United States Patent [19]

Gross

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[45] **Mar. 11, 1975**

[54] **CHENILLE PRODUCTION MACHINES**

[76] Inventor: **Alexander Gross,** 2590 W. Maple Ave., Feasterville, Pa. 19047

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[21] Appl. No.: **324,566**

[52] **U.S. Cl.** **57/24,** 57/56, 57/81, 57/106, 57/127.5

[51] **Int. Cl.** **D02g 3/42**

[58] **Field of Search** 57/13, 24, 56, 59, 100, 57/106, 3, 10, 81, 127.5, 127.7

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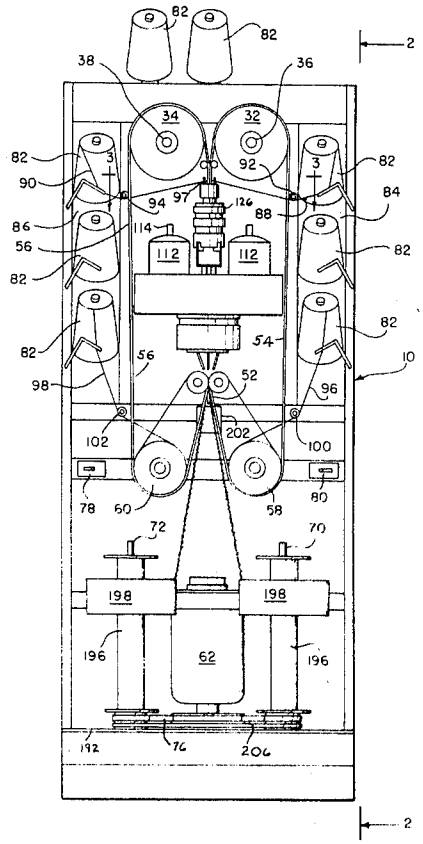
Primary Examiner—John W. Huckert
Assistant Examiner—Charles Gorenstein
Attorney, Agent, or Firm—Weiser, Stapler & Spivak

[57] **ABSTRACT**

An improved apparatus for the production of chenille wherein a bearing mounted flyer uprightly carries a plurality of spindles thereon and the filler thread spools position on the spindles in stationary relationship to the flyer itself. Each filler thread is continuously monitored by a stop motion device which serves to stop the mechanism upon detection of a broken yarn. Additionally, stop motion devices are provided for the warp threads and for the finished chenille product. The flyer and the finished yarn bobbins are simultaneously rotated by separate motors acting through separate shafts in a manner to relieve yarn tension when starting and stopping the apparatus. This arrangement also permits either clockwise or counterclockwise rotation of the bobbins as desired. The lower steel band idler wheels are peripherally grooved to receive the outside warp threads to synchronize the speed of the inside warp threads and the outside warp threads. An improved cutter blade mechanism is employed which permits easy vertical adjustment of the blade at the front of the machine, and the blade shaft is reciprocal within a self-aligning type of bearing. A vacuum air cleaning system with intakes directly under the cutting blade and near the finished yarn bobbins provides for a completely self cleaning apparatus.

