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DUAL PURPOSE SEAT COVER AND TOWEL FORMING MACHINE

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The present invention relates to dual purpose seat cover and towel forming machines. The present invention contemplates the provision of machines suitable for installation in locations where towels and/or seat covers may be used. It contemplates a machine adapted to operate on paper in the web to form a seat cover or towel, as desired by the person operating the machine. The ability to make either of the desired articles from the same supply roll, and in a single machine, makes it unnecessary to install two machines or dispensers for providing such articles and makes it unnecessary to maintain a stock of preformed towels or seat covers, or both. The utilization of a roll of paper as a source of supply for both items, contributes to the economical supply of the items for the rolled web of paper is the cheapest and most convenient manner of handling, storing, and transporting the material. It also eliminates much of the expense of packing in cartons, which is customary where preformed articles are supplied.

Machines of this nature may be made up either as dispensers or as venders, the latter requiring a coin control mechanism. Even where the free dispenser is employed, the necessity for operating the device by the user to obtain the desired article tends to discourage wastage without depriving one of additional articles, if desired. The essential difference between the seat cover and the towel formed by machines of this nature is that the seat cover has an incompletely severed flap while the towel has no flap. The articles are otherwise identical.

The present invention contemplates a machine wherein the mechanism for forming the flap may be rendered non-functioning when a towel is desired.

Seat cover making and vending machines are shown in Stahl Patent No. 1,840,266, dated January 5, 1932, and Doane Patent No. 1,844,884, dated February 9, 1932.

The accompanying drawings show, for purposes of illustrating the present invention, several embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same. In these drawings:

Fig. 1 illustrates a seat cover such as formed by the present machine;
Fig. 2 illustrates a towel;
Fig. 3 is a developed surface of the female cylinder or roller;
Fig. 4 is a vertical sectional view through one form of dual purpose machine having a bodily movable male cylinder or knife bearing roller, taken on the line 4—4 of Figs. 5 and 7;
Figs. 5 and 6 are end elevational views of the machine shown in Fig. 4, showing the stop and release mechanism and the mechanism for shifting the position of the knife carrying roll, —Fig. 5 showing this roller in forward position and Fig. 6 showing it in the rear position;
Fig. 7 is a diagrammatic sectional view taken at right angles to Fig. 4 through the male and female rollers, indicating in dot and dash lines the two positions of the male roller;
Fig. 8 is a fragmentary view of a detail of the selector lever of Figs. 5 and 6;
Fig. 9 is an end view with parts broken away and parts in section showing a modified form of construction having the male roller movable away from the female roller by eccentrics, also illustrating a modified form of stop and release mechanism;
Fig. 10 is a fragmentary sectional view through the eccentric control for the male roller;
Fig. 11 illustrates the stop and release mechanism in different positions;
Fig. 12 illustrates the relative positions of the male and female rollers;
Fig. 13 is a diagrammatic top plan view of a set of male and female rollers having collapsible flap forming knives;
Figs. 14 and 15 are top plan and front elevational views of the selector mechanism for collapsing the flap forming knives, the full lines showing the selector mechanism in position for collapsing the knives;
Fig. 14a is a sectional view taken on the line 14a—14a of Fig. 16, the knives being collapsed;
Fig. 15a is an elevational view taken in the direction of the arrow 15a of Fig. 16, the knives being collapsed;
Fig. 16 is a section taken on the line 16—16 of Fig. 13, the knives shown in full lines in the expanded position;
Fig. 17 is a fragmentary section on line 17—17 of Fig. 13;
Fig. 18 is an end elevational view of another form of dual purpose machine, wherein the collapsing of the flap forming knives is accomplished by an oscillatory shaft concentric with the male roller axis,—the full lines indicating the position of the controls when the machine is set for forming flaps, the dot and dash lines indicating the position of the controls for collapsing the flap forming knives;
Fig. 19 is a fragmentary vertical sectional view on the line 19—19 of Fig. 18, showing part of the
forming knife indicated at 45. A roller and pressure rollers indicated at 63. Rollers are drivingly connected by gears indicated at 20

The seat cover shown in Fig. 1 has a V-shaped lower edge indicated at a, a', and a similarly shaped upper edge a, a'. It is also provided with a partially severed, centrally located flap b, the unsevered portion c being near the lower or front end of the seat cover.

The towel shown in Fig. 2 has the same V-shaped ends but no flap.

These articles are adapted to be made from a web of paper w, the web roll being indicated at W. This web is passed between cooperative male and female rollers 39 and 40, the roller 39 being one-half the diameter of the roller 40.

They are driven in unison by gearing to be described.

The developed surface of the smaller roller 39 is shown in Fig. 3. It has helical slots 42a and 42b arranged for cutting the V-shaped ends a, a' of the toilet seat cover. It also has grooves indicated at 43a, 43b, 43c, 43d, 43e disposed about the surface of the cylinder for forming the flap b. This flap, as indicated in Fig. 1, is an oval flap secured to the body of the seat cover at c.

As the length of the flap is more than one-half the length of the seat cover, the grooves 43d and 43e cross the grooves 43b, as indicated in Fig. 3.

