

Aug. 21, 1951

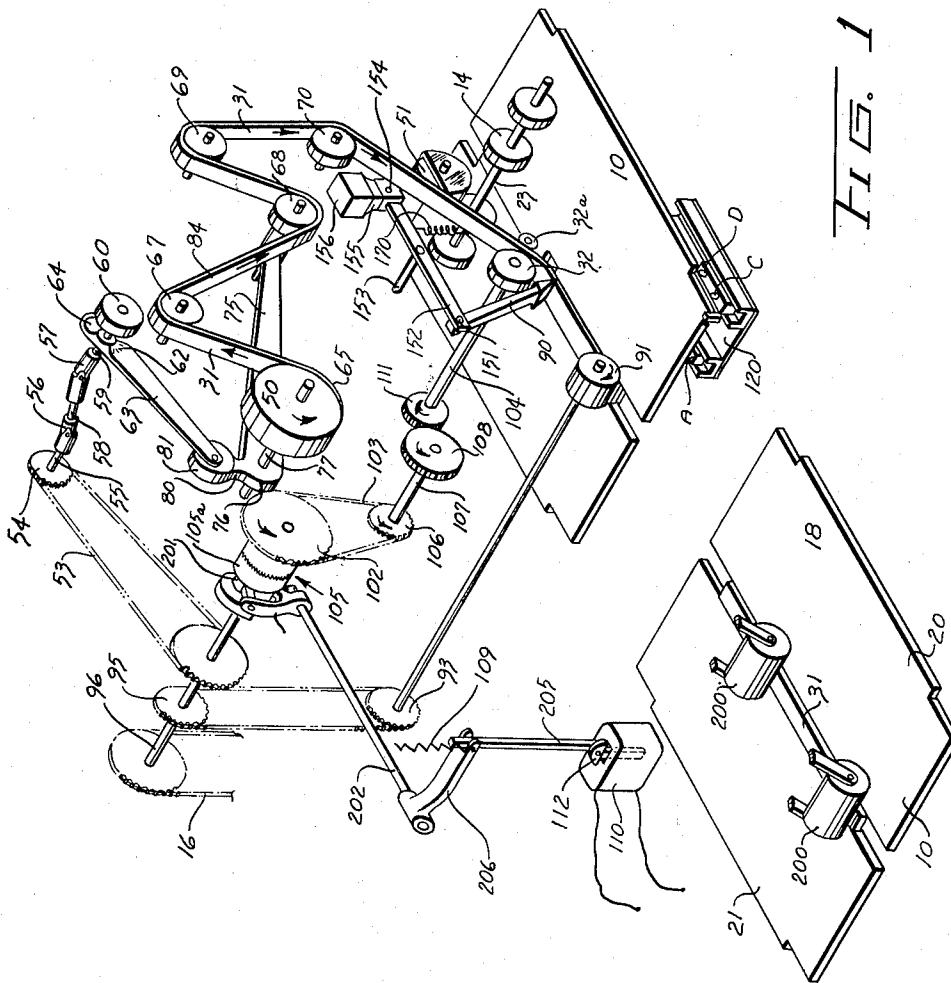
C. HESS

2,564,901

SOLENOID CONTROLLED TAPING MACHINE

Filed Nov. 20, 1947

3 Sheets-Sheet 1



File 1

INVENTOR.

CHARLES HESS

BY

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ATTORNEYS

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SOLENOID CONTROLLED TAPING MACHINE

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Fig. 1 is a perspective view of a portion of a conveyor belt assembly. It shows a main conveyor belt 120 with a series of transverse dividers 121. A smaller, stepped conveyor belt 124 is positioned above the main belt. The stepped belt has three steps, each with a pulley 125. The pulleys are labeled A, A', B, B', C, and C'. The main belt has a pulley 130. The assembly is supported by a frame 122. The inventor is Charles Hess.

