United States Patent

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[73] Assignee **Riegel Textile Corporation**
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[54] **APPARATUS FOR AUTOMATICALLY FABRICATING INDIVIDUAL ARTICLES**
14 Claims, 10 Drawing Figs.

[52] **U.S. Cl.** **112/121.11,** 112/203, 112/155
[51] **Int. Cl.** **D05b 19/00**
[50] **Field of Search** 112/2, 121.11, 121.12, 121.15, 121.14, 203, 262, 10, 11, 155

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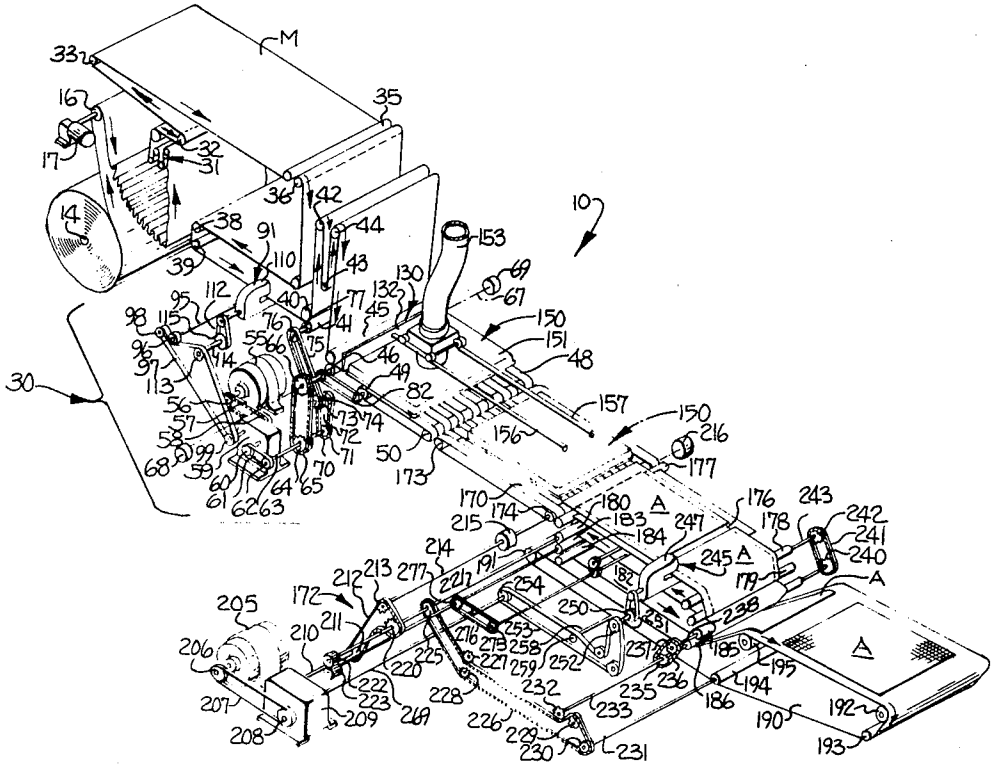
ABSTRACT: Apparatus for automatically fabricating individual articles, such as blankets and the like, from a continuous length of textile material comprising the following component parts. Supply means supplying a continuous length of textile material. First interrelated, intertimed feeding means feeding the continuous length of material from the supply means in an elongate path of travel along a longitudinally extending axis through the apparatus. First and second driven stitching means applying lines of stitching along the longitudinal edges of the continuous length of material into a plurality of successive individual articles of a predetermined length. Turning means successively turning each individually cut article 90° for continued travel through the apparatus. Second interrelated, intertimed feeding means receiving the individually cut articles from the turning means and feeding them in a continued elongate path of travel along the aforesaid longitudinally extending axis through the apparatus. Third and fourth driven stitching means applying lines of stitching along the cut edges of each of the individually cut turned articles so that each of the articles will be stitched along all four of its edges.



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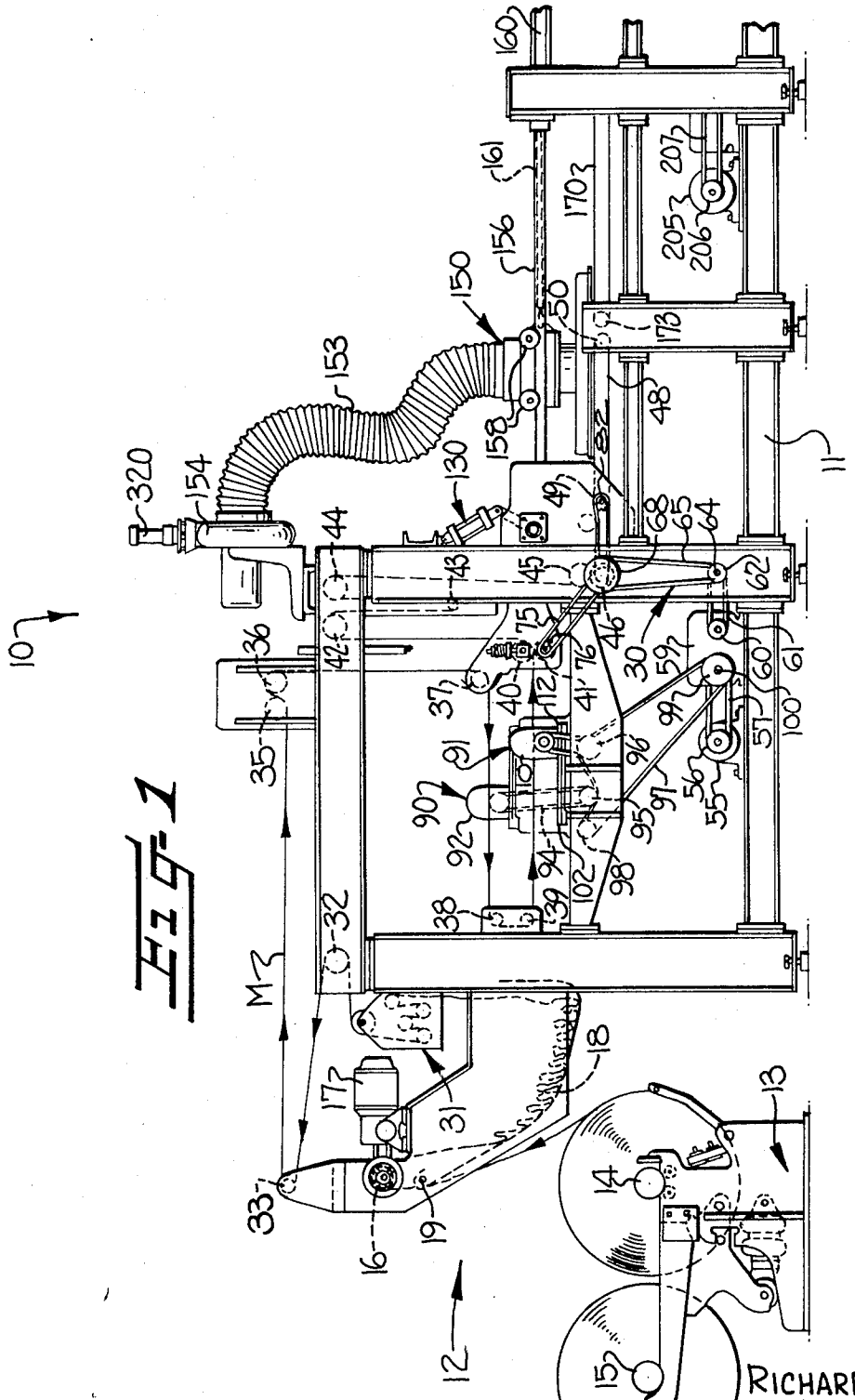

Fig. 1

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Fig. 1A

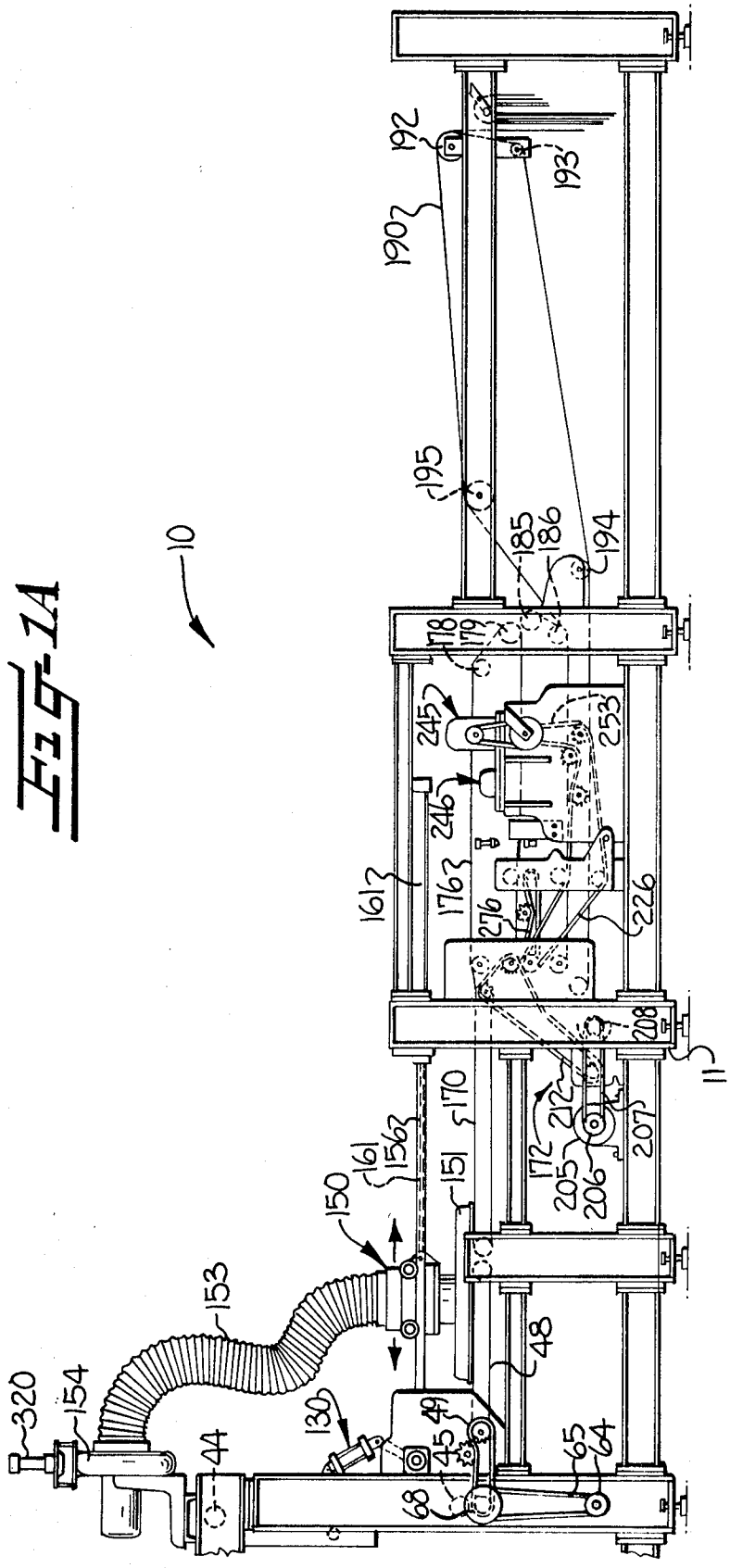
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FIG. 2

