Aug. 20, 1963 D. V. BONSOR 3,101,033

APPARATUS FOR MAKING CARRIER BAGS

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Fig. 1.

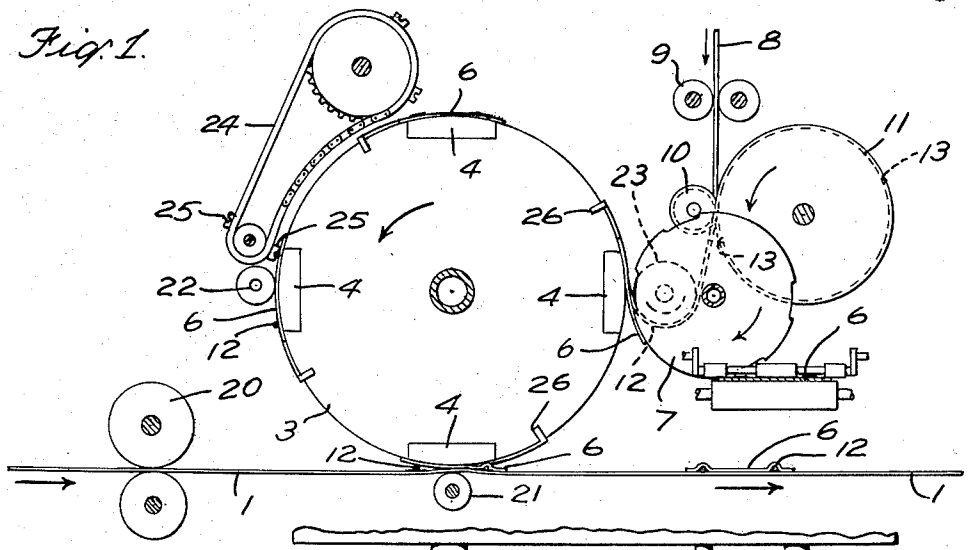
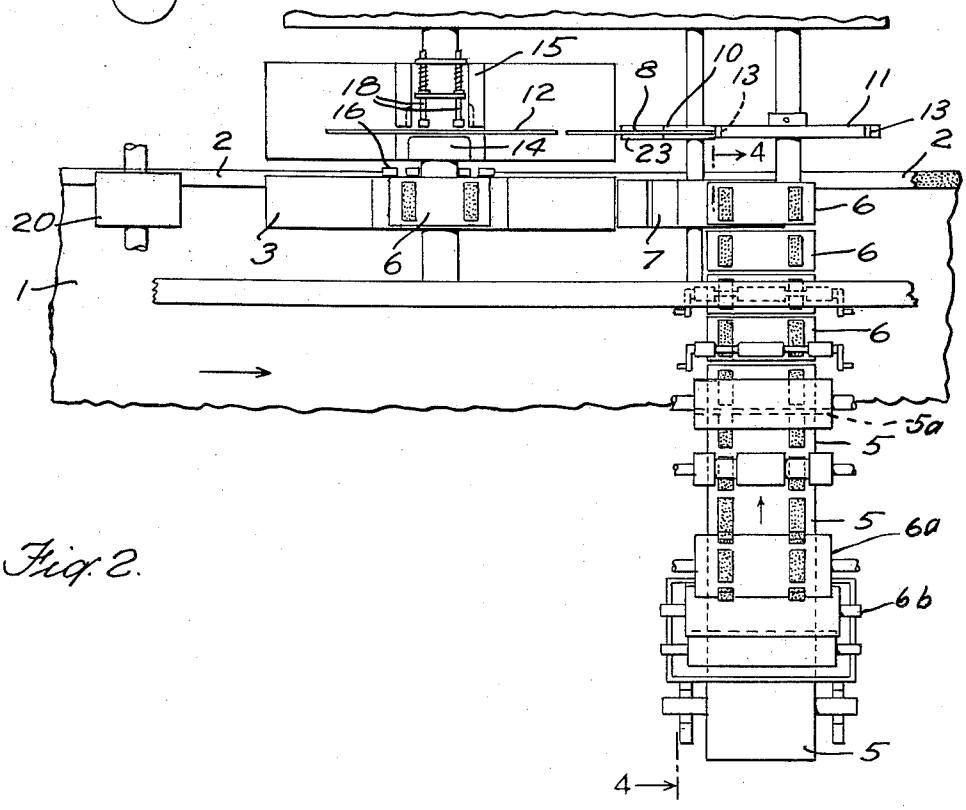


Fig. 2.



