

July 29, 1941.

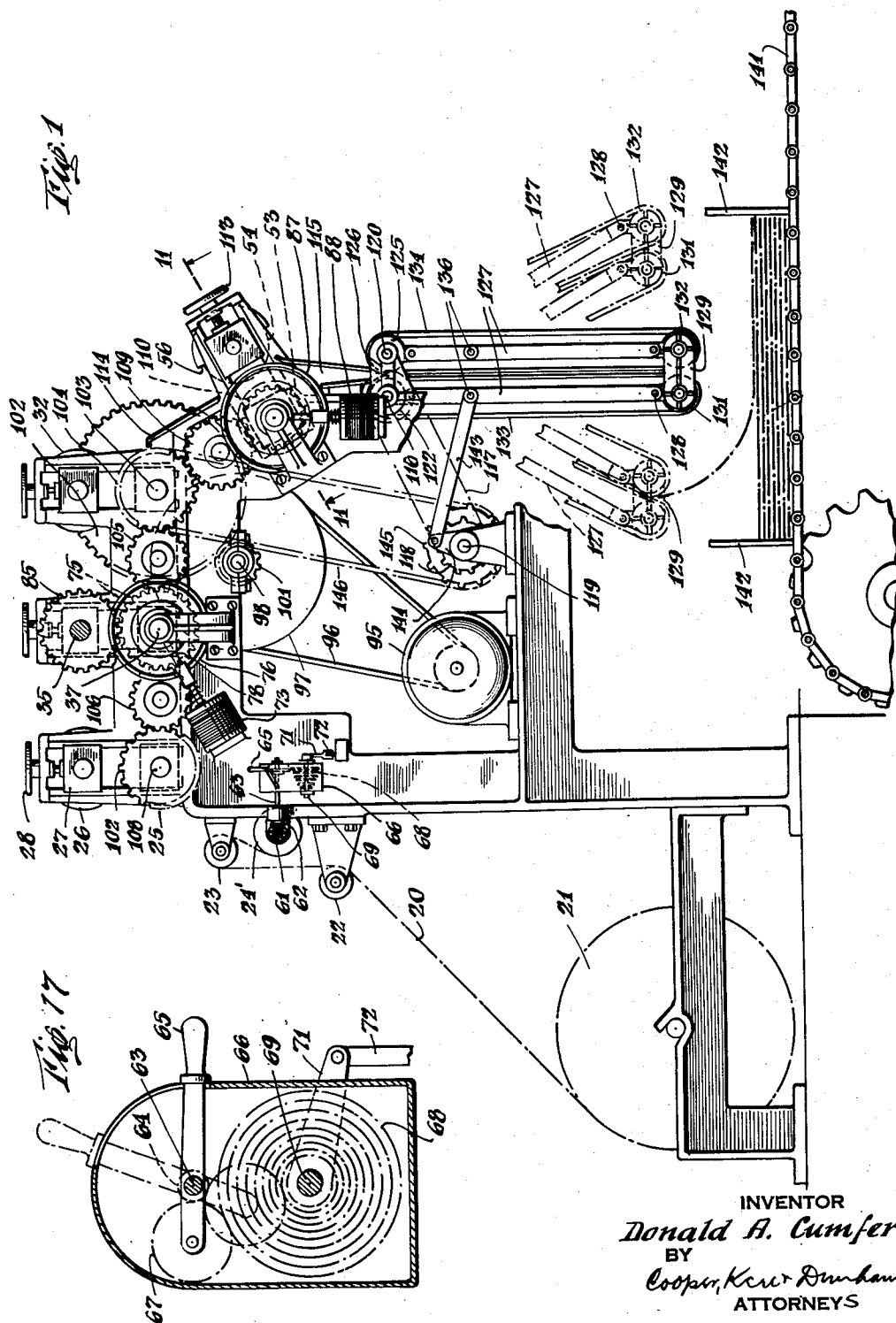
D. A. CUMFER

2,250,572

FABRIC TEARING MACHINE

Filed May 18, 1940

4 Sheets-Sheet 1



July 29, 1941.

