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T. HAWLEY, ADMINISTRATOR.
PAPER BAG MACHINE.
APPLICATION FILED JAN. 12, 1909.

945,944.

Patented Jan. 11, 1910.
2 SHEETS—SHEET 1.

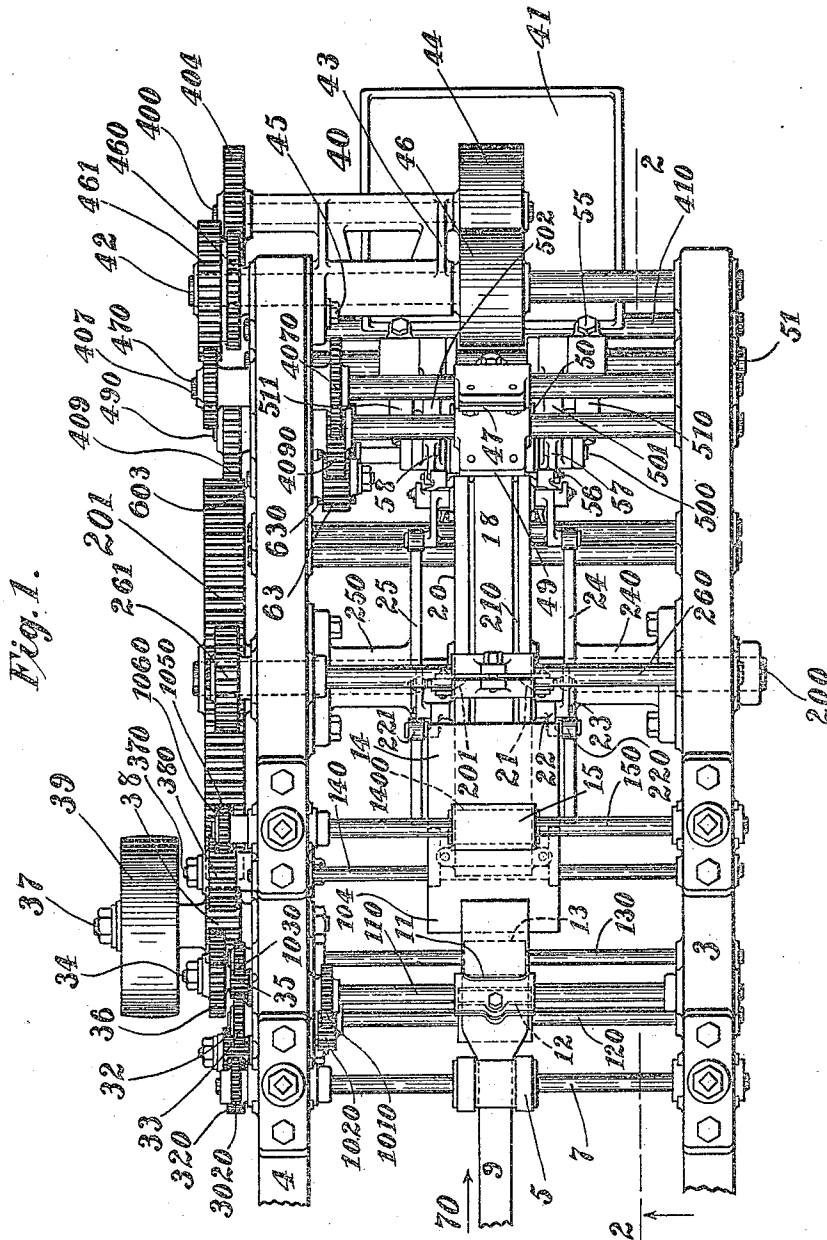


Fig. 1.

Witnesses:

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Daisy V. Riggs

Inventor.