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FIG. 4

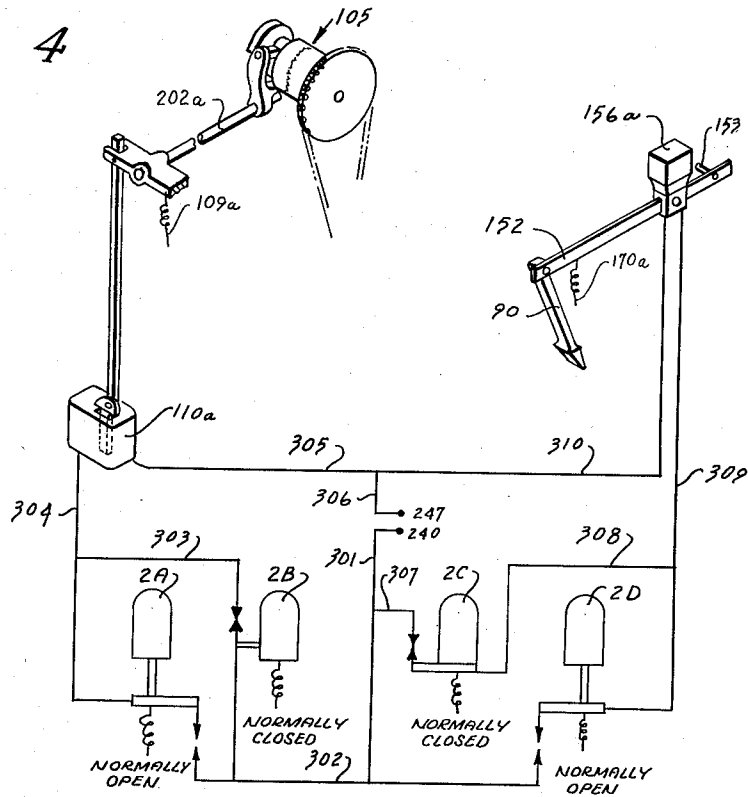
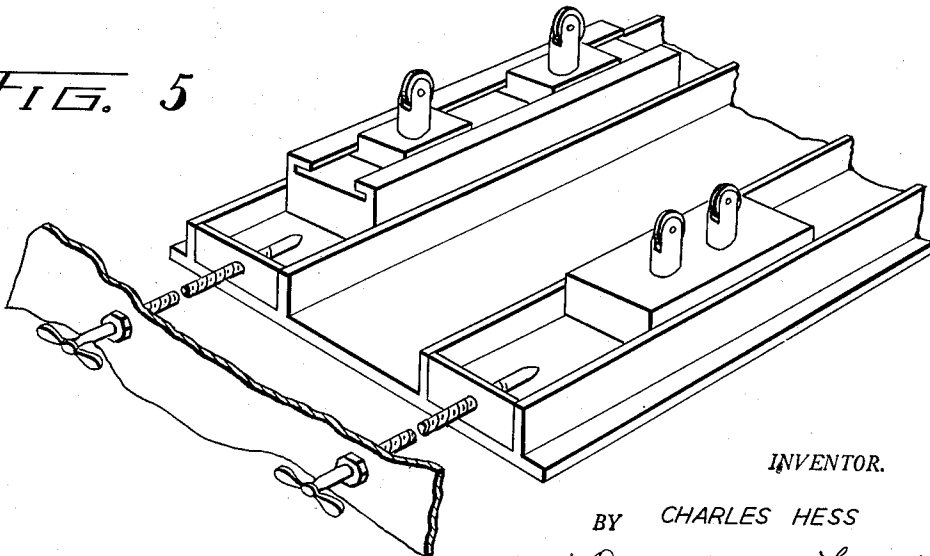


FIG. 5



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2,564,901

SOLENOID CONTROLLED TAPING MACHINE

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Application November 20, 1947, Serial No. 787,159

10 Claims. (Cl. 216—22)

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My present invention relates to taping machines and more particularly to a taping machine adapted to tape the seam of folded corrugated board or other fibre board boxes passed there-through preferably by means of taping operations initiated by the passage of the box through the apparatus.

More particularly my invention relates to a taping machine of the general type disclosed in Patent No. 2,467,275 issued April 12, 1949, wherein, however, switching means operated by the passage of the box through the machine initiates the tape feeding operation and performs the tape cutting operation.

In taping machines of this general type, it is necessary to feed out the tape to a position where it may be pressed down at the leading edge of the seam. Thereafter the box as it moves through the machine pulls out the tape; at the conclusion of the taping operation when the trailing end of the seam is reached, it is necessary to cut off the tape so that the trailing end of the tape will coincide with the trailing end of the seam.

Various mechanical means have been utilized in order to accomplish these various operations, these means being primarily interconnected with the blank feeding elements in order to produce appropriately phased operations.

