Feb. 3, 1953 F. STENCIL 2,627,153

BANDING OF ROOFING MATERIAL

Filed Dec. 16, 1948 6 Sheets-Sheet 1

Fig. 3.

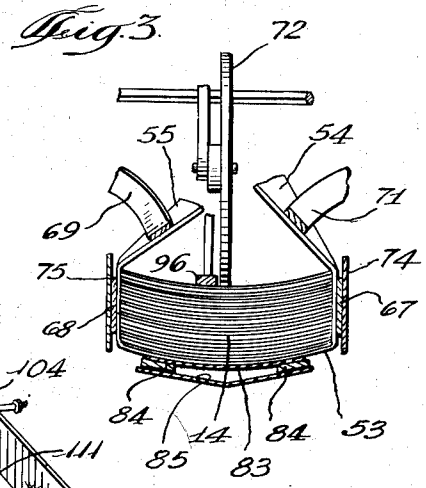


Fig. 1.

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BANDING OF ROOFING MATERIAL

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Fig. 2.

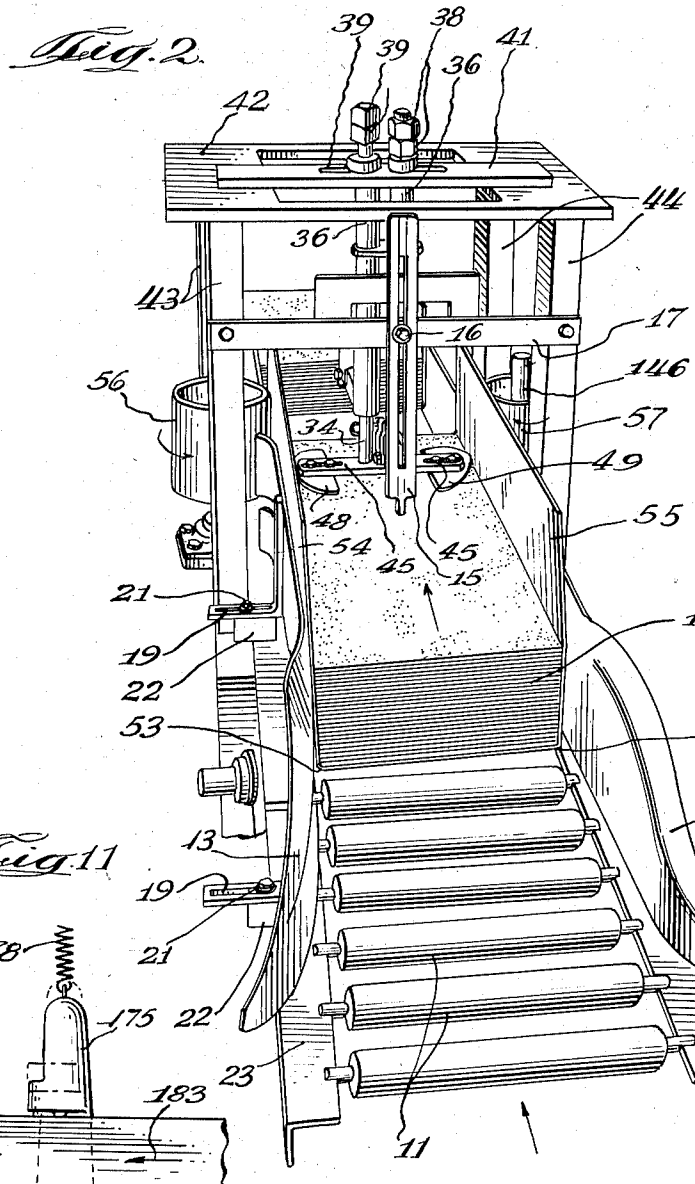


Fig. 11