5 Claims, 14 Drawing Figures



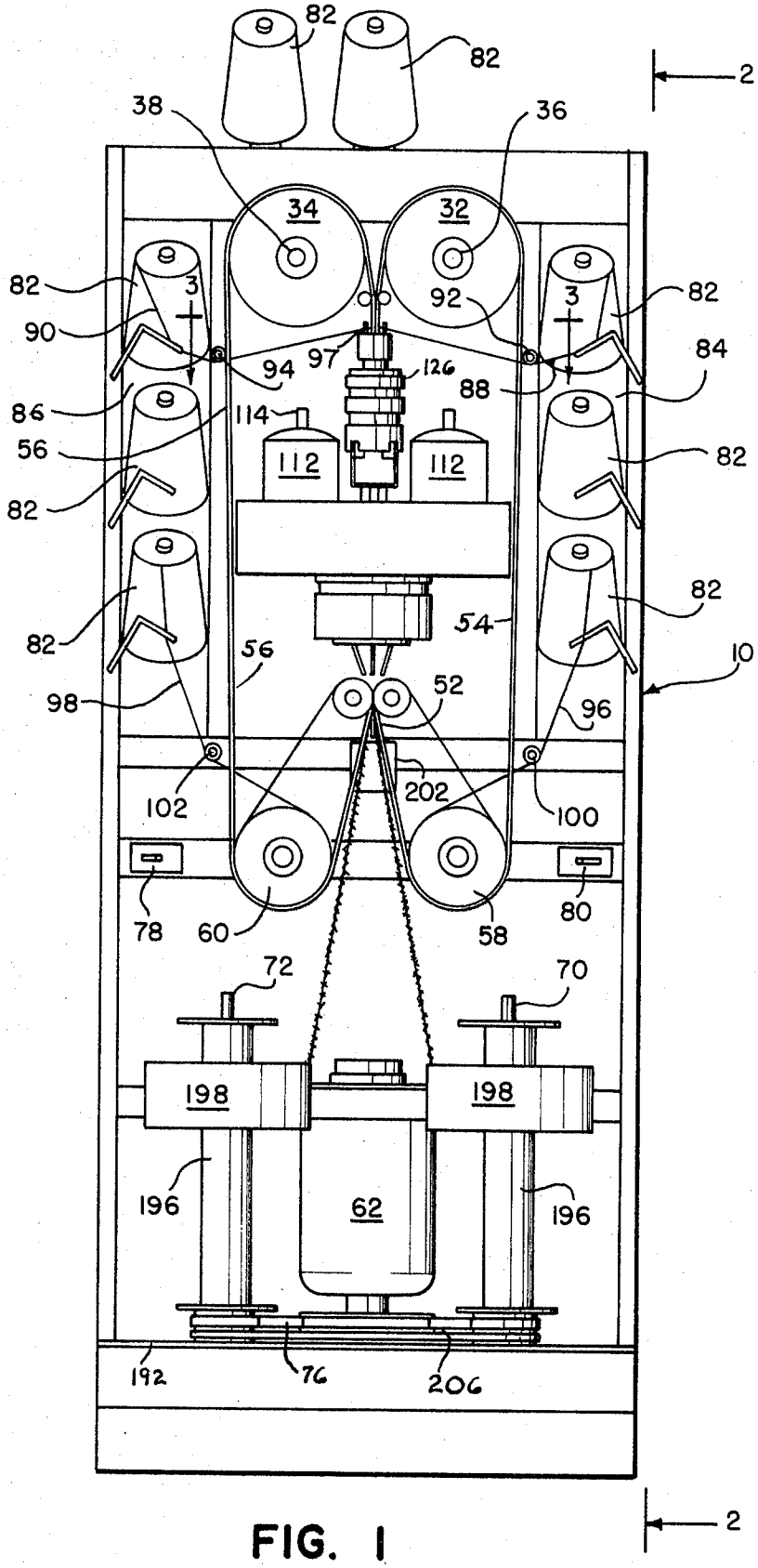

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FIG. 1

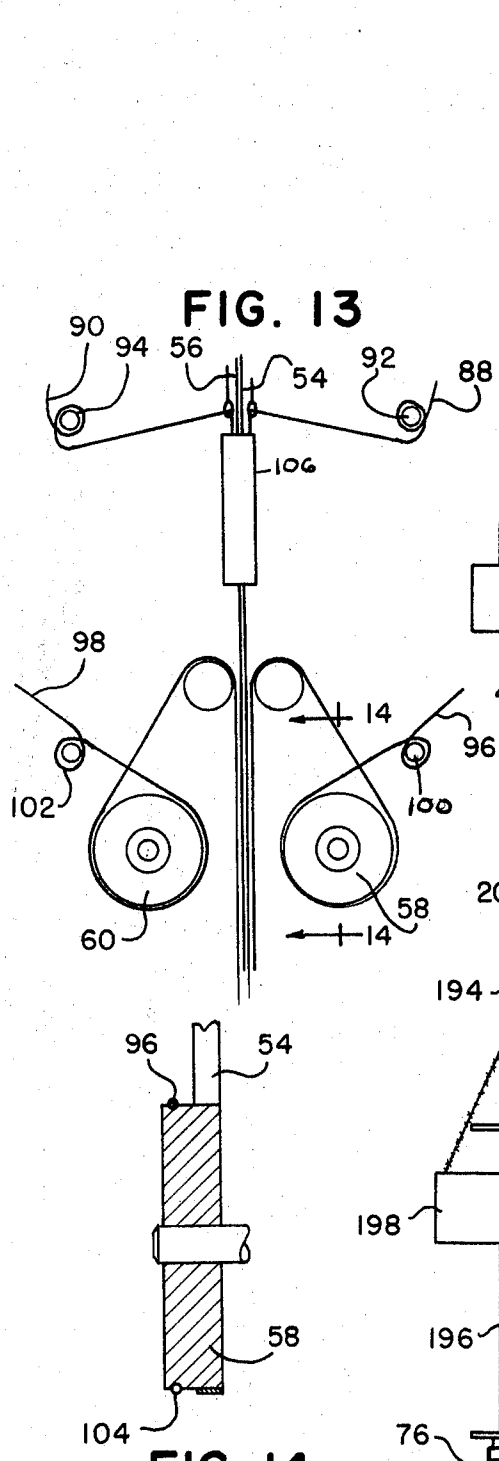

FIG. 13

FIG. 14

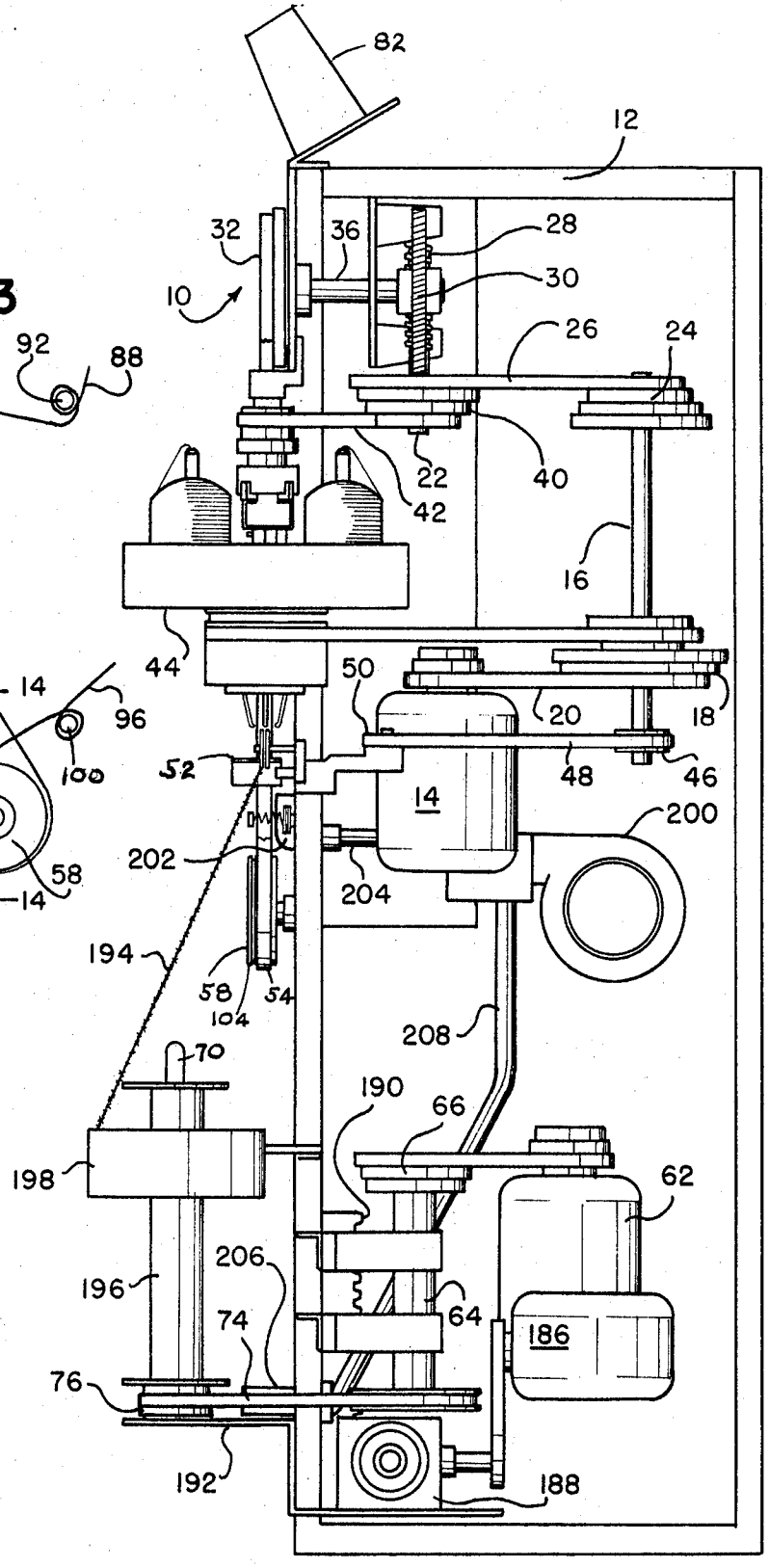

FIG. 2

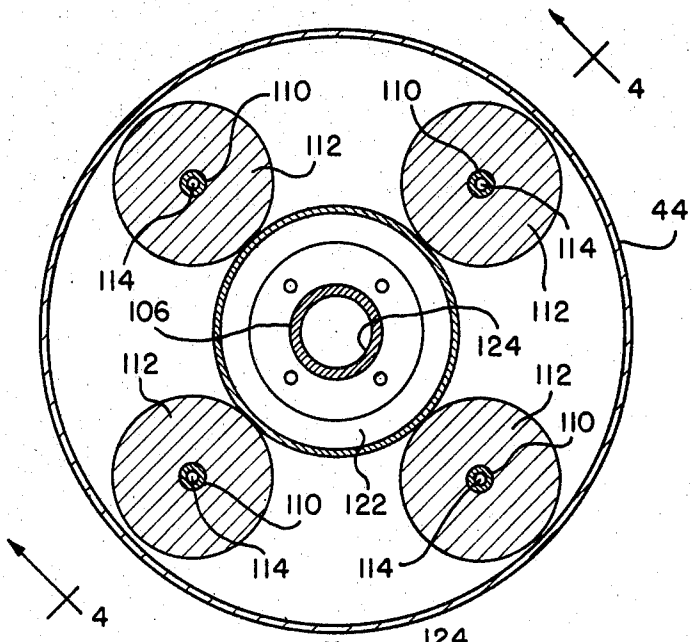
