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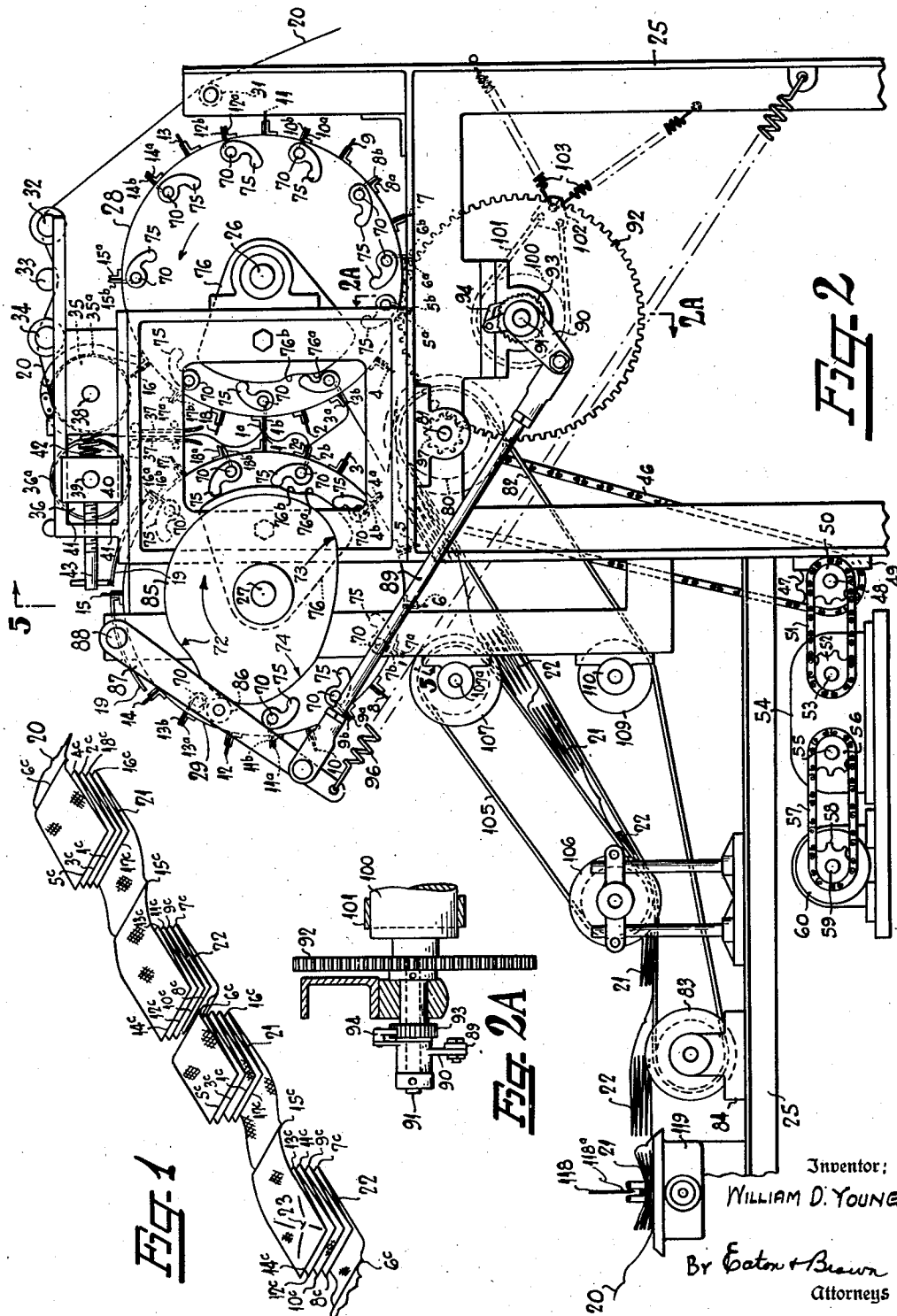
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2,336,051

