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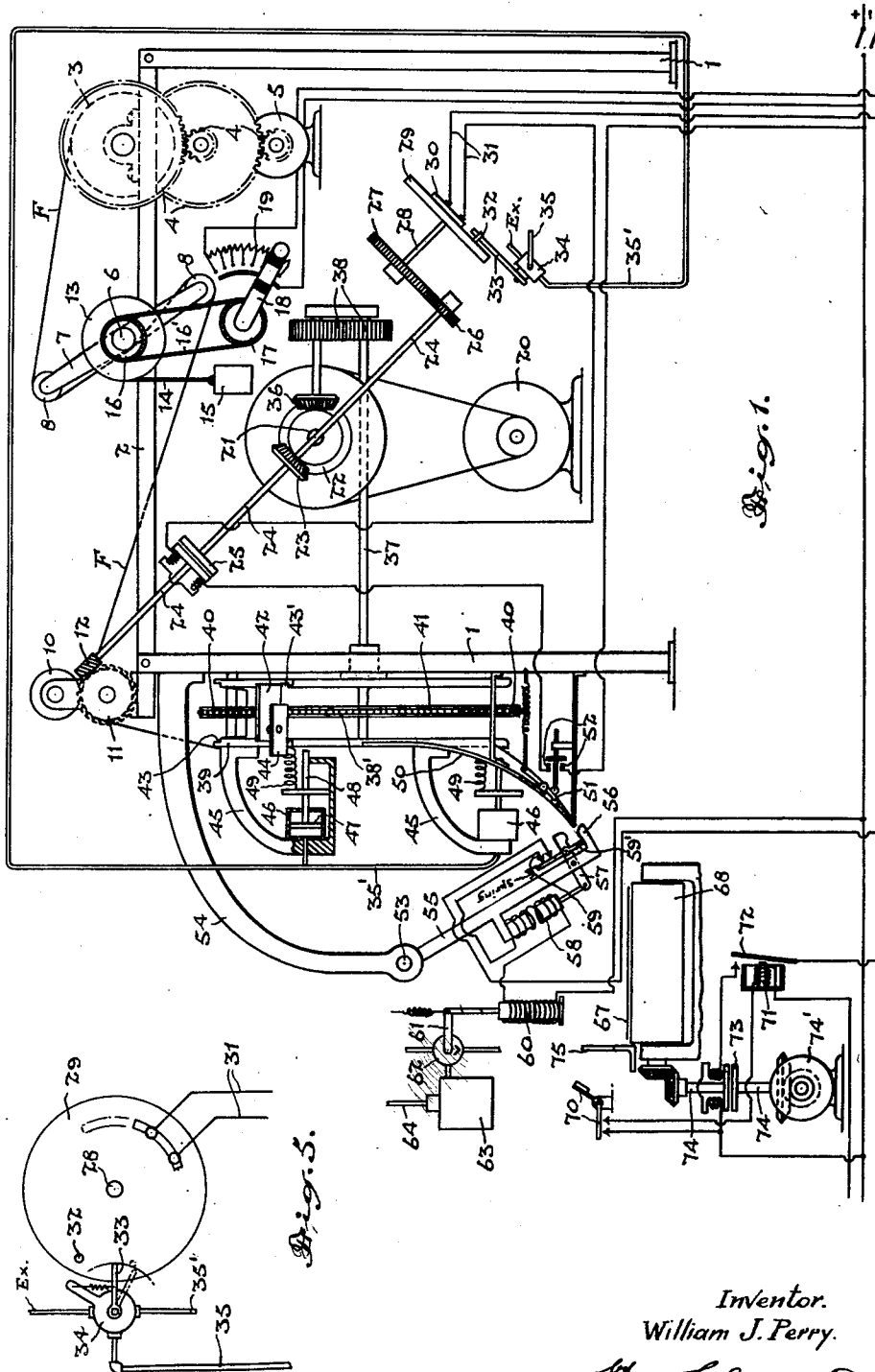
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2,331,342

FABRIC BIAS-CUTTING AND SPLICING MACHINE

Filed June 4, 1941

4 Sheets-Sheet 1



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FABRIC BIAS-CUTTING AND SPLICING MACHINE