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FIG. 3

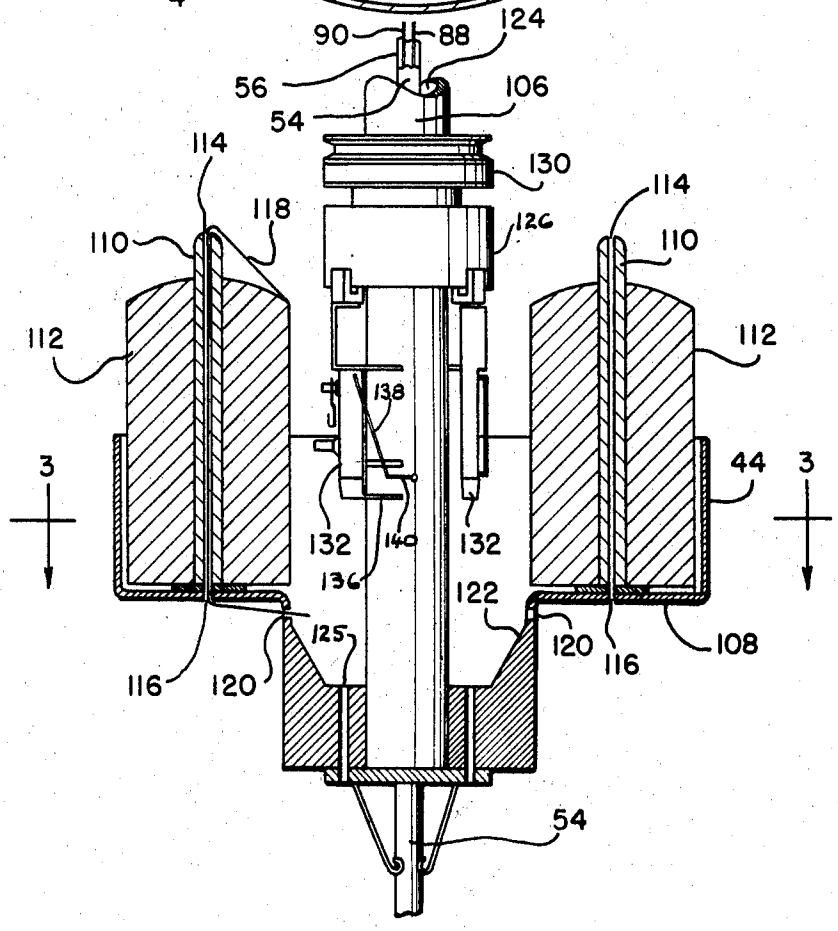
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FIG. 4

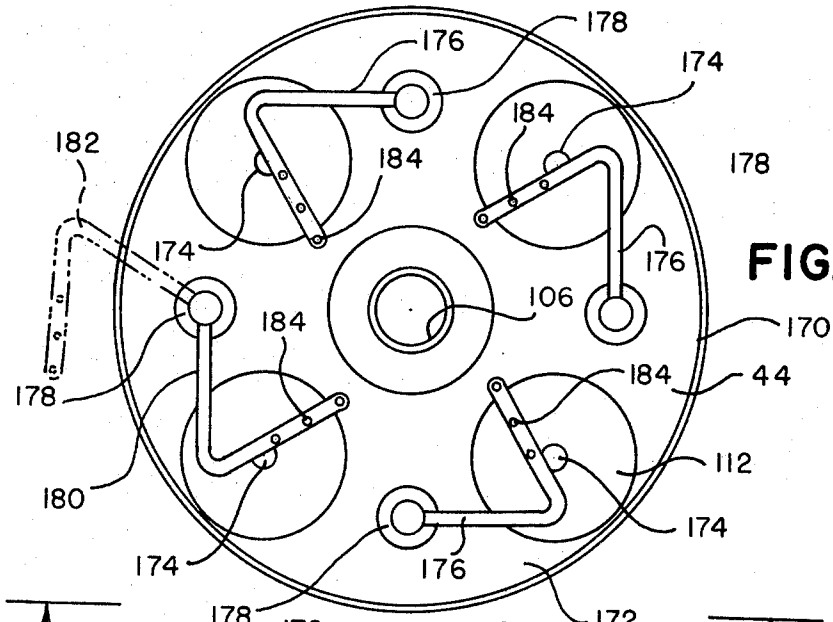
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FIG. 5