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BANDING OF ROOFING MATERIAL

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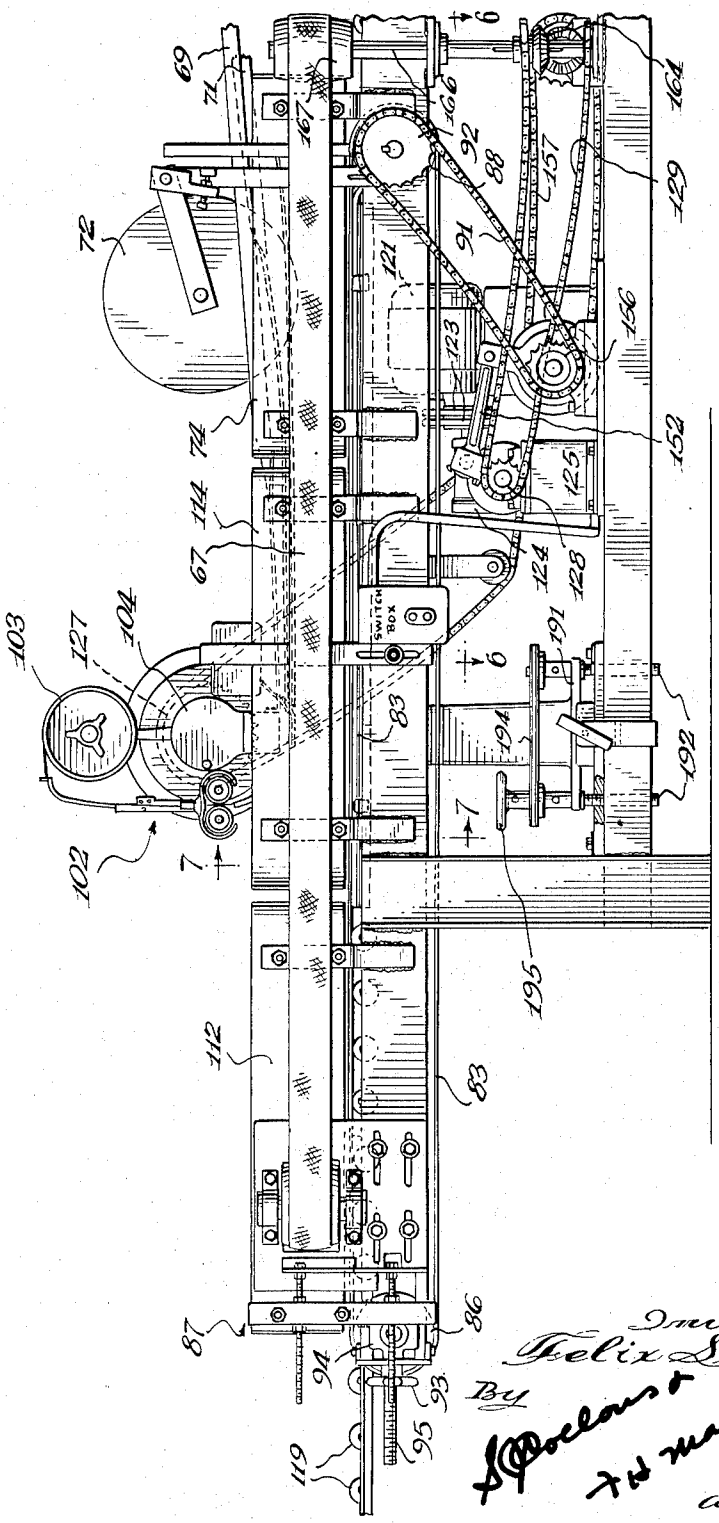


Fig. 4

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BANDING OF ROOFING MATERIAL

Filed Dec. 16, 1948 6 Sheets-Sheet 4

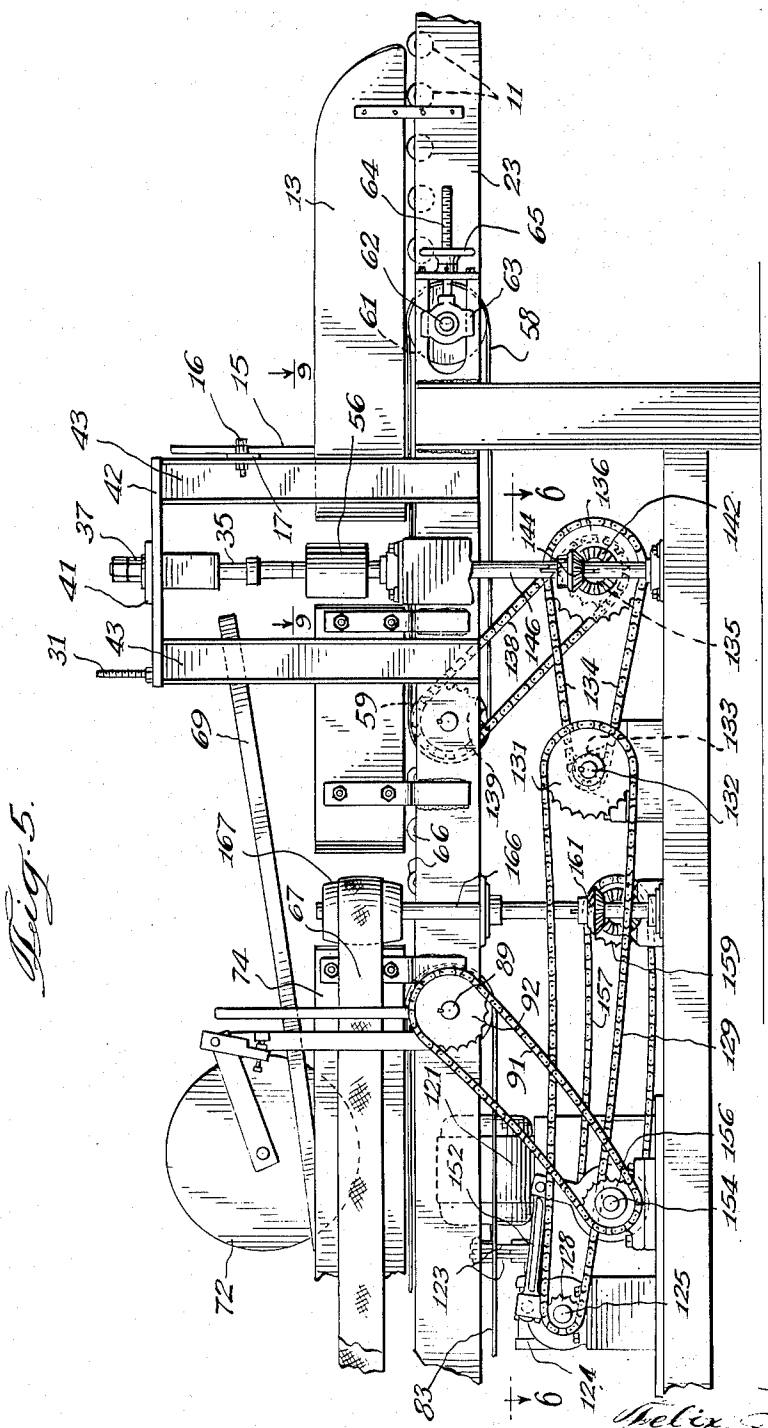


Fig. 5.