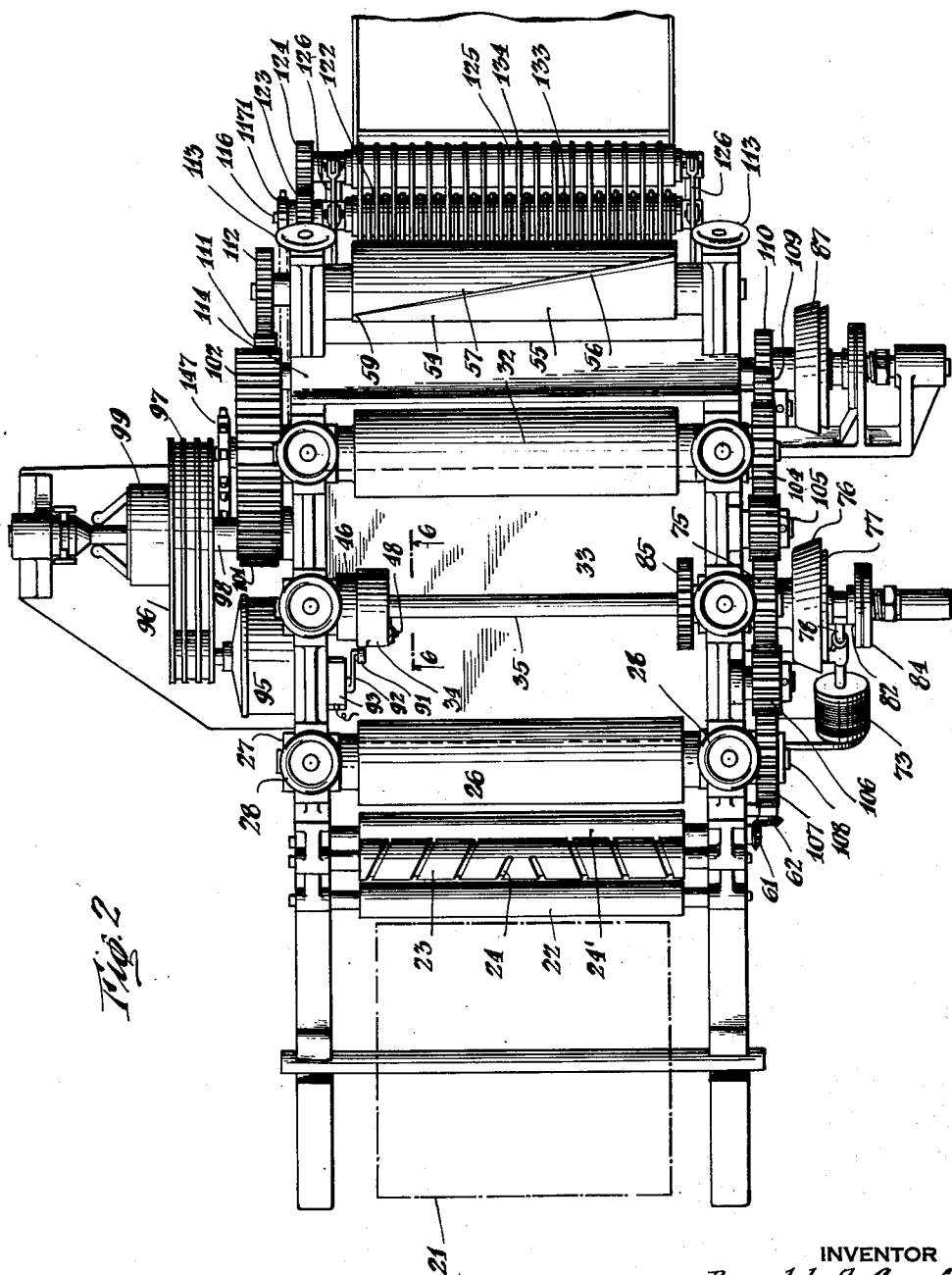
D. A. CUMFER

2,250,572

FABRIC TEARING MACHINE

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4 Sheets-Sheet 2



INVENTOR
Donald A. Cumfer
BY
Cooper, Kern & Dunham
ATTORNEYS

July 29, 1941.

D. A. CUMFER

2,250,572

FABRIC TEARING MACHINE

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4 Sheets-Sheet 3

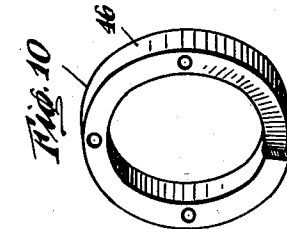
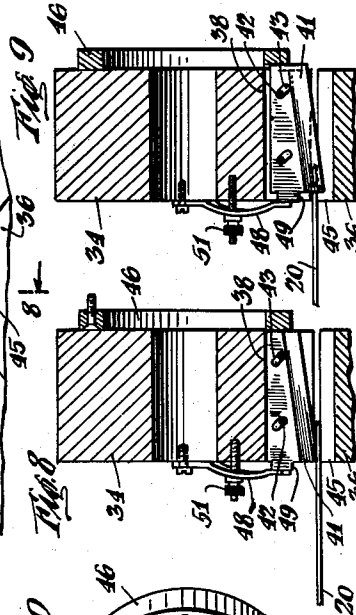
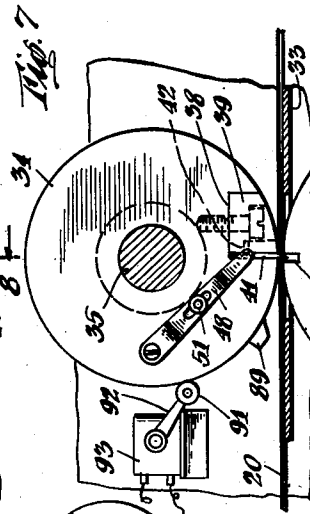
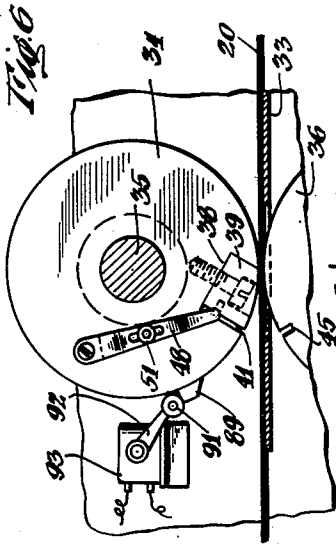
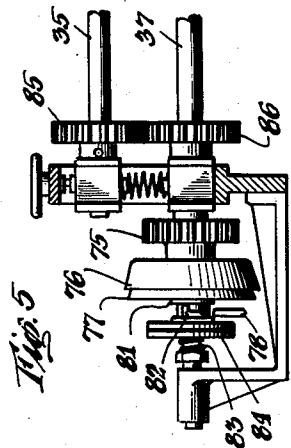
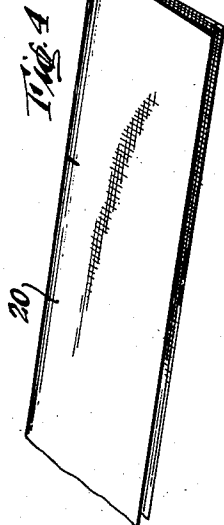
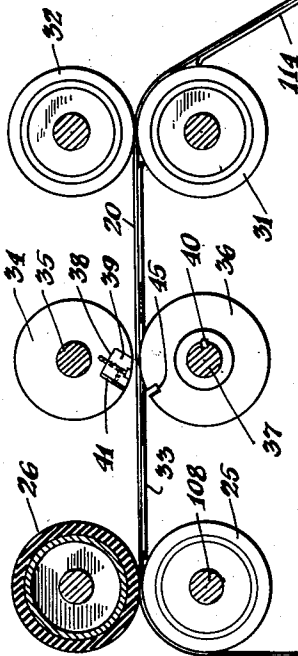