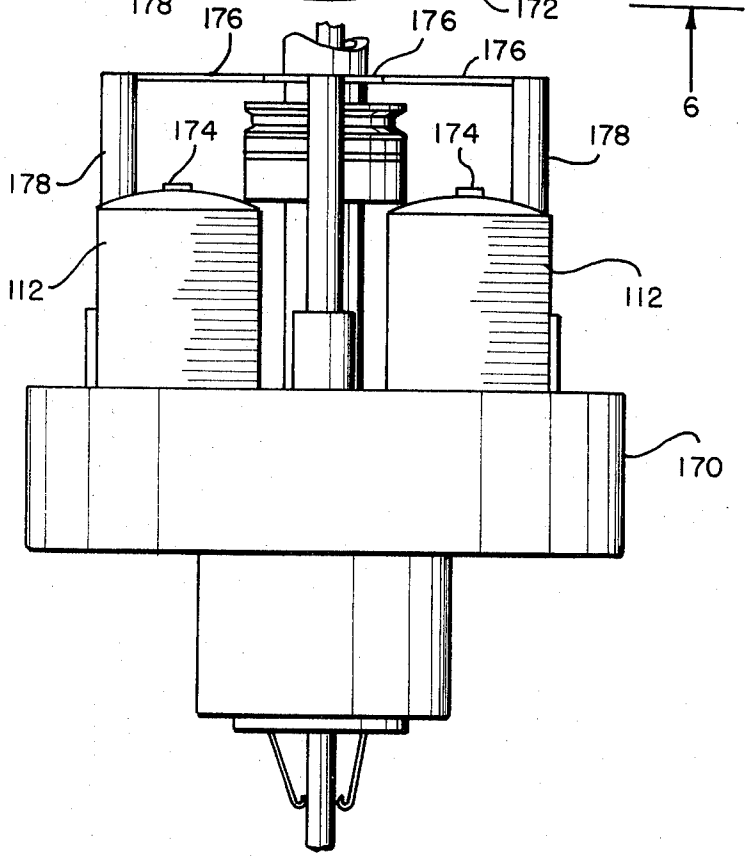
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FIG. 6