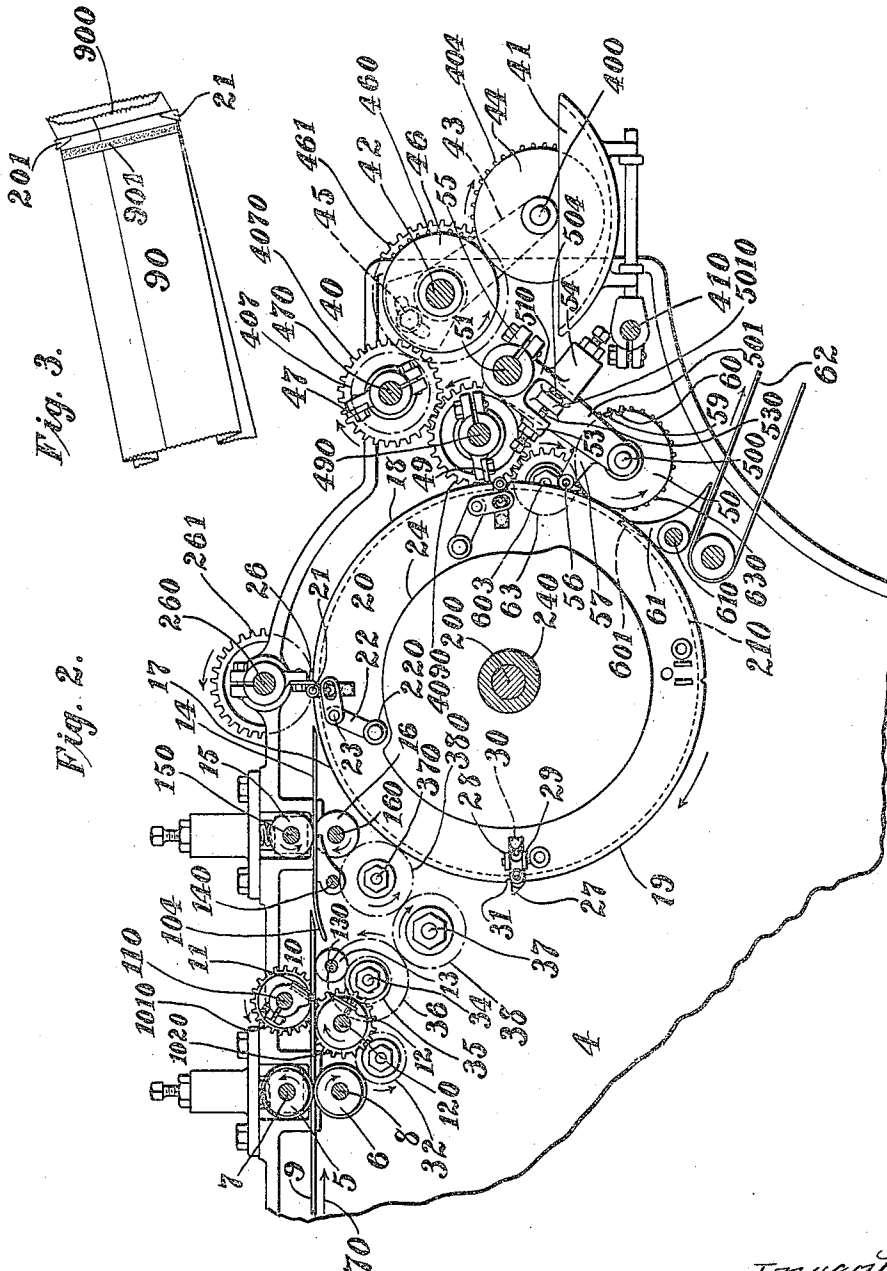
Theodore Hawley
administrator of the estate of
Frederick E. Strasburg deceased
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UNITED STATES PATENT OFFICE.

THEODORE HAWLEY, OF RUMFORD FALLS, MAINE, ADMINISTRATOR OF FREDERICK E. STRASBURG, DECEASED, ASSIGNOR TO CONTINENTAL PAPER BAG COMPANY, A CORPORATION OF MAINE.

PAPER-BAG MACHINE.

945,944.

Specification of Letters Patent.

Patented Jan. 11, 1910.

Application filed January 12, 1909. Serial No. 471,912.

To all whom it may concern:

Be it known that FREDERICK E. STRASBURG, late a citizen of the United States, and a resident of Rumford Falls, in the county of Oxford and State of Maine, has invented certain new and useful Improvements in Paper-Bag Machines, of which the following is a specification.

This invention relates to paper bag machines and directly to that class thereof provided for making flat bags from a continuous flat paper tube or for making square bags from a continuous paper tube having an inwardly folded tuck in each side thereof.

In the drawings accompanying this specification is illustrated a portion of a paper bag machine embodying one form of the improvements and which may be the preferred form thereof. Therein—

Figure 1 is a plan view and Fig. 2 is a sectional elevation on line 2, 2, of Fig. 1. Fig. 3 is a perspective view of a square paper bag in process of making.