Fig. 3



INVENTOR
Donald A. Cumfer
BY
Cropper, Kern & Dunham
ATTORNEYS

July 29, 1941.

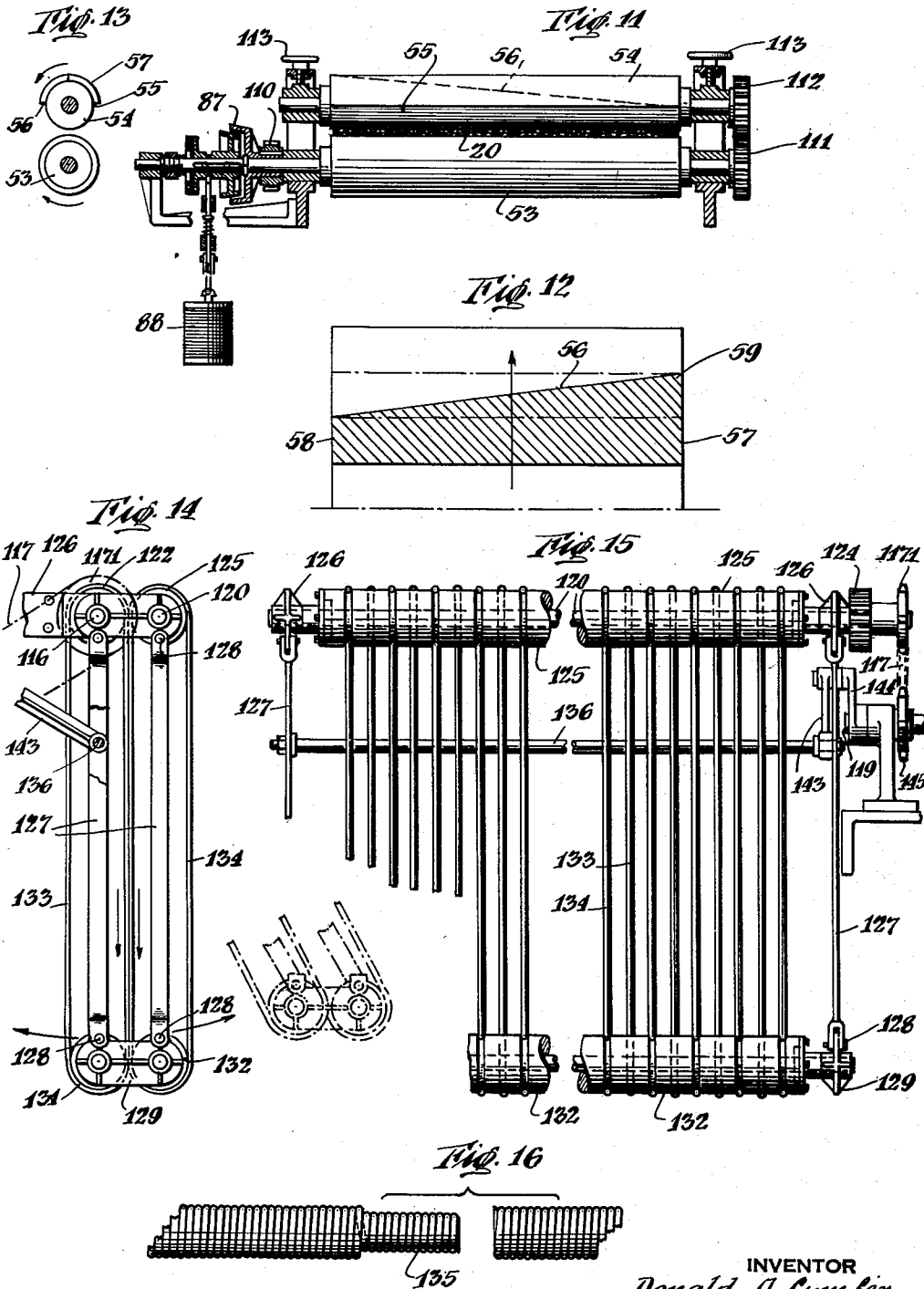
D. A. CUMFER

2,250,572

FABRIC TEARING MACHINE

Filed May 18, 1940

4 Sheets-Sheet 4



INVENTOR
Donald A. Cumfer
BY
Corper, Kerr & Dunham
ATTORNEYS

UNITED STATES PATENT OFFICE

2,250,572

FABRIC TEARING MACHINE

Donald A. Cumfer, Ridgewood, N. J., assignor of
one-half to Ralph W. B. Reade, Port Washington,
N. Y.

Application May 18, 1940, Serial No. 335,942

16 Claims. (Cl. 164—84.5)

This invention relates to fabric tearing machines and has particular reference to machines for tearing from a long web sections of fabric such as is used for bed sheets and similar articles.