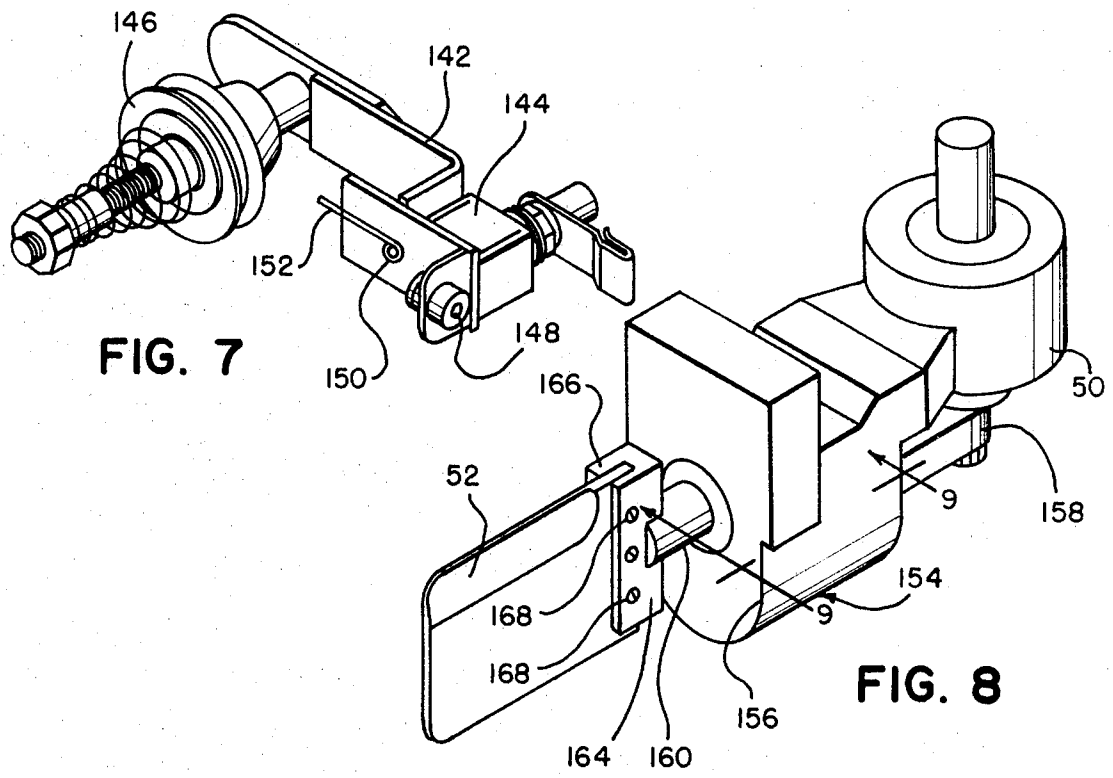

FIG. 7

FIG. 8

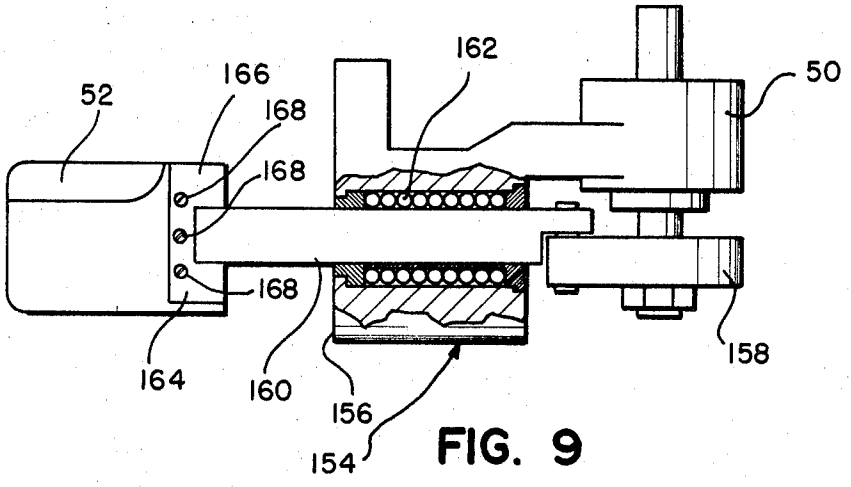

FIG. 9

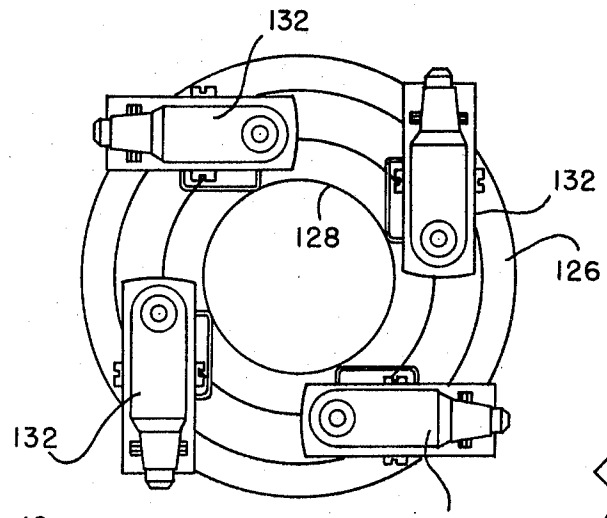

FIG. 11

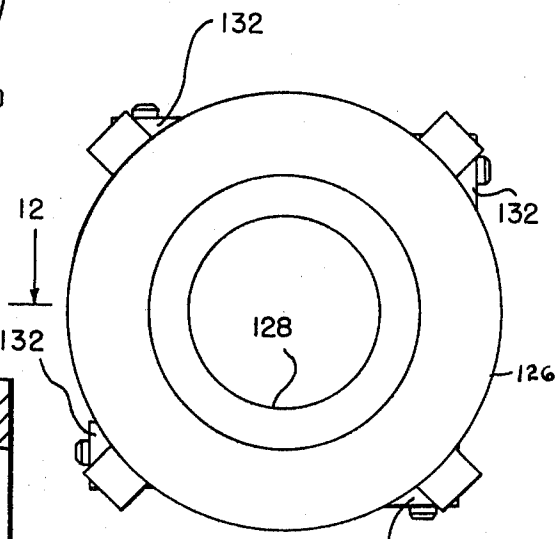

FIG. 12

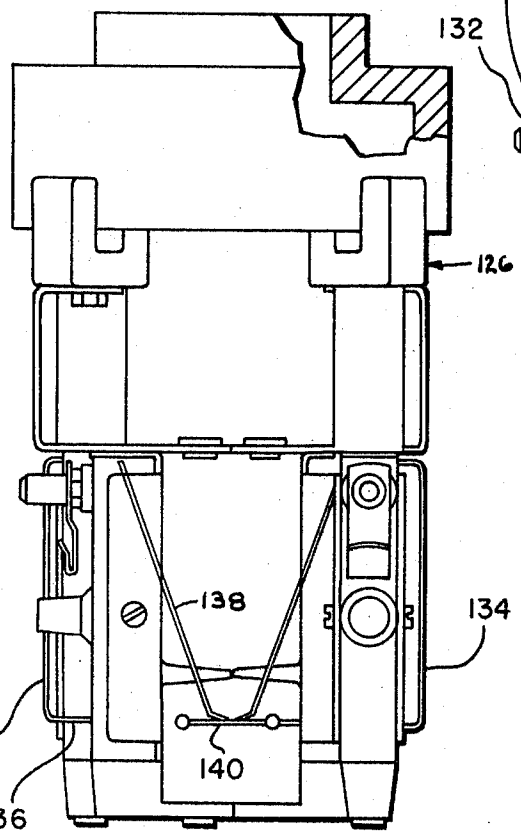

FIG. 10

12 12 11 11

CHENILLE PRODUCTION MACHINES

BACKGROUND OF THE INVENTION

The present invention relates generally to the field of yarn producing apparatus, and more particularly, is directed to a novel machine for the production of chenille.

This invention is an improvement over the apparatus for production of chenille as disclosed in my co-pending patent application, Ser. No. 208,748, filed Dec. 16, 1971, now Pat. No. 3,777,464. Previously designed chenille production machines including the device disclosed in my said co-pending application developed tensions between the filler yarn and warp feeds and the finished chenille product, and these tensions frequently resulted in yarn breakage, a condition which resulted in considerable down time of the apparatus. Additionally, the prior art machines could not be readily stopped and started without damage to the finished chenille product either by yarn breaking or by an initial insufficient yarn filling in the finished product due to tension between the bobbin and the cutter. In normal quality control procedures, the finished chenille product had to be reworked, the damaged length of material cut out, the yarn retied, all of which was quite time consuming. Additionally, the finished yarn bobbins and the flyer of the previously available machines were all directly driven by a single motor acting through a single shaft. Inasmuch as the flyer is fabricated of heavy metallic construction, the momentum forces built up by rotation of the flyer caused a speed differential between the flyer and the bobbins wherein the flyer was slower to stop and slower to reach operating speed, thereby causing yarn tension between the flyer and the bobbins.

Additionally, the prior art type of chenille production machines suffered from other maintenance problems in the cutter blade area. The prior art cutter blades were fixed in position and accordingly, could not be readily adjusted as to height when conditions demanded. Additionally, the prior art cutter blades reciprocated within fixed bearings or bushings which had a tendency to wear after a period of operations, thereby causing the cutter blade to readily work out of alignment.

Further, in view of the rotary action of the prior art filler yarn spools, the speed of production was definitely limited. Yarn breakage would always result when the speed of operation exceeded a predetermined rate.

SUMMARY OF THE INVENTION

The present invention relates to an improved apparatus for the formation of chenille yarn and is particularly directed to an aparatus which is capable of producing chenille yarn at greatly increased speed and with greatly improved efficiency.

The present invention includes a flyer which carries a plurality of spindles in upright orientation to receive yarn spools thereon. The spools are held in stationary relationship upon the flyer and it is the flyer and it is the flyer itself which rotates about the warp threads during the chenille formation process. The filler yarns either feed upwardly through yarn tensioning pigtails and then downwardly through the flyer floor for wrapping about the inside and outside warp threads or optionially, feed downwardly through internal bores which are provided in the spindles themselves.

The outside warp threads are synchronized for operation with the inside warp threads by turning about the lower band idlers simultaneously with the steel bands themselves. All of the filler yarns, the warp threads and the finished chenille product are continuously monitored by electric stop motion devices which are wired to automaticaly stop the machine operation upon detection of any yarn breakage.

The operation of the flyer and the finished yarn bobbins are controlled by separate motors which function through a single switch to synchronize action. The bobbin motor is provided with a reversing switch to permit either clockwise or counter-clockwise rotation of the bobbins depending upon whether the warp yarn cones are supplied with either an "S" or "Z" twist. By functioning the finished yarn bobbins and the flyer by means of separate motors, undersirable finished yarn tension between the bobbins and the cutter blade can be avoided to thereby minimize chances of yarn breaking during the manufacturing process or upon startup and to prevent unfilled spaces in the event the yarn did not completely break.

The machine is further improved in that all of the warp thread cones are now positioned in recessed boxes located in the upper portions of the machine. In this manner, the turbulence created by the rapid rotation of the flyer can in no way affect the feeding of the warp threads to the machine by creating tangles, breakages, etc. Further, by providing two similar chenille production machines in side by side juxtaposition and by employing the recessed cone boxes, the apparatus can now accommodate twelve cones rather than the eight cones which were available in previous designs. This is an important improvement because in some types of chenille yarn, it is necessary to have three warp threads both inside and outside which could therefore necessitate twelve positions of threads in the side by side machines.