The various parts and mechanism of the improved machine are mounted in side frames 3, 4. A pair of feed rolls 5, 6 fixed to shafts 7, 8 respectively are effective to support the delivery end of float 9 of tube forming mechanism, not shown, and for feeding the bag tube to cutting mechanism indicated in a general way at 10. Said cutting mechanism is constructed in accordance with the invention of Smith set forth in U. S. Patent 818713 of Apr. 24, 1906, and comprises upper rotatable toothed blade 11 in engagement with the grooved upper face of float 9 thereunder, and lower rotatable toothed blade 12 in engagement with the grooved lower face of said float. To avoid complication in the present drawings the teeth of said blades 11, 12 and the grooves in float 9 are not shown but they are all fully shown and described in said Patent 818713 to which reference may be had. Upper blade 11 is fixed for rotation on shaft 110 mounted in suitable bearings in side frames 3, 4. Lower blade 12 is similarly fixed to shaft 120 similarly mounted in said side frames. Just forward of lower blade 12 in the direction of travel of the bag tube, on shaft 130, is fixed roll 13 for supporting the delivery end of float 9.

A table 14 fixed to rod 140 is provided for receiving the bag blank as it passes for-

wardly off from around float 9. Said table 55 has its rear end 104 projecting under the delivery end of said float and about midway the length of said float is a rectangular cavity 1400 through which lower feed roll 16 projects for engagement with upper feed roll 15. Said rolls 15, 16 are fixed to shafts 150, 160 respectively mounted for rotation in side frames 3, 4. Said rolls 15, 16 are driven at a surface speed somewhat in excess of that of rolls 5, 6 and at the same surface speed as cylinder 20. Also said rolls 15, 16 are located forward of cutting mechanism 10 a distance equal to a bag blank length so that immediately upon the severance of a bag blank portion from the bag tube the leading end of said bag blank portion passes into the grip of rolls 15, 16 and any possible remaining uncut filaments connecting said bag blank portion with the bag tube are broken and said portion is fed forward at the increased speed.

Cylinder or carrier 20 is fixed to shaft 200 which in turn is mounted for rotation in side frames 3, 4. Said cylinder is preferably provided with a plurality of folding beds, in the present case four are shown, as 17, 18. Each of said folding beds is provided with a side clip as 21 (of folding bed 17) on each side and near the forward end thereof. Said side clips may be of any efficient type but side clips such as shown and fully described in U. S. Patent to Smith 864435 of Aug. 27, 1907, have been chosen for illustration herein. Said side clips are pivoted in ears as 28, 29 of side clip 27 and are urged to engagement with the bag blank by means of springs as 30 of said side clip 27. The said clips are actuated by means of bell-cranks as 22 of clip 21, pivoted at 23 on the side of and below folding bed 17. The lower arm of said bell-crank is provided with roll 220 for engagement with the periphery of fixed cam 24. Said cam is fixed to sleeve 240 fixed to and inreaching from frame 3. On the opposite side of cylinder 20 cam 25 mounted in all ways similar to cam 24, is provided to actuate the several side clips on that side of said cylinder.

Located above carrier 20 creaser 26 is fixed on shaft 260 mounted for rotation in frames 3, 4. Said creaser is timed to make one revolution for each passing folding bed and each folding bed is provided with a

groove thereacross for coaction with said creaser. Said grooves are located adjacent to and in front of their respective side clips, as for instance groove 31 of folding bed 19, Fig. 2.

The pasting mechanism is indicated in a general way at 40. Said mechanism comprises the usual receptacle 41 fixed on rod 410 supported in frames 3, 4. Mounted on shaft 42 swing frame 43 carries paste wheel 44. Said frame may be secured in any desired position about the axis of shaft 42 by clamp screw 45. Paste roll 44 is fixed to the inner end of shaft 400 mounted for rotation in the free end of said frame 43 and engages the paste in receptacle 41. Fast to shaft 42 is fixed secondary paste wheel 46 in rolling coaction with paste wheel 44 to take paste therefrom. On shaft 470 is fixed paste transfer bar 47 to take paste from paste wheel 46 and deliver it to paster bar 49 adjustably fixed on shaft 490 for rotation therewith. Said paster bar in its turn delivers the increment of paste 901 directly to the body of the bag blank and not as has heretofore been customary, to the flap 900, Fig. 3. By this means a much tighter and more uniform joint is obtained when the flap is folded over onto the body than by applying the paste to the flap. Cylinder 20, paster bar 49 and paste transfer bar 47 are actuated at equal surface speeds and somewhat in excess of the surface speed of secondary paste wheel 46 so that said paste transfer bar lifts from said secondary roll at each engagement therewith more paste than it would if it were operated at equal surface speed therewith.