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4 Sheets-Sheet 2

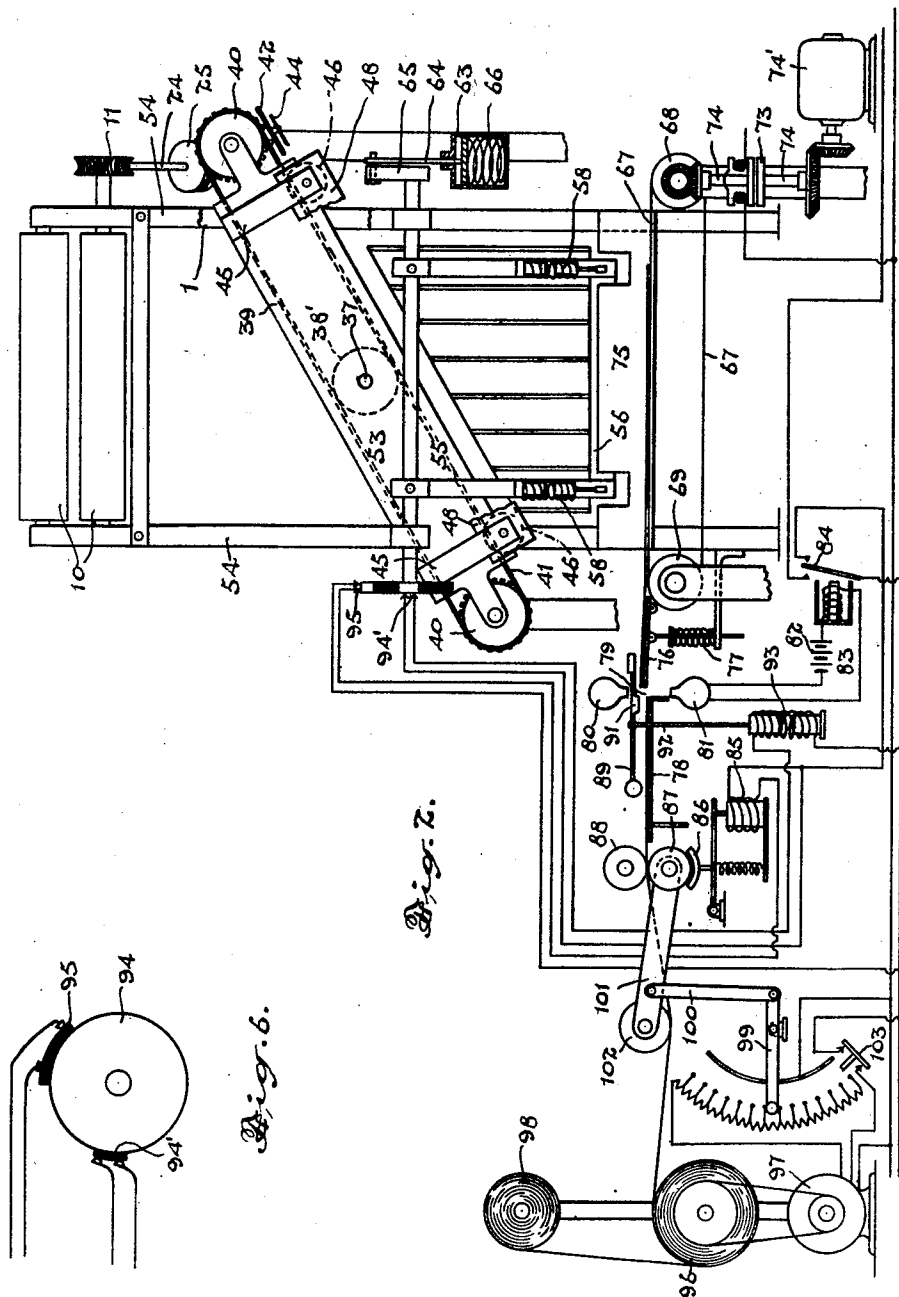


Fig. 2.

Fig. 6.

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FABRIC BIAS-CUTTING AND SPLICING MACHINE

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4 Sheets-Sheet 3

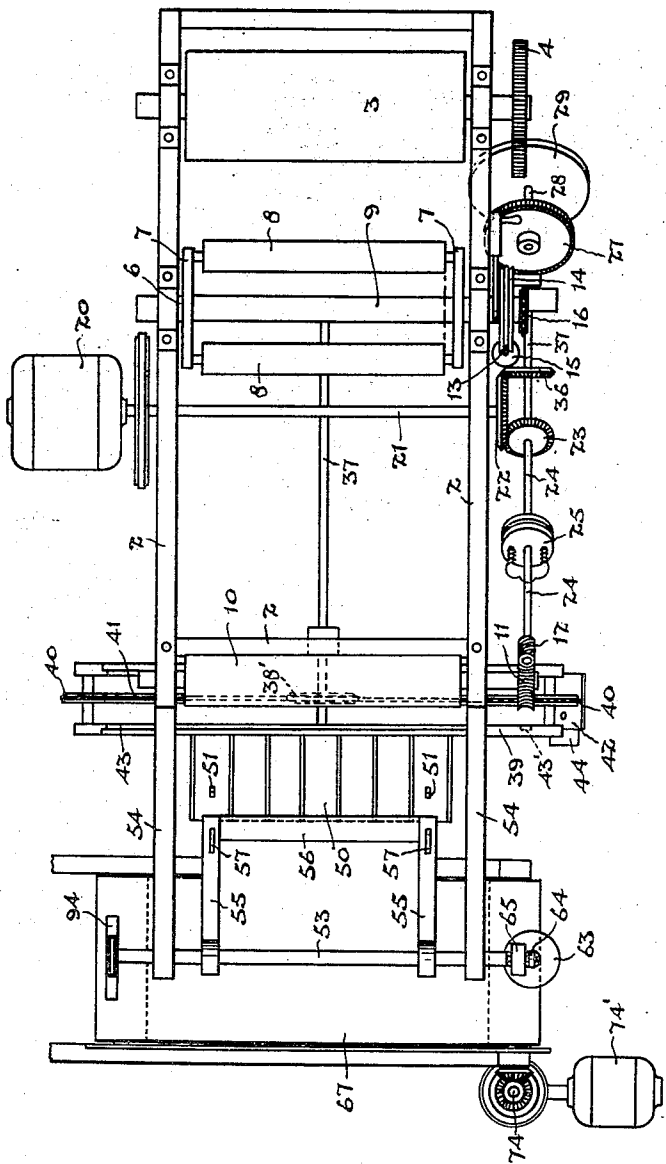


Fig. 3.