Warp threads guides and filler yarn pigtails are provided which are pivotal with respect to the aparatus itself. Accordingly, it is a simple matter to pivot the guides and pigtails outwardly to replace the warp thread cones and filler thread spools whenever desired. Each of the warp thread guide arms and the filler thread pigtails are provided with three or more yarn guide holes which are ceramic lined to provide combined yarn guide and yarn tensioning facilites.

The cutter blade of the present invention is greatly improved over previously employed blades in that the present mechanism includes pressure bars with set screws to allow vertical adjustment of the blade to any desired vertical position from the front of the apparatus without taking apart the entire apparatus. The blade holding bars are affixed to a hardened steel shaft which connects to the eccentric for reciprocating action. The shaft is reciprocal within a special bearing of the self-aligning type so that the blade, in conjunction with the special bearing will be self-aligning under all conditions of operation.

A vacuum air system has been provided and is equipped with two strategically placed air intakes, namely, one directly under the cutting blade to keep the cutting area clean and a second, in the form of which is an elongate inlet slot, positions on the spindle shelf to clean any material which may have dropped either from the cutting blade or which may have been produced by the ballooning action of the finished che-

nille yarn against the cleaning grid surrounding the finished yarn spindle.

It is therefore an object of the present invention to provide an improved apparatus for the production of chenille of the type set forth.

It is another object of the present invention to provide a novel apparatus for the production of chenille which is capable of increased rotative speed and increased productivity without loss of quality.

It is another object of the present invention to provide an improved apparatus for the production of chenille wherein the filler yarn spools position upon the flyer and wherein the finished yarn spools haave no rotative motion relative to the flyer.

It is another object of the present invention to provide a novel improved apparatus for the production of chenille which includes means to synchronize the feeding of the outside warp threads and the inside warp threads.

It is another object of the present invention to provide an improved apparatus for the production of chenille which incorporates a first motor for rotation of the flyer, a second motor for rotation of the finished yarn bobbins and means to operate the motors simultaneously.

It is another object of the present invention to provide a novel apparatus for the production of chenille which incorporates stop motion means to continuously monitor the filler yarn threads, the warp threads and the finished chenille product for breakages.

It is another object of the present invention to provide a novel, improved apparatus for the production of chenille wherein the finished yarn bobbin is functioned by means of a separate motor and wherein the motor may be reversed to opeate the bobbin in either a clockwise or counter-clockwise direction.

It is another object of the present invention to provide an improved, novel apparatus for the production of chenille which includes means to vertically adjust the position of the cutting knife from the front of the apparatus.

It is another object of the present invention to provide a novel, improved apparatus for the production of chenile which incorporates knife shaft bearings of the selfaligning type.

It is another object of the present invention to provide a novel, improved apparatus for the production of chenille that is rugged in construction, highly efficient in productivity and trouble-free when in use.

Other objects and and a fuller understanding of the invention will be had by referring to the following description and claims of a preferred embodiment thereof, taken in conjunction with the accompanying drawings, wherein like reference characters refer to similar parts throughout the several views and in which;

FIG. **1** is a front elevational view of an improved chenille production machine constructed in accordance with the teachings of the present invention.

FIG. **2** is a side elevational view thereof, taken along Line **2—2** of FIG. **1,** looking in the direction of the arrows.

FIG. **3** is a top plan view of the flyer, taken along Line **3—3** of FIG. **1,** looking in the direction of the arrows.

FIG. **4** is a cross-sectional view taken along line **4–4** of FIG. **3,** looking in the direction of the arrows.

FIG. **5** is a top plan view of a modified flyer construction.

FIG. **6** is a cross-sectional view taken along line **6—6** of FIG. **5,** looking in the direction of the arrows.

FIG. **7** is an enlarged, perspective view of the outside warp thread stop motion device.

FIG. **8** is an enlarged, perspective view of the cutter blade assembly.

FIG. **9** is a cross-sectional view taken along Line **9—9** of FIG. **8,** looking in the direction of the arrows.

FIG. **10** is an enlarged, side elevational view of a filler thread stop motion device, partially broken away to expose details of internal construction.

FIG. **11** is a bottom plan view of the device of FIG. **10,** taken along line **11—11** and looking in the direction of the arrows.

FIG. **12** is a top plan view of the device of FIG. **10,** taken along line **12—12** and looking in the direction of the arrows.

FIG. **13** is a partial, front elevational, schematic view showing the arrangement of filler threads and warp threads in the machine.

FIG. **14** is a cross-sectional view taken along Line **14—14** of FIG. **13** looking in the direction of the arrows.

DESCRIPTION OF THE PREFERRED EMBODIMENTS OF THE INVENTION

Although specific terms are used in the following description for the sake of clarity, these terms are intended to refer only to the particular structure of my invention selected for illustration in the drawings, and are not intended to define or limit the scope of the invention.

Referring now to the drawings, I show in FIGS. **1** and **2** a chenille production machine **10** including generally a frame **12** which is comprised of suitable angle iron construction to securely and operationally mount the operating components of the device. A first electric motor **14** is mounted upon the frame **12** in well known manner to rotate a vertical drive shaft **16** through a speed adjusting cone system **18** by employing an endless belt **20.** The drive shaft **16** rotates the steel band drive shaft **22** in conventional manner, by means of a second speed adjusting cone system **24** and a second endless belt **26.** Preferably, the steel band drive shaft is exteriorly threaded to form a worm gear **28** which cooperates with the band driving pulley gears **30** (only one of which is illustrated in FIG. **2**) to rotate the right and left band driving pulleys **32, 34** through the respective band pulley gear shafts **36, 38.**

As best seen in FIG. **2,** the bottom terminus of the band drive shaft **22** is fitted with a third speed adjusting cone system **40** which serves to rotate the flyer **44** by means of the interconnecting third endless belt **42.** Similarly, the bottom end of the vertical drive shaft **16** is provided with a drive pulley **46** which is positioned to rotate the fouth endless belt **48** in a horizontal plane. The fourth endless belt rotates the cutter blade operating pulley **50** which in turn reciprocates the cutter blade **52** in the manner hereinafter more fully set forth. It is thus seen that a unitary motor **14** simultaneously functions the flyer **44,** the band drive pulleys **32, 34** and the cutter blade **52.** The endless steel bands **54, 56** respectively rotate around the band drive pulleys **32, 34** and the cooperating lower band idler pulleys **58, 60** in conventional manner to carry the inside warp threads and the wrapped filler threads to the cutter blade **52.**

A second electric motor **62** conventionally mounts upon the frame **12** and functions a second vertical drive shaft **64** through a fourth speed adjusting cone system **66** by utilizing a fifth endless belt **68.** The drive shaft **64** powers the finished yarn bobbin spindles **70, 72** by employing at least one bottom endless belt **74** and the interconnecting belt **76.** A main switch **78** mounts upon the frame **12** and conventionally is wired to both the first and second electric motors **14, 62** to simultaneously start and stop the motors. in this manner, the machine **10** operates as a unit and has no tendency to build up tensions or stresses between the warp yarns and filler yarns and the finished chenille product.