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BANDING OF ROOFING MATERIAL

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Fig. 6.

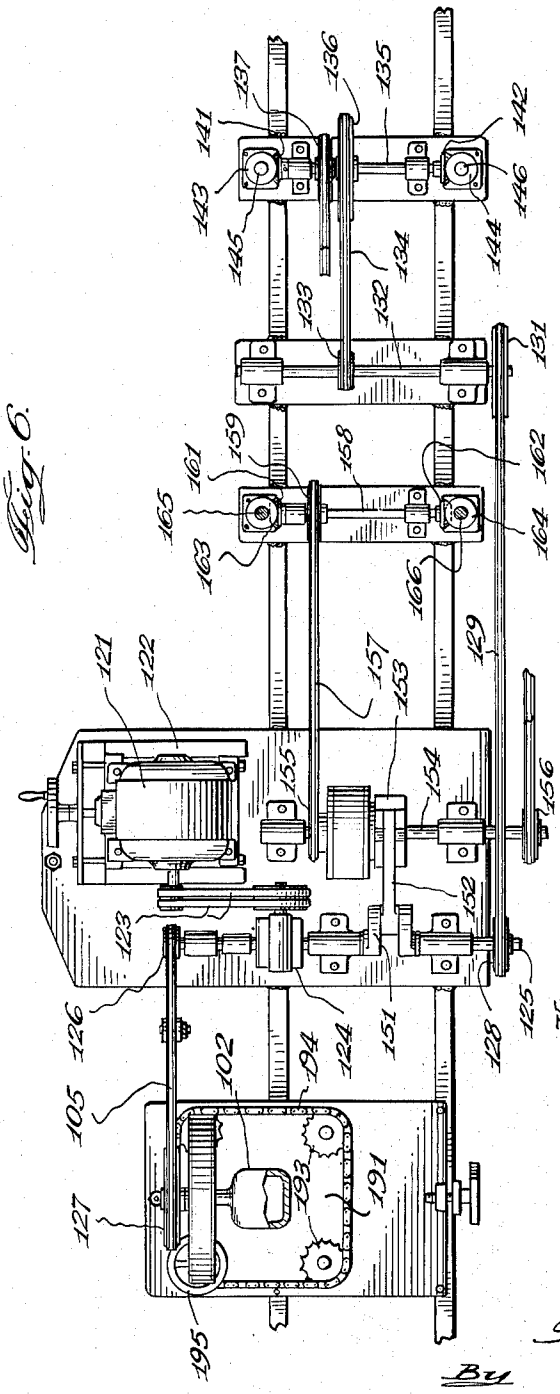
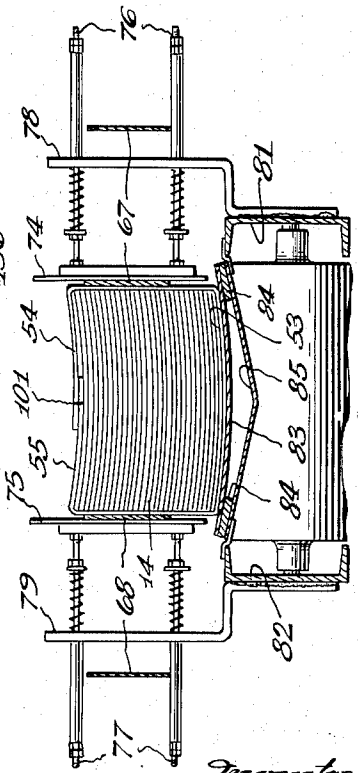


Fig. 7.



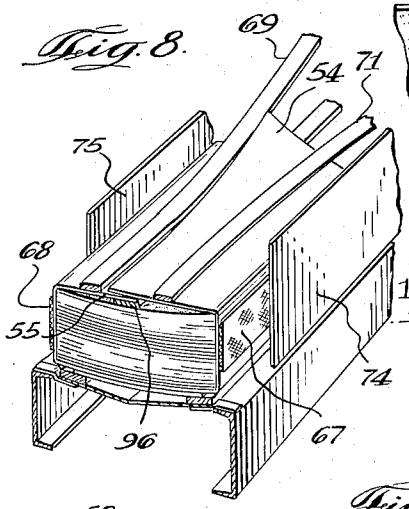
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Feb. 3, 1953 F. STENCIL 2,627,153

BANDING OF ROOFING MATERIAL

Filed Dec. 16, 1948 6 Sheets-Sheet 6

Fig. 8.



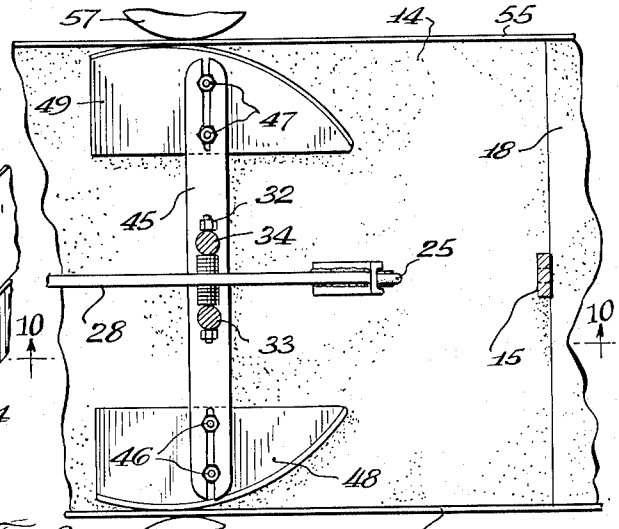


Fig. 9.