Attempts have also been made to initiate the taping cycle by a switch having an operating arm operated by the box as it moves through the machine but no means have been provided for terminating the tape feeding cycle at any particular desired adjustable point or for obtaining the tape cutting operation by means originally initiated by switching apparatus.

The primary object of my present invention, therefore, is the provision of electromechanical means for applying the tape and cutting off the tape at the proper point as a folded box moves through the taping machine.

Another object of my invention is the provision of novel means for utilizing the movement of the box through the machine not only for initiating the tape feeding operation but also for initiating the tape cutting operation.

Another object of my invention is the provision of novel means in addition to the foregoing and dependent on the movement of the box through the taping machine for controlling the length of the tape feeding operation.

Still another object of my invention is the provision of novel means dependent on the movement of the box through the taping machine for initiating and controlling the tape feeding op-

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eration and for cutting off the tape at the proper point, all of the said means being readily adjustable in accordance with the length of the seam to be taped.

The foregoing and many other objects of my invention will become apparent in the following description and drawings in which

Figure 1 is a schematic view in perspective illustrating my invention.

Figure 2 is a circuit diagram illustrating my invention.

Figure 3 is a schematic perspective showing the means for adjusting the switch elements of my invention.

Figure 4 is a combination schematic view and circuit diagram illustrating a modified and preferred form of my invention.

Figure 5 is a schematic perspective showing the means for making fine adjustments of the switch elements of my invention.

Referring now to Figure 1, the folded blank 10 is fed forward in any suitable manner as by the feed rolls 14 controlled by the front slats 15 on the moving chain 16, the said feeding means being generally in accordance with that set forth in application Serial No. 633,008.

Each folded blank 10 comprises essentially a tubular box having panels 18 and 19 which have been folded down around the fold lines 20, 21 with the edges of the panels 18 and 19 meeting to form the seam 23.

My device is designed to apply a length of tape 31 to the seam 23 in order to finish the tubular box.

The supply roll 50 for the tape 31 and the tape feeding arrangement 11 is that specifically shown in application Serial No. 659,636. The main drive shaft 96 (driven by chain 16 and sprocket 30) is connected by sprocket 52 and chain 53 to sprocket 54 of shaft 55 which is the drive shaft for the tape feeder 11. Drive shaft 55 is connected by universal joints 56 and 57 on either side of shaft 58 to the driven shaft 59 of driven pulley 60. Driven shaft 59 of pulley 60 passes through an opening 62 in lever 63 which lever is pivoted on the stationary pivot 64.

Tape supply roll 50 is mounted on shaft 65. The tape 31 which is pulled off the tape supply roll 50 passes over idler 67 and then down over the slack control idler 68 up over idler 69 and then down past guide roll 70 and over the water roll 51. Slack control idler 68 is mounted on the end of lever arm 75 which in turn has a collar 76 with an opening 77 therein mounted over stud 65 for pivotal rotation thereabout. Collar 76 has

the short extension 80 which is so arranged that it engages roller 81 at the end of lever 63 opposite the pivot 62.

When the slack control roller 68 is down in position shown in Figure 1, the lever 75 is also down as shown and extension 80 thereof is in the up position lifting the roller 81. This lifts the lever 63 about the pivot 64 and thus also lifts shaft 59 and driven pulley 60. As the tape 31 is drawn out the reduction of the slack loop 84 which thus occurs lifts the slack control roller 68 thus lifting the lever 75 and dropping down the extension 80. This causes roller 81 of lever 63 to drop down and thus causes the driven roller 60 to drop down on to the portion of the tape passing over idler 67.

Driven roller 60 is continuously driven at higher peripheral speed than the required linear speed of tape 31. Consequently contact of roller 60 with the portion of tape 31 over idler 67 will pull off tape 31 from supply roll 50 at a faster rate than the tape 31 is pulled off by roller 32 or blank 13 of the taping machine. This will cause the slack loop 84 to be increased thus permitting the slack control roller 68 and its associated lever 75 to drop down. Consequently extension 80 of lever 75 will rise lifting roller 81 and lever 63 thus lifting shaft 59 and the driven roller 60 to the position shown in Figure 1. Extension 80 of lever 75 is actually, as shown, a sharp bump on collar 76 so that driven roll 60 will contact the tape at all positions of arm 75 except at the extreme lower position shown in Figure 1.