Referring now to FIGS. **1** and **2,** the warp thread cones **82** are repectively positioned within recessed right and left boxes **84, 86** in a manner to substantially reduce the effects of air turbulence created by the rapid rotation of the flyer **44** upon the smooth feed of the warp threads. The inside warp threads **88, 90** feed from the upper warp thread cones **82** about the respective right and left inside warp thread stop motion devices **92, 94** to the top **97** of the hollow flyer spindle. The outside warp thread **96, 98** feed from the lower warp thread cones about the respective right and left outside warp thread stop motion devices **100, 102** to the respective steel band idler pulleys **58, 60.** In this manner, all of the warp threads are continuously monitored for breakage during all periods of machine operation.

Still referring to FIG. **1,** I show a reversing switch **80** mounted upon the frame and conventionally wired into the control circuit (not shown) of the second electric motor **62.** In order to understand the purpose of the reversing switch **80,** it will be appreciated that the warp thread yarn may be delivered in cones **82** from the supplier with either an *s* twist or a *z* twist, which means the threads may be twisted either to the right or to the left hand. If the finished yarn bobbin spindles **70, 72** were rotated in the same direction as the twist on the warp thread, this could double or even triple the twist in the finished yarn to thereby build up great stresses. By employing the reversing switch **80,** the second motor **62** may be operated to function in either a clockwise or counter-clockwise direction to accordingly control the direction of rotation of the finished yarn bobbins.

The separate motor and pulley system to control the flyer rotations and the separate system to control the finished yarn spindle rotation is important in producing uniformly satisfactory finished chenille yarn without breakages, unfilled areas and similar defects. Prior art machines functioned with one motor and one shaft in a manner whereby the yarn was continuously under tension between the bobbin and the cutter blade. Quite often, the increase in tension at start up would result in breakages or unfilled areas. In the present arrangement, however, it will be noted that the flyer **44** is heavier than the finished yarn spindles **70, 72** and therefore, due to the build up of centrifugal forces, will take longer to stop than the spindles, thereby relieving yarn tensions. The bobbin spindles will stop faster to completely relax the tension in the finished yarn between the bobbin and the cutter blade **52.** In starting up, the motors **14, 62** will be simultaneously energized by means of the switch **78** and the bobbin spindles will rotate to start to develop tension between the bobbin and the cutter blade. By the time tension is developed by the bobbin rotation, new yarn will be fed from the flyer to thereby continue the finished product without interruption or damage.

The outside warp thread **96, 98** feed from the lower stop motion devices **100, 102** to the steel band idler pulleys **58, 60.** The idler pulleys **58, 60** are specially peripherally grooved at **104** (FIGS. **2** and **14**) to provide a loop to receive the outside warp threads. It will be noted from FIGS. **1** and **13** that the inside warp threads **88, 90** feed down through the central portion of the flyer spindle **106** and these threads move simultaneously with the steel bands **54, 56.** The bands **54, 56** encircle the idler pulleys **58, 60** as do the outside warp threads **96, 98.** Accordingly, the inside warp threads **88, 90,** the outside warp threads **96, 98** and the steel bands **54, 56** will all move in unison at uniform speeds so that no unbalance or unequal feeding can occur between the inside warp threads and the outside warp threads.

Referring now to FIGS. **3** and **4,** I show a novel flyer **44** which is attached to the hollow spindle **106** and is rotated thereby. There are no upper bearings or upper pulleys employed in the flyer assembly construction, thereby permitting unrestricted access from the top for filler yarn spool insertion and removal. The flyer floor **108** mounts a plurality of vertical, hollow studs **110** to support a plurality of filler yarn spools **112** thereon. It will be noted that the spools stationarily position upon the flyer **44,** that is, the spools **112** have no motion relative to the flyer. Each stud **112** is preferably fabricated of steel or aluminum, is approximately seven inches high and approximately five-eights inches in diameter. Each stud is provided with a longitudinally extending axial bore **114** which communicates with a hole **116** which is provided in the flyer floor **108.** The filler yarn threads **118** feed from the respective filler yarn spools **112** downwardly through an axial bore **114** of a hollow stud **110** and thence through the bottom opening **116.** The threads **118** then feed horizontally inwardly through the inward openings **120** which are provided in the lower flyer vertical wall **112** toward the hollow spindle **106.**

Prior to feeding into the interior holes **125** at the flyer spindle **106,** each of the filler yarn threads **118** is directed through a multiple stop motion device **126** which functions to continuously monitor all of the filler yarn threads for breakage during all periods of machine operation. If desired, all of the stationary studs **110** may be provided with outwardly projecting springs (not shown) to respectively bias against the core of the filler yarn spools to keep each spool **112** in stationary arrangement on its associated stud **110** and to securely hold the spool on the flyer **44.** Inasmuch as the spools **112** do not rotate themselves, there are no centifugal forces generated which might tend to break the yarns, no matter how weak the yarn may actually be. Because of this novel method of filler yarn takeoff without spool rotation, any type of yarn, no matter how wweak, can be used without fear of breakage. This yarn takeoff arrangement additionally permits increased speed of operation. Tests have proven that speeds as great as sixty percent over speeds formerly attainable are now possible, thereby greatly increasing the productivity of a given chenille production machine.

As best seen in FIGS. **4, 10, 11, 12,** the multiple stop motion device **126** is provided with a longitudinally extending internal bore **128** of size to overfit and tightly secure upon the outer periphery of the flyer spindle

106. Thus, as the flyer and spindle rotate, the multiple stop motion device 126 also is rotated. Electrical contact between the stop motion device 126 and the machine electrical control circuit (not shown) is preferably accomplished by employing slip rings 130 whereby continuous rotary electrical contact can be maintained. In one embodiment of the device, a plurality of fixed yarn guides 132 are provided about the outer periphery 134 and each is provided with a fixed guide loop 136 to receive a filler yarn thread therethrough. A cooperating spring biased, pivotal guide arm 138 having a corresponding guide loop 140 is associated with each fixed guide 132. Thus, when a filler yarn thread is unbroken, it will feed through the respective guide loops 136, 140 to thereby keep the pivotal arm in vertical position against the bais of its spring. Should the filler yarn thread break, the pivotal arm 138 will swing to the inclined position illustrated in FIG. 10. In this position, a micro switch (not shown) will be activated to shut down the machine circuit.