One object of the invention is to provide a machine of the character indicated which will operate accurately and at high speed.

Another object is to provide a tearing machine which can be quickly and accurately adjusted to tear pieces of material of different lengths from a long strip drawn from a source of supply.

Still another object is to provide a machine which will tear off sections of fabric and deliver them in the convenient form for subsequent handling.

With the foregoing and other objects in view the invention consists in a novel construction and relative arrangement of parts, one embodiment of which is hereinafter described with reference to the drawings accompanying and forming a part of this specification, the novel features being pointed out in the claims appended hereto.

In said drawings:

Fig. 1 is a side view of a machine constructed according to the invention, with some of the frame work broken away to expose certain of the parts to view.

Fig. 2 is a top plan view of the machine shown in Fig. 1.

Fig. 3 illustrates more or less diagrammatically the construction and arrangement of the feed rolls for the fabric, the knife for cutting or nicking the fabric to initiate a tear and the rolls for completing each tear so initiated.

Fig. 4 illustrates diagrammatically the way in which doubled fabric is nicked or cut at the fold edge to initiate tears.

Fig. 5 illustrates the construction of the clutch and associated parts for operating the knife mechanism.

Fig. 6 is a view on the line 6—6 of Fig. 2 and shows the construction of the knife carrier and knife as well as some of the immediately associated parts for operating the knife, and also includes some of the switch mechanism for causing operations of the tearing mechanism to complete the tears initiated by operations of the knife.

Fig. 7 is the same as Fig. 6 except that the parts are shown in a different position.

Fig. 8 is a section along the line 8—8 of Fig. 7.

Fig. 9 is the same as Fig. 8 except that the knife is shown in the position it occupies when it has operated to nick or cut the fabric.

Fig. 10 is a perspective view of a cam employed for controlling operations of the knife.

Fig. 11 is a view on the line 11—11 of Fig. 1.

Fig. 12 is a diagram illustrating the construction of the tearing roll of the tearing mechanism.

Fig. 13 is an end view of the tearing roll and the roll opposing the tearing roll.

Fig. 14 is a side view of the pinch conveyor used for handling the web which has passed the tearing mechanism.

Fig. 15 is a front view of the pinch conveyor illustrated in Fig. 14.

Fig. 16 illustrates the construction of the spring belts of the pinch conveyor, and

Fig. 17 (Sheet 1 of the drawings) illustrates in somewhat diagrammatic form, the construction of a change speed device which is employed to determine the lengths torn from the web.

In the manufacture of bed sheets and other articles the fabric is woven in any length desired, running sometimes into the thousands of yards. After weaving, the woven web undergoes such processes as bleaching, drying, printing, calendaring and finishing. After these processes are completed wide webs are run over a folding unit which brings the selvage edges together and makes a fold running longitudinally of the center of the web. After folding, the web is usually wound into mill rolls which may contain as much as a thousand lineal yards of material. Material which is folded along its center longitudinal line with the selvage edges in alignment, is known in the trade as a double fold. Sometimes the material is folded again so as to make four plies of material and this fold is known as double-double fold.

The present apparatus is designed to work upon either a single web or upon a web having the double fold. In case the material has the double-double fold it must be changed to a double fold; that is, with the fabric in two plies having the selvages at one edge and the fold crease at the other edge. The apparatus is designed to do automatically and continuously, work which has previously been done only by hand. In the previous practice the fabric coming from the mill roll is pulled manually across the top of what is known as a tearing table and is clamped at its free end to the table. The operator then walks back and slits the fold edge on a short vertical knife blade attached to the top of the table and then grasps the web at each side of the slit and tears the sheet from the web. The tear follows between two woof threads all the way across the web.

It has been and still is necessary to tear the fabric as the woof threads become distorted in

processing and if the fabric is cut or sheared along a straight line the woof threads adjacent the cuts may not be parallel to the cuts and then when the article is laundered it will be found that the ends of the sheet or similar article will be irregular and will usually not be at right angles to the edges. When the fabric is torn the woof threads will, after laundering, be at the angle mentioned so that the laundered article will have straight ends and will be rectangular.

The apparatus illustrated and described herein will tear sheets as accurately as can be done by hand and will tear a good many times as many sheets, for example, during a period of time as can be torn by the most skilled hand operator. In addition, the hand tearing is exhausting and operators cannot endure the work for any great length of time.

Referring to the drawings, the material 20 is shown as being drawn from a mill roll 21, Figs. 1 and 2, although obviously it might be drawn directly from the machine performing the last finishing operation upon it. As the material passes through the machine it is nicked or cut at the fold edge to start tears and the tears are then completed at a later point in the movement of the material. The torn off sections are then drawn away from the tearing mechanism by a pinch conveyor and deposited in folded form by that conveyor on another conveyor or in some suitable receptacle.

The web passes from the mill roll or other source of supply under an idler roll 22 and over a spreader roll 23. This spreader roll has helical grooves and lands 24, running in opposite directions from the middle of the roll, as illustrated in Fig. 2, and serves to spread the web and keep it flat. From the spreader roll 23 the web passes under a roller which is usually referred to herein as the measuring roller. It is driven by the traveling web and in turn drives a control mechanism which regulates or times operations of the knife and tearing mechanism according to the lengths of sections which are to be torn from the web.

From the measuring roller the web passes between two rollers 25 and 26, the latter roll being provided with a shaft or trunnions rotating in blocks 27 adjustably mounted in openings in the frame of the machine and held adjusted by a hand screw 28. The rolls 25 and 26 are driven at a uniform speed and, assisted by other rollers mentioned further along, draw the web from the mill roll or other source of supply.