As soon as the slack tends to be used up once more, the tape feeder roll 68 again moves upwardly thereby causing the driven roller 60 to contact the portion of the tape 31 over idler 67 and draw off more slack. Again since the peripheral speed of roller 60 is higher than the linear speed required for tape 31, any of the slack 84 which is used up by any taping operation will be immediately restored without excess tension on the tape.

The taping machine will at all times only pull on the slack loop 84 which slack loop is continuously restored faster than the taping machine can pull the tape out and the length of slack loop 84 is controlled by reason of the fact that the roller 60 which creates the slack loop 84 is raised as soon as the slack loop is sufficient in length.

The tape 31 moves down under the guide roller 70 and over the moistener 51 to the tape feeding roll 32 which cooperates with the idler 32a. It is fed beneath the cutting knife 90 by the tape feeder 32 and on to the seam 23 of the box blank 10. The tape 31 is pressed down on the seam by the pressure roller 91 mounted on shaft 92, which shaft is driven from main drive shaft 96 by sprockets 95 and 93 and chain 94.

Heretofore many attempts have been made to simplify the operation of the tape feeding and tape cutting means. This has resulted in rather complex mechanical arrangements utilizing cams of various kinds to operate both the tape feeder and the tape cutter; and it was necessary to provide complex mechanical means for adjusting these cam arrangements to various sizes of boxes and for variations in the length of flap and the length of seam in the box.

My invention is directed specifically to simplified apparatus operated by the movement of the box itself for initiating the tape feeding and tape cutting operation. Primarily my invention utilizes electrically operated means for controlling both the tape feeding and tape cutting operations,

and, therefore, makes possible the use of simplified switching apparatus operated by the movement of the box itself to control these means.

The tape feeding roll 32 is operated from the main drive shaft 96 through clutch 105 operated by solenoid 110. This tape feeding roll is of the well-known ratchet type or overrunning clutch type described in application Serial No. 633,008 which roll is designed on rotation in a clockwise direction with respect to Figure 1, to pull out a length of tape, feeding it under the knife and under the pressure roller 91 until the leading edge of the length of tape is secured to the leading edge of the seam. At this time the box blank to which the leading edge of the tape is secured pulls out the tape past the roll 32, the ratchet or overrunning clutch arrangement in the roll 32 permitting this to occur.

Accordingly it is only necessary actually to feed out approximately 3 inches of tape irrespective of the length of the seam since after the leading edge of the tape has been applied to the box blank, the movement of the box blank serves to draw out the remaining tape needed for the seam.

In some cases and for specific operating reasons it may be necessary to vary the amount of tape actually fed out by operation of roll 32 in a clockwise direction.

Heretofore adjustments to obtain variations in the length of feed have required complex mechanical apparatus. My novel device requires merely the utilization of two switches A and B for this adjustment.

Heretofore also it has been necessary to provide mechanical means for operating the knife to cut the length of tape after it has been pulled out so that the length pulled out equals the length of the seam. My novel knife cutting operation requires merely the adjustment of a single unit containing a switch in order to operate the cutting knife at the appropriate time.

In addition, since the operation of the knife is electrical in my novel device, it is desirable that the mechanism for operating the knife be de-energized immediately after operation. For this purpose, instead of a single switch, two switches in series are used as hereinafter described in order to ensure that the knife operating mechanism is de-energized as soon as the cutting operation has taken place.

These switches need not be adjusted with respect to each other and thus may be moved simultaneously.

Heretofore in making adjustments of various kinds in prior taping machines to allow for the length of the flap in order that the tape may be applied at the proper point on the box at the beginning of the seam and in making adjustments for the length of feed-out of the tape and also in making adjustments of the knife cutting mechanism to cut the tape after an appropriate length has been fed out, it was necessary for the operator to adjust various parts of the mechanism at various points remote from each other.

My novel device makes it possible to place all of the adjustments at a single location preferably at or adjacent the portion of the taping machine at which the tape is applied and cut off.

Main drive shaft 96 drives roll 32 through the clutch 105 by sprocket 102 connected to the driven element of clutch 105, chain 103, sprocket 106 which drives shaft 107, gears 108 and 111 which drive shaft 104 which carries roll 32.

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Driving element 105a of clutch 165 has clevis 200 engaging in annular groove 201 thereof. Clevis 200 is mounted on rotatable shaft 202. When the shaft is rotated to the left, the clutch 105 is disengaged and roll 32 is not driven; when it is rotated to the right, the clutch is engaged and roll 32 is driven.