METHOD AND MEANS FOR FORMING BANDAGE TAILS

Filed Nov. 30, 1942

3 Sheets-Sheet 1



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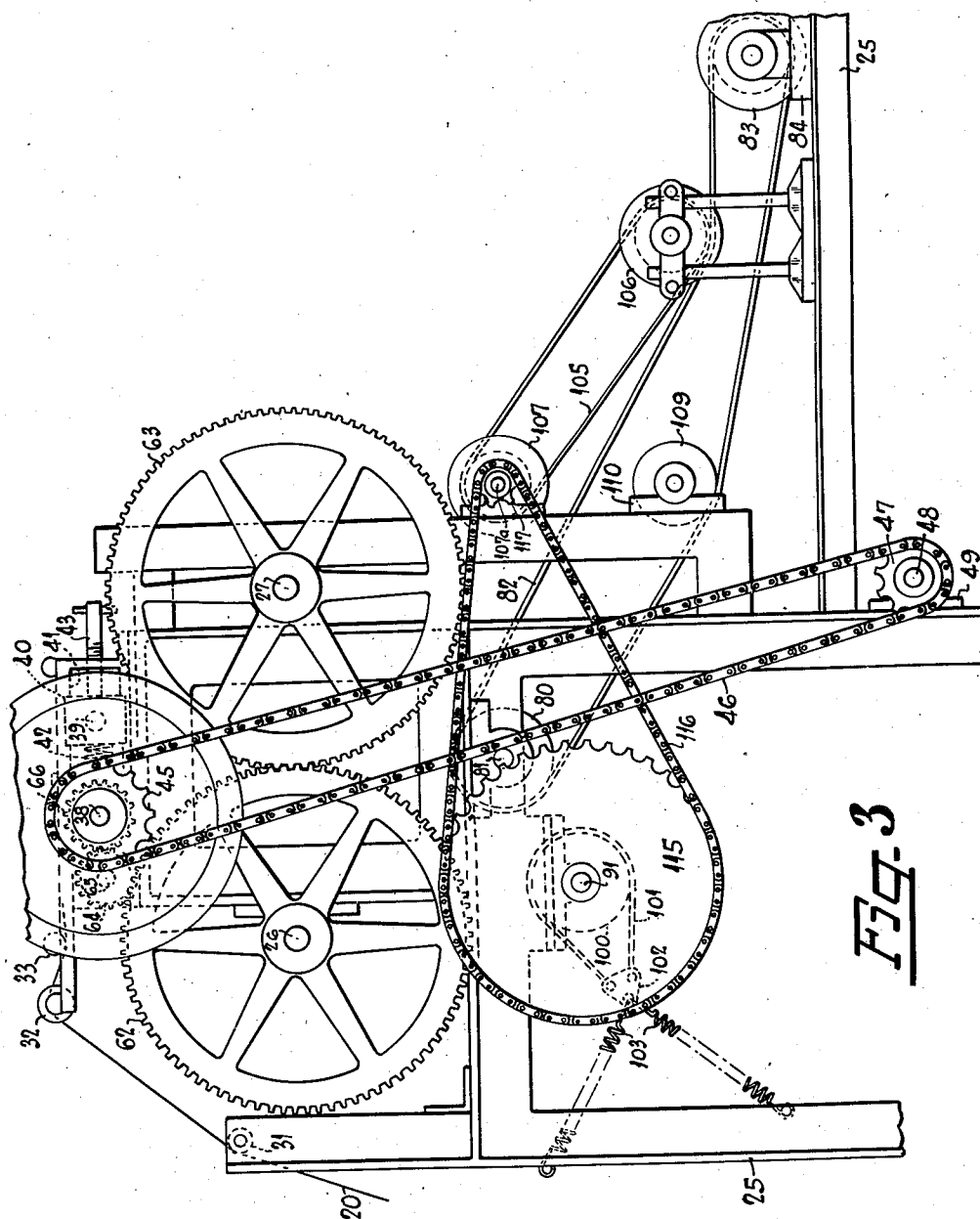