A second pair of rollers 31 and 32 are constructed like and operate in the same manner as the rollers 25 and 26 previously mentioned and take the web coming from the rollers 25 and 26. Between the two pairs of rollers is a guide 33, Fig. 3, supported by the frame work of the machine which prevents any undue sagging of the material, although if the web is started through properly it will always be fairly taut between the rollers 25, 26 and the rollers 31, 32. The knife mechanism previously mentioned operates upon the web while it is between the two pairs of rollers, an opening in the guide 33 being provided for that purpose.

The knife is carried by a short roller 34 attached to a shaft 35 and a cooperating short roller 36 keyed at 40 (Fig. 3) on a shaft 37. The short roller 34 carries the knife for cutting the fabric to initiate crosswise tears.

The knife and the parts immediately associated therewith are illustrated somewhat in de-

tail in Figs. 6 to 10 inclusive. The roller 34 has its face cut out as illustrated at 38 to receive a knife block 39. The cut and the block are so shaped relatively as to leave a space which is substantially radial of the roller 34 in which space is mounted the knife 41. The knife is supported by pins 42 in the block 39 extending through inclined slots 43 in the knife. The pins 42 and the slots 43 cooperate in such a way that if the knife is moved to the right from the position in which it is shown in Fig. 8 to the position in which it is shown in Fig. 9, the knife is thrust down so that its cutting edge will cut the fabric 20. The roller 36 opposing the knife carrying roll is provided with a slot 45 to receive the cutting edge of the knife, one edge of the slot acting somewhat in the nature of a shear for the knife edge.

The shafts 36 and 37 are geared together so that when the shafts and the rollers 34 and 36 are periodically turned as hereinafter described, the knife 41 and the slot 45 will always be in alignment as the knife passes the cutting point.

The knife 41 is normally held retracted in the position in which it is shown in Fig. 8 by a cam 46 which is secured to the adjacent frame of the machine. The face of the cam engaging the knife is so constructed that the knife is held retracted until the knife carrying roller 34 is turned to bring the knife substantially in the position illustrated in Fig. 7, whereupon the end of the knife trips from the shoulder 47 on the cam and is propelled endwise by a spring 48 fastened to the radial face of the roller 34 and having its free end engaging a lug 49 on the knife blade. An adjustment 51 permits regulating the tension on the knife operating spring.

After the knife has operated to cut or nick the edge of the web the portion containing the cut passes between the rollers 31 and 32 which, like the rollers 25 and 26, are driven continuously at a uniform speed. After the cut has passed between the rollers 31 and 32 the tearing mechanism is brought into play to complete the tears initiated by the knife cuts.

The tearing mechanism comprises a rubber roller 53 which has a smooth continuous surface and a roller 54 which has its effective portion of the same diameter as the roller 53. In the construction illustrated, half of the surface of the roller 54 is cut away as at 55 so as not to contact the web under any circumstances and the other half is cut away along a line 56 which is approximately helical to form a tearing edge. Preferably this is done in such a way that the uncut portion of the roll at one end 57, Fig. 12, extends approximately 180° of the circumference of the roll while at the other end 58 the uncut surface extends approximately 90° of the circumference of the roll, although this may be changed according to varying conditions. Normally the rolls 53 and 54 are not rotating, but after the knife cut has passed between the rollers 31 and 32 the rollers 53 and 54 are driven and at a higher speed than the rollers 31 and 32. This causes what might be termed the corner 59 of the gripping surface on the roll 54 to engage the web at the edge containing the knife cut and then, because of the higher peripheral speed and the configuration of the tearing edge 56, will complete the tear by the stress applied progressively and continuously across the web between the rollers 53, 54 and the rollers 31, 32. The mechanism for operating the knife and the tearing mechanism in properly timed relation and the mechanism for changing the time intervening between knife

cuts and operations of the tearing mechanism to vary the length of the sections torn off will next be described.

One end of the shaft of the measuring roller 24' is extended through the machine frame and carries a bevel gear 61, Figs. 1 and 2, which meshes with a bevel gear 62 on a shaft 63 (see also Fig. 17) of a change speed gear set of a well known type. The shaft 63 has attached to it a wide faced gear 64. Slidably mounted on the shaft 63 is a speed control handle 65 extending through a suitably shaped slot in the casing 66 of the gear set. Rotatably mounted on the inner end of the handle 63 is a gear 67 which is constantly driven by the gear 64 and can be slid along the wide faced gear 64 by the handle 65 and then swung by the handle with a sort of planetary movement around the gear 64 to engage any one of the gears of different diameter indicated generally by the numeral 68. The gears 68 are attached to a shaft 69 mounted in the gear housing 66. If the planetary gear 67 is in position to connect the gear 64 with the smallest of the gears 68 a relatively low speed will be imparted to the shaft 69 and, of course, if the planetary gear 67 is in engagement with the gear 68 of largest diameter the lowest speed of rotation of the shaft 69 will be obtained. This variation of the speed of the shaft 69 is for the purpose of changing the length of the sections torn from the end of the web.

The shaft 69 is provided with a crank 71 and link 72 for operating a limit switch which may be of any suitable construction to close the connection momentarily through a solenoid 73 which has its armature extended to form a plunger controlling a clutch for connecting and disconnecting the knife mechanism. The construction is such that the shafts 35 and 37 of the knife mechanism are given one complete rotation and then stopped until another measured section of the web has been fed over the measuring roller 24 to the point where the knife mechanism should again operate.