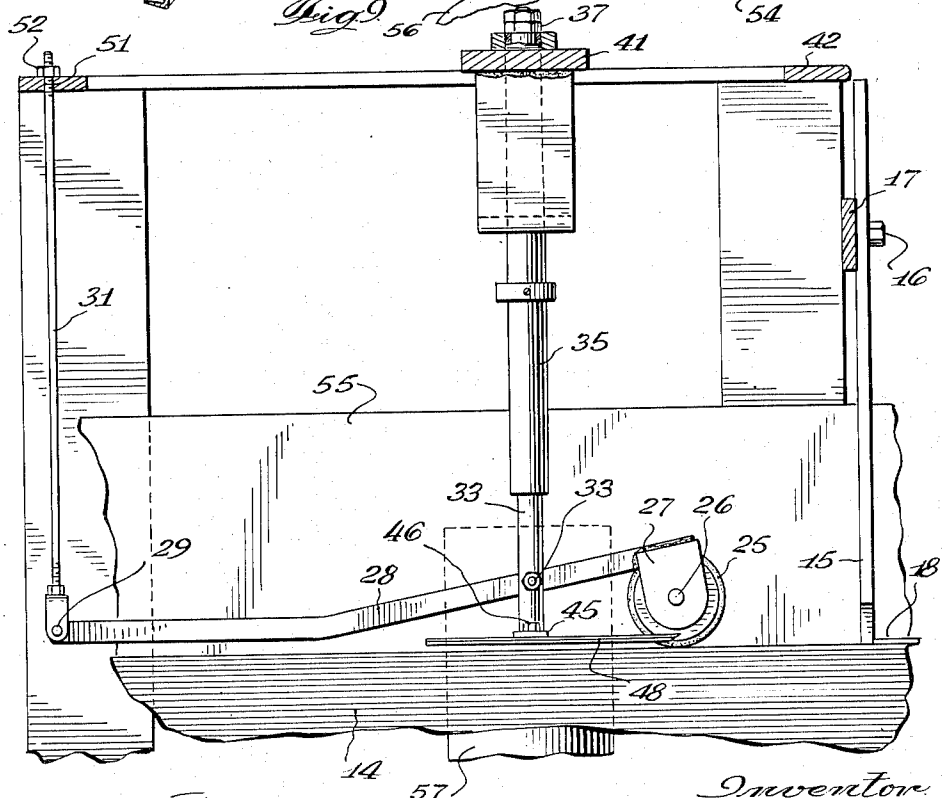


Fig. 10.

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Patented Feb. 3, 1953 2,627,153

UNITED STATES PATENT OFFICE

2,627,153

BANDING OF ROOFING MATERIAL

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Application December 16, 1948, Serial No. 65,687

11 Claims. (Cl. 53—59)

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The present invention relates to assembly line packaging apparatus and is concerned more particularly with a machine for applying fiberboard wrapping to stacks of sheet material such as roofing shingles, after which stitching staples are applied to secure the wrapper.

Asbestos and other types of roofing shingles are customarily marketed in terms of area coverage. Since shingles vary in thickness and correspondingly by weight, the packaging of shingles in terms which may be translated into area coverage requires variation in the size of packages into which they are conveniently packed. Accordingly, where it is endeavored to so prepare the packaging arrangement that three packages of shingles may cover one hundred square feet of area, it may become necessary that the packages differ from one another in respect to the quantities of shingles which they contain. Such variations in packaging are dictated by the established sales practices in this commodity so that a system of packaging in order to conform with these practices must be made adjustable within limited degrees of variation to accommodate differences in quantity of shingles to a package. Moreover in so doing, it is highly desirable that extraordinary care and attention on the part of the operator be not a prerequisite.

Stacks of composition shingles have been wrapped heretofore by simply encircling with a jacketing of double-faced cardboard applied perimetrically so as to encircle the slender dimension of the package whereafter the jacketing has been secured by strapping or wiring at spaced intervals. Several disadvantageous consequences have been observed in respect to this type of packaging, such as susceptibility to loosening, tendency to interval bulging and, most significant, a vulnerability to transverse incising by the strapping or wiring elements.

It has accordingly been suggested that the jacketing material be secured by a line of seam stitches closely placed so as to avoid intervening bulges and tightly wrapped before staple securement is applied to effect unity and adherence in the package component. In order to accomplish this result while stacks of shingles are gathered and advanced in a conveyor system, such as is customary in the manufacture and production of this item, there is presented a problem of applying the staples along a seam or overlap of the jacketing without interrupting the progressive advancement of successive packages.

The present invention proposes to accomplish a method of package wrapping that is suitable for enclosing stacks of composition shingles while such shingles are advanced along a conveyor section towards the end of producing a satisfactory stapled package assembly that will avoid all of

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the disadvantages and shortcomings which have been enumerated above.

A principal object of the present invention, therefore, is one of achieving a continuous conveyor packaging process which will afford seam stitching securements to an enveloping wrapper at the same rate that the packaging material is required to advance in keeping with the production line.

A further object of the present invention is to achieve an automatic conveyor type packaging apparatus in which the wrapper stitching machine is synchronized in respect to its staple projecting and clinching operations so as to effect its functions during intervalic rest periods which intervene between successive conveyor movements.

A still further object of the present invention is one of producing a longitudinal dimension wrapper for stacks of composition shingles and securing said wrapper along a longitudinal seam so as to avoid intermediate bulges, slackening, or shifting of the package content, such as result from more localized forms of securement.