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4 Sheets-Sheet 4

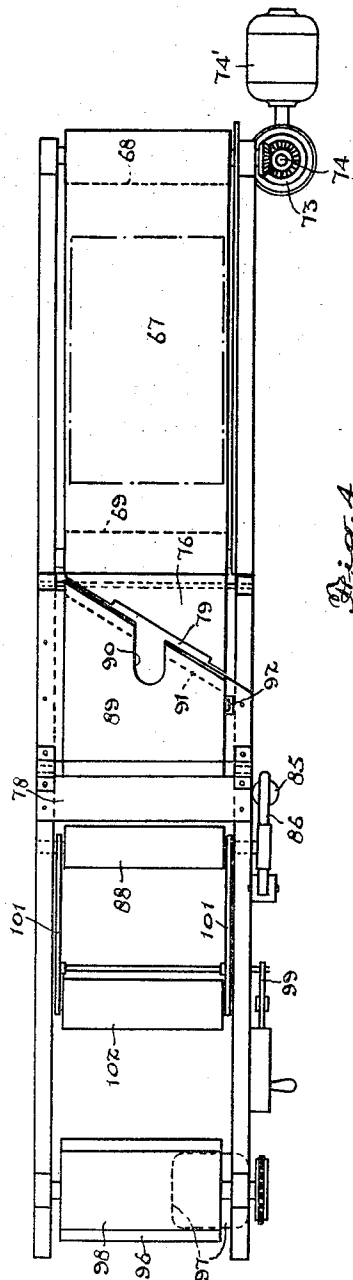


Fig. 4.

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UNITED STATES PATENT OFFICE

2,331,342

FABRIC BIAS-CUTTING AND SPLICING
MACHINE

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Application June 4, 1941, Serial No. 396,589

13 Claims. (Cl. 154—1)

This invention relates to improvements in machines for bias-cutting tire-making fabrics and assembling the severed pieces into a continuous strip ready for use in the fabrication of tires, and the principal objects of the invention are to effect a material increase in the speed of production of the bias fabric and to greatly reduce the labour costs.

A further and important object is to produce widths of bias-cut fabric of any desirable width and of a uniform construction.

A further important object is to provide a machine which will automatically measure and bias-cut the defined lengths of fabric from a continuous web and which will automatically turn, realign and secure together the several sections into a continuous web, the various operations being automatically regulated and controlled to operate continuously.

The principal features of the invention consist in the novel construction and arrangement of mechanism whereby a continuous web of fabric is fed from a roll to an intermittently operated measuring device and a measured length of the fabric is held and cut diagonally, the severed portions being transferred into alignment with the previously severed portions and moved to bring the advanced edge into overlapping relationship with the preceding portion, following which pressure is applied to effect the jointing of the overlapped edges and a continuous bias-cut web is thus formed.

A further important feature consists in the novel arrangement of control mechanisms whereby the progressive steps in the operation of the machine are actuated and controlled by the mechanism of preceding steps or operative movements.

In the accompanying drawings, which are necessarily diagrammatic, Figure 1 is a side elevational view of a mechanism embodying the present invention.

Figure 2 is a front elevational view of the mechanism illustrated in Figure 1.

Figure 3 is a plan view of the mechanism illustrated in Figure 1 for feeding the continuous web of material.

Figure 4 is a plan view of the means for advancing and joining the severed bias-cut portions of fabric.

Figure 5 is a plan detail of the timing arrangement for controlling the intermittent web-feeding mechanism.

Figure 6 is an elevational detail of the electrical control of the strip-sealing mechanism.

In the manufacture of rubber tires it is the present practice to fabricate a web of material of parallelly arranged cords lightly interlaced with a thin weft thread and bonded by a rubber coating calendered on both sides thereof. Such a web of fabric is bias-cut into strips of a selected width in accordance with the size of the tire to be made.

As far as I am aware no satisfactory form of machine has been produced which will bias-cut strips of fabric from a web and then align the ends of such strips and join them together to form a web of bias material and as far as I am aware no machine has been produced which will automatically measure and cut the strips then place them together in continuous cohesive arrangement.

The present invention proposes to accomplish the above result with a mechanism of comparatively simple form and which will be economical to operate.

A suitable frame is provided of substantially rectangular form having uprights 1 and top cross bars 2. At one side of the frame and mounted in suitable bearings supported by the cross bars 2 is a roller 3 on which is wound a web of the fabric that is to be bias-cut. The roller 3 is connected by a train of gears 4 with a motor 5 which is preferably of a variable speed type.

A shaft 6, journaled in suitable bearings supported on the top bars 2 of the frame adjacent to the roller 3, has rigidly mounted thereon adjacent to the ends the cross arms 7 between the ends of which are rotatably mounted the rollers 8. A roller sleeve 9 is preferably mounted on the shaft 6 between the cross arms 7.

A pair of feed rollers 10, mounted one above the other in suitable bearings supported on the bars 2 of the frame, extend across the frame at the end thereof opposite to the roller 3. One of these feed rolls is provided with a worm wheel 11 which meshes with a worm 12, preferably mounted in a sloping position in bearings carried by one of the top bars 2.