The male roller 40 has outwardly projecting end forming knives 44 of V-shape adapted to enter the grooves 42a, 42b. These knives are preferably designed so as to incompletely sever the web, as set forth in the patents above referred to. The male roller also carries the flap forming knife indicated at 45. The developed shape of this knife is the same as that of the flap b to be formed in the seat cover. It is adapted to mesh with the grooves 43a, 43b, 43c, 43d, and 43e of the female or grooved roller.

The frame of the machine includes vertical side frame members 50 and 51, top and bottom cross members 52 and 53, and a tie rod 54. The side members 50 and 51 are flanged at the rear as indicated at 50a and 51a, and slotted as indicated at 55 to facilitate mounting the frame on headed members 56 secured to the rear wall of a case, indicated at 57. The front of the case is indicated at 58, this case being adapted to completely enclose the machine.

The web roll W is supported in bearings 59 secured to the side frame members 50 and 51, and spring pressed friction arms 60 bear on the core ends 61 to resist unwindng of the paper. The web is passed downwardly about a guide roller 62, which applies it to the surface of the grooved or female roller 59 near the top of this roller. The paper is then passed about the surface of the female roller the female roller 59 and between this roller and pressure rollers indicated at 63. These rollers are drivingly connected by gears indicated at 64 and 65. The paper is fed downwardly by a delivery roller indicated at 66.

The paper delivery mechanism associated with these delivery and pressure rollers, forms the subject matter of my copending application for patent on Paper delivery mechanism executed concurrently herewith, Serial No. 703,098, filed December 19, 1953.

A side plate 67 is secured to the right hand frame member 51. This side plate revolvably supports the shaft portion 68 of a crank 69, and gears 70 and 71. The gear 70 is in mesh with a gear 72 carried by the crank shaft and secured to the female roller to revolve therewith. The end plate 67 also provides the bearings for the rollers indicated at 63 and 66. A somewhat similar end plate at the other end of the machine provides the bearings for the female roller and the two rollers 63 and 66. This plate does not appear in the section shown in Fig. 4.

The male roller 40 is mounted on a shaft 73 revolvably carried on the lower end 74 of hanger members 75. The upper ends of these hanger members are pivoted on studs 76 carried by frame plates 56 and 51. The male cylinder shaft 73 also carries a gear 71. The gears 72, 70, 71, and 77 act as a gear train to revolve the shaft 73 at one-half the speed of the female roller 39.

A form of stop and release mechanism is shown in Figs. 5 and 6. The crank 69 supports a locking lug 78 which in turn revolvably supports a disc 79. This disc has a limited movement by reason of the pin and slot connection indicated at 80 and 81. It has a laterally bent ear indicated at 82 and is notched in front of this ear, as indicated at 83. It is urged clockwise by a coiled spring 84 interconnecting the lug 78 and disc 79.

A selector lever 85 is mounted to rock about the crank 68 and is held in the position indicated in Fig. 5 by a coiled spring 86. This lever has a notch indicated at 87 and laterally extending flanges 88 and 89. The notch 87 is adapted to receive the nose 90 of a stop lever 91 pivoted at 92 and urged counter-clockwise by a spring 93. The upper left end of this lever has a shoulder 94 which is adapted to engage a shoulder 95 of the locking lug 78 and the lateral extension 79 of the crank.

When the parts are in the full line position of Fig. 5, turning the hand crank clockwise is prevented. Should one raise or lower the selector lever 85 it will be rocked about the axis of the crank and one or the other of the flanges 88 or 89 will engage the nose 90 of the stop lever 81, thereby shifting it to the position indicated in Fig. 6. This brings the shoulder 94 above the lateral extension 92 on disc 79 and allows the spring 84 to shift this disc on the locking lug so that the edge of the disc passes under the shoulder or abutment 95 as indicated in Fig. 6. The selector lever may now be released and it will return to the full line position of Fig. 5. Stop lever 91, however, is held against movement and the crank may now be turned in a clockwise direction to effect two revolutions of the female roller and one revolution of the male roller.

The selector lever is provided with a rearwardly extending finger 96 adapted to engage the front end 97 of a latch lever 98 secure to a shaft 99. The latch lever 96 is notched as indicated at 100 to receive a lug 101 carried by the hanger member 75 and is urged dowewardly by a coiled spring 102. The other end of the latch lever shaft 99 is connected to a latch lever 88 similar to the latch lever 98 and cooperating with a lug 101' similar to the lug 101.
lug 101. The latch lever 98 is urged downwardly by a spring corresponding with the spring 102. This releases the lugs 104 and 108' from the notches in the lever and allows the springs 103 to pull the male cylinder rearwardly. Flanges 104 on the cutter hangers then engage bumpers 105 carried by the frames.

The male roller 40 is provided with cams 106 and 107. These cams are engageable with rollers 108 and 109 carried by the frame plates and, as shown in dot and dash lines in Fig. 6, these cams are brought against these rollers during the latter part of the revolution of the male cylinder. The cams operate to press the male cylinder forward or to the left, as indicated in Figs. 5 and 6, bringing the roller axis back to the front position and causing the latches 98 and 98' to engage the lugs 101 and 101' and hold the male cylinder in the forward position.

This operation is brought about before the end of the female roller 12, as shown in Fig. 1. The cam 106 engages the lower end 110 of the stop lever 91 during the time when the notches 93 on the disc 19 is opposite the abutment 94 of the stop lever, and acts to hold the stop lever in the lower position of Fig. 6, so that it does not interfere with the continued rotation of the crank.