The clutch is of a type which is generally well known and is illustrated in Fig. 5. It comprises a gear 75 which is loose on the shaft 36 but is rigid with a clutch member 76. A cooperating clutch member 77 is splined on the shaft 35 and is normally held out of engagement with the member 76 by the solenoid plunger 78. Rigid with the member 77 is a collar 81 having a circumferential groove in which is mounted a member 82 which cooperates with the solenoid plunger to hold the clutch member 77 stationary until the plunger is withdrawn and then after a rotation of the clutch member 77, cooperates with the plunger to withdraw the clutch member 77 from engagement with member 76 and stop the member 77 from further rotation. This stoppage of the clutch member is effected by a cross shoulder on the member 82 which cooperates with the plunger 78 somewhat in the manner of a latch to stop the member 77 to release said member when the plunger is withdrawn from that cross shoulder. The movement of the member 77 into engagement with the member 76 when the solenoid plunger is withdrawn is effected by a spring 83 on the shaft 37, this spring being tensioned as the member 77 is disengaged from the other clutch member. Between the spring and the collar 81 are two brake disks 84 which cooperate somewhat in the manner of a friction brake to insure maintaining the clutch driving member 77 in proper position between operations.

The shafts 35 and 37 are geared together within the side frame of the machine by gears 85 and 86 so that the knife roller 34 and its opposing roller 36 are turned in properly synchronized relations.

The tearing rollers 53 and 54 are operated through a clutch which is designated generally by the numeral 87 and which is substantially the same in construction and operation as the clutch for the knife mechanism. The solenoid 88 for the tearing mechanism clutch 87 is energized through a limit switch which is closed momentarily in a timed relation with the knife operating mechanism. For this purpose the knife roller 36 is provided with a cam or shoulder 89, Figs. 6 and 7, which engages a roller 91 on a switch arm 92 and thereby closes the switch 93 momentarily to energize the clutch solenoid 88 to release the driving clutch member and then permits the switch to open and deenergize the solenoid in ample time for its plunger to disconnect the tearing roller clutch at the end of a rotation of the tearing rollers.

The power for driving all of the mechanisms so far mentioned comes from a motor 95, Fig. 1, connected by a V-belt drive 96 to a large pulley 97 on the main driving shaft 98. This pulley may be loose on the shaft and disconnected from and connected thereto by a clutch 99 or it may be directly connected to the shaft, depending upon whether the machine is to be stopped by disconnecting the shaft 98 from the pulley or is to be stopped by shutting off the motor.

Rigid with the pulley 97 and the shaft 98 is a pinion 101, Fig. 1, meshing with a large gear 102 which is secured to the shaft 103 to which the web feeding roller 31 is attached. Attached to the other end of the shaft 103 is a gear 104 engaging an idler 105 which in turn is meshed with the gear 75 of the knife operating clutch mechanism. The gear 75 acts through an idler gear 106 to drive a gear 107 secured to the shaft or trunnion 108 of the roller 25. Also driven by the gear 104 is an idler gear 109 meshing with a gear 110 rigid with the driving member of the clutch 87.

It will be apparent that the power from the motor will be applied through the various belt and gear connections in such a way that the rollers 25, 26, and 31, 32 will be rotated constantly and at substantially the same peripheral speed and that the driving member of the knife clutch and the knife roller 34 will also be turned at that same peripheral speed. Therefore the knife, when called into play, will act upon the web while the web and knife carrying roller 34 are moving at the same speed, this preventing any tendency to cause the knife to bind or fail to operate when the knife operating spring 48 is released.

As previously stated, the tearing rollers 53 and 54 are operated at a higher peripheral speed than the rollers 31, 32 so as to apply a progressive tearing stress across the web 20 when it is engaged by the tearing edge 56 of the roller 54. This may be effected by making the gear 110 for driving the driven member 87 of the tearing clutch smaller in diameter than the gear 104 so that the peripheral speed of the tearing rollers will be greater than the speed of the rollers 31, 32, or the same result can be accomplished by making the roller 53 and the effective part of the roller 54 of greater diameters than the diameters of the rolls 31 and 32. In the drawings the latter construction is illustrated.

As also previously stated, clutch 87 drives the

roller 53 and this movement is transmitted to the cut away tearing roller 54 through gears 111, 112, connecting the shafts of the two rollers, so that no matter what the peripheral speed may be the two rollers will operate in synchronism to grip and apply the tearing stress to the web. The gripping tension between the two rolls can be adjusted by the hand wheels 113 in the same manner as previously explained in connection with the adjustment of the other rollers. The web passes over a guide 114, Fig. 1, and between the tearing rollers.

As pointed out the tearing rollers 53, 54 are normally stationary and are only given their single turn after the knife cut has passed between the rollers 31, 32. After leaving or passing between the tearing rollers the web is directed by a guide 115 into a mechanism which is usually termed herein an oscillating pinch belt conveyor for keeping the web flat and smooth and taut enough to prevent slack. This makes it certain that tearing stress will be immediately applied when the tearing rollers are operated.

This conveyor mechanism includes a shaft 116 which is driven to drive the conveyor spring belts. The driving connection for the shaft 116 includes (Figs. 1 and 15) a sprocket 1171 on the shaft and a sprocket chain 117 which is driven by a sprocket 118 on a short shaft 119. The shaft 116 runs continuously and attached to it is a grooved roller 122. The shaft 116 is connected by a gear 123 and gear 124 to a shaft 120 on which is fixed another grooved roller 125. The shafts 116 and 120 are journaled in brackets 126 attached to the machine frame work. Pivoted on the brackets 126 are conveyor side frame members 127 which at their lower ends are pivoted, as at 128, to a member 129 in which are journaled the trunnions of grooved rollers 131 and 132. The spring belts 133 of one set are mounted in the grooves of the rollers 122 and 131 and the other set of spring belts 134 is mounted in the grooves of the rollers 125 and 132. The construction of the spring belts, as illustrated in Fig. 16, includes a well known form of connecting the ends of a spring of sufficient length to constitute a belt by twisting a reduced spring section 135 on one end into the coil of the spring at the other end. The belts of one set are staggered, with respect to the belts of the other set, and the meeting runs of the belts operate one slightly within the outside plane of the other to give a good frictional contact with the web. Cross rods of any suitable construction, indicated generally at 136 (Fig. 1), may be employed if desired to give lateral stiffness to the side members 127.