The web of fabric F extends from the roll 3 over the upper roller 8 and around the lower roller 8 carried by the shaft 6 and cross arms 7, and from the lower roller 8 the web extends between the feed rolls 10.

A grooved pulley 13 is secured to the shaft 6 adjacent to one end and a short length of cable 14 secured in said grooved pulley has mounted thereon a counter-weight 15 which tends to swing the upper end of the cross arms 7 in a forward direction to pull upon the web of fabric and

keep it taut. It will be understood that this swinging roller support for the web will automatically take up slack between the roll 3 and the feed rolls 10.

A sprocket 16 is mounted on the shaft 6 and a chain 16' extends around a sprocket 17 supported in suitable bearings on the frame and which carries a switch arm 18 which engages a rheostat 19 arranged in the electrical circuit to the motor 5 which drives the web roll 3.

A manually controlled electric motor 20 is operatively connected by suitable belts and pulleys, or other form of drive, to a shaft 21 upon which is mounted a bevel gear 22. The gear 22 meshes with a bevel pinion 23 mounted on a shaft 24 which is arranged in alignment with the shaft carrying the worm 12, and a suitable electrically controlled clutch 25 is arranged between these two shafts so that an intermittent operation of the feed rolls may be effected.

A spur gear 26 mounted on the shaft 24 meshes with a gear 27 secured to a shaft 28 suitably journaled parallel with the shaft 24 and on the shaft 28 is secured a disc 29 upon which is mounted an electric contact segment 30 arranged in the electrical circuit 31 controlling the clutch 25. It will be understood that as this disc is rotated through the operation of the motor 20 and the intermediate connections the contact segment 30 will periodically close the circuit to the electrical clutch 25, thereby causing the worm 12 to be operated for a certain predetermined period so that the feed rolls will feed a predetermined length of the fabric. The feeding will be much more rapid than the constant feed of the fabric through the operation of the motor 5, and upon the operation of the feed rolls they will pull upon the web of fabric, taking up the required amount thereof through the swinging of the slack-control member mounted on the shaft 6.

It will be understood that if the feed of the motor 5 is too rapid, causing an excess amount of fabric to be fed from the roll 3, the swinging of the take-up member mounted on the shaft 6 will automatically slow down the motor 5 through the operation of the rheostat switch 18.

The control disc 29 has mounted thereon a pin 32 which is adapted to engage a lever 33 connected with a rotary valve 34 arranged in a compressed air pipe line 35. The valve 34 is preferably a three-way valve operated to direct compressed air to the operating pipe line 35' leading to control devices hereinafter defined, said valve also exhausting the air from said branch line. The valve lever 33 is preferably spring-controlled to return to the exhaust position.

A bevel pinion 36 meshing with the belt-driven bevel gear 22 operates a shaft 37 through a suitable arrangement of gears 38. The shaft 37 extends in a horizontal direction to the front side of the machine in a position below the feed rolls 10 and about centrally of their length, and mounted upon the end of this shaft is a sprocket 38'.

A guide member 39, which is preferably of H-shape in cross section, is adjustably supported from the upright 1 of the frame and is arranged in an angular position, the angle being the desired angle for the bias-cutting of the web of fabric which extends downwardly from the feed rolls 10 but passes over the outer face thereof.

Sprocket wheels 40 are supported in suitable bearings at the opposite ends of the guide member 39 and an endless chain belt 41 extends

around the sprockets 40 and engages the sprocket 38' driven by the shaft 37.

Secured to the chain 41 and extending transversely of the guide member is a bar 42, the ends of which engage and slide upon the open groove 43 formed in the top edges of the guide 39 and also the closed grooves 43' arranged in the inner faces of the lower portions of the guide members.

Pivotaly mounted on the cross bar 42 carried by the chain 41 is arranged a slitting knife 44 which is spring-actuated to extend out under the lower edge of the guide member to engage and cut the fabric which extends downwardly over the outer face of the guide member as described. This slitting knife is adapted to be swung out of cutting position in moving in the reverse direction over the top of the guide member.

Mounted adjacent to each end of the guide member 39 are brackets 45 which support a pair of cylinders 46. In these cylinders are mounted pistons 47 which are connected with a bar 48 which is preferably of T-shape in cross section, and the web thereof is arranged to align with the lower edge of the guide member 39 and is adapted to engage and grip the fabric to be cut after a certain length of the fabric has been fed over the guide by the operation of the feed rolls 10 and just prior to the movement of the slitting knife 44 along the under edge of the guide.

The operation of the pistons to effect this gripping of the fabric is effected by the operation of the control disc 29 engaging the valve lever 33 and opening the air supply line 35 to the branch line 35', thus admitting air to the cylinders 46 and moving the pistons 47 and gripping bar 48 to grip the web.

The pistons and the bar 48 are returned to their normal position by means of suitable springs 49 upon the opening of the valve 33 to its exhaust position to release the pressure in the pipe line 35'.