This permits two revolutions of the female roller to take place before the stop mechanism functions to stop the machine. Holding the selector lever up or down allows one to make a number of female rolls or towels without stopping the machine.

In Figs. 9 to 12, inclusive, the female roller is indicated at 110 and the male roller at 111. The female roller has grooves similar to the grooves shown in Fig. 5. Two of these grooves appear in the cross section of Fig. 12 and are indicated at 110a and 110b. The male roller has end forming knives 112 and flap forming knives 113. These knives are of the proper outline to mesh with the grooves and form the seat cover similar to that shown in Fig. 1.

Owing to the fact that the structure shown in Figs. 9 to 12, inclusive, contemplates that the axis of the male roller shall be manually set to place to make either seat covers or towels, and remain in this set position until changed, the knives 113 are made wider to form the flap forming knives 112 for cutting the ends of the towels or seat covers and the grooves 110c, which receive the longer knives 112, are made wider to accommodate the extra length knives.

When the male roller is in the position indicated in full lines in Fig. 12, the flap severing knives 113 fall to the groove. The knives 112, however, are longer and reach the corresponding grooves.

The male roller 111 is provided with end discs 114 having hubs 115 bored to receive circular discs 116. These discs are eccentrically keyed to a shaft 117. The shaft 117 is mounted in fixed bearings 118 in the frame 119. The shaft 117 is connected by an arm 120 with a link 121, which in turn is connected by a lever 122 pivoted at 123. This lever is held to prevent the machine from oscillating the shaft 117. Turning this shaft back and forth effects a movement of the male cylinder toward or away from the female cylinder.

Owing to the use of two eccentrics carried in fixed bearings and operating on opposite ends of the male roll, parallelism of shaft axis is maintained, and weaving about on the supports is avoided.

The drive between the male and female cylinders is in the form of a sprocket chain 125 which passes over sprocket wheels 126 and 127 carried by the female cylinder and male cylinder. The chain also drives the pressure roller 128 and passes about an idler 129. This idler is provided with a bell crank 130 pivoted to the frame of the machine and having a lower end 131 having bifurcations 131' and 131' which embrace the hub 115 of the cylinder end 114. When the arm 123 is turned as indicated in Fig. 9, the bell crank 130 is shifted so as to shift the idler 123 and keep the chain tight.

The stop and release mechanism of Figs. 9 and 11 has a bifurcated arm 132 pivoted at 133 and shiftable back and forth by a plunger 134. The full line positions indicate the positions of this lever at the end of a cycle. The shaft 135 carries an arm 135 movable back and forth with the bifurcated arm 132 disposed inside the frame member 119. The end of this arm 135 is adapted to engage a stop lug 136, carried by the end 114 of the male roller to stop the machine at the end of a cycle.

When one desires to release the machine for operation, the plunger 134 is pressed inwardly. This shifts the bifurcated arm 132 and the lever 135 to the dot and dash line position of Fig. 11, thereby moving the end of lever 135 away from stop lug 136 and carrying the upper inner bifurcation 137 of the lever 132 away from the pin 138 which is connected with the hand crank 139.

As the crank is then turned in a clockwise direction, it completes approximately one-half a revolution when the pin 138 engages the left bifurcation 140 of the arm 132. At about the same time the lever 138 engages with a camming element 141 carried by the end of the male cylinder.

The turning of the crank then continues until the pin 138 is brought to the position indicated at 138a, Fig. 11. It then engages with a tootlike element 142 carried by the bifurcated lever 132 and turns it and moves the lever 132 further to the left, bringing it to the full line position of Fig. 9 and Fig. 11. The lever 138 may, at this time, engage the lever 135 so that the same movement may be effected by such an engagement. The machine is stopped when the stop lug 136 engages the lever 135 or when the pin 138 engages the end of the bifurcation 137. A spring pressed pawl 143 overrides the pin 138 when the machine is in the stop position and prevents backward turning.
The chain drive mechanism of Fig. 9 is a method of driving the rollers generally alternative to the gear arrangement of Figs. 5 and 6. Gears may be used with the eccentric shifting mechanism or chains with the latch and spring shifting mechanism.

In the arrangement shown in Figs. 13–17, inclusive, the flap forming knives are collapsed relative to the end forming knives when one desires to avoid forming a flap. The female roller is shown at 200 and the male roller at 201. The female roller is provided with flap forming grooves 252 and end forming grooves 253 similar to the end forming grooves shown in Fig. 3. The male roller has an end forming knife 294 similar to the end forming knife 44 of Fig. 4. The flap forming knives are indicated at 205a and 205b; these knives being in two parts to permit collapsing.

The female roller 200 is connected with a gear 236 which is in mesh with a driving gear 297 carried by the male roller. The male roller has a disc 208 at the right side connected to the gear 207, and a disc 209 at the left, the male knife being fastened to these two discs as indicated at 213, Fig. 15. The male knife is carried by a central assemblage 211 by screws as indicated at 212 (Figure 16); this central assemblage acting to support the collapsible knives in a manner to be described.