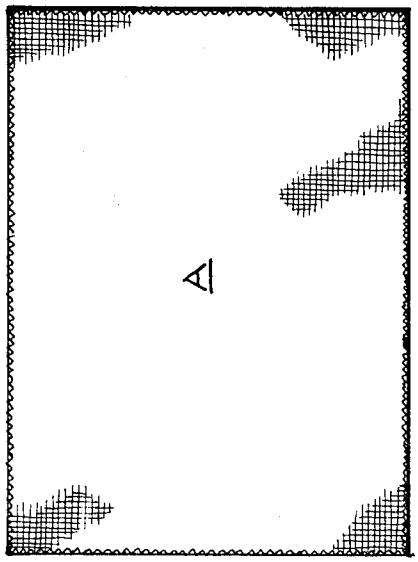

FIG. 3

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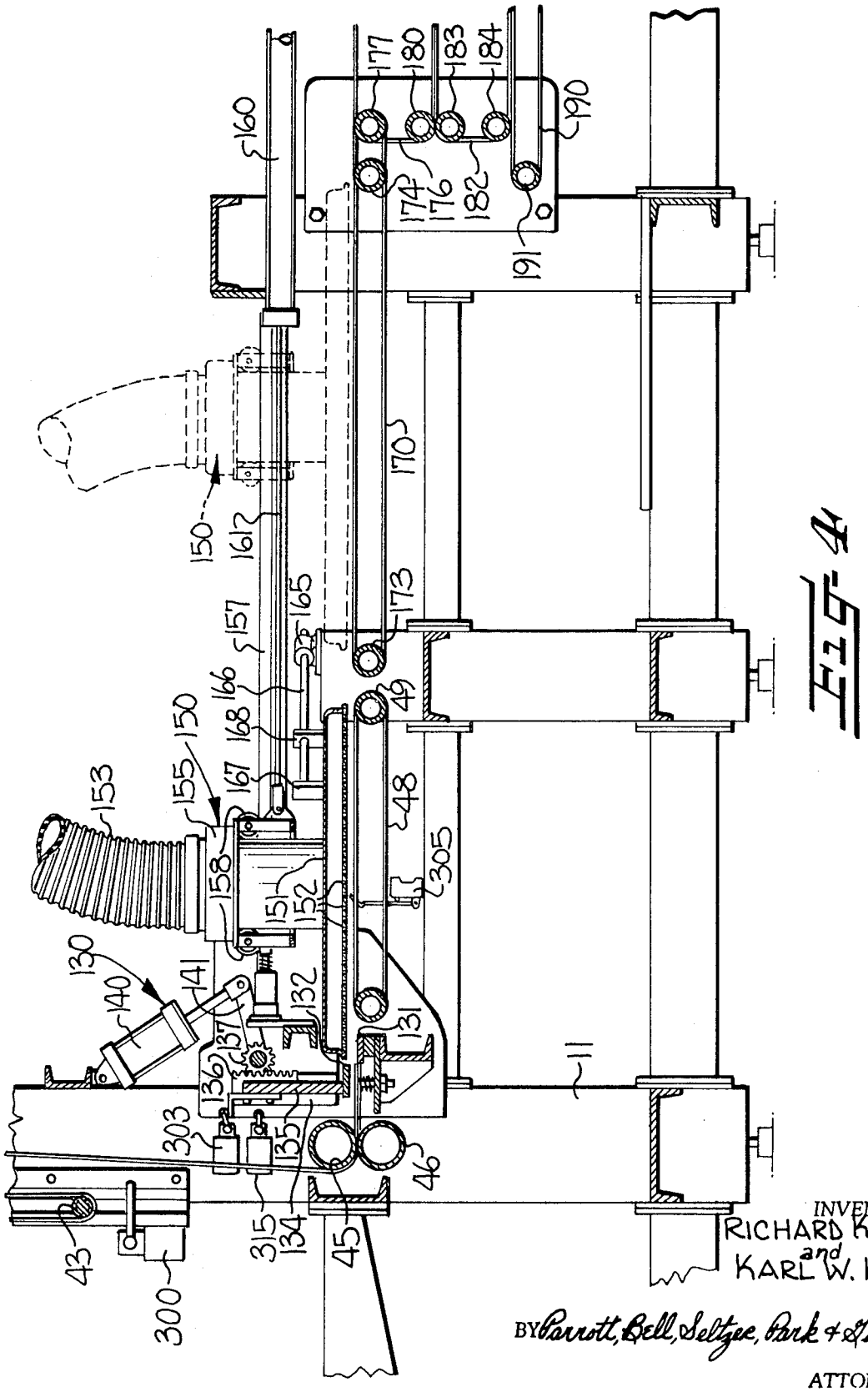

FIG. 4

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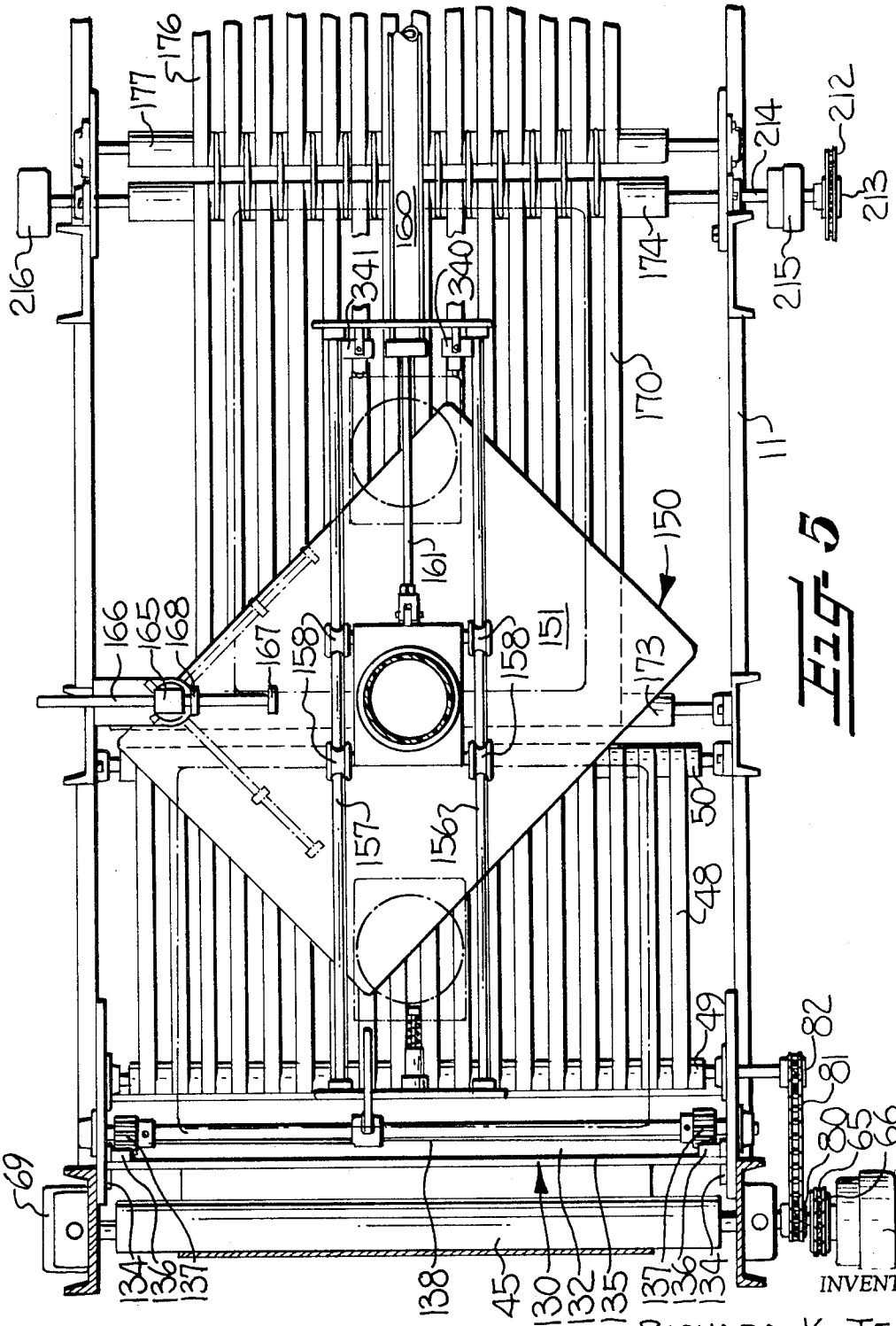