The fabric prior to being cut is fed downwardly past the guide member 39 the desired distance of the width of the bias-cut strip and engages the bars of a grid 50 which curve downwardly and outwardly. A pivotal trigger finger 51 is mounted on the grid and extends therethrough into the path of the downward movement of the fabric. This trigger finger is connected with an electric contact switch 52 which is arranged in the electric circuit to the feed roll control clutch 25 so that when a piece of the fabric extends over the grid the finger will maintain an open circuit to the clutch and the clutch can not operate to feed further lengths of material until the piece extending over the grid has been severed by the operation of the slitting knife and has been removed out of the path of the next succeeding length to be cut. The trigger finger is preferably spring-operated to close the switch on the removal of the severed piece of fabric.

A horizontally disposed shaft 53 is supported from suitable bracket arms 54 extending from the frame 1 and is arranged parallel with the guide 39 over which the web of fabric to be cut extends. Secured to the shaft 53 are a pair of arms 55 which are connected together at their lower ends by a cross bar 56. The upper surface of this cross bar is adapted to swing to a position slightly below the lower edge of the grid 50 so that the bias-cut strips falling upon the grid and sliding thereover will ultimately engage the cross bar 56.

Mounted upon each of the arms 54 adjacent

to the cross bar is a pivotal arm 57 which is adapted to be swung downwardly on the side adjacent to the grid and to grip the strip of fabric which overlies the edge of the cross bar 56. A suitable solenoid 58 is mounted on each of the pivot arms 55 and is connected to the outer end of the small pivot arm 57 to operate said pivot arms to grip the fabric strip.

Suitable electric contacts 59 are arranged on the arms 55 to close the circuit through the solenoid and operate the gripping members when the arms 55 swing to their inward position, and a strip of fabric severed from the web falls upon the grid and moves to engage the contact arm 59'.

The arms 55 are here shown operated by a solenoid 60 which is operatively connected with the lever arm 61 of an air valve 62 connected with the pressure air supply previously described. The operation of this valve 62 directs compressed air into a cylinder 63 and operates the piston therein, the rod 64 of which is connected to a crank 65 mounted on the end of the shaft 53. The solenoid 60 is arranged in series with the solenoid 58, the circuit being connected with a suitable source of electric current supply, and upon the closing of the contact 59 a strip of fabric is simultaneously gripped and the arms 55 are swung away from the grid by the action of the piston in the air cylinder 63 against the pressure of a coil compressing spring 66 arranged within the cylinder 63 which functions to move the arms 55 into the operative position to receive the severed strip.

Arranged below the shaft 53 and the arms 55 depending therefrom is an endless carrier belt 67 mounted upon suitable rollers 68 and 69. The swinging arms 55 with their carrier bar 56 are adapted to swing over the top of this carrier belt and to deposit the bias-cut strips of fabric thereon.

A contact switch 70 is engaged by one of the arms 55 as it swings to the outward position, said switch controlling an electric circuit through a solenoid 71. This solenoid operates a switch 72 which controls an electric circuit through a suitable magnetic clutch 73 which is arranged in a shaft 74 operatively connected with the roller 68 of the carrier belt 67 and driven by an electric motor 74'.

It will be noted that the carrier belt is not being operated while the pick-up device 55 is in the forward position receiving the fabric strip and the pick-up device swings away from the grid 50, carrying the strip over the carrier belt and the strip is simultaneously deposited upon the belt and the belt is started into operation through the mechanism described on the contact of the arms 55 with the switch 70.

The strip is removed from the holding engagement of the bar 56 and the gripper arms 57 by stripper members 75 mounted adjacent to the endless carrier 67, and as the member co-operating with the contact 59 is spring-actuated to release upon removal of the fabric strip from the grippers, the circuit to the solenoid 58 is automatically broken.

The severed strip of material deposited upon the carrier belt is delivered upon a plate surface 76 which is here shown pivotally mounted and arranged adjacent to the roller 69. The free edge of the plate 76 is supported by a compression spring 77 with its free edge arranged at a higher level than a fixed plate 78 arranged adjacent to said free edge but spaced therefrom. It will be

noted particularly on reference to Figure 4, that the free edge of the plate 76 and the spaced adjacent edge of the plate 78 are arranged on a bias angle, this angle being the same as the angle of the bias-cut of the fabric.

The space between the adjacent edges of these two plates is preferably in the form of an elongated slot 79 and arranged above this slot in a suitable form of support is a light 80 which is preferably hooded to direct a beam downwardly through the slot 79. Arranged below the slot is a suitable form of light-sensitive switch 81 which may be of the type which is commonly known as the "Magic Eye" or of any other form which will effect the closing of an electric circuit through a suitable form of magnet.

The circuit connected with the light switch 81 is here shown comprising a battery 82 and an electro-magnet 83, which magnet operates a switch 84 which is arranged in series with the magnet 71 operating the switch 72. The switch 84 is arranged in series with a solenoid or electro-magnet 85 which is so arranged as to effect the withdrawal of the braking pressure of a spring-operated brake 86 upon a roller 87 when the beam from the light 80 passes through the slot to the switch 81. When this beam is interrupted the switch 84 breaks the circuit to the brake-operating member 85 and permits the spring operation of said brake.

A roller 87 is arranged adjacent to the delivery side of the fixed plate 78 and a companion roller 88 is arranged thereover and is either spring-loaded or otherwise pressed downwardly to contact with the roller 87 to effect the pressure sealing of two strips of the bias-cut fabric, the edges of which have been overlaid.