The central assemblage 211 employs two castings 213 and 214 secured together by bolts indicated at 215. The casting 213 is secured to a shaft 216 by a locking screw 217. This shaft 216 is secured to the left disc 208 and projects beyond, as indicated at 218, to form a bearing for the left end of the male roller.

The right hand disc 208 is secured to a sleeve 219 by a clamping screw 220, so that this sleeve is driven by the revolving of the gear 207. This sleeve extends to the right, as indicated at 219', to form a bearing in the right hand frame 281 of the machine. The left end 219' of the sleeve 219 extends into the casing 214 and is secured to it by a clamping screw 222. It also receives the reduced end portion 223 of the shaft 216.

It will thus be seen that the central assemblage 211 is securely mounted on the two part shaft formed by the shaft 216 and the sleeve 219, and that the end discs and central assemblage, together with the end severing knife, will revolve as a unit.

The control for the knife collapsing mechanism is manual. A shaft 224 projects forwardly out of the cabinet in which the machine is mounted, and is provided with a selector arm or crank, indicated at 225. This shaft is revolvably mounted in an extension 226 carried by the frame member 227 and is provided with an off-center pin 228, which enters a slot 229 in a link 229 pivoted at 230. Shifting the hand crank 225 from the full line position of Figs. 14 and 15 to the dotted line position will shift the lever 229, as indicated in Fig. 15. An over-the-center spring 231 may be employed to insure that the parts will stay in the position to which they have been shifted.

The lower end of the lever 229 is bifurcated as indicated at 232 and receives a disc 233, mounted on the end of a shaft 234, carried inside the tube 235, so that the shaft is reciprocated back and forth by manipulation of the crank 225. The inner or left end 235 of the shaft 234 is connected to a pin 236 which extends out through slots 237 in the sleeve 216, and which is secured to an outer sleeve 238 slideable along the inner sleeve 215.

The sleeve 236 is secured to a strip 239 of arcuate cross section, which extends through slots 240 and 241 in the castings 213 and 214, whereby this arcuate shaped member may be guided for reciprocation and held against rotation. The reciprocatory member 239 is provided with a helical slot 242 into which projects a pin 243 carried on a sleeve 244 revolvably mounted on the reduced end 245 of knives 246. This sleeve 244 is secured to the casting 214, and through the helical slot and pin arrangement is adapted to oscillate back and forth when the selector handle 225 is shifted, as shown in dot and dash lines in Fig. 16.

The sleeve 244 is carried by three pins 245 with another sleeve 244' adjacent the casting 214. These two sleeves are revolvably on the reduced end 223 of the shaft 216. The pins 245 carry radially extending links 246, 247 and 248. The link 246, as shown in Fig. 14a is connected by a pivot pin 249 with a hinge casting 280 which is secured to the male knife part 205a. The link 246 is similarly connected by a pin 251 and hinge casting 252 with the portion 205b of the flap forming knife.

The adjacent portions of the flap forming knives 205a and 205b are secured to hinge members 252 and 254 by rivets indicated at 255 and 256. These hinge parts are in turn mounted on a hinge pin 251, secured to the outer end of the link 247 and guided in slots 258 in radially extending portions 259 of the castings 213 and 214. The flap forming knives 205a and 205b are cut away as indicated in Fig. 13 to accommodate the portions of the castings just referred to, so that the male knives may be drawn inwardly, as indicated in Figs. 16 and 17. These projecting portions 259 form guides for the male severing knives during collapsing and provide a connection which drives the knives during rotation.

It will be obvious that when the flap forming knives are collapsed, as indicated in the dot and dash lines of Fig. 16, that they will not reach the grooves in the female roller and hence no flap will be formed. The paper will be passed through the machine in the usual manner to form a towel without a flap. It will also be obvious that the shifting can take place at any time and that a selection need be made only when a change in the product of the machine is desired.

In the form of construction shown in Figs. 18–24, inclusive, the collapsing of the flap forming knives is accomplished by the oscillation of a shaft carried axially with respect to the male rolling axis, the inner end of the shaft being connected to flap forming mechanism somewhat like that which has been described in connection with Figs. 5–8.

In Figs. 18–24, inclusive, the female or grooved roller is indicated at 300 and the male roller at 301. The female roller may be made the same as previously described. The male roller has an end disc 302 on the right and a somewhat similar end disc on the left, not shown,—the right hand disc being secured to a sleeve or tube 303, and the left hand disc, not shown, being secured to a shaft 304, indicated in Fig. 25. These discs are secured to the sleeve or shaft by clamping screws such as indicated at 305. The sleeve 303 and shaft 304 are mounted in bearings in the main frame 306. The end severing knife 307 is similar to the end severing knife 204. The male and female rollers are driven by gears indicated at 308 and 309 having a 1 to 2 relation.

The selector lever for determining whether or not the machine is to make seat covers or towels is indicated at 310. It is pivoted at 311 on the
frame 306 of the machine. Its inner end is directly connected to a member 313 slotted at 314 to receive a shaft 315 carried in the sleeve 303. The shaft 315 is secured to a disc 316 slotted as indicated at 317 to receive a pin 318 carried by the vertically extending member 312. When the selector 310 is shifted from the full line position down to the dotted line position of Fig. 18, the pin 318 enters the slot 317 and turns the disc 316 and shaft 315 through approximately a one-quarter revolution relative to the male roller, or to the dot and dash line position of Fig. 18, which is the same as the full line position of Fig. 22.