Still other objects of the present invention are such as will be manifest from the disclosure and description which will be revealed during the course of the hereinafter following specification.

For a better understanding of this invention reference will now be had to the accompanying drawings and detailed specification wherein like reference characters designate corresponding parts throughout and wherein:

Fig. 1 is a perspective view from an uppermost forward vantage point of a packaging apparatus and conveyor having incorporated therein certain features of the present invention;

Fig. 2 is a perspective view from an uppermost rearward vantage point featuring various adjustments and conveyor apparatus located at the intake extremity of a packaging machine conveyor according to the present invention;

Fig. 3 is a fragmentary transverse sectional view through a portion of the packaging apparatus features in Figs. 1 and 2 revealing the transverse tensioning effect which is produced on a package of shingles by the gravity weight roller;

Fig. 4 is a side elevational view of a portion of the machine illustrated in Figs. 1 and 2 indicating the arrangement of the side guides, driving train, and conveyor adjustments;

Fig. 5 is a side elevational view of the remaining fragment of the machine illustrated in Figs. 1, 2 and 4;

Fig. 6 is a plan sectional view of a portion of the apparatus illustrated in Figs. 4 and 5 and is taken approximately on line 6—6 thereof characterizing particularly the power distribution and motion translators;

Fig. 7 is a transverse sectional view taken approximately on line 7—7 of Fig. 4;

Fig. 8 is a fragmentary perspective view of a portion of the conveyor table in which is located the wrapper flap fold-over guides as well as the stitching anvil;

Fig. 9 is a fragmentary plan sectional view taken approximately on line 9—9 of Fig. 5;

Fig. 10 is an enlarged transverse sectional view taken on line 10—10 of Fig. 9; and

Fig. 11 is a fragmentary detail elevational view of a modified form of apparatus for achieving synchronization between a stitching machine and a conveyor.

Composition shingles are manufactured in a continuous processing apparatus until they reach a state of completion as a result of a final operation usually consisting of a cutting and trimming operation performed by a set of rotary cutting dies. They are then accumulated in stacks at the hands of conveyor assisting operators in readiness for packaging. At this point an improved machine, according to the present invention, is disposed as a sectional unit in the conveyor system so that stacks of shingles of predetermined quantity enter upon the conveyor rollers 11 guided between the flaring side plates 12 and 13, Figs. 2 and 5.

The side guides 12 and 13 converge slightly so as to help center and direct the incoming stacks of shingles 14, where the first significant treatment which they are compelled to undergo is a height leveling regulation administered by the adjustable test probe 15 bolted as at 16 to a transverse bar 17 and this serves the purpose of pushing off any excess shingles 18, Fig. 10, according to predetermined regulation which will be varied from time to time as the weight and lateral dimensions of the shingles may vary in respect to pattern and width characteristics. An attendant at this point will regard the position and functioning of the apparatus and will remove excess shingles out of the path of oncoming stacks. Also to accommodate dimensional variations the guide plates 12 and 13 may be predeterminedly adjusted, if it is so desired to do, by providing securement brackets 19 which may be bolted as at 21 to frame blocks 22 that extend from the angle iron side frame members 23 and 24 which support the conveyor rollers 11.

After passing the probe 15 each stack of shingles 14 encounters a leveling rollers 25 pivoted as at 26 in a yoke 27 integral with the short end of a lever bar 28 which functions as a third class lever, being pivotally anchored as at 29 to a rod 31 and pivotally connected as at 32 to a pair of guide plungers 33 and 34.

The plungers 33 and 34 are housed in their related sleeves 35 and 36, see particularly Fig. 2, adjustably secured as at 37 and 38 in the longitudinal grooves 39 of a supporting bar 41 which is integrated with a top plate 42 of a cupola structure, including the channels 43 and 44.

At the lower extremities of the cylindrical rods 33 and 34, they are welded to a crossbeam 45 whose opposite ends are split whereby to receive the bolting elements 46 and 47 for anchoring thereto the grooving or scoring tools 48 and 49. By vertically adjusting the length of the pivot rod 31 which is threaded as at 51 into the top plate 42 and check nutted thereat as at 52, the scoring tools 48 and 49 may be adjusted vertically and by locating these elements in respect to the crossbeam 45 and anchoring by the bolt elements 46 and 47, they may be adjusted in respect to width

to accommodate variations in the related shingle stack dimensions.

When the shingle stacks are first placed on the conveyor rollers 11 they are partially enveloped by a rectangular double-faced cardboard wrapper 53 with sides 54 and 55 extending upwardly to be engaged by the scoring tools 48 and 49, respectively. The scoring operation is accomplished by the tools 48 and 49, which are backed in this function by a pair of laterally adjustable anvil rollers 56 and 57, power driven to rotate in conformity with the forward movement of the stacks through a driving train which will be described later. As the shingle stacks advance beyond the idler conveyor rollers 11, they encounter a first conveyor belt 58 which is driven in a continuous even motion around the flat driving pulley 59 and the idler pulley 61. The latter is pivoted on a transverse shaft 62 journaled in a pair of opposite bearings 63 which may be longitudinally adjusted as by the take-upscrew 64 and wheel nut 65 to afford stretchment regulation in the event that the conveyor belt 58 undergoes distention. It will thus be observed that when they achieve the position of the scoring tools 48 and 49, the shingle stacks 14, together with their enveloping wrappers 53, receive forward impelling movement through their impingement on three sides with the belt 58 and the anvil rollers 56 and 57.