Fig. 3

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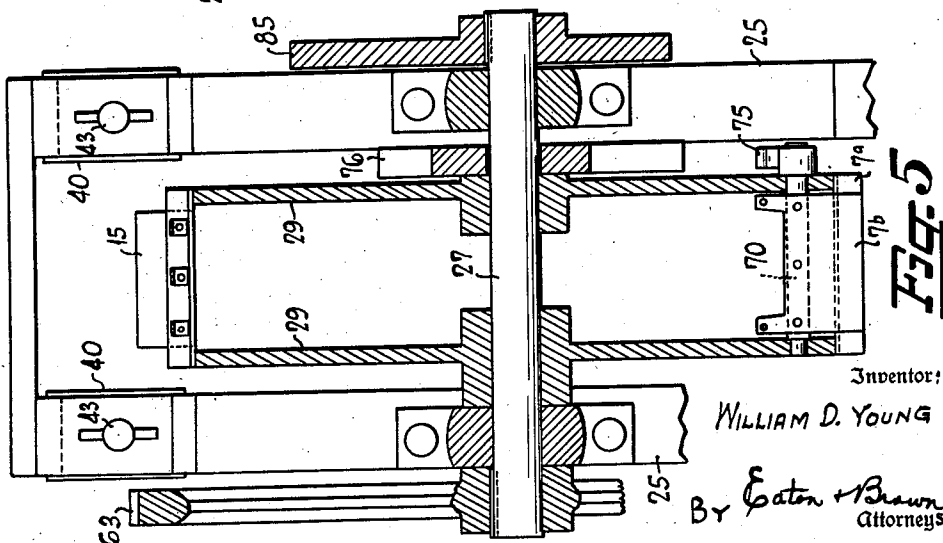
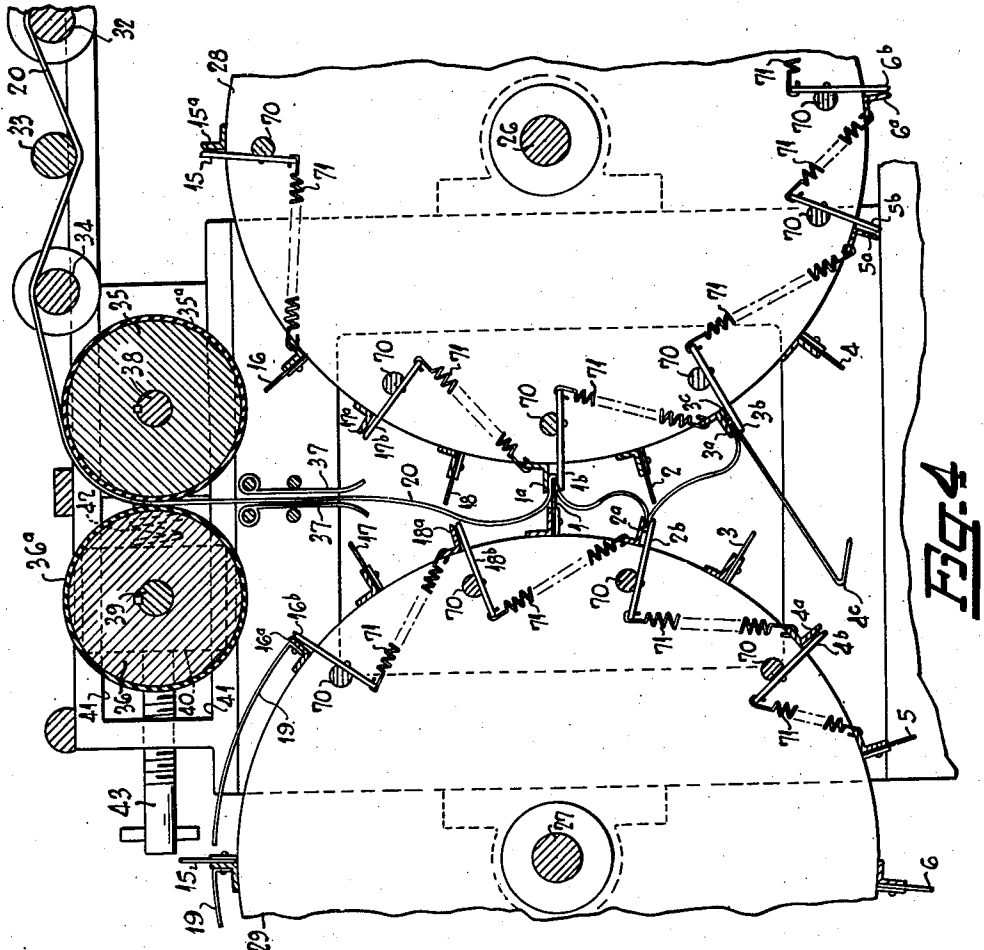
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METHOD AND MEANS FOR FORMING BANDAGE TAILS

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,336,051

METHOD AND MEANS FOR FORMING
BANDAGE TAILS

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Application November 30, 1942, Serial No. 467,350

9 Claims. (Cl. 270—73)

This invention relates to a method and means for forming interconnected batches of folded web material, and more especially to an improved method and means for producing tie tapes or tails for use on bandages such as disclosed in co-

pending patent application, Serial No. 460,252, filed September 30, 1942.

In the above-mentioned patent application, tie tapes are secured to the opposed edges of a bandage so that the bandage can be secured in position upon an injured portion of one's body. It is very essential that these tapes be folded in as compact position as possible so as to facilitate packing and transportation; consequently, the end of each tape is folded into a batch. Furthermore, in order to expedite the production of finished bandages, it has been found desirable to first form the tie tapes in a continuous length of interconnected batches, and subsequently subdivide this length as the tapes are attached to the bandages.

It is an object of this invention to provide an improved method of producing tie tapes in which a continuous length of tape is alternately creased from opposed faces thereof and then folded into spaced interconnected piles or batches. The folds of these batches are usually releasably secured together so that the tie tapes can be easily distended when it is necessary to use the bandage.

It is another object of this invention to provide an improved apparatus for forming a continuous web of material into a continuous interconnected series of folded batches, in combination with means for compressing the batches, and subsequently releasably securing the folds of the batches together.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

Figure 1 is an isometric view of a strip of web material folded upon itself in such a manner as to provide a series of interconnected batches of material;

Figure 2 is an elevation of the apparatus employed for making the material shown in Figure 1;

Figure 2A is a sectional view taken along the line 2A—2A in Figure 2;

Figure 3 is an elevation looking at the opposite side of the apparatus from that shown in Figure 2;

Figure 4 is an enlarged sectional view taken through the upper portion of Figure 2;

Figure 5 is an enlarged vertical transverse sec-

tional view taken along the line 5—5 in Figure 2.

Referring more particularly to the drawings, the numeral 20 denotes a piece of web material which is folded back and forth from opposed faces thereof along transverse crease lines 1c to 18c inclusive to form interconnected batches of folded web material 21 and 22. The material disposed between adjacent crease lines 15c (Figure 1) is sufficient to provide two tie tapes for a bandage, such as disclosed in the above-mentioned patent application. Usually the folded material 20, as shown in Figure 1, is severed along lines 15c as the unfolded portions of the folded material are attached to the opposed edges of a bandage pad, after which the attached material is again severed intermediate its ends along crease line 6c so as to form two tie tapes, each tape having its end folded upon itself in the form of a batch 21 or 22. The folds of the batches 21 and 22 immediately after being formed, are releasably secured to each other by any suitable means, such as a tack stitch 23; however, other means may be employed for accomplishing this purpose.