FIG 5

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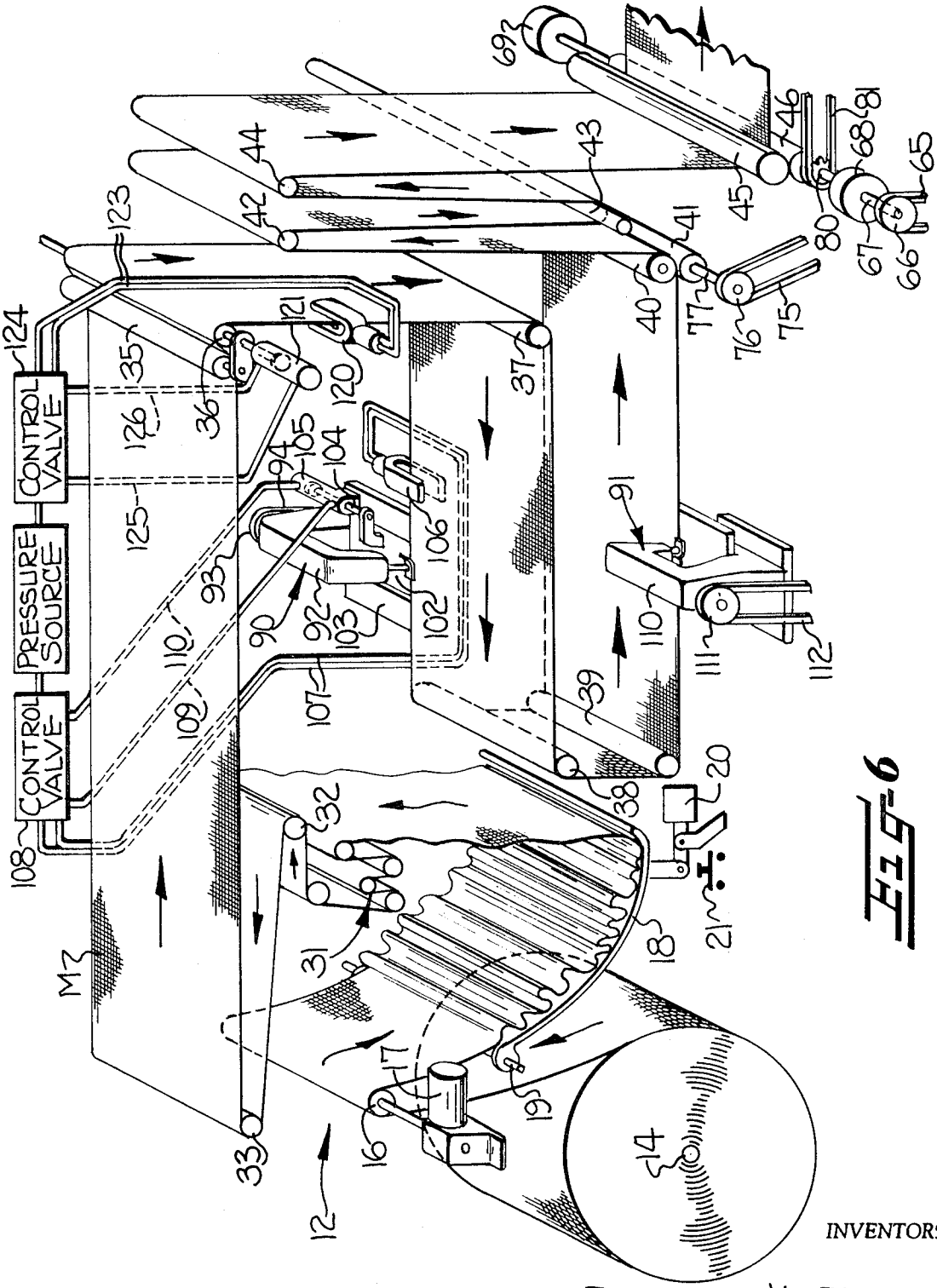

FIG. 6

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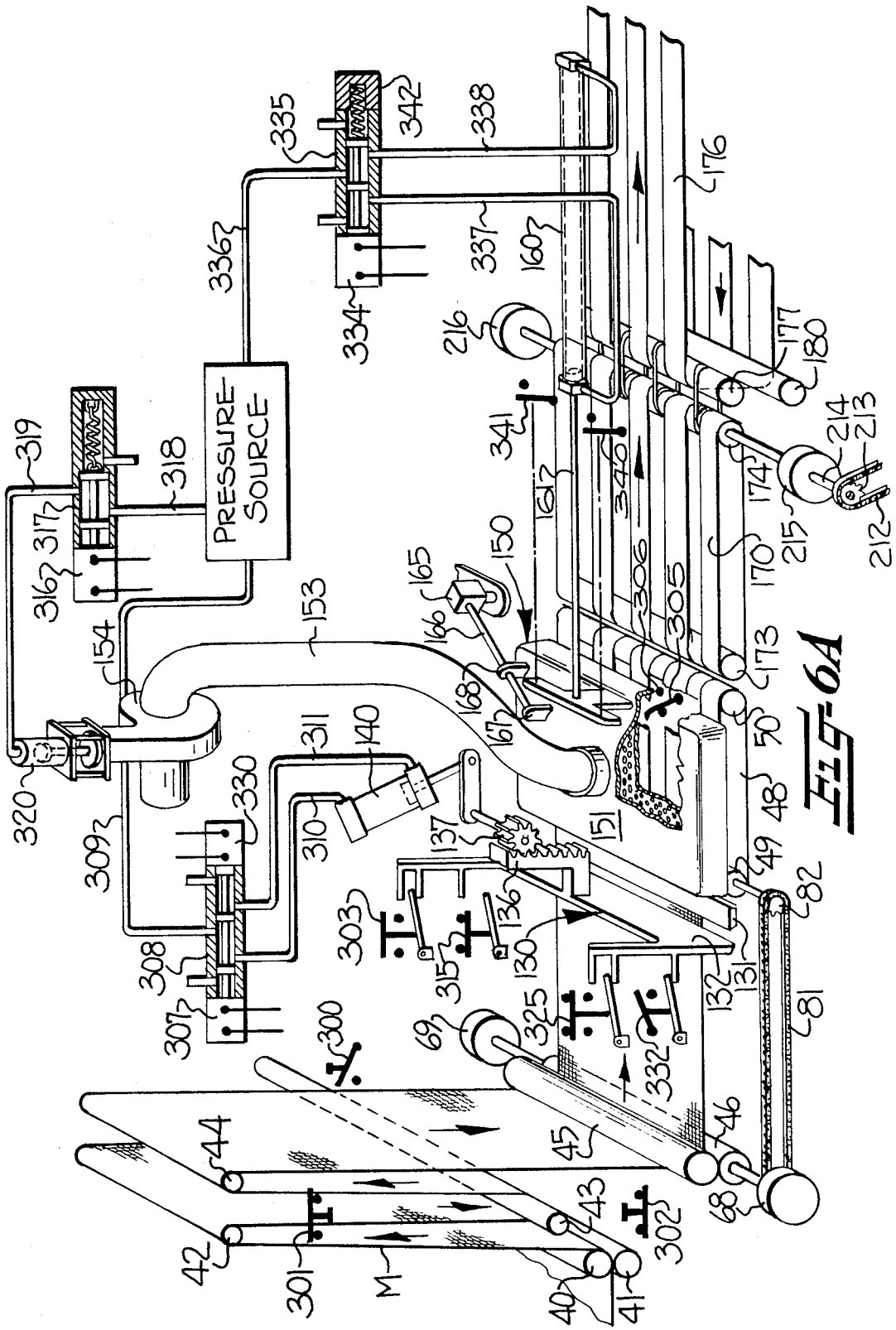
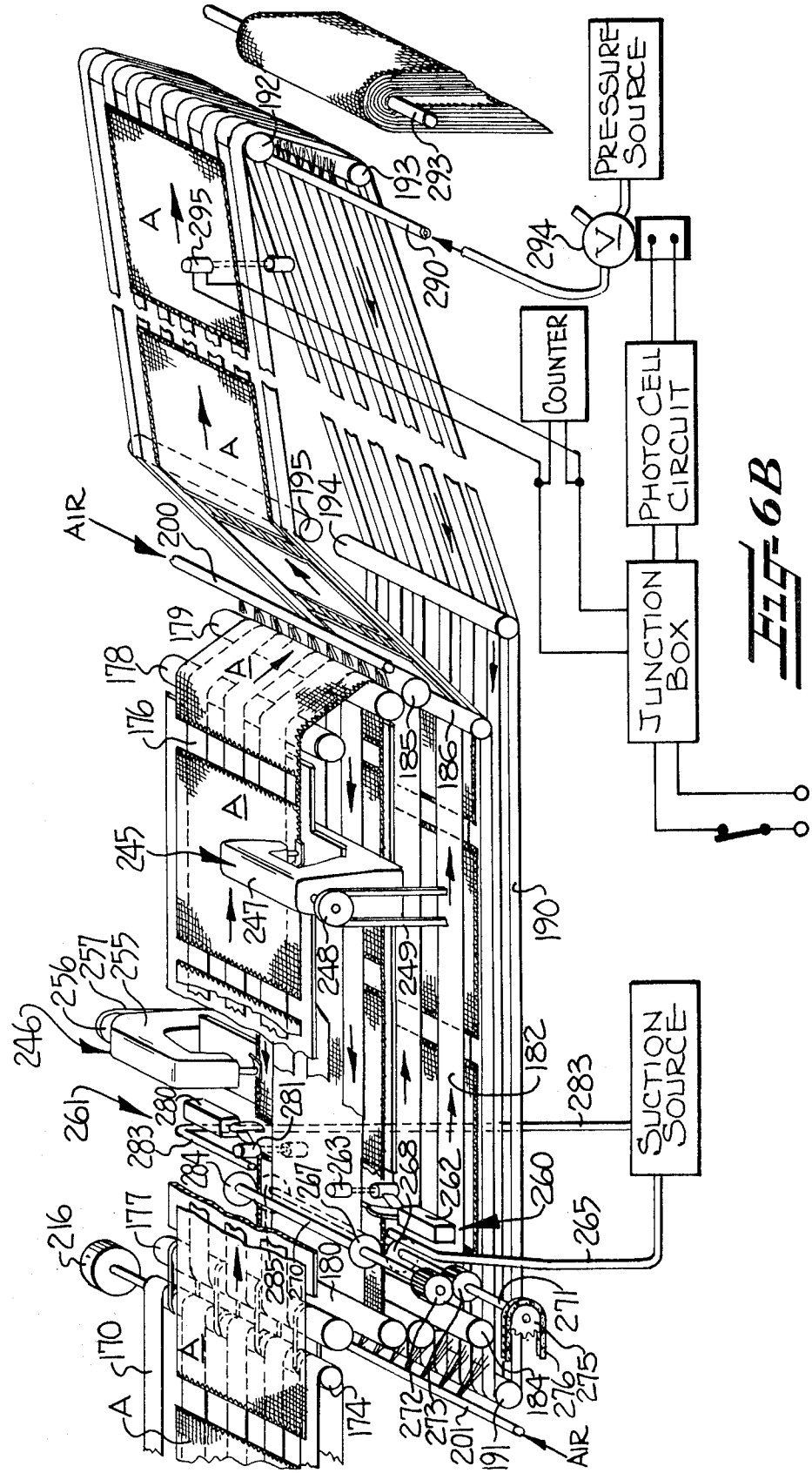


FIG-6A


PRESSURE SOURCE
COUNTER
PHOTO CELL CIRCUIT
JUNCTION BOX
SUCTION SOURCE
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AIR
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FIG-6B