This partial revolution of the shaft 315 effects the collapsing of the flap forming knives, as will now be described.

The central assembly 320, as shown in Figs. 24 and 25, employs two castings 321 and 322 similar to the castings 211 and 214. The casting 322 is secured to the sleeve 303 by a screw indicated at 323 and the casting 321 is secured to the shaft 324 by a screw indicated at 324. The two castings are secured together by bolts indicated at 325. The central assembly is secured to the middle of the end forming knife 307 by screws 326a, hence the central assembly and shafts and end forming knife revolve as a unit.

The inner end of the shaft 315 is connected with a collar 326 that carries three pins 327 which are secured to a disc 328. The pins 327 carry links 329, 330, and 331 which are similar to the arms or links 244, 240 and 241. They are connected with the forming knives 322a and 322b by hinge members 333, 334, 335 and 336, similar to those previously described. The hinge pin 337 corresponds with the hinge pin 357 of Figs. 16 and 17 and slides in and out in a slot 338 similar to the slot 258. The disc 328 carries an arm 339 which is connected with a spring 340 anchored on a post 341 carried by the casting 321. This spring acts as an over-the-center spring to hold the shaft 315 in the position to which it has been shifted.

Should one desire to restore the flap forming knives to operative position, the selector 310 is returned to the full line position of Fig. 18, the pin 318 entering the slot 317 and turning the shaft 315 clockwise.

The machine shown in Figs. 18 to 23 is provided with a coin freed release mechanism which interlocks so that the operation of the selector 310 must precede the operation of the coin release and the turning of the rollers.

A coin chute is indicated at 350. A plunger 351 projects forwardly of the machine and is provided with a coin receptacle 352. The sides of the coin receptacle are slotted as indicated at 353 to receive a pin 354 on which is mounted a link 356. The other end of this link is connected by pin 356 with a lever 357 pivoted at 358 to the frame of the machine.

When the parts are in the full line position as shown in Figs. 18, 21 and 23, an extension 359 on the lever 357 is in the path of a pin 360 carried by the end disc 302 of the male roller and prevents further rotation of the male and female rollers. If a coin C is placed in a chute it comes between the pin 354 and the abutment 361, so that pressure on the plunger 351 will push the arm 355 to the right, thereby passing the extension 359 inside the pin 356. This releases the rollers and brings the right hand end 362 of the plunger to the dot and dash line position of Figs. 18 and 22.

When the plunger is in this position it is in the path of a lug 363 carried by the vertically movable member 313, so that the selector 310 cannot be shifted up or down after the coin has been inserted and the rollers released. The lever 367 is restored to the stop position by a cam 364 carried by the end disc 302, so that it will be in the path of the pin 360 to stop the machine at the end of the cycle. The cam 364 is annular except for the depressed portion indicated at 365a which acts to restore the plunger 351 and arm 357.

The cam 364 is provided with two notches 365 and 366, see Fig. 20. The notch 365 is in line with flange 361 carried on a vertically guided member 368. When the selector lever 310 is in the full line position, the flange 367 is above the level of the cam 364, as is clear from Figs. 18, 19 and 21, and when the selector is in the dot and dash line position, the flange 367 is below the level of the cam 364. The cut out portion 366 of the cam 364 permits the male cylinder to revolve when the vertically movable member 368 is in the lower position.

The arrangement just described requires that the machine be in the stop position and that the release mechanism be still acting to prevent operation of the machine while it is in this position. When the selector 310 is shifted by the coin, as is illustrated in Fig. 20, it will be observed that the rollers and brings the right hand end 362 of the plunger to the dot and dash line position of Figs. 18 and 22.

What is claimed is:

1. A dual purpose machine for forming seat covers or tows out of a web of paper, comprising two web severing means, one for forming an incompletely severed flap in the web and the other for severing the web at a point remote from the flap to form an article extending the entire width of the web, and means for rendering the flap-severing means effective or ineffective at will, whereby articles may be produced with or without flaps.

2. A dual purpose machine as claimed in claim 1, wherein the web severing means are incorporated in a grooved roller about which the web is passed and a knife carrying roller cooperative therewith, and having means whereby the spacing of the grooved roller and the flap forming knives may be varied so that they may register to form a flap or fail to register so as not to form a flap.

3. A dual purpose machine as claimed in claim 1, wherein both web severing means are incorporated in a grooved roller mounted in fixed bearings and about which the web is passed and in a knife carrying roller cooperative therewith, the knives for forming the flap being movable relative to the grooved roller so as to enter or fail to enter the corresponding grooves.

4. A dual purpose machine as claimed in claim 1, wherein both web severing means are incorporated in a grooved roller mounted in fixed bearings and about which the web is passed and in a knife carrying roller cooperative therewith and mounted in bearings movable relative to the bearings for the grooved roller.

5. A dual purpose machine as claimed in claim 75.
1, wherein both web severing means are incorporated in a grooved roller mounted in fixed bearings and about which the web is passed and in a knife carrying roller cooperative therewith and mounted in bearings movable relative to the bearings for the grooved roller, and having means for normally holding the knife carrying roller close to the grooved roller so that all the knives thereon may enter the corresponding grooves, releasable spring operated means for separating the knives so that the knives clear the grooves, and means responsive to the turning of the rollers for restoring the knife carrying roller to normal position prior to the time the second web severing means functions so that the article is severed from the web.