A plate 89 is pivotally mounted above the stationery plate 78 and this extends over the slot 79, there being a light slot 90 in the bevelled edge thereof which extends over the slot 79 to permit a beam of light from the light source 80 to pass therethrough. The plate 89 has a transverse depression 91 which extends along the edge of the slot formed by the fixed plate 78. The plate is normally spring-held in a raised position clear of the plate 78 but it has attached thereto a rod 92 which is operatively connected with an electro-magnet 93.

It will be noted that the light beam from the light 80, passing through the slot 79 to the light switch 81, energizes the magnet 93 which in turn effects the energizing of the magnet 71 which controls the switch 38, and through the switch 38 the clutch which causes the operation of the carrier belt 67. When this belt operates to project a severed fabric strip over the plate 76 so that the edge of the fabric extends over the slot 79 and therefore cuts off the light beam to the switch 81, the circuit to the magnet 93 is broken and the switch 84 automatically opens the circuit through the magnet 71, thereby releasing the spring-operated switch 72 to disconnect the clutch 73 and stop the movement of the carrier belt.

A previously cut strip of fabric is arranged upon the fixed plate 78 and a contact wheel 94 mounted on the shaft 53 moves an electrical contact carried thereby into position to close an electric circuit through the magnet 93 and the operation of the magnet depresses the plate 89 so that its cross bar 91 engages the top surface at the edge of the new strip of fabric advanced by the carrier belt and which has been moved to slightly overlap the edge of the preceding strip

and the applied pressure causes the two adhesive members to stick together.

It will be noted that the magnet 85, which operates to release the spring-actuated brake on the roller 87, is connected with the contact of the switch 84 to be closed upon the opening of the circuit to the magnet 83 and the circuit is completed through a contact 95 carried on the disc which carries the contact 94', and consequently the timing of the closing of both these circuits is regulated in accordance with the position of the swinging gripper member 55—56.

A wind-up roll 96 is arranged adjacent to the pressure rolls 87—88 and it is driven by an electric motor 97. A roll of interlining material 98 is arranged above the take-up roll and winds an interlining web in with the newly fabricated bias material strip.

The operation of the motor 97 is controlled by a suitable rheostat control member 99 which is operated by a link 100 connected with an arm 101 pivotally mounted, preferably in relation to the roller 87, and carrying a roller 102 which rests upon the web of fabric passing from the pressure sealing rolls 87—88.

A cut-out switch 103 is arranged at the end of the rheostat so that when the brake is applied to the roller 87 to arrest the movement of the web of fabric, the web is stretched tight between the roll 87 and the wind-up roll 96, and the roll 102 lifts upon the link 100, swinging the rheostat lever arm around to operate the cut-out switch 103, thereby stopping the motor.

A machine constructed generally in the manner herein described will operate automatically in a very satisfactory manner. The cord fabric which is suitably constructed of continuous cords parallelly arranged and adequately bound together, is wound, preferably with a suitable interliner, upon the roller 3. The end of the web is then carried over the rollers 8 of the oscillating member described and is passed between the feed rollers 10. Any slack occurring between the supply roll 3 and the feed roll 10 is taken up automatically by the weighted pivotal rocker member and the movement of this rocker member automatically controls the feed of the motor operating the roll 3 which feeds the fabric continuously.

The feed rolls are operated intermittently being controlled by the clutch 25 which is timed in relation to the motor drive which operates the bias-cutting device. The web of fabric extends downwardly from the feed rolls 10 between the guide 39 and the clamping bar 48, and when the required length of web has been fed downwardly over the guide and engages the grid 50, the clamp bar 48 is operated by the air-controlled mechanism described and the cutter knife, which is operated through the medium of the chain drive and shaft 37 connected with the motor 20, cuts the fabric.

The strip of fabric being severed slides further down the grid and engages the cross bar 56 of the transfer member and as it also concurrently engages the contact device closing the contacts 59, the pivotal grippers take hold of the edge of the severed piece of fabric and the air-operated and electrically controlled mechanism rotates the shaft 53 to carry the strip of material away from the grid and to deposit it upon the carrier belt 67, said strip being stripped from the gripping transfer member by the stripper members 75.

The swinging member 55, operating the switch 70, closes the circuit through the magnet 71,

thereby operating the switch 72 and energizing the clutch 73 to cause the carrier member to be operated. The operation of the carrier member continues until the severed strip of fabric is projected over the plate 76 and covers the slot 79, interrupting the beam of light from the light 80 to the light switch 81 and allowing the spring-operated switch 84 to first break the circuit, holding the switch 72 and releasing the clutch in the drive of the carrier belt. The switch 84 immediately thereafter closes the circuit through the magnet 85 which releases the brake on the roller 87, this circuit being closed through the contacts 95 carried by the shaft 53 of the swinging transfer member.

Simultaneously the contact 94' also carried by the shaft 53 operates the magnet 93 to swing the plate 89 downwardly to effect a temporary seal between the edge of the strip advanced over the carrier to the strip previously handled which is normally resting on the plate 78.

On the release of the brake on the roller 87, the weight of the roller carried by the arm 101 depresses the web and first operates the rheostat switch arm to close the circuit to the motor and the motor effects the winding up of the fabric.