In the present invention, the folded tape 20 is produced in a continuous length in order to expedite production, and this continuous length is subdivided when the same is attached to the bandages in a manner previously described. In forming the folded tape 20, the web material is successively and alternately creased along lines 18c to 1c inclusive, after which the creased material is permitted to settle into batches 21 and 22. After a batch is completed, it is removed to permit the succeeding batch to be formed. In other words, there is a mechanism employed which successively creases a continuously moving strip of web material while a supporting means for the crease material intermittently removes piles or batches of the creased material from a stationary position disposed below the creasing mechanism, thereby forming interconnected batches. It is therefore evident that the means which convey the accumulated batches of folded material away from stationary position must be operated in timed relation to the creasing apparatus, so that the interconnecting unfolded link between the batches will be of the proper length.

It can be seen by observing the right-hand portion of Figure 1, for example, that the unfolded connecting link between crease lines 16c and 14c of batches 21 and 22 respectively is considerably longer than the connecting link between crease lines 7c and 5c of the next succeeding batches 22 and 21 respectively, therefore, the amount of intermittent movement of the conveying means,

after the accumulation of the first-named batch 21 and before the second batch 22 is begun, must be somewhat greater than the amount of the intermittent movement between the time that the second batch 22 begins moving away from fixed position until the third batch 21 is begun.

In the accompanying drawings, the numeral 25 designates the framework of the mechanism which processes the strip of material 20 shown in Figure 1. This framework has rotatably mounted therein shafts 26 and 27, which, in turn, have pairs of spaced discs 28 and 29 respectively mounted thereon. The pair of discs 28 have secured to their periphery radially disposed blades 2, 4, 7, 9, 11, 13, 15, and 18, which blades respectively penetrate between socket members 2a, 2b, and 4a, 4b, and 7a, 7b, and 9a, 9b, and 11a, 11b, and 13a, 13b, and 15a, 15b, and 18a, 18b as the two pairs of discs rotate about their respective shafts 26 and 27. In other words, the blades mesh with the sockets when the blades and sockets move into coinciding relation.

The unfolded strip of web material 20 is adapted to pass downwardly between the respective blades and sockets and to be transversely creased thereby when each blade enters a socket.

The above described blades on discs 28 and sockets on discs 29 serve to crease the strip of material only from one face thereof to produce transverse crease lines 2c, 4c, 7c, 9c, 11c, 13c, 15c, and 18c. A substantially similar structure is employed for producing the creases 1c, 3c, 5c, 6c, 8c, 10c, 12c, 14c, 15c, and 17c from the opposed face of the strip of material 20. This structure comprises blades 1, 3, 5, 6, 8, 10, 12, 14, 15, and 17, which are mounted upon the periphery of discs 29, said blades respectively fitting into sockets 1a, 1b, and 3a, 3b, and 5a, 5b, and 6a, 6b, and 8a, 8b, and 10a, 10b, and 12a, 12b, and 14a, 14b, and 15a, 15b, and 17a, 17b, as the discs rotate. The position of the blades and the sockets, of course, determines the positions of transverse crease lines 1c to 18c in the piece of web material 20. Blades 1, 3, 4, 5, 8, 10, 12, 14, 15, and 17 and socket members 2a, 2b, 4a, 4b, 7a, 7b, 9a, 9b, 11a, 11b, 13a, 13b, 15a, 15b, 18a, and 18b are secured upon the peripheries of spaced discs 29 to form one cylinder, whereas blades 2, 4, 7, 9, 11, 13, 16, and 18 and socket members 1a, 1b, 3a, 3b, 5a, 5b, 6a, 6b, 8a, 8b, 10a, 10b, 12a, 12b, 14a, 14b, 15a, 15b, 17a, and 17b are secured upon the peripheries of spaced discs 28 to form another cylinder.

As the tape of web material 20 is introduced to the creasing apparatus described, it passes upwardly from a suitable source of supply, not shown, such as a roll, and is adapted to ride upon a guide rod 31 in the framework 25. From this rod 31, the tape passes over another guide rod 32, then below a guide rod 33 and again above another guide rod 34, after which the tape passes downwardly between feed rollers 35 and 36, which advance the uncreased tape of material downwardly between guide fingers 37 and then between the discs 28 and 29 where the above-described transverse creases are placed in the opposed faces thereof. It is necessary for the rollers 35 and 36 to rotate at a sufficient peripheral speed to produce a forward slack in the advanced material so that there will be a sufficient length of material to permit the transverse creases to be placed therein when the blades penetrate the socket members.

It can be seen by referring to Figure 4 that the

peripheries of rollers 35 and 36 respectively have friction surfaces 35a and 36a respectively for gripping the web material 20 as it passes therebetween and for feeding the same between the blade and socket creasing mechanism at the desired rate of travel.