For folding over the seal flap as 900 of bag blank 90 (see Fig. 3) onto paste ribbon 901 previously deposited by paster bar 49 on the body portion of the blank, the following mechanism is provided: Fixed to shaft 500 rotatably mounted in the free ends of swinging arms 501, 502 is roll 50 positioned and actuated for rolling coaction with the periphery of cylinder 20 and the folding beds thereof. Arms 501, 502 are mounted for free movement on fixed shaft 51 supported in frames 3, 4. Said arms 501, 502 are limited in their movements about axial shaft 51 by means of yoke arms 510, 511 respectively. Said arms are mounted on shaft 51 and may be fixed in any desired position thereon by clamps such as clamp 55 of arm 510. Said yoke arm 510 has in ear 53 thereof set screw 530 abutting against that side of post 5010 of arm 501 adjacent to cylinder 20. Said post 5010 is normally held against said set screw 530 by spring 504 in ear 54 of said arm 510. Arms 511 and 502 are similarly equipped for coaction at the other end of roll 50. By means of said springs roll 50 is urged toward cylinder 20 for engagement therewith and by means of adjusting

screws as 530 said roll 50 may be held off from said cylinder any desired distance. Said roll 50 is provided with a notch as 59 in each side of the face thereof to accommodate the side clips, as 21, 201, as they pass the said roll. Also at 60 a groove is formed entirely across the face of said roll 50 so as to relieve the pasted portion 901 of the bag blank of undue pressure in passing said roll 50.

For turning up the seal flap 900 of the bag blank and directing it between roll 50 and the folding bed, rod 56 is provided. Said rod is mounted adjacent to the path of the folding beds and parallel with the axis of carrier 20 in ears 57, 58 outstanding from arms 501, 502 respectively. Discharge blades, as 61, mounted on rod 610, have their upper horns projecting into circumferential grooves in cylinder 20, as for instance horn 601 of blade 61 in groove 210. Belt 62 is provided to carry away the finished paper bags.

Power is communicated to the machine and transmitted to the various mechanisms as follows: On stud 37 outstanding from frame 4 is gear 38 having pulley 39 fixed to the hub thereof. Rearwardly above and meshing with said gear 38 is large gear 36 on stud 34. Small gear 35 is fixed to the hub of gear 36 and turns with it. Said small gear 35 meshes with and drives lower cutter gear 33 and, through intermediate gear 32, lower feed gear 320 on shaft 8. Just inboard frame 4 gear 1020 on lower cutter shaft 120 drives gear 1010 on upper cutter shaft 110. Upper feed roll shaft 7 has gear 3020 fixed thereon meshing with gear 320 on lower feed roll shaft 8. On roll shaft 130 gear 1030 meshes with gear 35 on stud 34. Forwardly above and meshing with pulley gear 38 is intermediate gear 380 on stud 370. Gear 1060 on lower feed roll shaft 160 is driven by said intermediate gear 380 and in turn drives gear 1050 on upper feed roll shaft 150. Said intermediate gear 380 also meshes with and drives cylinder gear 201 on cylinder shaft 200. Creaser gear 261 on shaft 260 is driven from cylinder gear 201. For driving the paster mechanism, gear 409 on paster bar shaft 490 meshes with cylinder gear 201. Inboard frame 4, also fixed to shaft 490, is gear 4090 of equal size with gear 409 and meshing with equal gear 4070 on paste transfer shaft 470. Outboard frame 4 fixed to shaft 470 is gear 407 smaller than gear 4070. Said gear 407 meshes with large gear 461 on secondary paste wheel shaft 42 whereby paste wheel 46 is rotated at a surface speed less than that of transfer bar 47. On shaft 42 between gear 461 and frame 4 is fixed gear 460 meshing with gear 404 fixed to paste wheel shaft 400. For driving flap folding roll 50, intermediate gear 63 on stud

603 meshes on the one side with paster gear 4090 and on the other side with gear 630 fixed to folding roll shaft 500.