A solenoid 110 has an armature 112 connected at 112 by link 205 to crank 206 on shaft 202. When the solenoid 110 is energized to attract its armature 112, it rotates the shaft 202 to engage clutch 105 to drive sprocket 102 and hence to drive shaft 104 and feed-out roll 32. The length of tape is thus fed out until the solenoid 110 is de-energized and tension spring 109 pulls crank 206 and shaft 202 back to disengage clutch 105 and thus halts the operation of the shaft 104 and the feed-out roll 32.

Switches A and B are operated by the leading edge of the box blank 10 to control the operation of solenoid 110. Switch A is normally closed and switch B is normally open. Switch A is forward of the switch B so that it will be struck later by the leading edge of the box blank. Switches A and B are provided, respectively, with operators A' and B' which are pushed down by the leading edge of the box and held down by the under-surface of the box blank as it moves along.

Switch B is spaced forward of the tape feeding element by an amount equal to the length of flap of the box so that when the leading edge of the box closes switch B by pressing down the switch operator B', the leading end of the seam will be just under the tape that is fed out. Switch A is spaced forward of switch B by an amount equal to the length of tape to be fed out. The closing of switch B actuates the solenoid to pull out latch 107 and thereby feed-out roller 32 to feed out tape.

As the box then moves along it opens switch A to deenergize the solenoid. Thus the spacing of switches A and B controls the length of tape to be fed out which preferably is of the order of three inches, the box then pulling out the remainder of the tape. Consequently switches A and B will ordinarily be adjusted simultaneously since usually the amount of tape to be fed out is constant irrespective of the length of the box. This is so because the box blank itself pulls out the remainder of the tape. Thus at the area at which tape is first applied to the box, a platform 120 (Figures 1 and 3) is provided with two tracks 121 and 122. Track 121 carries the slide 124 which in turn is provided with track 125.

Switches A and B are slidably mounted in track 125 in order to obtain the proper adjustment between switches A and B. Ordinarily switches A and B will not be slid with respect to each other in track 125 unless a change in the actual length of the original feed-out of the tape is required. But slide 124 will be moved back and forth in the track 121 whenever it is necessary to adjust the position of switch B for variations in the length of flap of successive sets of boxes. This makes it possible to adjust switches A and B simultaneously, maintaining the relationship between switches A and B, switch B being of course the controlling switch which must be accurately adjusted.

Track 122 provides an adjustment for the slide element 130 which carries switches C and D. Switches C and D need not be adjusted with respect to each other and accordingly are not adjustably mounted in the slide element 130 but are rigidly mounted therein.

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Switch A is normally closed and switch B is normally open. These switches are in series with each other and with the tape feed-out solenoid 110, as well as with the source of current.

As seen in Figure 2, the circuit for solenoid 110 is from terminal 140, conductors 141, 142, through switch B, conductor 143, through switch A, conductor 144, through the solenoid 110, conductors 145, 146, to terminal 147. With switch A normally closed and switch B normally open, then as the leading edge of the box blank reaches switch B it presses down switch operator B' to close switch B. At this time the solenoid 110 is energized and the tape feed-out roll 32 begins to operate as above described. The box blank in its forward movement now strikes switch operator A' of switch A to open switch A while switch B is closed. This breaks the circuit to solenoid 110 and halts the operation of the feed-out roller 32.

Thereafter the box blank to which the leading edge of the tape has been secured pulls out the tape, the ratchet or over-running clutch arrangement in the feed-out roller 32 permitting this to occur.

The cutting knife 90 is located at the lower end of the arm 150 which is rigidly secured at 151 to the level 152 which in turn is pivoted at the cross-shaft 153. The opposite end of lever 152 is pivotally connected at 154 to the solenoid armature 155 of solenoid 156. When solenoid 156 is energized it attracts its armature 155 to cause lever 152 to pivot in a counterclockwise direction about its shaft 153 to cause arm 150 carrying cutting knife 90 to move down and cut the tape 31.

Solenoid 156 is energized by the movement of the box blank in order to effect this cutting operation. This energization occurs when the box blank leaves the switch D. As the box blank moves along the path it first strikes switch operator D' of switch D and opens switch D; then it strikes operator C' of switch C and closes switch D. Switches C and D are in series with solenoid 156, the circuit therefore extending from terminal 140 and conductors 141 and 160 to switch D; then over conductor 162 to the solenoid 156 and then through conductors 163 and 146 to terminal 147.