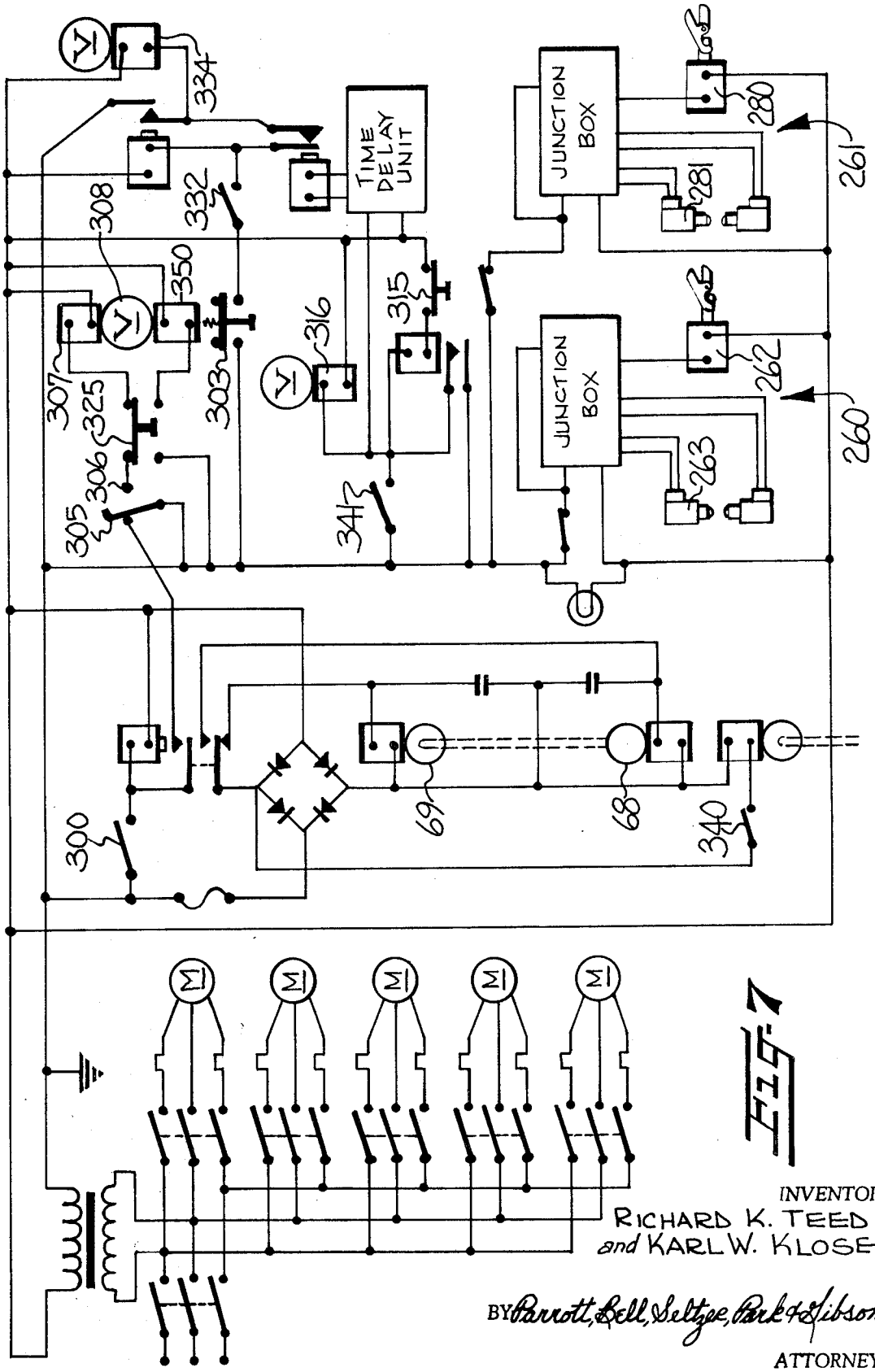

FIG. 7

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APPARATUS FOR AUTOMATICALLY FABRICATING INDIVIDUAL ARTICLES

This invention relates to apparatus for automatically fabricating individual articles, such as blankets and the like, from a continuous length of textile material.

In the prior manufacture of blankets, handkerchiefs and other like articles in which it is necessary to cut individual articles from a continuous length of textile material, stitch the individually cut article along all four of the edges, etc., it has usually been necessary to carry out a series of different steps in the manufacturing process by a series of separate operators, either manually or with separate machines. This necessarily involved a large number of operators, time consumption, inefficiency, nd costliness. Other disadvantages of this prior type of manufacture were the amount of space necessary to hold these separate operators and machines and the human element involved in these separate operations by separate operators produced a tendency toward nonuniformity in the finished products.

Prior attempts of providing a completely automatic machine for the fabrication of these types of articles have not proven satisfactory, particularly from a control standpoint, inasmuch as the continuous length of material and the individual articles cut therefrom were fed in numerous directions with respect to a longitudinal axis through the apparatus for effecting the desired stitching, cutting, etc., operations. Also, the feeding of the continuous web and the feeding of the individually cut articles were cumbersome, unrelated, untimed, etc., such that bunching up of the material and malfunctioning of various portions of the apparatus resulted.

Accordingly, it is the object of this invention to provide an apparatus for completely and automatically fabricating individual articles, such as blankets or the like, from a continuous length of textile material, thereby eliminating various operators, cutting down on time consumption, increasing efficiency, reducing costs, conserving space and increasing uniformity in the finished product.

It is a more specific object of this invention to provide an automatic fabricating apparatus which feeds a continuous length of textile material back and forth along a longitudinal axis through the apparatus in interrelated, intertimed relationship past a plurality of working stations including a means for cutting the continuous length of textile material into a plurality of successive individual articles, and which feeds each of the individually cut articles back and forth along the longitudinal axis through the apparatus in interrelated, intertimed relationship past a plurality of working stations.

By this invention, it has been found that the above objects may be accomplished by providing an apparatus comprising the following basic component parts.

The apparatus includes a supply means for supplying a continuous length of textile material thereto. A first interrelated, intertimed feeding means, preferably operated from a single motor means, is provided for feeding the continuous length of material from the supply means in an elongate path of travel along a longitudinally extending axis through the apparatus. First and second driven stitching means are disposed adjacent the supply means in the path of travel of the continuous length of material for applying lines of stitching along the longitudinal edges of the continuous length of textile material. Cutting means are disposed adjacent the first and second stitching means in the path of travel of the continuous length of material for transversely cutting the continuous length of material into a plurality of successive individual articles of a predetermined length.

Disposed adjacent the cutting means is a turning means for successively turning each individually cut article 90° for continued travel through the apparatus. Second interrelated, intertimed feeding means, preferably operated from a single motor means, is operatively associated with the turning means for receiving the individually cut articles from the turning means and feeding them in a continued elongate path of travel along the aforesaid longitudinally extending axis through the apparatus. Third and fourth driven stitching means are disposed in the path of travel of the individually cut articles for applying lines of stitching along the cut edges of each of the individually cut articles so that each of the articles will be stitched along all four of its edges.

Some of the objects and advantages of this invention having been stated, other objects and advantages will appear as the description proceeds when taken in conjunction with the accompany drawings, in which:

FIGS. **1** and **1A** are side elevational views of the apparatus of this invention, FIG. **1A** being a continuation of FIG. **1**;

FIG. **2** is an enlarged top plan view of a blanket which may be fabricated by the apparatus of this invention;

FIG. **3** is a perspective, schematic view of the apparatus of this invention illustrating particularly the drive means utilized in the apparatus in somewhat exploded, diagrammatic form;

FIG. **4** is an enlarged vertical cross-sectional view taken through a portion of the apparatus of FIGS. **1** and **1A** and illustrating particularly the cutting means and turning means along with associated conveyor means utilized in the apparatus;

FIG. **5** is a top plan view of the portion of the apparatus of this invention illustrated in FIG. **4**;

FIGS. **6**, **6A** and **6B** are perspective, diagrammatic views of the apparatus of this invention illustrating in diagrammatic form the operation of various components therein, FIG. **6A** being a continuation of FIG. **6** and FIG. **6B** being a continuation of FIG. **6A**; and

FIG. **7** is a schematic wiring diagram of the apparatus of this invention.

Referring now to the drawings, the complete apparatus of this invention as viewed from one of the longitudinally extending sides thereof is shown in FIGS. **1** and **1A** and generally designated therein by the reference numeral **10**. The apparatus **10** includes a stationary frame, the various portions and component parts thereof being collectively designated by the reference numeral **11**, for supporting the various components of the apparatus **10** on the floor or other surface along a generally longitudinally extending axis being with the left-hand side of FIG. **1** and extending through the right-hand side of FIG. **1A**. The apparatus **10** further comprises the following component parts.

A supply means **12** is provided for supplying a continuous length of textile material *M*. This supply means **12** comprises a roll stand means **13** for carrying a roll **14** of material *M* in the active or feeding position and a roll **14** of material *M* in the reserve position. The roll stand means is also adapted to lift the rolls of material *M* from the floor and maintain these rolls in the aforementioned reserve and active positions and forms the subject matter of copending application Ser. No. 700,277, filed Jan. 24, 1968, assigned to the assignee of the present invention, and reference may be had to that application for further details thereof.

The supply means **12** further comprises a feed roll **16** mounted in suitable bearings (not shown) on a portion of the apparatus frame **11** for receiving the continuous length of textile material *M* thereover and feeding the same from the roll stand means **13**. The feed roll **16** is driven by a suitable motor, belt and pulley drive means **17**. The continuous length of material *M* passes from the feed roll **16** into a scray mechanism **18** which forms a part of the supply means **12**. The scray mechanism **18** is pivoted as at **19** to a portion of the apparatus frame **11** for receiving a predetermined excess amount of the continuous length of textile material from the feed roll **16** and for moving downwardly under the weight of the excess amount of material against the influence of any suitable biasing means, shown schematically at **20** in FIG. **6**, to stop operation of the feed roll **16** when the predetermined excess amount of the continuous length of material *M* has been received in the scray means **18**.

This is accomplished, as shown diagrammatically in FIG. **6**, by locating a switch **21**, which is suitably electrically connected with the motor **17** driving the feed roll **16**, in such a

position as to be actuated by the downward pivotal movement of the scray means **18** under the weight of a predetermined excess amount of the continuous length of textile material *M* for shutting off operation of the motor **17**.

From the supply means **12**, the continuous length of textile material *M* is fed in a zigzag or back-and-forth path of travel along the aforementioned longitudinally extending axis through the apparatus **10** by a first feeding means, generally indicated by the reference numeral **30** in FIG. **3**. This first feeding means includes various tensioning rolls, idler guide rolls, feed rolls, conveyors, and drives therefore, as follows.

Firstly, there is provided a group of tensioning rolls **31** of conventional construction mounted on a portion of the apparatus frame **11** for tensioning the continuous length of material *M* as it leaves the scray mechanism **18**. From the tensioning rolls **31** the continuous length of material *M* is fed back in a reverse direction around an idler roll **32** suitably mounted in bearings on a portion of the apparatus frame **11** and around idler roll **33** also suitably mounted in bearings on a portion of the apparatus frame **11** to be fed in a forwardly extending direction. From the idler roll **33**, the continuous length of material *M* passes under and over a pair of positioning rolls **35** and **36** suitably mounted for rotation in bearings on transversely of the continuous length of material *M* for positioning of the longitudinal edge thereof, as will be described hereinafter.