The feed roller 35 is fixedly secured upon a shaft 38, said shaft, in turn, being rotatably mounted in the upper portion of framework 25. The adjoining feed roller 36 is fixedly mounted upon a shaft 39, and the ends of this shaft are rotatably mounted in a pair of blocks 40, which blocks are mounted upon trackways 41 for sliding movement towards and away from feed roller 35.

Disposed between each of the blocks 40 and the framework 25 is a compression spring 42, said spring being adapted to normally force the two feed rollers 35 and 36 apart from each other. The action of spring 42 is overcome to a large extent, however, by means of adjustment screws 43, which are threadably mounted in framework 25 to engage the opposite sides of blocks 40 from the sides engaged by the compression spring 42. These screws 43 serve to regulate the amount of pressure exerted by the feed rollers 35 and 36 upon the tape 20 as it passes therebetween.

The driving means for the feed rollers 35 and 36 is clearly shown in Figures 2 and 3. It is here seen that the end of shaft 38 has fixedly secured thereon a sprocket 45, said sprocket having a chain 46 mounted thereon, and said chain being also mounted upon a second sprocket 47 on a shaft 48. Shaft 48 is mounted in bearings 49, secured to the framework 25.

Also mounted on the shaft 48 (see Figure 2) is a sprocket 50 upon which a chain 51 is mounted, said chain being also mounted on a sprocket 52 on a shaft 53 extending from a gear reduction unit 54. Gear reduction unit 54 has another shaft 55 extending therefrom, which, in turn, has a sprocket mounted thereon. This sprocket 56 has a chain 57 mounted thereon, and chain 57 is also mounted on a sprocket 58 on a motor shaft 60.

The previously described parts indicated by reference characters 51 to 60 inclusive merely illustrate a conventional drive employing a gear reduction principle. It is to be understood, however, that any suitable driving mechanism may be employed as long as the proper speed is imparted to the feed rollers 35 and 36.

The driving means for the discs 28 and 29, together with their associated blade and socket members is also illustrated in Figure 3. It is here seen that the ends of shafts 26 and 27 have intermeshing gears 62 and 63 fixedly secured thereon. The gear 62 also meshes with an idler pinion 64 pivoted as at 65 to the framework 25, said idler gear, in turn, meshing with a gear 66 fixedly secured on the shaft 38. When the previously described driving mechanism rotates shaft 38 to operate the feed rolls 35 and 36, the shafts 26 and 27 are simultaneously rotated through members 62, 63, 64, and 66 to impart the desired rotation to discs 28 and 29 and to the associated blade and socket members. It is, of course, understood that the relative rate of travel of the blade and socket members to that of the feed rollers is such as to properly crease the tape of web material 20 as it is fed downwardly from the feed rollers.

Referring again to Figures 2, 4, and 5, it is seen that each of the socket members 1b to 18b

inclusive has its inner end secured to a transversely disposed shaft 70. These shafts are arranged in a circle about the shafts 26 and 27 and between the two pairs of the spaced discs 28 and 29. A spring 71 is employed for each socket member for rotating the free end of each socket member 1b to 18b against companion stationary socket members 1a to 18a inclusive.

Each of the rotatably mounted shafts 70 in discs 28 and 29 has fixedly secured on one end thereof a lever 75, said lever having its free end positioned in such a manner that it will engage a fixed cam 76 during a part of the revolution of the discs 28 and 29 about the axes of rotation 26 and 27 respectively.

For example, the blade 1 on spaced discs 29 is disposed on one side of the tape 20 and the associated socket members 1a and 1b are disposed on the other side. When the material 20 is pressed between members 1a and 1b by blade 1, the free end of socket member 1b must yield so as to provide the necessary space. When the blade is in an inserted position, the free end of the lever 75 on the shaft 70 is engaging its associated fixed cam 76 sufficiently to slightly separate socket member 1b from socket member 1a, but at the same time, the blade 1 and the folded material is being gripped. As the discs 28 continue to rotate in a counter-clockwise manner, and the discs 29 simultaneously rotate in a clockwise manner, the blade 1 will automatically be removed from between the socket members 1a and 1b, thereby permitting the folded material to be further gripped between these socket members to crease the same. The depression 76b in fixed cam 76 permits this further gripping and creasing when the blade is removed. After rotating still farther in the above-named direction, the free end of the lever 75 will engage a high side 76a on fixed cam 76 to thereby rotate the free end of socket member 1b away from the fixed socket member 1a and release the creased material. It is therefore seen that immediately after the creased portions of the tape 20 are released at the point 76a on cam 76, the creased material is permitted to fold in a zig-zag manner to form a fan folded or accordion folded batch.