This forward motion is, as has been said, a continuous even advancement until the stack and wrapper assembly passes beyond the intermediate idler rollers 66, Fig. 5, riding off the foremost extremity of the belt 58 and thereupon being engaged by a pair of side belts 67 and 68. Shortly before this occurs, however, the upstanding wrapper flaps 54 and 55 encounter a pair of guide rails 69 and 71, Figs. 3, 5 and 8. These guide rails differ from each other slightly in respect to their angle of twist, or, in other words, in accordance with the rate at which they descend from their uppermost position as may be observed in Fig. 5, to their prone position as best observed in Fig. 8. Because of this difference, one of the flaps 55 is folded over ahead of the other flap 54, assuring the completed package of noninterference between the two flaps. The aforedescribed scoring which is produced by the tools 48 and 49 dictates the precise location of the crease.

At about the time that the flaps 55 and 54 are laid over the partially prepared packaging wrapper and its contents approaches the position, Figs. 4 and 5, at which they encounter the depression disc 72, coincident with which it also is engaged by the side plates 74 and 75, see also Fig. 7. This causes the package to receive a longitudinal deflection, as best indicated in Figs. 3 and 7, which is not released until the package passes beyond the range of the side plates 74 and 75. The purpose of this deflection is to overlap the flaps 55 and 54 to a sufficient extent before stapling them together, so that thereafter when the rectangular form is restored to the package there will be established a condition of taut encirclement by the wrapper 53 whereby to prevent the shingles from having sufficient freedom to tend to be displaced even under conditions of shock and vibration.

The degree of flexure which is imparted to the assembled package before stapling may be regulated by adjusting the relative position of the side plates 74 and 75 by means of the adjustment bolts 76 and 77 in their association with

the stout adjustment brackets 78 and 79 carried by the side frame channel members 81 and 82. In order to permit this longitudinal distortion of the package to be performed within the degrees that it is desired to do, the second conveyor belt 83 is guided over longitudinal side rails 84 so as to yield to a limited extent as indicated by the shallow V member 85, Fig. 7, throughout a distance coincident with the particularly described function.

Thereafter, the conveyor belt 83 resumes its normal flat condition until it reaches the remote idler pulley 86 at the discharge end 87 of the machine. In counterdistinction from the first table level conveyor belt 58, the just described conveyor belt 83 is a member which functions in intermittent steps of motion, having intervening rest intervals for a purpose which will later be understood. Its power driven pulley 88, Fig. 4, carried on a shaft 89 receives counterclockwise motion from a driving chain 91 which meshes with a driven sprocket wheel 92. If, as a result of replacement or stretchment, the belt 83 may vary in longitudinal dimension, such variation may be taken up by a horizontal adjustment of its idler pulley 86 by turning the hand wheel 93, which carries with it the pulley shaft journals 94 on a threaded anchor post 95, just as in the case of the pulley adjustment 63 for the earlier described pulley 61.

Thus far the progress of the shingle packages has been described to an intermediate achievement at which the wrapper has been completely encircled about the stack of shingles and at which the shingles have been longitudinally flexed so as to enable the wrapper flaps to overlap each other to a somewhat greater extent than would be afforded under conditions of rectilinear disposition of the shingles. The bundle is now in readiness for stapling while undergoing intermittent advancement in response to this type of driving engagement which is imparted to the bundles by the intermittent motion characteristics of the side belts 67 and 68, as well as by the table floor belt 83. From Figs. 3 and 8, it will be understood that the flaps 54 and 55 are being held down as a result of the prone portions of the guide rails 69 and 71, and that at this time they are resting upon an anvil rail 96 against which the securing staples may be driven to effect clinching of their ends.

The securement staples 101, Fig. 1, are formed and applied by a commercially available machine, generally designated 102, the specific structure of which forms no significant part of the present invention and may be of a class such as that illustrated in U. S. Patent No. 2,194,225. In this type of apparatus a supply spool 103 of wire, located above the forming and applying head 104, directs the wire stock into a forming mechanism, whereupon it is shaped into a staple with two pointed lug portions directed downwardly towards the carton flaps 54 and 55. Through a driving belt 105, which is constantly rotating, the forming mechanism and staple hammering apparatus of the machine 102 are cyclically powered so as to effect at regularly spaced periodic intervals a direct striking of a staple into the flap seam area of the flaps and against the anvil bar 96, described above. As the packages of shingles advance intermittently passing the stapling machine at regularly spaced movements, the timing arrangement is such that the staple striking is performed during the rest interval which intervenes successive movements. Accordingly, the density of stapling along the package seam may be regulated by the degree of movement imparted to the driving belt system during each intermittent advance.

The stapling machine is a continuous power driven device which is cycled at a regular periodicity to effect a striking operation of a staple against a package supported at the proper level beneath it. In order to make certain that no staples are struck during intervals when shingle packages do not pass beneath the striking machine, a probe apparatus 111 is provided which controls the trip clutch of the stapler 102, so that it may not be permitted to engage except when the probe 111 is properly actuated by an underlying objective against which the staples may be directed.

After the flaps have been stapled together as indicated in Fig. 1, the transverse pressure which had been applied against the shingles is marginally released, permitting the shingles to resume a flat unflexed condition and this is the result of the side rails 112 and 113 being adjusted so as to have greater intervening distance than that of the side rails 74 and 75, or of the side rails 114 and 115.