From the rolls **35** and **36**, the continuous length of material *M* passes vertically downwardly and around an idler roll **37**, suitably mounted for rotation on a portion of the apparatus frame **11**, to reverse its direction and be fed in a generally horizontal plane in a rearward direction. The continuous length of material *M* then passes around a pair of idler rolls **38** and **39**, suitably mounted for rotation on the apparatus frame **11**, such that the continuous length of material *M* is fed downwardly in a vertical plane and then forwardly in a generally horizontal plane. From the roll **39**, the continuous length of material *M* passes between a pair of driven rotating nip rolls **40** and **41** carried by the apparatus frame **11** for the feeding of the continuous length of material *M* around, over and under each of the above-described rolls.

From the nip rolls **40** and **41**, the continuous length of material *M* passes in an alternating up-and-down, generally vertical, path of travel over and under and over again a set of three tensioning rolls **42**, **43** and **44**, respectively. The middle roll **43** is a "dancing" roll and is suitably mounted in a slot in a portion of the apparatus frame **11** for the well-known tensioning or "dancing" motion to apply or form a uniform tension in the continuous length of material *M* as it travels through the three rolls **42**, **43** and **44**. The rolls **42** and **44** are mounted by suitable bearings on a portion of the apparatus frame **11**.

From the roll **44**, the continuous length of material *M* passes through a pair of driven nip rolls **45** and **46** suitably mounted for rotation in a portion of the apparatus frame **11** and driven in a manner to be described below. From the nip rolls **45** and **46**, the continuous length of material *M* passes in a generally horizontal path of travel onto a set of parallel conveyor belts **48** which extend around and are driven by a driven roll **49** and idler roll **50** both suitably mounted for rotation on a portion of the apparatus frame **11**.

For driving of the driven rolls **41**, **46** and **49** so that the feed of the continuous length of material *M* around, over and under each of the above-described rolls and past fabricating apparatus, to be described hereinafter, in predetermined, interrelated and intertimed relationship for obtaining proper feeding of the continuous length of material along the longitudinally extending axis through the apparatus, there is provided a single motor means **55** which rotates a pulley **56** on which is mounted a belt **57** which also passes around and drives a pulley **58** of a speed reduction unit **59**. The speed reduction unit **59** drives a pulley **60** which carries a belt **61** passing around a pulley **62** on the end of a shaft **63** carrying a sprocket **66** on a shaft **67** extending from the driven nip roll **46** for the driving thereof. The shaft **67** includes a clutch **68** on one end thereof and a brake **69** on the other end thereof for allowing driving of the roll **46** when the clutch **68** is engaged and for stopping the driving of the roll **46** when the brake **69** is engaged, for the purposes to be hereinafter described.

The shaft **63** also carries a sprocket **70** which drives a chain **71** which passes around a sprocket **72** on a stub shaft **73**. The stub shaft **73** also carries a sprocket **74** which carries a chain **75** passing around a sprocket **76** carried by a shaft **77** extending from the driven nip roll **41** for the driving of the nip roll **41** and nip roll **40** which is in frictional engagement therewith. The shaft **67** further carries a pulley which has a belt **81** passing therearound and also around a pulley **82** on the end of a shaft **83** which extends from the roll **49** carrying the set of conveyor belts **48** for the driving of the conveyor belts **48** in a forward direction.

Thus, it may be seen that the first feeding means **30** includes a single motor means and interconnected drive means driven by the motor means and operatively connected with various portions of the first feeding means for driving the various portions of the first feeding means in predetermined, interrelated and intertimed relationship for obtaining proper feeding of the continuous length of material *M* through the apparatus. This type of feeding means controlled by a single motor means and by interconnected drive means eliminates the possibility of malfunction which would occur if various motor means and unconnected drive means were utilized.

For stitching the longitudinally extending edges of the continuous web of material *M* as it is fed by the above-described first feeding means **30**, there is provided first and second driven stitching means **90** and **91** for applying lines of stitching, preferably overedge stitching along opposite longitudinally extending edges of the travel continuous length of material *M* as it is fed by the first feeding means **30**.

The stitching means **90** comprises a driven sewing machine **92** of conventional design for applying a line of overedge stitching. The sewing machine **92** is driven by a pulley **93** extending from the drive shaft thereof and disposed on the rear end of the machine **92**. The pulley **93** is driven by a belt **94** which is in turn driven by a suitable pulley (not shown) extending from a shaft **95**. The shaft **95** carries a pulley **96** on the other end thereof (see FIG. **3**) which is driven by a belt **97**. The belt **97** is carried by an idler pulley **98** and is driven by a pulley **99** extending from a shaft **100** from the speed reduction unit **59** and, therefore, is driven by the above-described motor means **55**.

The sewing machine **92** is mounted on a movable plate or carriage **102** which is carried in a cutout or slot in a stationary plate **103** mounted on a suitable portion of the apparatus frame **11** between rolls **37** and **38**. The slot or cutout in plate **103** extends transversely of the continuous length of material *M* such that the sliding or movable plate **102** and the sewing machine **92** may be moved forwardly and reversely in a linear path of travel in a direction transverse to the continuous length of material *M* and to the path of travel of the continuous length of material *M* through the apparatus **10**.

This forward and reverse movement of the sewing machine **92** is provided by a suitable double-acting, fluid operated piston and cylinder mechanism **105** which is suitably mounted on the stationary plate **103** and is connected at the forward end of the piston shaft to an arm **104** which is also connected to the sliding or movable plate **102** such that movement of the arm **104** by the piston and cylinder mechanism **105** will effect movement of the plate **102** and the sewing machine **92**.

The piston and cylinder mechanism **105** is controlled by an edge sensing mechanism **106** which may be of any convenient construction and as illustrated in the drawings is an air stream actuated edge sensing mechanism which operates in a manner well understood by those with ordinary skill in the art to exert an air stream across the horseshoe shaped sensing head. The sensing head is operatively connected through air lines **107** to a control valve **108**, shown schematically in FIG. **6**, which also receives a supply of pressurized fluid from a pressure source. The control valve includes fluid conveying lines **109** and **110**

which lead to opposite sides of the piston and cylinder mechanism **105**. The above sensing head **106** and piston and cylinder mechanism **105** operate in such a manner that if the longitudinally extending edges of the continuous length of material *M* passing through the sensing head **106** moves in a transverse direction toward or away from the sewing machine **92**, the piston and cylinder mechanism **105** will be operated to correspondingly move the sewing machine **92** forwardly or reversely in its transverse linear path of movement so as to always be aligned with the longitudinally extending edge of the continuous length of material *M*.

The second sewing means **91** comprises a driven sewing machine **110** suitably mounted stationary on a portion of the apparatus frame **11** along the other longitudinally extending side of the continuous length of material *M* so as to apply a line of overedge stitching along the other side of the continuous length of material *M* as it passes between idler roll **39** and driven nip rolls **40** and 4l. The sewing machine **110** is driven by a pulley **111** attached to the end of the main drive shaft of the sewing machine **110**. The pulley **111** is driven by belt **112** which passes around a pulley **113** on the end of a shaft **114**. The shaft **114** carries a pulley **115** on the other end thereof which is driven by the above-described belt **97** so that the sewing machine **110** will be driven by the motor means **55** in the manner described above.

For aligning the longitudinally extending edge of the traveling continuous length of material *M* with the sewing machine **110** for assuring that the line of overedge stitching is properly located, there is also provided an edge sensing mechanism **120**, which may be of the same type as the edge sensing mechanism **106**, to control a double-acting, fluid operated piston and cylinder device **121** through air lines **123** and control valve **124** which receives a source of pressurized air and feeds the same through lines **125** and **126** to opposite ends of the piston and cylinder mechanism **121**. The forwardly extending shaft of the piston and cylinder mechanism **121** is operatively connected with the ends of positioning rolls **35** and **36** for transversely moving the positioning rolls **35** and **36** back and forth in a direction transverse to the continuous length of textile material *M*. Therefore, the edge sensing means **120** will operate to move the positioning rolls **35** and **36** through control valve **124** and piston and cylinder mechanism **121** for moving the continuous web of textile material back and forth in a transverse direction for aligning the longitudinally extending edge of the continuous length of textile material *M* with the sewing machine **110**.

The above-described mechanism per se including the movable sewing machine **92**, the edge sensing means **106** controlling same, the material aligning nip rolls **35** and **36**, the edge sensing means **120** controlling same and the stationary sewing machine **110** is more fully described in copending application, Ser. No. 853,224, filed Aug. 26, 1969, and assigned to the assignee of the present application, and reference may be had to that application for full details of the operation thereof.

After having been stitched on each longitudinally extending side, the continuous length of material *M* is fed by the above-described first feeding means **30** to a cutting mechanism, generally indicated at **130**. The cutting mechanism **130** is disposed between the driven feed rolls **45** and **46** and the set of conveyor belts **48** comprising part of the above described first feeding means **30**. The cutting means **130** includes a stationary cutting blade **131** suitably carried by a portion of the apparatus frame **11** and located below the path of travel of the continuous length of material *M* and includes a cutting surface extending transversely of the continuous length of material *M*. The cutting means **130** further comprises a movable cutting blade **132** arranged for vertical up-and-down movement in suitable slots in block members **134** secured to portions of the apparatus frame **11** (see FIG. **5**). For effecting up-and-down movement of the cutting blade **132**, there is attached thereto an upstanding plate member **135** which carries a rack member **136** on each side thereof, as shown in FIGS. **4** and **5**. Each of the rack members **136** is engaged by a pinion member **137** carried on a shaft **138** which is mounted for rotation in suitable bearing at each end thereof on the apparatus frame **11**. For reciprocating the shaft **138** and thus the pinions **137** back and forth to reciprocate the rack members **136** and thus the cutting blade **132** up and down to effect a cutting engagement with the stationary blade **131**, there is provided a double-acting, fluid operated piston and cylinder mechanism **140** having the piston shaft thereof pivotally secured to an arm **141** which is attached to the shaft **138** such that when the piston and cylinder shaft extends, the pinions will be reciprocated in one direction to move the rack in an upward direction bringing the cutting blade **132** to an upward position out of engagement with the stationary blade **131**. Likewise, when the piston and cylinder mechanism shaft is retracted, the cutting blade will be moved downwardly into cutting engagement with the stationary blade **131** to effect transverse cutting of the continuous web of material *M*.

Thus, it may be seen that as a predetermined length of the continuous web of textile material is fed past the cutting mechanism **130** onto conveyor belts **48**, the cutting mechanism will be actuated, by a means to be described hereinafter, to effect a cutting action between the blades **131** and **132** to cut off a predetermined length of the continuous web of the material *M* to form successive individual articles *A* of a predetermined length.

After having been cut by the above-described cutting mechanism **130**, the individually cut articles *A* are resting on the set of conveyor belts **48** and have been stitched on the two longitudinally extending sides thereof and are in position for being turned 90° for continued travel along the longitudinal axis of the apparatus **10** for stitching along the other two sides thereof which will be the longitudinally extending sides after the individual articles *A* have been turned 90°. For the turning of each of the individual articles *A* there is provided a turning means, generally indicated in the drawings at **150**.