6. A dual purpose machine as claimed in claim 1, wherein both web severing means are incorporated in a grooved roller mounted in fixed bearings and about which the web is passed and in a knife carrying roller cooperative therewith and mounted in bearings movable relative to the bearings for the grooved roller, and having means for normally holding the knife carrying roller close to the grooved roller so that all the knives thereon may enter the corresponding grooves, releasable spring operated means for separating the knives so that the knives clear the grooves, and means responsive to the turning of the rollers for restoring the knife carrying roller to normal position prior to the time the second web severing means functions so that the article is severed from the web, and stop means for stopping the machine after the article has been severed and in said normal position.

7. A dual purpose machine as claimed in claim 1, wherein both web severing means are incorporated in a grooved roller mounted in fixed bearings and about which the web is passed and in a knife carrying roller cooperative therewith and mounted in bearings movable relative to the bearings for the grooved roller, the knives for severing the web to separate the article therefrom being longer than the knives for severing the flap and entering the corresponding grooves irrespective of the position of the bearings for the knife carrying roller.

8. A dual purpose machine as claimed in claim 1, wherein the web severing means are incorporated in a grooved roller mounted in fixed bearings and about which the web is passed and in a knife carrying roller cooperative therewith and mounted in fixed bearings, and the flap forming knives are movable radially of the axis of the knife carrying roller to positions where they enter the corresponding grooves or where they fail to reach said grooves.

9. A machine for severing a web of paper to selectively form seat covers and/or towels extending the entire width of the web of paper, comprising means for supporting a roll of paper, a revoluble knife bearing roller having end forming and flap forming knives, a revoluble grooved female roller mounted in fixed bearings, the rollers meshing together and having a predetermined design to form a seat cover with a flap, paper guiding means for directing the paper between the rollers and for guiding it after it passes between the rollers, driving means for the rollers, and means for relatively moving the female roller and flap forming knives so as to render the latter ineffective for forming a flap so that articles may be produced with or without flaps.

10. A machine for severing a web of paper to selectively form seat covers and/or towels extending the entire width of the web of paper, comprising means for supporting a roll of paper, a revoluble knife bearing roller having end forming and flap forming knives, a revoluble grooved female roller mounted in fixed bearings, the rollers meshing together and having a predetermined design to form a seat cover with a flap, paper guiding means for directing the paper between the rollers and for guiding it after it passes between the rollers, driving means for the rollers, and means for relatively moving the female roller and flap forming knives so as to render the latter ineffective for forming a flap so that articles may be produced with or without flaps.

11. A dual purpose machine for forming seat covers or towels out of a web of paper, having cooperative knife carrying and grooved rollers meshing together to cut the web to form a seat cover to shape with an incompletely severed flap, manually controlled means to shift the knife carrying roller away from the grooved roller prior to the time when the flap forming knives would normally function to enter the grooves whereby no flap is formed, and automatically controlled means to shift the knife carrying roller toward the grooved roller prior to the time when the flap forming knives enter the corresponding grooves so that they function to cut the article from the web.

12. A dual purpose machine as claimed in claim 11, wherein the manually controlled means includes a manually releasable latch and a spring acting on release of the latch.

13. A dual purpose machine as claimed in claim 11, wherein the automatic roller restoring means includes a cam movable with the knife carrying roller and a fixed follower.

14. A dual purpose machine as claimed in claim 11, wherein the manually controlled means includes a manually releasable latch and a spring acting on release of the latch, and wherein the automatic roller restoring means includes a cam movable with the knife carrying roller and a fixed follower.

15. A dual purpose machine for forming seat covers or towels out of a web of paper, having cooperative knife carrying and grooved rollers meshing together to cut the web to form a seat cover to shape with an incompletely severed flap, manually controlled means to shift the knife carrying roller away from the grooved roller during the time when the flap forming knives would normally function to enter the grooves whereby no flap is formed, and automatically controlled means to shift the knife carrying roller toward the grooved roller prior to the time when the end severing knives enter the corresponding grooves so that they function to cut the article from the web, the manually controlled means including a spring controlled latch for holding the knife carrying roller in the position to which it is moved on the automatic means.

16. A machine having a cycle of operations for severing a web to form seat covers with flaps or towels one at a time from a web, including a fixed female roller and a movable male roller, the rollers meshing together and having end severing devices which transversely cut the web at regular distances to separate the articles and flap severing devices for forming a flap in each such article when desired, a pressure roller pressing the paper against the female roller and acting to draw the paper past the severing devices.
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vices, a spring tending to separate the male roller from the female roller, a latch for holding these rollers close together so that both serving devices may function, manually or electrically, a stop means for stopping the machine with the completed article pasted beyond the pressure roller, a selector to release the stop means and, when desired, the latch so that the spring shifts the male roller away from the female roller, and means to return the male roller to the latched position prior to the time when the end serving devices should enter the corresponding grooves.

17. A machine as claimed in claim 16, wherein the movable male roller is carried on the lower ends of hanger arms pivoted at their upper ends.