As the completed packages are discharged over the power driven belt 83, they enter upon a conveyor line 119 ready to be taken off and stacked for shipment. It will thus be seen that in accordance with the teachings here disclosed a method and apparatus for packaging shingles may be achieved which is far superior to the practices heretofore known for this purpose in that the enwrapment and securement of the protective sheath is applied during the regular course of travel of the shingles in a production line, the jacketing is secured without danger of bulging, incising or deformation, such as is characteristic of wire and strapping securements, but most significant there is achieved ultimately a packaging dress for commercial shingles that is stronger and more able to withstand the rigors of rough handling during shipments while yet displaying aesthetically pleasing lines which enhance the appearance of the packages and make them more suitable for handling as well as for opening after they have arrived at their destination.

Attention will now be given to the power distribution train whereby all of the aforedescribed function performing elements of the apparatus are driven from a single powering motor and whereby there is maintained a timed synchronization between all of the constituent operations. In Fig. 6 the reference numeral 121 designates an electric motor mounted on a bed support 122, so as to be horizontally adjustable for the purpose of taking up tension in the driving belts 123 whereby the pulley of motor 121 imparts rotation through a worm and gear translating unit 124 to a main distributing shaft 125.

As observed in Fig. 6, the first power take-off from the driving shaft 125 is through a driving pulley 126 which meshes with the aforedescribed belt 105 to drive a pulley wheel 127 that powers the stapling machine 102. At the opposite end of shaft 125 a driving sprocket 128 imparts constant rotation through a link chain 129 to a sprocket wheel 121 of a jack shaft 132 which carries a driving sprocket 133 meshing with the chain 134 to impart rotation to a shaft 135 through the sprocket wheel 136. The shaft 135 is thereby given counterclockwise rotation, as viewed in Fig. 5, and through its driving sprocket 137 it is enabled to impart similar rotation

through a chain belt 138 to the driving sprocket 139 of the first conveyor belt 58. Bevelled gears 141 and 142 carried at opposite ends of shaft 135 mesh with spur gears 143 and 144, whereby there is imparted synchronous but opposite rotation to the shafts 145 and 146 which carry the anvil rollers 56 and 57 against which the creasing tools 48 and 49 are directed.

Intermediate its extremities the main distributing shaft 125 is provided with a crank 151 to which is pivoted a connecting rod 152, so that as the shaft 125 rotates there is imparted an oscillatory movement to a clutch 153 which produces intermittent clockwise rotation affecting the shaft 154, Figs. 5 and 6, which carries the driving sprockets 155 and 156. Driving sprocket 156, which is best seen in Figs. 4 and 5, meshes with a link chain 91 to impart counterclockwise rotation to the driven gear 92 and hence to the conveyor belt 83, as viewed in Figs. 4 and 5. Driving sprocket 155 meshes with a link belt 157 and drives a jack shaft 158 through the driven gear 159. At opposite ends of the jack shafts 158 there are carried the bevelled driving gears 161 and 162 which mesh with the spurs 163 and 164 to impart synchronous but opposite rotation to the vertical shafts 165 and 166. Shaft 166, which is foremost, as viewed in these illustrations, carries a driving pulley 167 and rotates clockwise, as viewed in plan, imparting the necessary direction of intermittent movement to the driving belt 67, while shaft 165 correspondingly powers a driving pulley (not shown) for imparting the opposite type of intermittent movement to the belt 68.

There is thus described a system in which a single power generating device coordinates several advancing and stapling operations. In order to be able to regulate the altitude adjustment of the stapling machine 102, it is preferably carried upon a base 191 of rectangular outline through the four corners of which there extend the threaded adjustment shafts 192. At the upper end of each of these shafts 192, there is secured a sprocket wheel 193 and all of the sprocket wheels are encircled by a common regulating chain which meshes with their teeth, and which is indicated 194. A hand wheel 195 on any one of the screw shafts 192 rotating that shaft will, therefore, impart, through the sprocket wheels 193, corresponding rotation to the other shafts, whereby the stapling machine 102 may be parallelly raised and lowered to effect simple adjustment for accommodating variations in the thickness of the shingle stacks 14.

A portion of the conveyor system has been designed so as to propel the shingle packages at an even regular motion and another portion of the conveyor has been arranged to step the parcels by intermittent motion, so that during the rest intervals which intervene, the stapling machine may be enabled to direct the staples to the package seam. In Fig. 11 there is illustrated another modification of apparatus for synchronizing the stitching movement with the intermittent motion of a conveyor. Here the stitching machine is generally indicated 175 and includes a base 176 which rests upon a multiplicity of guide dowels 177 so as to insure vertical parallel movement. A counterbalancing spring 178 assists in overcoming the weight of the apparatus so as to enable the machine 175 to ride the cam surface of a cam 179 carried by a power shaft 181. Through a link 182 the stapling machine is reciprocated horizontally to and fro so as to move in the direction of the arrow 183 with each package 184 as it advances leftwardly, but to be drawn back a predetermined distance which may be the interval between the successive staples by the link 182 during the dwell which intervenes successive movements on the part of the package 184.

The stapling operation may be accomplished while the machine 175 is moving with the package 184, after which the cam 179 raises the machine and the link 182 draws it back the aforedescribed predetermined step.

While the present invention has been explained and described with reference to specific embodiments of contemplation, it will be understood nevertheless that numerous modifications and variations may be incorporated within its spirit or scope. Accordingly, it is not intended to be limited in an understanding of this invention to the specific language employed in the foregoing description nor to the particulars of the accompanying illustrations except as indicated in the hereunto appended claims.