The turning means **150** comprises a hollow suction box **151** which is of a generally rectangular configuration and positioned in one position thereof over the conveyor belts **48**. The suction box **151** includes a plurality of perforations **152** in the lower surface thereof and an air conduit **153** communicating with the interior of the suction box through the upper surface thereof. The conduit **153** leads to a suitable fan mechanism **154** which is suitably operated to create a source of negative pressure or suction through the conduit **153** and the suction box **151** to provide a vacuum or sucking action through the perforations **152** on the lower surface of the suction box **151**.

The conduit **153** includes a rotary joint **155** allowing the suction box **151** to rotate or turn with respect to the conduit **153**. The suction box **151** is carried in a position slightly above the path of travel of the individual articles *A* by carriage mechanism comprising a pair of longitudinally extending rods **156** and **157** suitably mounted on upstanding portions of the apparatus frame **11** (see FIG. **5**) and by rollers **158** suitably secured to a portion of the rotary joint **155** so that the suction box **151** and the flexible conduit **153** may be reciprocated back and forth in a linear path of travel along the longitudinally extending axis through the apparatus **10**.

For effecting the above linear path of travel, there is provided a double-acting, fluid operated cylinder and piston mechanism **160** having a forwardly extending piston shaft **161** which is attached to a portion of the rotary joint **155** (see FIGS. **4** and **5**) such that when the piston and cylinder mechanism **160** is actuated in one direction, the shaft **161** will extend to position the suction box **151** in its rearward position (see solid line position in FIG. **4**) and when the shaft **161** is retracted by operating the piston and cylinder mechanism **160** in the opposite direction, the suction box will be moved to a forwardly extending position (see dotted line position in FIG. **4**), as explained more fully hereinafter.

The suction box **151** is also rotated 90°during its above-described linear path of travel from the rearward position to the forward position. This is effected by providing pivotally

mounted slide box **165** secured to a portion of the apparatus frame **11** and having a shaft **166** extending therethrough in sliding relationship therewith. The forward end of the shaft **166** is secured to an upstanding plate **167** which is attached to the top of the suction box **151** and the shaft also passes through a guide plate **168** in sliding relationship thereto. By this arrangement which acts as a pivot for suction box **151**, as may be seen particularly in FIG. **5** including the dotted line showings thereof, the suction box **151** will rotate 90° when moved to the forward position (dotted line position of FIG. **4**) through the pivoting action of shaft **166**, sliding block **165**, guide plate **168** and plate **167**.

For operation of the above-described structure of the turning means **150**, the suction box **151** is positioned in its rearward position, as shown in solid lines in FIG. **4**, when the cutting mechanism **130** has been actuated to cut off an individual article *A*. A source of suction is then created in the suction box **151** and the individual article *A* will be sucked up onto the upper surface of the suction box **151**. The fluid operated cylinder mechanism **160** will be actuated to cause forward linear movement of the suction box **151** while turning 90° to position the suction box in its forward position, as shown in dotted lines in FIG. **4**. When the suction box has reached its forward position, the suction therein will be released which will release the individual article *A* onto a set of parallel conveyor belts **170** for continued travel through the apparatus **10**. The conveyor belts **170** are carried by an idler roll **173** mounted by suitable bearings on the apparatus frame **11** and by a driven roll **174** mounted by suitable bearings on the apparatus frame **11** and having a clutch means **215** on one end thereof and a brake means **216** on the other end thereof. The 90° rotation of the suction box **151** will likewise cause a 90° rotation of the individual article *A* carried thereby such that when the article *A* is released by the suction box **151** and received on the set of conveyor belts **170**, the previously stitched edges will extend transversely of the path of movement of the individual article *A* through the remainder of the apparatus **10** and the unstitched edges will then become the longitudinally extending edges.

For proper control of the cutting means **130**, the turning means **150** and related feeding means, a series of controls is provided. These controls are shown schematically in FIG. **6A** and are also shown in the wiring diagram of FIG. **7**.

The first of these controls is associated with the tensioning rolls **42**, **43** and **44** and includes a first switch **300** operatively positioned with respect to the tensioning, dancing roll **43** so that when the roll **43** reaches a lower extremity of its path of travel, assuring that a suitable supply of the continuous length of material *M* is present, the switch **300** will be contacted thereby. The switch **300** is operatively connected with the clutch **68** and brake **69** so as to engage the clutch **68** and release the brake **69** when contacted by the roll **43** so that the nip rolls **45** and **46** will feed the continuous web of material *M* through the cutting mechanism **130**. The tensioning roll mechanism **42**, **43** and **44** also includes switches **301** and **302** disposed at opposite upward and lower extremities such that if too much material is received in the tensioning roll mechanism and the dancing roll **43** has extended to an extreme lower position, the switch **302** will be engaged which will shut-off operation of the entire apparatus **10**. Also, if too little material is received in the tensioning mechanism and the dancing roll **43** reaches an upward extremity of its path of travel, the switch **301** will be engaged thereby and will shut-off operation of the entire apparatus **10**.

With the switch **300** engaged, the continuous web of material *M* will be fed past the cutting mechanism **130** until the leading edge thereof engages an upstanding switch **305** and causes the same to engage contact **306**. The contact **306** is operatively connected with the brake **69** and the clutch **68** so as to disengage the clutch **68** and engage the brake **69** to stop rotation of the nip rolls **45** and **46** and stop movement of the set of conveyor belts **48** through the interconnected drive chain **81** and thus stop feed of the continuous web of material *M*. The switch **305** and the contact **306** are also operatively connected with a solenoid **307** connected to a valve **308** which has a conduit **309** connected thereto and leading from a pressure source, indicated schematically in FIG. **6A**. The valve **308** includes lines **310** and **311** leading to opposite sides of the double-acting piston and cylinder **140** controlling the cutting mechanism **130**. Thus, when the switch **305** engages the contact **306** to complete a circuit therethrough, the solenoid **307** will be actuated to allow operation of the piston and cylinder mechanism **140** in one direction for downward movement of the blade **132** into cutting engagement with the blade **131** to cause a cutting action of the cutting mechanism **130** for serving a predetermined length of the continuous web of material *M* to form an individually cut article *A*.

Upon downward movement of the movable cutting blade **132**, a switch **315** is actuated. The switch **315** is operatively connected with a solenoid **316** on a valve mechanism **317** which includes a conduit **318** leading from the pressure source and a conduit **319** leading to a spring-loaded valve **320** which when actuated, by the opening of the valve **317** through the solenoid **316** upon actuation of the switch **315**, will allow the fan **154** to cause a source of suction in the turning mechanism **150** and the turning box **151** so as to suck up the individually cut article which has just been cut by the cutting mechanism **130** for the above-described turning movement.

Downward movement of the movable blade **132** of the cutting mechanism **130** also actuates a switch **325** which breaks the circuit from switch **305** to solenoid **307** and is operatively connected with a solenoid **330** on the other side of the valve **308** to actuate the solenoid **330** and open the conduit **311** to the other side of the double-acting piston and cylinder mechanism **140** to reverse the operation of the cutting means **130** and allow the upward movement of the cutting blade **132**.

Downward movement of the movable blade **132** of the cutting mechanism **130** also actuates a switch **332** and a switch **333** which are both operatively connected with a solenoid **334** connected to one side of a valve **335** which includes a conduit **336** leading from a pressure source and includes conduits **337** and **338** leading to opposite sides of the double-acting piston and cylinder mechanism **160** controlling the movement of the turning mechanism **150**. Thus, when the movable cutting blade **132** has effected its cutting action, the switches **332** and **333** will be actuated to operate the solenoid **334** to open the valve **335** through the conduit **336** to cause rearward movement of the shaft **161** of the piston and cylinder mechanism **160** to cause a turning forward movement of the suction box **151**. At this point, the suction in the suction box **151** has already been actuated and the individually cut article *A* has been sucked onto the suction box.

As the suction box **151** moves forwardly to the end of its path of linear travel, a pair of switches **340** and **341** are engaged thereby. The switch **340** is operatively connected with the clutch **215** and the brake **216** on the roll **174** controlling the set of conveyor belts **170** such that upon actuation of the switch **340**, the clutch **215** will be disengaged and the brake **216** engaged to stop movement of the conveyor belts **170** for reception of the individually cut article being turned by the turning means while the belts **170** are in stationary position. Upon disengagement of the switch **340** by the turning box **151**, the clutch **215** will be engaged and the brake **216** disengaged to allow continued feeding movement of the conveyor belts **170**.

The switch **341** is operatively connected with the solenoid **316** such that when engaged by the turning box **151** reaching the forward position in its path of travel, the switch **341** will disengage the solenoid **316** to shut-off the source of suction through the turning box **151** to release the individually cut article onto the conveyor belts **170** in the turned condition thereof. The switch **341** is also operatively connected with a solenoid **342** on the other side of valve **335** so as to reverse the action of piston and cylinder mechanism **160** to cause the turning box **151** to return to the rearward position for reception of the next successive individually cut article *A*.

While only a portion of the controls of the apparatus **10** of this invention have been illustrated schematically in FIG. **6A**, FIG. **7** includes a schematic wiring diagram of these and other controls for this apparatus and additional details of the above-described controls and additional details of the overall apparatus controls may be seen therein. The wiring diagram of FIG. **7** is such as to be understood by anyone with ordinary skill in the art and further detailed description herein is not deemed necessary.

The individually cut and turned article *A* now resting on the set of conveyor belts **170** is fed through the remainder of the apparatus **10** along with each successive individually cut article *A* by a second feeding means, generally indicated at **172** in FIG. **3**, which includes the set of conveyor belts **170**. This second feeding means **172** feeds the successive individual articles *A* along the above-mentioned longitudinal axis through the apparatus **10** in a zigzag forward and reverse path of travel.

From the conveyor belts **170**, the individual articles *A* are passed on to another series or set of parallel mounted conveyor belts **176** carried by an idler roll **177** at the rearward end thereof which is mounted adjacent the roll **174** in suitable bearings on the apparatus frame **11**. The conveyor belts **176** further pass around a pair of rolls **178** and **179** at their forward extremity and then pass around a driven roll **180** at the rearward extremity which is mounted in suitable bearings on the apparatus frame generally below and parallel with the roll **177**, as may be seen in FIGS. **3** and **4**.

The second feeding means **172** also includes a set of parallel conveyor belts **182** carried by rolls **183** and **184** on the rear end thereof and rolls **185** and **186** on the forward end thereof, as may be seen in FIGS. **3** and **4**. Additionally, the second feeding means **172** includes a further set of parallel conveyor belts **190** carried around an idler roll **191** in the rearward extremity thereof and passing around rolls **192** and **193** at the forward extremity thereof. The set of conveyor belts **190** also passes around rolls **194** and **195** at an intermediate position thereof, the roll **194** being a driven roll.