The operation of the improved machine is as follows: Continuous paper tubing, suitably folded and pasted and if desired, as illustrated in Fig. 3, having an inwardly folded tuck in each side thereof, being supplied around float 9 and into the grip of feed rolls 5, 6, the machine is started. Said paper tubing is then fed forward in the direction of arrow 70, that portion of said tube lying below float 9 passing into engagement with lower cutter 12 and that portion lying above that float into engagement with upper cutter 11, and a bag blank length thereby severed from the tube. Prior to its severance from the bag tube the leading end of said bag blank portion has passed off from the forward end of float 9 and onto table 14 and thence simultaneously with the operation of upper cutter 11 passes into the grip of rolls 15, 16. By these rolls the now entirely severed bag blank is advanced at a speed greater than that of the bag tube and equal to that of the periphery of cylinder 20, to one of the folding beds on which said blank is now delivered. The mechanism is timed to deliver the bag blank onto a folding bed, as 17, in position for side clips, as 21, 201 to grip the respective sides of the blank a short distance rearward of its leading end (see Fig. 3). Said side clips close upon the bag blank as rolls 220, 221 pass to the low parts of their respective cams 24, 25. The bag blank then passes under creaser 26 which in coaction with the creaser groove (as 31 of folding bed 19) forms a crease across the whole width of said blank and causes the seal flap, as 900, thereof to fold upwardly (see Fig. 3). Passing onwardly with the rotation of cylinder 20 the bag blank approaches the pasting mechanism. At this time paste transfer bar 47, rotating at a speed in excess of that of paste transfer roll 46, wipes therefrom a portion of paste and in turn delivers said portion to paster bar 49 by which it is rolled onto the body portion of the bag blank just rearward of the side clips, as at 901 Fig. 3. The bag blank continuing its onward movement now presents its lifted front flap, as 900, to rod 56 by which it is further folded over toward the body of the blank and into position to pass into the bite between roll 50 and the folding bed. As the now folded over forward end of the bag blank passes into the grip of roll 50 and the folding bed, notches as 59 in the sides thereof provide room for the side clips, as 21, 201, to pass and the edges of groove 60 press down seal flap 900 on each side of paste ribbon 901 without unduly squeezing said paste ribbon to cause it to exude from under said seal flap. The side clip rolls thereupon pass to the high parts of cams 24, 25 respectively, causing the side

clips to release their hold on the completed bag which is then lifted from the folding bed by discharge blades 61 and delivered thereover to belt 62.

I claim:

1. In a machine for making flat and square paper bags, the combination of a rotating folding bed, means for holding a bag blank thereon, rotary means for forming a crease across the bag blank, a rotating paste wheel, means for supplying paste thereto, a rotary paste transfer bar for wiping paste from the paste wheel at a speed in excess of that of said wheel, and rotating means for taking said paste from the paste transfer bar and applying it to the bag blank, means for folding down the seal flap of the bag blank and means for discharging the bag from the machine.

2. In a machine for making flat and square paper bags, the combination of a rotating carrier having a plurality of folding beds, each folding bed having means for holding a bag blank thereon, rotary means for forming a crease across the bag blank, a rotary paste wheel, means for supplying paste thereto, a rotating paste transfer bar for wiping paste from the paste wheel at a speed in excess of that of said wheel, and rotating means for taking said paste from the paste transfer bar and applying it to the bag blank, means for folding down the seal flap of the bag blank and means for discharging the bag from the machine.

3. In a machine for making flat and square paper bags, the combination of a rotating folding bed, means for holding a bag blank thereon, rotary means for forming and sealing the bottom of the bag comprising a rotating paste wheel, means for supplying paste thereto, a rotating paste transfer bar for wiping paste from the paste wheel at a speed in excess of that of said wheel, a rotating paste bar for taking paste from the paste transfer bar and applying it to the bag blank and means for discharging the bag from the machine.

4. In a machine for making flat and square paper bags, the combination of a rotating carrier having a plurality of folding beds thereon, each folding bed having means for holding a bag blank thereon, and the following unitary instrumentalities for coaction with the successive folding beds, to wit: rotary means for forming and sealing the bottom of the bag comprising a rotating paste wheel, means for supplying paste thereto, a rotating paste transfer bar for wiping paste from the paste wheel at a speed in excess of that of said wheel, a rotating paster bar for taking paste from the paste transfer bar and applying it to the bag blank and means for discharging the bag from the machine.

5. In a machine for making flat and

square paper bags, the combination of rotary means for severing the bag tube, a rotating folding bed for receiving the severed bag blank, means for holding the bag blank
5 thereon, rotary means for forming a crease across the bag blank, a rotating paste wheel, means for supplying paste thereto, a rotating paste transfer bar for taking paste from the paste wheel and actuated at a speed in
10 excess of that of the paste wheel, a rotating paster bar for taking paste from the paste transfer bar and rolling it onto the body of the bag blank, a fixed member positioned for engaging the seal flap of the passing bag
15 blank and folding it down toward the body of the blank, a rotating ironing roll for co-

action with the folding bed for pressing down the seal flap onto the body of the blank, said ironing roll having a groove thereacross to relieve the paste bearing portions of the bag blank of undue pressure while being sealed, and means for discharging the bag from the machine. 20

Signed at Rumford Falls, Maine, this eighth day of January, 1909, before two subscribing witnesses. 25

THEODORE HAWLEY,
Administrator of the estate of the late Frederick E. Strasburg, deceased.

Witnesses:

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HERBERT P. LYON.