18. A machine having a cycle of operations for serving a web to form seat covers with flaps or towels one at a time from a web, including a fixed female roller and a movable male roller, the rollers meshing together and having end serving devices which transversely cut the web at regular distances to separate the articles and flap serving devices for forming a flap in each such article when desired, a pressure roller pressing the paper against the female roller and acting to draw the paper past the serving devices, a pivoted hanger in which the male roller is journaled, the hanger being movable to separate the male and female rollers so that neither serving devices may function, or bring them together so that both serving devices may function, a releasable latch for holding the hanger in the latter position, a spring for shifting it to the former position upon release of the latch, means for releasing the latch prior to the functioning of the flap serving devices whenever the flapless article is desired, and means for relatching the released hanger before the end serving devices are to function so that the articles are severed from the web.

19. A machine having a cycle of operations for serving a web to form seat covers with flaps or towels one at a time from a web, including a fixed female roller and a movable male roller, the rollers meshing together and having end serving devices which transversely cut the web at regular distances to separate the articles and flap serving devices for forming a flap in each such article when desired, a pressure roller pressing the paper against the female roller and acting to draw the paper past the serving devices, a pivoted hanger in which the male roller is journaled, the hanger being movable to separate the male and female rollers so that neither serving devices may function, or bring them together so that both serving devices may function, a releasable latch for holding the hanger in the latter position, a spring for shifting it to the former position upon release of the latch, means for releasing the latch prior to the functioning of the flap serving devices whenever the flapless article is desired, and means for relatching the released hanger before the end serving devices are to function so that the articles are severed from the web.

20. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved female roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a revolvable male roller having knives cooperable with the grooves for forming either of said articles, movable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, and a gear train between the grooved roller and the male roller including idlers whereby the gears are always in mesh.

21. A machine as claimed in claim 20, wherein the male roller bearings are supported on a pivoted hanger and the drive between the grooved and male rollers includes an idler carried in a fixed bearing substantially in line with the positions of the axis of the male roller and the pivot for the hanger.

22. A machine as claimed in claim 20, characterized by the fact that the knives for severing the articles from the web are longer than the knives which form the flap so that the former reach the grooves in either position of the male roller.

23. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved female roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a revolvable male roller having knives cooperable with the grooves for forming either of said articles, movable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, and a gear train between the grooved roller and the male roller including idlers whereby the gears are always in mesh.

24. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved female roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a revolvable male roller having knives cooperable with the grooves for forming either of said articles, movable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, and a gear train between the grooved roller and the male roller including idlers whereby the gears are always in mesh.

25. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved female roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a revolvable male roller having knives cooperable with the grooves for forming either of said articles, movable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, and a gear train between the grooved roller and the male roller including idlers whereby the gears are always in mesh.

26. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved female roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a revolvable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, and a spool chain for driving the three rollers in unison.

27. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved female roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a revolvable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, and a spool chain for driving the three rollers in unison.
roller having knives co-operative with the grooves for forming either of said articles, movable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, an oscillatory member movably about a fixed axis in the frame and supporting the male roller about an eccentric axis whereby shifting the oscillatory member shifts the axis of the male roller, and means to drive the male and female rollers in unison.

27. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved female roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a revolvable male roller having knives co-operative with the grooves for forming either of said articles, movable male roller supporting bearings whereby the male roller is movable toward and away from the grooved roller so that the knives thereon for forming the flap may or may not reach the grooved roller to act on the paper, a driven paper-drawing roller pressing the paper onto the grooved roller, an oscillatory member movable about a fixed axis in the frame and supporting the male roller about an eccentric axis whereby shifting the oscillatory member shifts the axis of the male roller, a sprocket chain for driving the rollers in unison, and a chain tightening shifting with the male roller for keeping the chain taut.

28. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a male roller having knives cooperative with the grooves for forming either of said articles, the flap forming knives being shorter than the end cutting knives, a bearing support for the male roller including an oscillatory eccentric, bearings for the oscillatory eccentric means for shifting the eccentric to vary the spacing of the rollers so that both sets of knives or the end cutting knives only mesh with the grooves in the grooved roller, and means to drive the two rollers in unison.

29. A dual purpose machine for forming seat covers with flaps or towels out of a web of paper, comprising a frame, a grooved roller mounted in fixed bearings in the frame for rotation about a horizontal axis, a male roller having knives cooperative with the grooves for forming either of said articles, the flap forming knives being shorter than the end cutting knives, a bearing support for the male roller including an oscillatory eccentric, bearings for the oscillatory eccentric means for shifting the eccentric to vary the spacing of the rollers so that both sets of knives or the end cutting knives only mesh with the grooves in the grooved roller, sprocket wheels carried by the rollers, a chain drive for the wheels, and an idler sprocket wheel movable with the male roller sprocket wheel to keep the chain taut.

30. A dual purpose machine for forming seat covers or towels out of a web of paper having two web severing means, one for forming an incompletely severed flap in the web and the other for severing the web at a point remote from the flap to form an article extending the entire width of the web, and means for rendering the flap-severing means effective or ineffective at will, whereby articles may be produced with or without flaps, the flap-severing means including a roller mounted in bearings and movable eccentrically supporting the roller bearings whereby the position of the bearings and roller axis may be varied.