Thus, through the above-described sets of conveyor belts, each of the individual articles *A* are successively transferred from the driven conveyor belts **170** onto the driven conveyor belts **176** for movement in a generally horizontal path of travel along the longitudinal axis through the apparatus **10**. When the individual articles *A* have reached the forward extremity of the conveyor belts **176**, they will move downwardly in a generally vertical path of travel and be contacted at the leading edge thereof by a continuous stream of air extruded from a hollow conduit **200** which passes transversely across the conveyor belts **176**, in the manner shown in FIG. **6B**. The leading edge of each successive individual article *A* will then pass between rolls **179** and **185** and between conveyor belts **176** and **182**. Each of the successive individual articles *A* will be sandwiched between the lower portion of the conveyor belts **176** and the upper portion of the conveyor belts **182** to be moved in a generally horizontal path of travel in a rearward direction.

When each of the individual articles *A* have reached the rearward extremity of the conveyor belts **182**, they will then pass in a generally vertical path of travel downwardly around the rolls **183** and **184** on the conveyor belts **182**. The leading edge of each successive individual article *A* will then be contacted by another stream of air continuously extruded from a conduit **201** which extends transversely across the apparatus **10** in the manner shown in FIG. **6B**. This stream of air will cause the individual articles *A* to pass around the roll **184** and be disposed on top of the set of conveyor belts **190** and be sandwiched between the lower portion of the conveyor belts **182** and the top portion of the conveyor belts **190**. Each of the articles will then be fed in a generally horizontal forwardly extending path of travel between the conveyor belts **182** and **190** until they reach the roll **186** at which point the path of travel extends generally angularly upwardly until the individual articles are passed over the roll **195** at which time they will be fed forwardly in a generally horizontal path of travel until they reach the forward extremity of the belts **190** as they pass around the roll **192**.

For driving the above-described rolls and sets of conveyor belts carried thereby, there is provided a single motor means **205** (see FIG. **3**). The motor means **205** has a pulley **206** on the forward end of the drive shaft therefrom which carries a belt **207** also passing around a pulley **208** extending from a shaft in a speed reduction unit **209**. The speed reduction unit **209** includes a first shaft **210** carrying a sprocket **211** on the forward end thereof.

The sprocket **211** carries a chain **212** which passes around a sprocket **213** secured to a shaft **214** which extends from the roll **174** carrying the conveyor belts **170** for driving the conveyor belts **170**. The shaft **214** includes the clutch **215** on one side of the roll **174** and the brake **216** on the other side of the roll **174** so that, upon activation of the clutch **215** and deactivation of the brake **216**, the roll **174** will be driven through the shaft **214** and its related connections back to the motor means **205** and when the clutch is disengaged and the brake engaged, the drive of the roll **174** will be stopped and the conveying action of the belts **170** will be stopped.

The chain **212** also passes around a sprocket **220** carried by a shaft **221** which is secured to the roll **180** around which the set of conveyor belts **176** pass for driving the conveyor belts **176** in the direction of the arrows in FIG. **3**. The forward end of the shaft **221** carries a gear **222** which meshes with a gear **223** secured to a shaft **224** extending from the roll **183** around which the set of conveyor belts **182** pass for driving the conveyor belts **182** in the direction of the arrows in FIG. **3**.

The shaft **221** also carries a sprocket **225** around which passes a chain **226** which is supported by idler sprockets **227**, **228** and **229** and passes around sprocket **230** on shaft **231** and around sprocket **232** on shaft **233**. The shaft **233** extends from the roll **186** for driving same along with conveyor belts **182**. The shaft **233** also includes a sprocket **235** which carries a chain **236** which passes around another sprocket **237** on a shaft **238**. The shaft **238** extends from the roll **185** for driving same and for driving the conveyor belts **182**. The shaft **238** also extends from the other side of roll **185** and contains a sprocket **240** thereon which carries a chain **241** which also passes around a sprocket **242** on the end of shaft **243** extending from the roll **178** for driving same and for aiding in driving the belts **176**. The shaft **231** extends from the roll **194** for driving the roll **194** and for driving the set of belts **190** passing therealong. The belts **190** are also driven by frictional contact with the belts **182**.

Thus, it may be seen that the second feeding means **172** includes a single motor means **205** and interconnected drive means driven by the motor means and operatively connected with various portions of the second feeding means for driving the various portions of the second feeding means in predetermined, interrelated and intertimed relationship for obtaining proper feeding of the individual articles *A* in succession through the apparatus **10**. This type of feeding means controlled by a single motor means and by interconnected drive means eliminates the possibility of malfunction which would occur if various motor means were utilized.

For stitching the remaining longitudinally extending side edges of each of the successively fed individual articles *A* as they are fed by the above-described feeding means **172**, there is provided third and fourth stitching means **245** and **246** for applying lines of stitching, preferably overedge stitching, along the remaining longitudinally extending edges of the successively fed individual articles *A* as they are fed by the second feeding means **172**.

The stitching means **245** comprises a driven sewing machine **247** of conventional design for applying a line of overedge stitching. The sewing machine **247** is driven by a pulley **248** extending from the drive shaft thereof and disposed on the rear end of the machine **247**. The pulley **248** is driven by a belt **249** which is, in turn, driven by a pulley **250** (see FIG. **3**) secured on the end of a stub shaft **251** which carries a pulley **252** on the other end thereof. A belt **253** passes around the

pulley **252** and around a group of idler pulleys to extend back to a pulley **254** carried on the end of a shaft **269** extending from the speed reduction unit **209** and driven by the motor means **205**.

The sewing machine **247** is suitably mounted stationary on a portion of the apparatus frame **11** and is mounted to one side of the set of belts **176** for stitching along the right-hand longitudinally extending side of each of the successively fed individual articles *A* as they are fed along the upper path of travel of the belts **176**, as may be clearly seen in FIGS. 3 and 6B. The sewing machine **247** applies a continuous line of overedge stitching along the right-hand longitudinal edge of the individual articles *A* including a connecting chain of stitches between each of the articles *A*, as may be seen in FIG. 6B.

The fourth stitching means **246** comprises a driven sewing machine **255** of conventional design for applying a line of overedge stitching. The sewing machine **255** is driven by a pulley **256** extending from the drive shaft thereof and disposed on the rear end of machine **255**. The pulley **256** is driven by a belt **257** which is in turn driven by a suitable pulley (not shown) extending from a shaft **258** which includes a pulley **259** on the forward end thereof. The pulley **259** is in frictional engagement and driven by the belt **253** which also drives the sewing machine **247**.

The sewing machine **255** is mounted stationary on a portion of the apparatus frame **11** and is disposed on the other side of the apparatus from the sewing machine **247** in a position so as to engage and stitch the left-hand longitudinally extending sides of each of the successively fed individual articles *A* as they are passed in a rearward generally horizontal path of travel while sandwiched between the sets of conveyor belts **176** and **182**. The sewing machine **255**, like the sewing machine **247**, applies a continuous line of overedge stitching such that a connecting chain stitch is presented between each successive individual article *A* as they are stitched and both sewing machines **247** and **255** may include edge trimmers (not shown).

For removing the longitudinally extending connecting chain of stitches between each successively fed individual article *A* after having been stitched on each of the remaining longitudinally extending sides by the sewing means **245** and the sewing means **246**, there is provided cutting means **260** and **261** mounted on each longitudinally extending side of the individual articles *A* on a portion of the apparatus frame **11** and in such a position as to sever the connecting stitch chain at the rear thereof first and then at the front thereof.

Referring particularly to FIG. 6B, the cutting means **260** comprises a scissors-type cutting mechanism **262** suitably mounted on a portion of the apparatus frame **11** so that the blades thereof extend in overlapping relationship to the left-hand longitudinal edge of each of the successively fed individual articles *A* as they are fed in a generally rearward horizontal path of travel while sandwiched between the conveyor belts **176** and **182**. The scissors-type cutter **262** is operatively connected with a photoelectric cell **263** in any suitable manner well understood by those with ordinary skill in the art such that the photoelectric cell **263** will sense the leading edge of each individually cut article *A* and actuate the cutter **262** to cut the connecting stitch chain at the rear end thereof adjacent the leading edge of the individual article *A*.

When this first cutting operation is effected, a loose stitch chain will be produced which will be hanging at the front end thereof from the trailing edge of the previous successive individual article *A*. This loose stitch chain will be sucked into a suitably positioned vacuum conduit **265** having an open forward end closely adjacent the longitudinal edge of the individual articles *A* as they are fed in the above-described path of travel. This will position the loose stitch chain in an outward perpendicular position with respect to the longitudinal edge of the individual article *A* as it is being fed forwardly. While the loose stitch chain is held in this position, the forward end thereof, which is attached to the trailing end of the previous individual article *A*, will pass through a pair of driven rotary cutters **267** and **268** cutting the forward end of the stitch chain and allowing the entire stitch chain to be sucked away by the vacuum conduit **265**.

The cutter **267** is mounted on a shaft **270** and the cutter **268** is mounted on a shaft **271**. Both of the shafts **270** and **271** include gears **272** and **273** intermeshing with each other so that the shafts will be driven together. The shafts **270** and **271** are mounted for rotation in suitable bearings on the apparatus frame **11**. The forward end of the shaft **271** includes a pulley **275** which carries a belt **276** which also passes around a pulley **277** on the shaft **211** so that the rotary cutters **267** and **268** are driven from the motor means **205** through the above-described connections to the shaft **211**.

The cutting means **261** is disposed on the opposite side of the apparatus along the opposite longitudinally extending edge of the individual articles *A* and include the exact same apparatus as the cutting means **260** for performing the same function on the opposite side of the individual articles *A*. The cutting means **261** includes a scissors-type cutter **280** carried by the machine frame and overlying the opposite longitudinally extending edge of the individual articles *A* and actuated by a photoelectric cell **281** in the same manner and for the same purpose as the cutter **262**. A vacuum conduit **283** operates in the same manner as the vacuum conduit **265** to suck the loose stitch chain therein after cutting by the scissors-type cutter **280** for perpendicular positioning of the loose stitch chain. A pair of rotary cutters **284** and **285** are mounted on the other end of the shafts **270** and **271**, respectively, for cutting off the remaining portion of the loose stitch chain as the individual articles are fed forwardly through the apparatus **10** in the same manner as the rotary cutters **267** and **268**.

The above-described mechanism per se for removing the connecting stitch chain between individual articles *A* is more fully described in copending application Ser. No. 853,223, filed Aug. 26, 1969, and assigned to the assignee of the present application, and reference may be had to that application for full details of the operation thereof.