It is to be noted that each set of bandage tails comprises two accordion folded batches, and that these batches have the crease line 6c disposed further from the crease lines 5c and 7c than the other crease lines of the batch, such as for example, the distance between the crease lines 16c and 17c and that the crease lines 15c along which the material is severed to form a set of folds for a bandage are considerably further from the crease lines 14c and 16c than the fold lines of the batches as for example, the distance between 8c and 9c. By referring to the drawings, it is seen how this is accomplished. By observing the left-hand central portion of Figure 2, it is to be noted that the distance between the members 5 and 6 and the members 6 and 7a is greater than the distance between the members 2a and 2b for example. At the points 5, 6, and 7a, the crease lines 5c, 6c, and 7c are formed. Now by observing the upper left-hand corner of Figure 2, it is seen that the distance between members 14, 15, and 16a is very much greater than the distance between members 14 and 13b, or the distance between members 13a and 12. At the points 14, 15, and 16a, the crease lines 14c, 15c, and 16c are formed,

thus providing a much greater distance between the crease lines, so that the strip may be severed at the crease lines 15c to form a set of two accordion folds to provide the tails for a bandage, the ends of the set of folds appearing at 15c are the ends which are secured to the ends of the bandage. It is also quite evident that the companion turret or wheel 28 has its creasing members spaced to agree with the creasing members on wheel 29 just described. The members 15 and 16 have secured thereto one end of arcuate members 19 which fit against the periphery of disk 28 between members 14a, 15a, and 16 to hold the tape in proper position for creasing.

It is necessary for a suitable supporting means to be provided for the creased material as it is released by the blade and socket members. With this in view, a roller 80 has been provided, which roller is fixedly mounted on a shaft 81, rotatably mounted in framework 25. A belt 82 is mounted on roller 80, said belt also being mounted on another roller 83 rotatably mounted in bearings 84. It is seen by observing Figure 2 that the upper end of the belt 82, when disposed on the roller 80, is positioned immediately beneath the point where the material 20 is creased, and consequently, this upper portion of the belt will act as a supporting means for the folded creased material. As the zig-zag creased material accumulates in a plurality of superposed accordion folds upon the belt 82, it is necessary to intermittently advance the belt so that interconnected spaced piles or batches will be provided.

In order to intermittently advance the belt in timed relation to the operation of the creasing apparatus, and also in order to provide long and short inter-connected links between the batches 21 and 22 of the creased material, a suitable cam 85 has been fixedly secured on the shaft 27. The periphery of this cam is adapted to be engaged by a roller 86 on the intermediate portion of a lever 87, said lever having its upper end secured on a pivot shaft 88 on framework 25. The lower end of the lever 87 has pivotally secured thereto one end of a link 89. Link 89 has its other end pivotally secured to the lower end of a lever 90, which lever has its upper end mounted for oscillation around shaft 91. The shaft 91 has fixedly mounted thereon a gear 92, shaft 91 having fixed thereon a ratchet 93 which is adapted to be engaged by a pawl 94 on the previously described lever 90. It is seen by observing Figure 2 that the roller 86 is normally held in engagement with the periphery of cam 85 by means of a tension spring 96.

During the operation of the machine and while the shafts 26 and 27 continuously rotate, the cam 85 also rotates to cause the levers 87 and 90 to oscillate about their respective axes of rotation. When the lever 90 oscillates in a clockwise manner (Figure 2), the ratchet 93 and its associated gear 92 is likewise rotated in a clockwise manner, and this rotation of the gear 92 will impart counter-clockwise rotation to shaft 81 by way of a pinion 97, said pinion 97 being fixedly mounted on the shaft 81, and meshing with the gear 92. As the roller 86 moves from a high side of the cam 85 to a low side, the spring 96 will cause the lever 90 to rotate in a counterclockwise manner, during which time the shafts 91 and 81 will remain stationary, therefore, the roller 80 and the belt 82 will remain in stationary positions.

It is while the above-mentioned shafts 91 and 81 are in a stationary position that batches of

material 21 and 22 accumulate. Then when a predetermined number of folds have been deposited in a batch, the proper intermittent advancement of the belt 82 is produced by the cam 85 so that the accumulated batch will be removed and another begun. In removing a batch, the two top layers are unfolded to become the connecting link between the top of the formed batch and the bottom of the next batch to be formed. While the cam 76 is making a half revolution, it is seen that roller 86 will be held in one position from points 72 to 73. From point 73 to point 74, the lever 70 will be allowed to swing in a counterclockwise manner to impart movement to the conveyor belt 82. This will move a set of folds which later form a complete set of bandage tails from beneath the folding mechanism. At point 74, it will be observed the lever 70 will be swung in a clockwise manner again, and when it is allowed to again move in a counter-clockwise manner, it will give a shorter movement to the conveyor belt to space the two batches of the set of folds forming a bandage tail, so as to position the folds along the belt 82 as shown in the drawings.

As a means for preventing counter-clockwise rotation of gear 92 and shaft 91 together with the members driven thereby while the lever 90 is rotated in a counter-clockwise manner, a suitable roller 100 has been fixedly mounted on shaft 91. Upon this roller a friction strap 101 is mounted, said strap having the ends thereof fixedly secured to a fitting 102. Suitable springs 103 have one end thereof attached to the fitting 102 and the other end thereof secured to the framework 25 so as to produce the desired friction between the strap 101 and the roller 100. This amount of friction can be easily overcome during the operation of the machine when the lever 90 is rotated in a clockwise manner in Figure 2, but it is sufficient to hold the shaft 91 and roller 100 in a stationary position when counter-clockwise rotation is imparted to this lever.