The side frame members 127 are oscillated on their pivotal supports to swing the spring belt conveyor to and fro while the belts are being driven to deposit the torn off sections of the web in folded condition in a receptacle. In the construction illustrated in the drawings, a chain belt conveyor 141 is provided with partitions 142 extending laterally of the conveyor and forming receptacles in which the torn off sections are folded by the swinging end feeding movement of the spring belt conveyor. The conveyor 141 is given a step-by-step movement to bring an empty receptacle in position as soon as the preceding receptacle has received the intended number of torn off sections. It is obvious, of course, that the conveyor 141 and its receptacles may be replaced by some other receiver such as a continuously running conveyor which will deliver the sections to the desired point.

The mechanism for swinging the spring belt conveyor comprises a link 143 connecting the conveyor side frame members 127 to a crank 144 on the end of the short shaft 119, which, as previously mentioned, also carries the sprocket for driving the chain 117. The crank 144 is of such length that the spring belt conveyor will be swung to or through all of the positions indicated in Fig. 1 at each turn of the shaft. The shaft 119 is driven through a sprocket 145 on the shaft engaging a sprocket chain 146 which is driven by a sprocket 147 (Fig. 2) on the end of the shaft 103.

It is desirable to have the spring belt conveyor running faster than the speed at which the web is delivered through the tearing rolls so as to prevent slack in the material when it is engaged by the tearing rolls. This is accomplished by so proportioning the sprockets 117 and 1171 that the effect stated will be obtained. The frictional grip of the spring belts on the web will tend at all times to draw the material flat and smooth, as well as deliver it to the receptacle for the torn off sections.

In the foregoing specification the measuring roll driven by the web controls the lengths of the intervals between operations of the knife 41 and the bearing rollers, but it is obvious that the change speed gearing shown and described may be connected to a mechanically driven part of the machine and used to control the knife and tearing clutches in substantially the same way as described.

In explaining the construction of the apparatus it has been deemed advisable to state the operation as the explanation proceeded, so a résumé of that operation is thought to be unnecessary here.

It is obvious from the foregoing description that the apparatus shown and described is capable of various modifications and changes and it is not the desire to be limited by the drawings and description except to the extent indicated in the claims which follow.

What I claim is:

1. An apparatus comprising in combination driven rollers for drawing a longitudinally folded web of woven fabric from a source of supply, a knife operable to cut the fabric at its folded longitudinal edge to initiate a tear, a measuring roller driven by the moving web, knife operating devices controlled by said measuring roller for actuating the knife at regularly timed intervals for the purpose stated, and tearing devices operated in a timed relation with the knife operating devices for tearing the fabric the full width starting with each knife cut.

2. An apparatus comprising in combination driven rollers for drawing a longitudinally folded web of woven fabric from a source of supply, a knife operable to cut the fabric at its folded longitudinal edge to initiate a tear, a measuring roller driven by the moving web, knife operating devices controlled by said measuring roller for actuating the knife at regularly timed intervals for the purpose stated, and tearing devices controlled by and operated in a timed relation with the knife operating devices for tearing the fabric the full width starting with each knife cut.

3. An apparatus of the character described comprising in combination a plurality of driven rollers for drawing a web of longitudinally folded fabric from a source of supply, a knife operable while the web is moving to nick the fabric at its folded longitudinal edge to initiate a tear, a meas-

uring roller driven by the moving web, knife operating devices controlled by said measuring roller for actuating the knife at regularly timed intervals for the purpose stated, means intermediate the measuring roller and the knife operating devices adjustable to vary the length of the intervals between knife operations, and devices controlled by and operated in a timed relation with the knife operating devices for tearing the fabric the full width starting with each knife cut.

4. An apparatus of the character described comprising in combination a plurality of pairs of driven rollers for drawing a longitudinally doubled web of woven fabric from a mill roll, a knife operable periodically to cut through the fabric at the fold edge to initiate cross-wise tears, a measuring roller driven by the fabric, a change speed gearing, a knife operating mechanism, means controlled by the measuring roller through the change speed gearing for periodically actuating the knife operating mechanism, a normally inactive tearing mechanism for completing the cross-wise tears initiated by the knife cuts, and means controlled by the knife operating mechanism for periodically rendering the tearing mechanism effective for the purpose stated.

5. An apparatus of the character described comprising in combination driven rollers for drawing a longitudinally doubled web of woven fabric from a mill roll, a knife operable periodically to cut through the fabric at the fold edge of the doubled fabric to initiate tears cross-wise of the web, a measuring roller driven by the web, a knife operating mechanism, means controlled by the measuring roller for periodically actuating the knife operating mechanism, a tearing mechanism for completing the tears initiated by the knife cuts, and means controlled by the knife operating mechanism for periodically operating said tearing mechanism in a timed relationship with operations of the knife.