Thus, before the box blank moves into position over switches C and D, the circuit for solenoid 156 is open at switch C. While the box blank is moving over switches C and D, switch C is closed but switch D is open so that the circuit for solenoid 156 still remains open. When the box blank leaves switch D, then switch D closes, energizing solenoid 156 to operate the knife 90 to cutting position, switches C and D in series with solenoid 156 being closed at this time.

Immediately after this operation, the box blank leaves switch C permitting switch C to open and thus de-energizing the solenoid to permit knife blade 90 to be raised. An appropriate tension spring 170 may be provided connected to lever 152 to maintain knife 90 in raised position.

It will thus be seen that the switches A and B, mounted on the slide 124, and switches C and D, mounted in the block 130, may all be located in the same region or area at the point at which the tape is first applied, thereby simplifying the adjustment operation.

These switches may be adjusted in accordance with the length of flap so that the tape will be applied at the beginning of the seam and the tape

will be cut off to match the trailing end of the seam. The tape is first pressed down by the roller 91 and then further pressed down and smoothed by the pressure rollers 200, 200.

In Figure 4, I have shown a modified and preferred form of my invention in which the ratchet drive solenoid 110a and the cutting solenoid 156a are continuously energized while the machine is operating and in which the solenoids are de-energized during the feed-out stroke and the cutting stroke, respectively, to permit spring 109a to effect the closing of clutch 105 to feed out the tape and to permit spring 170a to perform the cutting operation.

Solenoid 110a is energized from terminals 240 over conductors 301, 302 normally closed switch 213, conductors 303 and 304 to solenoid 110a and conductors 305 and 306 to terminal 247. When the blank advances it first opens the switch 2B. This de-energizes solenoid 110a to permit spring 109a to rotate shaft 202a to close the clutch 105.

When the leading edge of the blank strikes switch 2A, it closes a circuit paralleling switch 2B to re-energize the solenoid. The solenoid 110a remains energized while the blank passes over switch 2A. But before the blank leaves switch 2A, it first leaves switch 2B permitting it to close so that solenoid 110a remains energized. The solenoid 110a is thus de-energized only while the leading edge of the blank passes from switch 2B to switch 2A. The distance between these two switches thus determines the length of the tape feed-out.

Similarly, solenoid 156a is energized from terminal 240, conductors 301, 307, normally closed, switch 2C, conductors 308, 309, solenoid 156a, conductors 310, 306 to terminal 247. Switch 2D parallels switch 2C and is normally open. The blank closes switch 2D to maintain solenoid 156a energized while the blank continues to open switch 2C. When the trailing edge of the blank leaves switch 2D, this switch opens and the solenoid remains de-energized until switch 2C closes when the blank leaves this switch. The cut occurs when switch 2D is opened by the trailing edge of the blank. When solenoid 156a is de-energized, spring 170a on the knife side of pin 153 effects the cut.

In Figure 5, I have shown the application of a running adjustment for the positions of the switches of Figures 1 or 4. Switches A and B slidable in block 121 ride in rail 400. Nut 402 in block 121 receives the screw 404. Rotation of screw 404 shifts the switches A and B or 2A and 2B longitudinally. Also switches C and D on block 122 ride in rail 401. Nut 403 on block 122 receives screw 405. Rotation of this screw shifts switches C and D. Screws 404 and 405 extend to the delivery end of the machine where the inspector stands. The inspector may adjust switches A and B by rotating screw 404 when the leading edge of the tape does not register accurately with the leading edge of the seam. He adjusts switches C and D by rotating screw 405 when the trailing edge of the tape does not register accurately with the trailing end of the seam.

In the foregoing, I have described my invention solely in connection with specific illustrative embodiments thereof. Since many variations and modifications of my invention will now be obvious to those skilled in the art, I prefer to be bound not by the specific disclosures herein contained but only by the appended claims.