Means are provided whereby the spaced interconnected batches of web material 21 and 22 may be compressed subsequent to the same being deposited upon the top of conveyor belt 84. This compressing means comprises a second belt 105, which is mounted on rollers 106 and 107, the lower section of said belt 105 being disposed immediately above the spaced batches of material which, in turn, rest upon the lower belt 82. The proximate faces of belts 82 and 105 are disposed in angular relation to each other. In other words, the distance between the upper proximate faces of belts 82 and 105 is somewhat greater than the distance between the lower proximate faces, thereby providing a wedge shaped space therebetween for the reception and compression of the folded material as the two belts advance the same therebetween.

The relative positions of the rollers 33 and 106 is such that the proximate faces of the respective belts 82 and 105 will contact each other at the lower portion of belt 105 when no material is disposed therebetween. In order to guide the lower intermediate portion of belt 82 in such a manner it will not contact the upper portion of this same belt, a suitable roller 109 is provided, said roller having its ends rotatably mounted in bearings 110 on framework 25.

Figure 3 illustrates a driving mechanism for the top belt 105. This driving mechanism comprises a sprocket 115 fixedly secured on the end of shaft 91, said sprocket having a chain 116

mounted thereon, which chain is also mounted on a second sprocket 117 on the hub 107a of roller 107.

The gearing of the roller 107 to shaft 91 is such that belt 105 will be intermittently advanced at the same time the lower belt 82 is intermittently advanced; therefore, the top and bottom portions of the successive batches 21 and 22 of pleated material will be supported and conveyed by the belts 105 and 82 which move in the same direction and at the same time, and at the same surface speed.

After passing between the belts 105 and 82, the batches 21 and 22 of the material are compressed so that the folds therein will retain their compact position while a tack stitch 23 is being placed therein in the manner shown in Figure 1. The left-hand portion of Figure 2 shows a suitable sewing mechanism comprising a needle 118 and a base support 119, said mechanism being employed for releasably sewing the folds of the individual batches 21 and 22 together. This operation is usually performed manually by an operator. Therefore, the production of the pleating mechanism is so timed that the operator can releasably tack the folds of each batch as it moves off the conveyor belt 82.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a machine for forming tie tapes for bandages from a continuous tape of web material, the combination of a pair of continuously rotating cylinders having their peripheries disposed in opposed relation to each other, means for feeding said tape between said cylinders, means on said cylinders for alternately forming on opposed faces of the tape a given member of spaced transverse creases whereby accordion folds in said tape are successively formed, a conveyor disposed below said cylinder for receiving said folded material in batches means on the cylinders for forming two creases spaced further apart than the given number of creases, means for advancing said conveyor and an accumulated batch in timed relation to the movement of said cylinders to thereby provide a link between the formed batch and a batch of creased material about to be deposited in accordion folds on the conveyor, means on the cylinders for forming another given number of spaced creases to form a batch of folds, means on the cylinder for then forming two creases spaced further apart than the previous two spaced creases to form a connecting link between two sets of pairs of folds, and means for advancing the conveyor a greater distance than it was previously advanced.

2. That method of producing interconnected batches of folded web material which comprises the continuous creasing of said web at evenly spaced intervals and alternately from opposed sides thereof for a plurality of times to thereby provide a batch containing a plurality of zig-zag or accordion folds, then forming a pair of crease lines in the material at a greater distance apart than the previously formed crease lines and then moving the batch in timed relation to the creasing operation to provide an unfolded connecting link between the formed batch and a batch about

to be formed, and then compressing the folds of said interconnected batches.

3. That method of producing interconnected batches of folded web material which comprises creasing said web at evenly spaced intervals and alternately from opposed sides thereof for a given number of times, and depositing the folds, one on top of the other, to thereby provide a batch containing a given number of zig-zag or accordion folds, then forming a pair of crease lines alternately from opposed sides of the material a greater distance apart than the previously formed crease lines, and while forming the two pairs of crease lines, moving the batch of previously formed accordion folds, then creasing the web at evenly spaced intervals and alternately opposed sides thereof for a given number of times to thereby provide another batch containing a plurality of zig-zag or accordion folds, and then forming a pair of alternately projecting crease lines spaced further apart than the previously mentioned pair of crease lines to provide a longer interconnected link between the last batch formed and the next batch to be formed.

4. That method of forming interconnected batches of folded material from a continuous web of material which comprises creasing the web alternately from opposed sides for a given number of times at evenly spaced distances to thereby form a given number of zig-zag folds on a suitable supporting means, then forming a pair of alternately projecting creases in the material spaced a greater distance apart than the previously formed creases, and moving the support with the first-formed batch to allow the second batch to be deposited on the support, then forming a given number of creases alternately in opposed sides in the material spaced the same distance apart as the first-formed creases, to provide a second batch of zig-zag folds, then moving the support with the previously formed batch, and at the same time forming a pair of creases alternately from opposed faces of the fabric spaced a greater distance than the previously formed pair of creases to thereby provide an elongated connecting link between the pair of batches of folds already formed and the next batch to be formed.

