the gauge space 40 by rocking the rear end of the blade 12 in the direction of the working face 21 of the plate 10. The blast of air ejected from the nozzle 41 will blow out any loose fibers or slub which collects in the space 40 or against the concave leading face 14 of the blade 12. After the roller 37a rides past the spring 38, the blade 12 will return to its normal operating position which is the position shown in full lines in Figure 12.

What I claim is:

1. A yarn gauge and cleaner comprising a base plate for attachment to a circulating winding head, a combined cleaner and gauge blade confronting said base plate, pivotal supporting means for mounting said blade in confronting relation to said base plate, yieldable means correlated with said pivotal means for urging said blade toward said plate, and a stationary yieldable member disposed in the path of the circulating movement of said blade for rocking said blade to a released and cleaning position at each circulation of the head.

2. A yarn gauge and cleaner comprising a base plate for attachment to a circulating winding head, a combined cleaner and gauge blade confronting said base plate, pivotal supporting means for mounting said blade in confronting relation to said base plate, yieldable means correlated with said pivotal means for urging said blade toward said plate, and a stationary yieldable member disposed in the path of the circulating movement of said blade for rocking said blade to a released and cleaning position at each circulation of the head and means for directing a stream of air toward said blade at the time said blade is moved to an open position.

3. In combination a yarn gauge and cleaner comprising a base plate for attachment to a circulating winding head, a combined gauge blade and yarn cleaner pivotally carried by said plate, means mounting said blade on said plate for limited rocking movement toward or away from said plate, means engageable with said blade at least once during each complete circulation of said head for rocking said blade to a released position, and means active when said blade is in a re-

leased position for forcing the fibers away from said blade.

4. A yarn gauge and cleaner comprising a base plate for attachment to a circulating winding head, a gauge blade confronting said plate, a bushing threaded through said blade and engageable with said plate for adjusting the spacing of said blade from said plate, a bolt loosely engaging through said bushing and threaded into said plate, a spring about said bolt within said bushing and providing a means for yieldably holding said blade against rocking while maintaining said blade in adjusted position, a roller carried by said blade adjacent one end thereof, and a stationary spring engageable with said roller during each circulation of said head to thereby rock said blade to a released position.

5. A yarn gauge and cleaner comprising a base plate for attachment to a circulating winding head, a gauge blade confronting said plate, a bushing threaded through said blade and engageable with said plate for adjusting the spacing of said blade from said plate, a bolt loosely engaging through said bushing and threaded into said plate, a spring about said bolt within said bushing and providing a means for yieldably holding said blade against rocking while maintaining said blade in adjusted position, a roller carried by said blade adjacent one end thereof and offset laterally therefrom, a stationary spring engageable with said roller during each circulation of said head to thereby rock said blade to a released position, and an air ejecting nozzle for directing a stream of air between said plate and said blade.

6. A yarn gauge and cleaner comprising a base plate for attachment to a circulating winding head, a gauge blade confronting said plate, a

bushing threaded through said blade and engageable with said plate for adjusting the spacing of said blade from said plate, a bolt loosely engaging through said bushing and threaded into said plate, a spring about said bolt within said bushing and providing a means for yieldably holding said blade against rocking while maintaining said blade in adjusted position, said plate and blade having confronting recesses at one side of said bolt, a spring-pressed plug engaging loosely in said recesses, a roller carried by said blade adjacent one end thereof and offset laterally therefrom, and a stationary spring engageable with said roller during each circulation of said head to thereby rock said blade to a released position.

7. A yarn gauge and cleaner comprising a base plate for attachment to a circulating winding head, a gauge blade confronting said plate, a bushing threaded through said blade and engageable with said plate for adjusting the spacing of said blade from said plate, a bolt loosely engaging through said bushing and threaded into said plate, a spring about said bolt within said bushing and providing a means for yieldably holding said blade against rocking while maintaining said blade in adjusted position, said plate and blade having confronting recesses at one side of said bolt, a spring-pressed plug engaging loosely in said recesses, said plate having an elongated slot therein, a guide plate carried by said blade loosely engaging in said slot, a roller carried by said blade adjacent one end thereof and offset laterally therefrom, and a stationary spring engageable with said roller during each circulation of said head to thereby rock said blade to a released position.

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