I claim:

1. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape feeding and applying apparatus and said tape cutting apparatus being electrically controlled; first switch means operable by the passage of the box blank leading edge through the machine for successively energizing and de-energizing a first solenoid, the armature of said first solenoid controlling the operation of said tape feeding and applying apparatus and independent second switch means directly operable by the passage of the box blank through the machine for successively energizing and de-energizing a second solenoid, the armature of said second solenoid controlling the operation of said tape cutting apparatus; said first switch means comprising a pair of switches in series and operating members therefor, said operating members being aligned longitudinally and positioned to be moved by the leading edge of the box blank, the switch first operated by the leading edge of the box blank being normally open and the switch operated next by the leading edge of the box blank being normally closed; the first operated switch being closed by the leading edge of the box blank and remaining closed as the box blank moves thereover and the second operated switch being opened by the leading edge of the box blank and remaining open while the box blank moves thereover; the tape feeding and applying apparatus being energized while the leading edge of the box blank moves from the operating member for the first switch to the operating member for the second switch.

2. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape feeding and applying apparatus being electrically controlled; switch means operable by the passage of the box blank through the machine for successively energizing and de-energizing a first solenoid, the armature of said first solenoid controlling the operation of said tape feeding and applying apparatus; said switch means comprising a pair of switches in series and operating members therefor, said operating members being aligned longitudinally and positioned to be moved by the leading edge of the box blank, the switch first operated by the leading edge of the box blank being normally open and the switch operated next by the leading edge of the box blank being normally closed; the first operated switch being closed by the leading edge of the box blank and remaining closed as the box blank moves thereover and the second operated switch being opened by the leading edge of the box blank and remaining open while the box blank moves thereover; the tape feeding and applying apparatus being energized while the leading edge of the box blank moves from the operating member for the first switch to the operating member for the second switch.

3. In a taping machine for applying tape to the seam of a folded box blank, means for moving

the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape feeding and applying apparatus being electrically controlled; switch means operable by the passage of the box blank through the machine for successively energizing and de-energizing a first solenoid, the armature of said first solenoid controlling the operation of said tape feeding and applying apparatus; said switch means comprising a pair of switches in series and operating members therefor, said operating members being aligned longitudinally and positioned to be moved by the leading edge of the box blank, the switch first operated by the leading edge of the box blank being normally open and the switch operated next by the leading edge of the box blank being normally closed; the first operated switch being closed by the leading edge of the box blank and remaining closed as the box blank moves thereover and the second operated switch being opened by the leading edge of the box blank and remaining open while the box blank moves thereover; the tape feeding and applying apparatus being energized while the leading edge of the box blank moves from the operating member for the first switch to the operating member for the second switch and being de-energized when the leading edge of the box blank engages the operator for the second switch.

4. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape feeding and applying apparatus being electrically controlled; switch means operable by the passage of the box blank through the machine for successively energizing and de-energizing a first solenoid, the armature of said first solenoid controlling the operation of said tape feeding and applying apparatus; said switch means comprising a pair of switches in series and operating members therefor, said operating members being aligned longitudinally and positioned to be moved by the leading edge of the box blank, the switch first operated by the leading edge of the box blank being normally open and the switch operated next by the leading edge of the box blank being normally closed; the first operated switch being closed by the leading edge of the box blank and remaining closed as the box blank moves thereover and the second operated switch being opened by the leading edge of the box blank and remaining open while the box blank moves thereover; the tape feeding and applying apparatus being energized while the leading edge of the box blank moves from the operating member for the first switch to the operating member for the second switch and being de-energized when the leading edge of the box blank engages the operator for the second switch; said tape feeding and applying apparatus remaining de-energized while the box blank passes thereover.

5. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading

edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape feeding and applying apparatus being electrically controlled; switch means operable by the passage of the box blank through the machine for successively energizing and de-energizing a first solenoid, the armature of said first solenoid controlling the operation of said tape feeding and applying apparatus; said switch means comprising a pair of switches in series and operating members therefor, said operating members being aligned longitudinally and positioned to be moved by the leading edge of the box blank, the switch first operated by the leading edge of the box blank being normally open and the switch operated next by the leading edge of the box blank being normally closed; the first operated switch being closed by the leading edge of the box blank and remaining closed as the box blank moves thereover and the second operated switch being opened by the leading edge of the box blank and remaining open while the box blank moves thereover; the tape feeding and applying apparatus being energized while the leading edge of the box blank moves from the operating member for the first switch to the operating member for the second switch and being de-energized when the leading edge of the box blank engages the operator for the second switch; said tape feeding and applying apparatus remaining de-energized while the box blank passes thereover; said switches being longitudinally adjustable along the path of movement of the box blank.

6. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape feeding and applying apparatus being electrically controlled; switch means operable by the passage of the box blank through the machine for successively energizing and de-energizing a first solenoid, the armature of said first solenoid controlling the operation of said tape feeding and applying apparatus; said switch means comprising a pair of switches in series and operating members therefor, said operating members being aligned longitudinally and positioned to be moved by the leading edge of the box blank, the switch first operated by the leading edge of the box blank being normally open and the switch operated next by the leading edge of the box blank being normally closed; the first operated switch being closed by the leading edge of the box blank and remaining closed as the box blank moves thereover and the second operated switch being opened by the leading edge of the box blank and remaining open while the box blank moves thereover; the tape feeding and applying apparatus being energized while the leading edge of the box blank moves from the operating member for the first switch to the operating member for the second switch and being de-energized when the leading edge of the box blank engages the operator for the second switch; said tape feeding and applying apparatus remaining de-energized while the box blank passes thereover; said switches being longitudinally adjustable with respect to each other along the path

of movement of the box blank to control the length of the tape fed out by the tape feeding and applying apparatus.

7. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape feeding and applying apparatus being electrically controlled; switch means operable by the passage of the box blank through the machine for successively energizing and de-energizing a first solenoid, the armature of said first solenoid controlling the operation of said tape feeding and applying apparatus; said switch means comprising a pair of switches in series and operating members therefor, said operating members being aligned longitudinally and position to be moved by the leading edge of the box blank, the switch first operated by the leading edge of the box blank being normally open and the switch operated next by the leading edge of the box blank being normally closed; the first operated switch being closed by the leading edge of the box blank and remaining closed as the box blank moves thereover and the second operated switch being opened by the leading edge of the box blank and remaining open while the box blank moves thereover; the tape feeding and applying apparatus being energized while the leading edge of the box blank moves from the operating member for the first switch to the operating member for the second switch and being de-energized when the leading edge of the box blank engages the operator for the second switch; said tape feeding and applying apparatus remaining de-energized while the box blank passes thereover; said switches being longitudinally adjustable with respect to each other along the path of movement of the box blank to control the length of the tape fed out by the tape feeding and applying apparatus; said switches being also simultaneously adjustable longitudinally.

8. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape cutting apparatus being electrically controlled; switch means operable by the passage of the box blank leading edge through the machine for successively energizing and de-energizing said tape cutting apparatus; said switch means comprising a pair of switches in electrical parallel and operating members therefor arranged longitudinally along the path of movement of the box blank to be moved thereby as it passes thereover; the first switch to be operated by the box blank being normally closed and second being normally open; said box blank as it passes thereover causing the first switch to open and the second to close; said first switch closing as the trailing edge of the box blank leaves the operator therefor to energize the tape cutting apparatus.

9. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape cutting apparatus being electrically controlled; switch means operable by the passage of the box blank leading edge through the machine for successively energizing and de-energizing said tape cutting apparatus; said switch means comprising a pair of switches in electrical parallel and operating members therefor arranged longitudinally along the path of movement of the box blank to be moved thereby as it passes thereover; the first switch to be operated by the box blank being normally closed and second being normally open; said box blank as it passes thereover causing the first switch to open and the second to close; said first switch closing as the trailing edge of the box blank leaves the operator therefor to energize the tape cutting apparatus; said tape cutting apparatus being de-energized when the trailing edge of the box blank leaves the operator for the second switch.

10. In a taping machine for applying tape to the seam of a folded box blank, means for moving the box blank through the machine, tape feeding and applying apparatus for applying the leading edge of the tape to the leading edge of the seam, tape cutting apparatus for cutting the tape after a length thereof equal to the length of the seam has been drawn from the tape feeding and applying apparatus; said tape cutting apparatus being electrically controlled; switch means operable by the passage of the box blank leading edge through the machine for successively energizing and de-energizing said tape cutting apparatus; said switch means comprising a pair of switches in electrical parallel and operating members therefor arranged longitudinally along the path of movement of the box blank to be moved thereby as it passes thereover; the first switch to be operated by the box blank being normally closed and second being normally open; said box blank as it passes thereover causing the first switch to open and the second to close; said first switch closing as the trailing edge of the box blank leaves the operator therefor to energize the tape cutting apparatus; said tape cutting apparatus being de-energized when the trailing edge of the box blank leaves the operator for the second switch; said switch means being longitudinally positionable in accordance with the dimensions of the box blank being taped.

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The following references are of record in the file of this patent:

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