It will be noted that when the strip severed by the bias cutter is stripped from the transfer member the spring-operated switch carried by the arm 55 opens the circuit of the solenoid which grips the gripper and simultaneously opens the circuit of the solenoid 60 which operates the air-valve 62 directing air into the cylinder 63, whereupon the compression spring within the cylinder raises the piston and exhausts the air through the three-way valve and simultaneously swings the crank 65 to swing the gripper arms back to their initial position at the bottom of the grid. This movement rotates the disc carrying the contacts 94' and 95 into the position to close the circuits to the magnets 93 and 85.

This arrangement of switches and valves are so timed as to properly co-ordinate to accomplish the desired functions of the different parts in their proper sequence.

It will also be noted that immediately following the severing of the bias-cut strip from the original web of fabric the rotation of the disc 29, operated by the motor 20 through its gear connections, opens the valve 34 releasing the pressure against the pistons in the cylinders 46 so that the gripper bar 48 is moved by means of the compression springs operating thereagainst to clear the passage for the advancement of the web taken from the main roll 1 to enable the operation to be repeated.

The mechanism herein described as has herein been stated is shown diagrammatically and it will be readily understood that numerous operating devices may be selectively chosen or specially constructed in order to accomplish the desired result.

It will also be appreciated that a machine constructed in the manner described will operate automatically to accurately cut on the bias regulated lengths of strips and these strips will be automatically transposed one after the other and pieced together to form a new web from fabric which will be of bias construction. The ends of the separate pieces will be uniformly overlapped then pressure-rolled to form a permanent union.

What I claim as my invention is:

1. A machine for making bias-cut fabrics, comprising means for supporting a web of ma-

terial to be cut, means for unwinding said web of material, means for intermittently feeding predetermined lengths of the material to a substantially vertical position to be cut, means for bias-cutting the vertically arranged fabric between the feeding operations, means for holding the fabric during the cutting operation, means for entirely removing each severed strip from the vertical plane of movement of the succeeding unsevered fabric, means for entirely transposing each severed strip and placing same in alignment with and in overlapping relation to previously cut strips, means for joining the overlapped strips together successively end-to-end, and means for removing the joined fabric.

2. A machine for bias-cutting tire fabric, comprising means for supporting a web of material to be cut, means for unwinding said material, means for bias-cutting strips from said web, a pair of feed rolls adapted to feed the fabric to said cutter intermittently, means connected with the cutter mechanism for timing the intermittent operation of said feed mechanism, means interposed between said feed rolls and the web of material to be cut for taking up the slack during the intermittent feeding operation, means for transposing the strips after being cut from the web to a different plane than the plane of feed, means for joining the ends of the transposed severed strips together, and means for winding up the newly fabricated web of bias-cut material.

3. A machine for bias-cutting tire fabric, comprising a fabric-supporting roll, an electric motor geared to said roll, a rheostat control for said electric motor, a shaft arranged adjacent to said roll, cross arms mounted on said shaft extending either side thereof, rollers mounted between the ends of said cross arms around which the web of fabric is fastened, said arms and rollers forming a take-up for slack in the webbing, means connecting said shaft with said rheostat to control the speed of the motor, a pair of feed rolls arranged adjacent to said take-up member, means for driving said feed rolls intermittently, means for bias-cutting the web of fabric fed by said feed rolls, means for transposing the severed strips of fabric, means for joining the severed strips of fabric together into a continuous bias-cut strip, and means for removing the fabricated bias-cut material.

4. A machine for bias-cutting tire fabric, comprising means for supporting a web of material to be cut, a pair of feed rolls adapted to feed the material to be cut intermittently, means for driving said feed rolls including a clutch, means connected with said feed roll driving means for periodically operating said clutch, means for clamping the material fed from said feed rolls in a substantially vertical position during the period of cessation of operation of the feed rolls, means connected with the means for driving the feed rolls for controlling said clamping means, means for cutting the fabric during the period of its being clamped, means for entirely transposing each severed portions of fabric from the plane in which it is cut, means for joining the successive severed portions of fabric together, and means for winding up the newly formed bias-cut web of fabric.

5. A machine for bias-cutting tire fabric, comprising means for supporting a web of fabric, means for intermittently feeding said fabric to a cutting device, a cutting device including a

diagonally arranged guide member and a cutter travelling thereon, a clamping bar arranged adjacent said guide member adapted to engage and hold the fabric to be cut against said guide, pneumatic means for moving said guide bar into gripping engagement with the fabric, means associated with the fabric-feeding means for periodically controlling the operation of said pneumatic means, means for receiving the severed strips of fabric, means for transposing the position of the severed strips of fabric, means for joining the severed strips of fabric into a continuous bias-cut web, and means for removing the web.

6. A machine for bias-cutting tire fabric, comprising means for intermittently feeding a length of fabric to be cut, a guide member over which the fabric is fed, means for gripping the fabric against said guide member, an endless belt mounted on said guide member, a cutter carried by said endless belt and adapted to cut the fabric below the guide, means for driving the intermittent feeding mechanism, means connected with said driving means for operating said endless belt and cutter, means for temporarily supporting the severed strip of fabric following the cutting operation, a swingable member adapted to grip the severed strips of fabric, means for operating said swingable member to transpose the severed strips of material, an endless carrier adapted to receive the transposed strips of material, and means for joining the ends of the transposed strips of material together to form a continuous bias-cut web.