Thus, as the individual articles *A* are fed around the rolls **183** and **184** and in a generally forward horizontal path of travel between the belts **182** and **190**, as described above, they have been stitched along all four sides thereof and connecting stitch chains between individual articles on each longitudinally extending side have been removed to form a completely fabricated individual article *A*, as shown in FIG. 2.

The articles are fed forwardly, as described above, until they reach the rolls **192** and **193** at which point they are allowed to drape over the roll **192** to extend in the generally downwardly vertical position. An air conveying conduit **290** extends tranversely across the apparatus on the inside of the belts **190** and has a plurality of apertures therein for exerting intermittent streams of air perpendicularly across the path of travel of the belts **190** as they pass around the rolls **192** and **193**, as may be seen in FIG. 6B. These streams of air will cause doffing or removal of each of the articles *A* and cause them to be stacked onto a stacking bar means **293**.

The air conduit **290** is operatively connected with a pressure source through a valve **294**, shown schematically in FIG. 6B. The valve **294** is operatively connected with a photoelectric cell **295** through any suitable sample circuit, as shown schematically in FIG. 6B, such that the photoelectric cell **295** will sense each individual article *A* as they are fed forwardly by the conveyor belts **190** and will actuate the valve **294** to allow a stream of air to be emitted from the conduit **290** at the proper time when each of the individual articles *A* are in position for doffing or removal.

Thus, it may be seen that this invention has provided an apparatus for completely and automatically fabricating individual articles, such as blankets and the like, from a continuous length of textile material. In the drawings and specification, there have been set forth preferred embodiments of this invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation.

What I claim is:

1. Apparatus for automatically fabricating individual articles such as blankets and the like from a continuous length of textile material, said apparatus comprising:

a. supply means for supplying a continuous length of textile material;

b. first interrelated, intertimed feeding means for feeding the continuous length of material from said supply means in an elongate path of travel along a longitudinally extending axis through said apparatus;

c. first and second driven stitching means disposed adjacent said supply means in the path of travel of the continuous length of material for applying lines of stitching along the longitudinal edges of the continuous length of textile material;

d. cutting means disposed adjacent said first and second stitching means in the path of travel of the continuous length of material for transversely cutting the continuous length of material into a plurality of successive individual articles of a predetermined length;

e. turning means disposed adjacent said cutting means for successively turning each individually cut article 90° for continued travel through said apparatus;

f. second interrelated, intertimed feeding means operatively associated with said turning means for receiving the individually cut articles from said turning means and feeding them in a continued elongate path of travel along the aforesaid longitudinally extending axis through said apparatus; and

g. third and fourth driven stitching means disposed in the path of travel of the individually cut articles for applying lines of stitching along the cut edges of each of the individually cut articles so that each of the articles will be stitched along all four of its edges.

2. Apparatus, as set forth in claim 1, in which said first feeding means includes a single motor means and interconnected drive means driven by said motor means and operatively connected with various portions of said first feeding means for driving the various portions of said first feeding means in predetermined, interrelated and intertimed relationship for obtaining proper feeding of the continuous length of material through said apparatus, and in which said second feeding means includes a separate single motor means and interconnected drive means driven by said motor means and operatively connected with various portions of said second feeding means for driving the various portions of said second feeding means in predetermined, interrelated and intertimed relationship for obtaining proper feeding of the individually cut articles through said apparatus.

3. Apparatus, as set forth in claim 1, in which said supply means comprises a roll stand means for carrying at least one supply roll of a continuous length of textile material, driven feed roll means for feeding the continuous length of textile material from said roll stand means, and a scray means for receiving an excess amount of the continuous length of material from said feed roll means and supplying the continuous length of material to said first feeding means for travel through said apparatus, said scray means including means for stopping operation of said feed roll means when the predetermined excess amount of the continuous length of material has been received in said scray means.

4. Apparatus, as set forth in claim 1, in which at least one of said first and second stitching means comprises a movable sewing machine, carriage means for supporting said sewing machine and for allowing linear forward and reverse movement of said sewing machine in a direction transverse to the continuous length of material and to the path of travel of the material through said apparatus, fluid operated means operatively connected with said carriage means for moving said sewing machine in its forward and reverse directions, and edge sensing means operatively connected with said fluid operated means for sensing the position of one of the longitudinal edges of the continuous length of material and for controlling the operation of said fluid operated means so that said sewing machine will be aligned with the edge of the material for proper stitching thereof.

5. Apparatus, as set forth in claim 4, in which said apparatus further comprises a pair of movable, material aligning, nip roll means for receiving the continuous length of material in advance of stitching by said first and second stitching means and for moving back and forth in a direction transverse to the continuous length of material and to the path of travel of the material through the machine for moving the continuous length of material transversely for proper alignment, fluid operated means operatively connected with said nip roll means for moving said nip roll means, and edge sensing means operatively connected with said fluid operated means for sensing the position of the other longitudinal edge of the continuous length of material and for controlling the operation of said fluid operated means to move said nip roll means for aligning the continuous length of material for proper registration with the other of said first and second stitching means for proper stitching.

6. Apparatus, as set forth in claim 1, in which said first feeding means includes means for interrupting operation of at least a portion of said first feeding means for stopping the feed of the continuous length of material during operation of said cutting means and during at least a portion of the operation of said turning means to insure an even cutting thereof into successive individual articles of a predetermined length and to insure proper turning of the individual articles.

7. Apparatus, as set forth in claim 1, in which said second feeding means includes means for interrupting operation of at least a portion of said second feeding means for stopping the feeding action thereof during at least a portion of the operation of said turning means to insure proper reception of the individually cut articles from said turning means.

8. Apparatus, as set forth in claim 1, in which said turning means comprises a movable suction box means mounted adjacent said cutting means above the individual articles cut thereby for reciprocating forward and reverse movement in a linear path of travel along the aforesaid longitudinally extending axis through said apparatus while rotating 90° during each of the forward and reverse strokes of its path of travel, and actuating means for creating a suction in said suction box means during the forward stroke of its reciprocating movement and for releasing the suction during the reverse stroke of its movement, so that each of the individually cut articles will be sucked onto said suction box means and rotated 90° during the forward stroke of said suction box means and released therefrom in the turned position during the reverse stroke of said suction box for continued feeding through said apparatus by said second feeding means.

9. Apparatus, as set forth in claim 8, in which said first feeding means for feeding the continuous length of material includes a driven conveyor means at the terminating end thereof which is disposed adjacent said cutting means and beneath said turning means in its rearward position for feeding the continuous length of material past said cutting means to allow cutting thereof and for presenting the cut article to said turning means for the turning thereof, and in which said second feeding means for feeding the individually cut articles includes a driven conveyor means at the beginning end thereof which is disposed adjacent said conveyor means of said first feeding means and beneath said turning means in its forward position for receiving the turned individually cut articles from said turning means and feeding them therefrom.

10. Apparatus, as set forth in claim 1, in which said turning means comprises a movable suction box means mounted adjacent said cutting means above the individual articles cut thereby for reciprocating forward and reverse movement in a linear path of travel along the aforesaid longitudinally extending axis through said apparatus while rotating 90° during each of the forward and reverse strokes of its path of travel and actuating means for creating a suction in said suction box means during the forward stroke of its reciprocating movement and for releasing the suction during the reverse stroke of its move-

ment so that each of the individually cut articles will be sucked onto said suction box means and rotated 90° during the forward stroke of said suction box means and released therefrom in the turned position during the reverse stroke of said suction box means for continued feeding through said apparatus by said second feeding means; in which said first feeding means for the feeding the continuous length of material includes a driven conveyor means at the terminating end thereof which is disposed adjacent said cutting means and beneath said turning means in its rearward position for feeding the continuous length of material past said cutting means to allow cutting thereof and for presenting the cut article to said turning means for the turning thereof, said first feeding means including means for interrupting operation of said driven conveyor means forming a part thereof for stopping the feed of the continuous length of material during operation of said cutting means and during at least a portion of the operation of said turning means to insure an even cutting thereof into successive individual articles of a predetermined length and to insure proper sucking of the individually cut articles onto said turning means for the turning thereof; and in which said second feeding means for feeding the individually cut articles includes a driven conveyor means at the beginning end thereof which is disposed adjacent said conveyor means of said first feeding means and beneath said turning means in its forward position for receiving the turned individually cut articles from said turning means and feeding them therefrom, said second feeding means including means for interrupting operation of said driven conveyor means forming a part thereof for stopping the feeding action thereof during at least a portion of the operation of said turning means to insure proper reception of the individually cut articles from said cutting means when the suction thereof is released and the individually cut articles are released therefrom.

11. Apparatus, as set forth in claim 1, in which said third and fourth stitching means each applies a line of stitching along the cut edge of the spaced-apart individually cut articles with a connecting chain of stitches therebetween, and in which said apparatus includes cutting means associated with each of said third and fourth stitching means for cutting the connecting chain of stitches at the trailing and leading transverse edges of the individually cut articles for separating same.

12. Apparatus, as set forth in claim 11, in which each of said cutting means comprises a first cutter for cutting the connecting chain of stitches at the leading end of the individually cut articles passing thereby, edge sensing means for sensing the leading end of the individually cut articles and for actuating said first cutter, a second cutter for cutting the connecting chain of stitches at the trailing end of the individually cut articles after cutting thereof by said first cutter, and suction means for receiving the connecting chain of stitches after cutting by said first cutter and for positioning the chain of stitches for cutting by said second cutter.

13. Apparatus, as set forth in claim 12, in which said first cutter comprises a scissors-type cutter, said edge sensing means comprises photoelectric cell sensing means, said second cutter comprises a pair of superimposed, circular, continuously operating rotary cutter wheels, and said suction means comprises an elongate hollow conduit having an open end positioned adjacent said cutter wheels for sucking the cut end of the chain of stitches therein so that the uncut end will pass through said cutter wheels as the individual articles are fed forwardly through said apparatus.

14. Apparatus, as set forth in claim 1, in which said apparatus comprises a stacking means at the terminating end thereof for stacking the individual fabricated articles for removal by an operator.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,580,198 Dated May 25, 1971

Inventor(s) Richard K. Teed, Greenwood, South Carolina
Karl W. Klose, Findlay, Ohio

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the Abstract, Line 10, after "length of" insert --textile material. Cutting means transversely cutting the continuous length of--. Column 1, Line 15, "nd" should be --and--. Column 2, Line 47, after "and a roll" insert --15-- deleting --14--. Column 3, Line 24, after "on" insert --a portion of the apparatus frame 11. These rolls are mounted for movement--. Same column, Line 73, after "sprocket" insert --64. The sprocket 64 drives a chain 65 which also passes around a sprocket--. Column 4, Line 11, after "pulley" insert --80--. Column 13, Line 1, "I" should be --is--.

Signed and sealed this 26th day of October 1971.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Acting Commissioner of Patents

FORM PO-1050 (10-69)

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