The invention claimed is:

1. A packaging machine comprising, a first conveyor section for advancing rectangular packages containing stacks of sheet material encased in wrappers along a horizontal course of travel, a second conveyor section in alignment with said first conveyor section, a stitching apparatus located within the range of said second conveyor section for applying a series of stitching elements upon the wrappers encasing said packages, and a device located intermediate said first and second conveyor sections for compressing said packages to reduce their girth as they approach said stitching apparatus comprising opposed side pressure elements and a deflecting center pressure element.

2. A package stapling machine comprising a continuous conveyor system made up of first and second sections, endless belt conveyor means located in said first section having continuous motion, endless belt conveyor means located in said second section having intermittent motion, a stitching apparatus driven in timed relation with said second section belt conveyor means including mechanism for driving and clinching securement staples onto packages advanced in said second section during the rest intervals which intervene the intermittent movements of said belt conveyor thereof, and pressure apparatus located between said first and second sections for transversely compressing packages advancing therethrough for thereby reducing the girth of enveloping wrappers in advance of their encounter by said stitching apparatus.

3. A package wrapping and stapling machine comprising, a horizontal conveyor system including first and second sections, package propelling means located in said first section having continuous motion, package propelling means in said second section having intermittent motion, a stitching apparatus driven in timed relation with said second section propelling means including mechanism for driving and clinching securement staples onto package wrappers during the rest interval which intervenes the intermittent movements of said second section propelling means, and pressure apparatus located between said first and second sections for compressing packages advancing therethrough for thereby reducing their girth so that their enveloping wrappers may be stitched under taut encasing condition.

4. In a package wrapper stapling machine, a linear conveyor channel adapted to advance rectangular packages partially enveloped by a single ply jacket of stiff fibrous material, a first package impelling mechanism for imparting continuous motion to said packages, a second package impelling mechanism for importing intermittent motion advancement to said packages, a wrapper stapling machine located at said second package impelling mechanism, and means comprising side pressure constricting plates cooperating with a longitudinal curvature depressing weight located intermediate said first and second package impelling mechanisms for constricting the girth of said packages in order to achieve a taut condition of encirclement by said jacket before it is secured about said packages.

5. In a stapling machine for moving packages, a horizontal conveyor channel on which are advanced rectangular packages enveloped by a single sheet wrapper, a first advancing mechanism in said conveyor for imparting continuous motion to packages, a second advancing mechanism in said conveyor for imparting intermittent motion to packages, a staple applicator associated with said second advancing mechanism and means comprising side pressure constricting plates cooperating with a longitudinal curvature depressing weight located intermediate said first and second advancing mechanisms for constricting the girth of packages as they are advanced from said first to said second mechanism in order to achieve a taut condition of the packages before said wrapper is secured.

6. In a stapling and packaging apparatus, a conveyor system for advancing assembled stacks of sheet products encased in a sheath to be stapled, a rotary power source, a power take-off apparatus associated with said source including translating mechanism for imparting intermittent movements to said conveyor system, guide elements located along the course of travel in said conveyor system for directing the ends of said sheaths into overlapping seam relation, and a stitch applicator including a rotary power take-off apparatus driven by said source, an anvil disposed beneath the overlapping seam of said sheath, and timing means for initiating a stitch operation by said applicator during the rest interval which intervenes the intermittent movements of said conveyor system.

7. In a machine for stapling package wrappers, a first conveyor having continuous propelling motion, creasing anvils riding over successive packages as they are propelled by said first conveyor for imparting fold creases to an encircling wrapper at the precise altitudes of said packages, a second conveyor having intermittent propelling motion, a stapling machine for securing together the ends of a wrapper after folding at said creases, and power means for actuating said stapling machine during the rest intervals which intervene the intermittent propelling motions imparted by said second conveyor.

8. In a machine for applying stitching staples to the wrappers of packages, a staple forming and applying apparatus powered from a rotary source, a conveyor over which partially wrapped packages are advanced passing as they do so beneath said staple forming and applying apparatus, a base member supporting said apparatus, a set of elevation adjustment screws extending through said base, and means for regulating the elevation of said apparatus whereby to accommodate different sized packages borne by said conveyor, which comprises horizontally aligned sprockets integral with each of said adjustment screws, a sprocket chain meshing with all said sprockets, and a hand wheel associated with one of said adjustment screws whereby all are rotated in unison and whereby parallelism in elevational adjustment is maintained.

9. In a packaging machine for stacks of sheet material, a conveyor comprising a system of intermittent motion package advancing impellers, a stitching apparatus for securing together the seam ends of a wrapper encircling said stacks of sheet material, and means for longitudinally flexing and thereby constricting the girth of said stacks of sheet material before said stitching apparatus has secured together said wrapper comprising converging side wall elements for compressing said stacks and overriding down pressure apparatus for directing the course of deflection of said stacks.

10. The combination set forth in claim 9 including a courseway in said conveyor adjacent said flexing and constricting means in which table support components are shaped to conform with the deformations imparted to said stacks by said flexing and constricting means.

11. A wrapping and wrapper stitching machine for packaging stacks of flat stock material comprising, a staple forming and applying machine supported to overlie a line of travel through which overlapping edges of a wrapper encasing a stack of said material is traveled, intermittently fed belt conveyors journalled upon vertical pivots flanking the edges of said wrapper encased flat stock material having their innermost felt flights engaging said edges, pressure plates carried upon horizontally adjustable rods disposed behind said innermost belt flights for applying a compressive force against said stack during the time that it is passing said staple machine, the said compressive force being sufficient to effect concavity of said stack and means comprising a support table having concavity and a weighted depresser riding over said stock for inducing said stock to assume a marginal girth diminishing curvature before reaching said staple applying machine.

FELIX STENCIL.

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