31. A machine for severing a web of paper to selectively form seat covers and/or towels extending the entire width of the web of paper, comprising means for supporting a roller, a revolvable knife bearing roller having end forming and flap forming knives, a revolvable grooved female roller, the rollers meshing together and having a predetermined design to form a seat cover with a flap, paper guiding means for directing the paper between the rollers and for guiding it after it passes between the rollers, driving means for the rollers, means to bodily shift the knife carrying roll toward or away from the grooved roll, the flap forming knives being shorter than the end forming knives, the end forming knives reaching the corresponding grooves in either position of the roller, the flap forming knives entering the corresponding grooves in only one position.

32. A machine as claimed in claim 31, wherein the grooves member movable provided with the grooves are wider than the grooves for the flap forming knives.

33. In a dual purpose machine for forming seat covers or towels out of a web of paper, a rotatable male roller having flap forming knives and end severing knives, roll supporting means for holding the roll in one position, a spring for shifting it upon release of the release, and means for restoring it to the latched position at a certain point in its rotation.

34. In a dual purpose machine for forming seat covers or towels out of a web of paper, a grooved roll revolving and fixed in bearings and about which the web is passed, a knife carrying roller mounted in fixed bearings and cooperative therewith, the knife carrying roller being provided with end forming knives of constant outside diameter so as to enter corresponding grooves to sever the web, and with relatively movable flap forming knives having two positions, in one position these knives reaching corresponding grooves in the grooved roller to form a flap, in the other position these knives falling to reach said grooves, and selector means for positioning the flap forming knives.

35. A machine as claimed in claim 35, wherein the selector means includes a shaft extending axially of the knife carrying roller, the inner end of the shaft being operatively connected to the flap forming knives, the outer end passing beyond the bearings for said roller, and means for shifting the shaft back and forth.

36. A machine as claimed in claim 35, wherein the selector means includes a reciprocatory shaft extending axially of the knife carrying roller, knife collapsing and extending means connected with the inner end of the reciprocatory shaft.
and means acting on the outer end of the shaft for reciprocating it.

33. In a dual purpose machine for forming seat covers or towels out of a web of paper, a grooved roll revolvably mounted in fixed bearings and about which the web is passed, a knife carrying roller mounted in fixed bearings and cooperative therewith, the knife carrying roller being provided with end forming knives of constant outside diameter so as to enter corresponding grooves to sever the web, and with relatively movable flap forming knives having two positions, in one position these knives reaching corresponding grooves in the grooved roller to form a flap, in the other position these knives failing to reach said grooves, and selector means for positioning the flap forming knives, said means comprising a reciprocatory shaft extending axially of the knife carrying roller, an oscillatory lever for shifting the shaft back and forth and an over-the-center spring for holding the lever and shaft in the position to which they have been shifted.

39. In a dual purpose machine for forming seat covers or towels out of a web of paper, a grooved roll revolvably mounted in fixed bearings and about which the web is passed, a knife carrying roller mounted in fixed bearings and cooperative therewith, the knife carrying roller being provided with end forming knives of constant outside diameter so as to enter corresponding grooves to sever the web, and with relatively movable flap forming knives having two positions, in one position these knives reaching corresponding grooves in the grooved roller to form a flap, in the other position these knives failing to reach said grooves, and selector means for positioning the flap forming knives, said means including a reciprocatory shaft extending axially of the knife carrying roller, an oscillatory sleeve, a spiral cam connecting the sleeve and shaft to shift the sleeve back and forth, and connections between the sleeve and flap forming knives.

40. In a dual purpose machine for forming seat covers or towels out of a web of paper, a grooved roll revolvably mounted in fixed bearings and about which the web is passed, a knife carrying roller mounted in fixed bearings and cooperative therewith, the knife carrying roller being provided with end forming knives of constant outside diameter so as to enter corresponding grooves to sever the web, and with relatively movable flap forming knives having two positions, in one position these knives reaching corresponding grooves in the grooved roller to form a flap, in the other position these knives failing to reach said grooves, selector means for positioning the flap forming knives, and an over-the-center spring for holding the flap forming knives in the position to which they are positioned by the selector means.

41. In a dual purpose machine for forming, out of a web, paper articles with or without longitudinally extending slits of predetermined shape therein, cooperative rollers between which the paper web is passed, one roller having grooves corresponding with the shape of the slits to be formed, the other roller carrying knives of a shape to fit the grooves, means to revolve the knives with the roller carrying them, means to support the knives so that they project beyond a predetermined radius so as to reach the grooves, and means to withdraw them inside that radius so that they fail to reach the grooves.

42. A machine as claimed in claim 41, wherein the knives are in two parts hinged together and the hinge and ends of the knives are connected by links to an oscillatory ring coaxial with the roller.

43. A collapsible flap forming mechanism for seat cover machines having a rotatable body, a shaft drivingly connected to the body, one end of the shaft being tubular, a control shaft in the tubular portion of the driving shaft, means to shift the control shaft back and forth, a hub member connected to the control shaft to be oscillated when the control shaft is shifted, three radially extending links pivoted to the hub member eccentrically, two knife carrying members, a hinge connecting the adjacent portions of the knife carrying members together and to one of the links, hinge connections from the end of the knife carrying members to the other links, the body having a slot to receive the common hinge whereby the knives revolve with the body and shift in or out according to the movement of the control shaft relative to the driving shaft.

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