6. An apparatus for the purpose set forth comprising a plurality of driven rollers for drawing a web of longitudinally folded fabric from a source of supply, a knife operable while the web is moving to cut the fabric at its longitudinally folded edge to initiate a tear, a measuring roller driven by the fabric, knife operating devices controlled by said measuring roller and operating the knife at regularly timed intervals, devices controlled by and actuated in a timed relation with the knife operating devices for tearing the fabric the full width starting with each knife cut, and means intermediate the measuring roller and the knife operating devices adjustable to vary the length of intervals between operations of the knife and the tearing devices.

7. An apparatus of the character described comprising in combination a pair of driven rollers for drawing a web of fabric from a source of supply, a second pair of driven rollers for taking the web from the first pair of rollers, the two pairs having substantially the same peripheral speed, a knife between the two pairs of rollers operable periodically to nick one edge of the web to initiate tears and means for periodically operating the knife, and tearing devices actuated after each nick in the web has passed the second pair of rollers to apply a laterally progressive tearing stress across the fabric between said tearing devices and said rollers to complete the tears initiated by operations of the knife.

8. An apparatus of the character described

comprising in combination a pair of driven rollers for drawing a web of fabric from a source of supply, a second pair of driven rollers for taking the web from the first pair, the two pairs having substantially the same peripheral speed, a knife between the two pairs of rollers operable periodically to nick one edge of the web to initiate tears and means for periodically operating the knife, tearing devices constructed to apply tearing stresses progressively and laterally across the web between said devices and said second pair of rollers to complete the tears initiated by operations of the knife, and means for actuating said tearing devices in a timed relation to operations of the knife.

9. An apparatus of the character described comprising in combination a pair of driven rollers for drawing a web of fabric from a source of supply, a second pair of driven rollers taking the web from the first rollers, a knife operated periodically between said pairs of rollers to cut one edge of the fabric to initiate cross-wise tears, a pair of tearing rollers, one of which has a helical tearing edge cooperating with the other tearing roller and with the second pair of driven rollers to apply tearing stresses to the web starting with the edge containing the knife cuts and then progressively across the web whereby to tear the web its full width, and means for periodically driving the tearing rollers at a higher peripheral speed than the aforesaid driven rollers.

10. An apparatus of the character described comprising in combination a pair of driven rollers for drawing a web of fabric from a source of supply, a second pair of driven rollers taking the web from the first rollers, a knife operated periodically between said pairs of rollers to cut one edge of the fabric to initiate cross-wise tears, a pair of tearing rollers, one of which has a helical tearing edge cooperating with the other tearing roller and with the second pair of driven rollers to apply tearing stresses to the web starting with the edge containing the knife cuts and then progressively across the web whereby to tear the web its full width, means for periodically driving the tearing rollers at a higher peripheral speed than the aforesaid driven rollers, and means controlled by the moving web for operating the knife and the tearing roll driving means in a timed relation for the purposes stated.

11. An apparatus of the character described comprising in combination a pair of driven rollers for drawing a longitudinally doubled web of fabric from a source of supply, a second pair of driven rollers taking the web from the first rollers, a knife operated periodically between said pairs of rollers to nick the fold edge of the fabric to initiate cross-wise tears, a pair of tearing rollers, one of which has a helical edge cooperating with the other tearing roller and with the second pair of driven rollers to apply tearing stresses to the web starting with the edge containing the aforesaid knife nicks and then progressively across the web whereby to tear the web its full width, and means for periodically driving the tearing rollers at a higher peripheral speed than the second pair of driven rollers.

12. An apparatus of the character described comprising in combination driven rollers for drawing a web of fabric from a mill roll or other source of supply, a spreader roll driven by the web and constructed with oppositely running grooves and lands for spreading the web flat be-

tween said source of supply and said driven rolls, a measuring roll also driven by the web, devices controlled by the measuring roll for initiating and then completing tears the full width of the fabric, and a pinch belt conveyor for drawing the torn off portions of the web away from the tearing devices.

13. An apparatus of the character described comprising in combination driven rollers for drawing a web of fabric from a mill roll or other source of supply, a spreader roll driven by the web and constructed with oppositely running grooves and lands for spreading the web flat between said source of supply and said driven rolls, a measuring roll also driven by the web, devices controlled by the measuring roll for initiating and then completing tears the full width of the fabric, a pinch belt conveyor for drawing the torn off portions of the web away from the tearing devices, and a guide constructed to direct said sections into the pinch belt conveyor.

14. An apparatus of the character described comprising in combination driven rollers for drawing a web of fabric from a mill roll or other source of supply, a measuring roll driven by the web, devices controlled by the measuring roll for initiating and then completing tears the full width of the fabric, a pinch belt conveyor constructed to seize the torn off sections of the web and draw them from the tearing devices,

and means for oscillating said conveyor to fold said torn off sections on a receiver.

15. An apparatus of the character described comprising in combination driven rollers for drawing a web of fabric from a mill roll or other source of supply, a measuring roll driven by the web, devices controlled by the measuring roll for initiating and then completing tears the full width of the fabric, a pinch belt conveyor constructed to seize the torn off sections of the web and draw them from the tearing devices, a guide constructed to direct said sections into the pinch belt conveyor, and means for oscillating said conveyor to fold said torn off sections on a receiver.

16. An apparatus of the character described comprising in combination driven rollers for drawing a web of fabric from a source of supply, a knife operable periodically to nick the fabric at one edge of the web to initiate tears cross-wise of the web, a knife operating mechanism, a tearing mechanism for completing the tears initiated by the knife cuts by applying a tearing stress progressively across the web, and means for varying the lengths of intervals between operations of the knife and tearing mechanism to determine the lengths of sections to be torn from the web.

DONALD A. CUMPER.