7. A machine for bias-cutting tire fabric, comprising means for intermittently feeding a length of fabric to be cut, means for gripping the fabric between the intermittent feeding operations, means for cutting the fabric while it is gripped, means for receiving the strip of fabric cut, means on said receiving means for preventing the operation of the intermittent feeding means until the cut strip is removed therefrom, swingable means for removing said cut strip from said receiving member, means for receiving said cut strip from the swingable means, and means for joining the ends of the cut strips together in a continuous web.

8. A machine for bias-cutting tire fabric, comprising means for intermittently feeding a length of fabric to be cut, means interposed in said intermittent feeding mechanism, means for periodically operating said clutch to operate the feeding mechanism, means for cutting the fabric between operations of the feeding mechanism, means for receiving the strip of fabric cut, an electric switch included in the means for operating the intermittently feeding mechanism, means mounted on the means for receiving the strip of fabric cut connected with said electric switch adapted to hold said switch open to prevent the operation of the feeding mechanism while the severed strip of fabric is supported by the strip-receiving means, means for removing said cut strip from said receiving member, means for receiving said cut strip from said removing means, and means for joining the ends of the cut strips together in a continuous web.

9. A machine for bias-cutting tire fabric, comprising means for intermittently feeding a length of fabric to be cut, means for cutting the fabric between the periods of operation of the feeding means, pivotally mounted means adapted to grip the strip of fabric cut, compressed-air-operated means for swinging said pivotal

member, a valve controlling said compressed-air-operated means, electrically operated means for operating said valve, electric contact means arranged on said gripper member adapted upon engagement by the strip of cut fabric to energize said valve-operating means, a stripper member adapted to remove the cut strip from said gripper means, an endless carrier adapted to receive the said strip from said gripper means, means controlled by the movement of said gripper member for operating said endless carrier, and means for joining the ends of the cut strips together in a continuous web.

10. A machine for bias-cutting tire fabric, comprising means for intermittently feeding a length of fabric to be cut, means for bias-cutting the fabric between the intermittent feeding operations, a pivotal gripper member adapted to grip the cut strip of fabric, means for swinging the pivotal gripper member to transpose the cut strip, an endless carrier arranged to receive the cut strip transposed by said gripper member, means for displacing the cut strip from the gripper member onto said carrier, electrically operated means for intermittently operating said endless carrier, an electric switch engaged by said gripper member following the release of the cut strip adapted to energize the means for operating the carrier, electrically operated means for arresting the movement of the carrier, means for pressing the cut strip carried by the carrier into sealing engagement with the preceding cut strip, means for removing the cut strip from the carrier as a part of the fabricated web of bias-cut material, means for arresting the movement of the fabricated web of bias-cut material immediately following its removal from the carrier, and electrically operated means for controlling the intermittent operation of the fabricated bias-cut material.

11. A machine for bias-cutting tire fabric, comprising means for intermittently feeding a length of fabric to be cut, means for cutting the fabric between the intermittent feeding operations, means for transposing the strip of fabric cut, an intermittently operated carrier for receiving the cut strip of fabric from the transposing means, a light-beam-operated switch device arranged adjacent to the end of said carrier adapted to control the intermittent operation of the carrier by the advance of the cut strip to intercept the light beam, electrically operated means connected with said light beam switch-operated mechanism controlled by the operation of the strip-transposing means for pressing the light-intercepting edge of the cut

strip into adhesive contact with a preceding cut strip, means for pressure-sealing the engaging edges of the cut strip and the preceding strip, electric means controlled by the light beam-controlled switch for controlling the movement of the pressure sealing means, and electrically operated means for withdrawing the fabricated strip of bias-cut material from the sealing means.

12. A machine for bias-cutting tire fabric, comprising means for intermittently feeding a length of fabric to be cut, means for bias-cutting the fabric during the intermittent feeding operation, means for removing the cut strip of fabric out of the path of movement of the succeeding fabric to be cut, means for conveying the removed strip of fabric to bring its advanced edge into overlapping relation with a previously cut strip, an electrical control apparatus for arresting the movement of the conveyor and said cut strip when it arrives in overlapping relation to the previously cut strip, means for pressing this overlapping strip edge into sealing contact with the previously cut strip, pressure rolls adapted to press and seal the overlapping strips together, a brake adapted to arrest said pressing rolls, timed electrical means co-operating with the strip-arresting means for releasing said brake means, a power-driven roller adapted to draw the fabricated web of bias-cut strips through said pressure rolls, and means interposed between the pressure rolls and said power-driven roll engaging the fabricated strip of material and controlling the operation of the electrically driven roll.

13. A machine for bias-cutting tire-making fabrics, comprising means for intermittently feeding a length of fabric in a substantially vertical plane to be cut, means for bias-cutting the fabric vertically arranged at intermittent periods between the feeding operations into separate individual strips, means for displacing entirely each cut strip from the plane in which it is cut, means for moving each cut strip and depositing same in a substantially horizontal plane and into alignment with a previously cut strip with one end overlapping the preceding strip, means for joining the overlapped ends of the bias-cut strips consecutively to form a continuous length of bias fabric, means for intermittently moving the newly fabricated continuous strip of material, and means for progressively co-ordinating the co-operative movement of the aforesaid means.

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