5. In a machine for forming tie tapes for bandages from a continuous tape of web material, a pair of continuously rotating cylinders having their peripheries disposed in opposed relation to each other, means for feeding the tape between the cylinders, means on the cylinders for alternately forming on opposed faces of the tape a given number of spaced transverse creases, whereby a given number of accordion folds are successively formed in the tape, a conveyer disposed below the cylinder, onto which the folds are deposited, means on the cylinder for forming a pair of spaced transverse creases in the tape, facing in opposite directions and being spaced further apart than the creases in the preceding given number of creases, means for moving the conveyer to move the batch of accordion folds formed from the spaced transverse creases of the given number of folds, whereby the two folds formed from the spaced transverse creases spaced a further distance apart form the top layer of the batch of folds deposited on the conveyer and the bottom layer of a batch of folds about to be formed, means on the cylinder for then forming a plurality of spaced transverse creases spaced the same distance apart as the first-above-named spaced transverse creases,

means on the cylinders for forming a pair of spaced transverse creases having a distance apart from each other which is substantially greater than the distance between the first-named pair of transverse creases, means for again moving the conveyer belt to move the batch of folds along the conveyer whereby the folds formed from the elongated folds between the longer spaced transverse creases will form the top layer of the last batch, and the bottom layer of the next succeeding batch about to be formed.

6. In a machine for forming a tape into a plurality of accordion folds to serve as tie tapes for bandages, a pair of rotating cylinders, one of the cylinders rotating in a direction opposite the other cylinder and having their proximate faces in juxtaposition to each other, means on the cylinders comprising a plurality of blades and a plurality of grippers for alternately forming spaced transverse creases in the tape for a given number of times to thereby form a batch of accordion folds having a given number of layers, means on the cylinders for forming a pair of spaced transverse creases spaced a greater distance apart than the previously formed creases, means on the cylinder for again forming a given number of transverse creases spaced apart the same distance as those first above-named, means on the cylinder for again forming a pair of spaced and alternately opposed transverse creases whose distance from each other is substantially greater than the previously mentioned pair of spaced transverse creases, and means intermittently operable between each of the above-recited steps for moving the accordion folded material from beneath the cylinders to thereby form a pair of interconnected accordion folds connected together and for also forming an elongated connecting link between the pair of accordion folded batches and the next pair of accordion folded batches about to be formed by the spaced transverse cylinders.

7. Apparatus for folding a continuous strip of material into a plurality of accordion folded batches to serve as tails for surgical bandages comprising means for alternately forming on opposed sides of the tape a given number of evenly spaced creases to form an accordion fold, means for then forming a pair of alternately opposed spaced transverse creases which are spaced apart a greater distance than the previously formed creases, means for then forming another given number of spaced transverse creases whose distance apart is the same as the first above-recited spaced transverse creases, means for forming a pair of alternately opposed spaced transverse creases whose distance apart is substantially greater than the first-mentioned pair of spaced transverse creases, whereby bandage tails are made of two batches of accordion folds connected together by elongated folds, and the pairs of batches are connected together by a pair of still further elongated folds.

8. In a machine for forming tie tapes from a continuous tape of web material, the combination of a pair of continuously rotating cylinders having their peripheries disposed in opposed relation to each other, means for feeding the tape between the cylinders, means on the cylinders for alternately forming on opposed faces of the tape a given number of spaced transverse creases whereby accordion folds in said tape are successively formed, means for alternately forming on opposed faces of the tape a pair of transverse

creases which are spaced further apart than the previously mentioned creases, means on the cylinders for alternately forming on opposed faces of the tape a given number of spaced transverse creases whose distance apart is the same as the distance between the first above-mentioned creases, means on the cylinder for alternately forming on opposed faces of the tape a pair of spaced transverse creases whose distance apart is substantially greater than the distance between the previously formed pair of transverse creases, and intermittently operable conveyer means disposed below the cylinder for intermittently moving the tape between each of the above-mentioned steps, to thereby form the tape into pairs of accordion folded batches spaced apart from each other and with a pair of batches also being spaced apart from a succeeding pair of batches to be formed.

9. That method of producing interconnected batches of accordion folded web material to serve as tails for surgical bandages, which comprises alternately forming on opposed sides of a tape of material a given number of spaced transverse creases, depositing the web into accordion folded position, then forming a pair of spaced transverse creases then alternately forming on opposed surfaces of said web a pair of spaced transverse creases whose distance apart is greater than the

distance between the aforementioned spaced transverse creases, moving the accordion folded batch while the pair of spaced transverse creases are being formed, then alternately forming on opposed faces of the tape another given number of spaced transverse creases whose distance apart is substantially the same as the distance between the first-mentioned spaced transverse creases, then alternately forming on opposed faces of the tape, a pair of spaced transverse creases whose distance apart is substantially greater than the distance between the first-mentioned pair of spaced transverse creases, moving the batches alternately as they are formed to thereby provide a pair of batches of accordion folded material with a connecting link between the same formed from the first-mentioned pair of spaced transverse creases and also forming an elongated portion extending from the last batch of accordion folded material to thereby fold the material into a continuous length having spaced accordion folded batches, spaced apart in pairs a greater distance than the pairs are spaced from each other to thereby form a plurality of pairs of accordion folded material, each pair serving as a tie tape for a surgical bandage when the pairs are severed from each other.

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