FIG. 7, I show one embodiment of a warp thread stop motion device 92, 96,, 100, 102 which preferably includes a body 142 suitable for connecting to the frame 12, a micro switch 144, a yarn tensioning device 146, fixed yarn guide loop 148, a spring biased, pivotal yarn guide loop 150 and the pivotal guide arm 152. Should a warp thread break, the guide arm 152 will swing its guide loop 150 out of alignment with the fixed loop 148 to thereby activate the micro switch 144.

Referring now to FIGS. 8 and 9, the cutter blade assembly 154 is set forth which includes a bearing body 156 which is mounted in stationary arrangement upon the machine frame 12. The cutter blade pulley 50 rotates an eccentric 158 to conventionally reciprocate the cutter blade shaft 160. A self-aligning bearing 162 is employed to permit the cutter blade 52 to be automatically self aligning under all conditions of operation. The shaft 160 terminates forwardly in a pair of vertically positioned, horizontally spaced pressure bars 164, 166 which are interconnected by a plurality of set screws 168 which serve to permit easy vertical adjustment of the blade 52 from the front of the machine without the need to disassemble any part of the apparatus.

A modified type of flyer 170 is shown in FIGS. 5, 6 wherein the filler yarn spools 112 stationarily mount upon the flyer floor 172 by positioning upon a solid stud 174. A yarn take off guide 176 of generally V-shaped configuration is pivotally positioned above each spool 112 by a spring biased vertical support 178. Each guide is pivotal about its support 178 from a yarn feeding position 180 as illustrated in full lines to a spool changing position 182 as indicated in broken lines. The filler yarn threads feed upwardly and feed through the ceramic lined holes 184 provided in the take off guides 176. Preferably, the threads feed alternately upwardly and downwardly through the holes 184 for tensioning purposes.

Again referring to FIG. 2, a third electrical motor 186 powers a gear box pinion 188 which functions with the rack 190 to alternately raise and lower the finished yarn bobbin platform 192 to facilitate even winding of the finished chenille yarn 194 on the finished yarn bobbin 196. a ballon ring 198 cleans the finished yarn in well known manner as the yarn is wound on the bobbin 196.

The air system of the present invention may best be observed by referring to FIGS. 1 and 2. A suction fan 200 mounts upon the frame 12 in conventional manner and may be of the multi-vane type capable of developing the required static pressures for satisfactory lint cleaning operation. The fan 200 draws a portion of its suction from an air inlet 202 which is positioned directly beneath the cutter blade 52 by means of the interconnecting, flexible tube 204. The fan 200 draws the remaining portion of its suction from an elongate inlet slot 206 which positions on top the finished yarn bobbin platform 192 intermediate the finished yarn spindles to clean up any loose material which may have dropped either from the cutting blade 52 or which may have been produced by the ballooning action of the finished yarn 194 against the ballon rings 198. Flexible tubing 208 which preferably is similar to the tubing 204 interconnects the suction of the fan 200 with the inlet slot 206 in conventional

Although I have described the present invention with reference to the particular embodiments therein set forth, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction may be resorted to without departing from the spirit and scope of the invention. Thus the scope of the invention should not be limited by the foregoing specification, but rather only by the scope of the claims appended hereto.

I claim:

1. In a chenillle production machine of the type including a frame, the combination of

A. a flyer mounted on the frame and having rotary motion with respect to the frame,
  1. said flyer including a floor,
  2. said flyer being concentrically positioned about a hollow spindle;

B. an endless steel band rotating about the frame and passing through the hollow interior of the flyer spindle,
  1. said band rotating about an upper pulley and a lower pulley,
    a. the lower pulley being provided with a peripheral groove and wherein an outside warp thread loops about the periphery of the lower pulley and is positioned within the groove to synchronize the speed of feeding the outside warp thread with the speed of feeding the inside warp thread,

C. filler yarn studs carried by the flyer,
  1. said filler yarn studs being rotated in a horizontal plane relative to the frame,
  2. the filler yarn studs having no motion relative to the flyer itself,
  3. the filler yarn studs projecting upwardly from the flyer floor,
  4. the filler yarn studs each being provided with an axial bore,
  5. the flyer floor being provided with openings in vertical alignment below each said axial bore;

D. inside and outside warp thread cones positioned on the frame and having no motion relative to the frame,
  1. the inside warp thread cones feeding inside warp threads to the steel band and downwardly through the hollow interior of the flyer spindle,
  2. the outside warp thread cones feeding outside warp threads to the steel band below the flyer;

E. a filler yarn spool removably carried upon a filler yarn stud and feeding filler yarn to the steel band,
1. said filler yarn passing downwardly through the axial bore and aligned flyer floor opening,
2. said filler yarn being wrapped about the steel band below the flyer by the rotation of the flyer;
F. a cutter blade mounted on the frame below the flyer,
1. said cutter blade reciprocating near a portion of the steel band to sever wrapped filler yarns to form chenille yarn; and
G. a finished yarn bobbin mounted for rotary action relative to the frame,
1. said finished yarn bobbin receiving and winding the chenille yarn.

2. The invention of claim **1** and air cleaning means affixed to the frame, said air cleaning means including a suction fan and at least one suction air inlet, the one said suction inlet being positioned near the cutter blade, the said suction air inlet being interconnected by a conduit to the suction fan.

3. The invention of claim **2** and a second suction air inlet, said second suction air inlet being positioned near the finished yarn bobbin, the second suction air inlet being interconnected by a conduit to the suction fan.

4. In a chenille production machine of the type including a frame, the combination of
A. a flyer mounted on the frame and having rotary motion with respect to the frame,
1. said flyer being concentrically positioned about a hollow spindle;
B. an endless band rotating about the frame and passing through the hollow interior of the flyer spindle,
1. said band rotating about an upper pulley and a lower pulley;
C. at lest one filler yarn spool carried by the flyer,
1. the flyer wrapping the filler yarn about a portion of the band;
D. at least one outside warp thread being fed to the band at the filler yarn wrapped area thereof,
1. the lower pulley being provided with a peripheral groove,
2. the outside warp thread wrapping about the lower pulley and being positioned within the groove,
3. the lower pulley controlling the speed of feeding the outside warp thread to the band; and
E. a cutter blade mounted on the frame below the flyer.
1. said cutter blade reciprocating near a portion of the band to sever the wraped filler yarn to form chenille yarn.

5. The chenille production machine of claim **4** and air cleaning means affixed to the frame, said air cleaning means including a suction fan and an air inlet, said air inlet being positioned near the cutter blade, the said air inlet being interconnected by a conduit to the suction fan.

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