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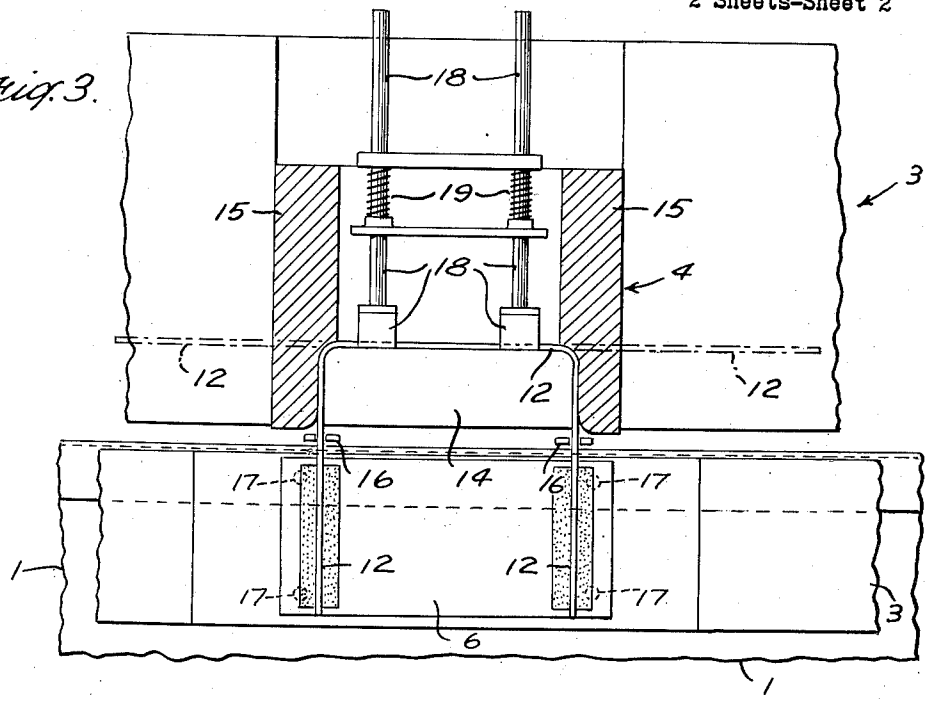
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Fig. 3.



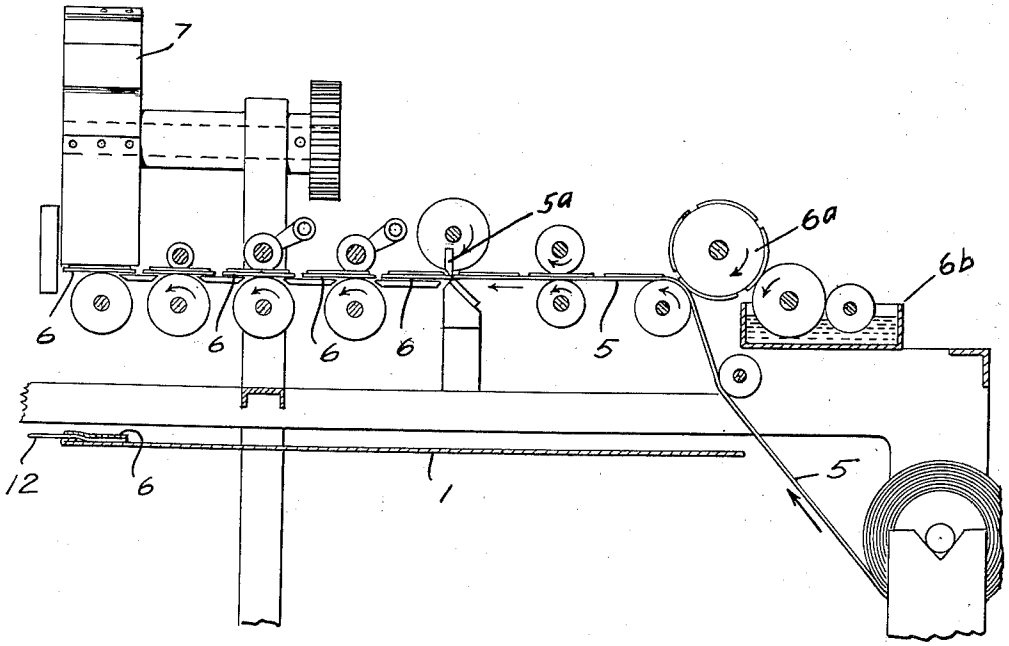


Fig. 4.

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3,101,033
APPARATUS FOR MAKING CARRIER BAGS

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7 Claims. (Cl. 93—8)

This invention relates to an apparatus for making carrier bags, particularly bags for shopping purposes of the kind having looped handles made from cord or other suitable material (hereinafter referred to as "cord").

It is an object of this invention to provide an improved apparatus for the continuous manufacture of handled carrier bags.

According to the invention, apparatus is provided for carrying out the following operations: conveying a paper web destined to form the body of the bags, forming a handle comprised of a patch and U-shaped cord upon a revoluble drum, and causing the handle so formed to be deposited upon the traveling paper web at spaced intervals with the handle legs between the web and the patch. It is a further feature of the invention to provide handle leg straightening means operative to straighten the legs after the handle has been secured to the patch and while both are attached to the rotating drum.

It is a still further feature that the axis of the drum is disposed at right angles to the longitudinal axis of the web whereby the cord and patch assemblies are deposited successively in position along a longitudinal edge of the web.

Other objects of the invention and the advantages thereof will be apparent as the description proceeds and the features of novelty will be pointed out in the appended claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing in which:

FIGURE 1 is a side elevation,

FIGURE 2 is a plan view of suitable apparatus,

FIGURE 3 shows the details of the handle-forming means, and

FIGURE 4 is a view taken on line 4—4 of FIGURE 2.

In the drawing a web of paper 1 with a folded hem 2 suitable for making into bags is fed from a reel, not shown, beneath a rotating cylinder (or cylinders) 3. Spaced in equal pairs around the cylinder and in accordance with the desired spacing of the handles are four handle forming devices one of which is at 4 (it being understood that the number of such handle forming devices is not fixed but can be more or less than four). A patch-forming web of paper 5 is fed at right angles to the bag-forming web 1. Patch-sized portions 6 are cut off web 5 by cutter 5a and conveyed on to a cylinder 7, by conventional conveyor elements as shown in FIGURES 2 and 4. This transfers each one on to cylinder 3 at a handle-forming position. The patches are held on the cylinders 7 and 3 by suction. Handle-forming cord 8 is fed by rollers 9 between grooved guide and cutting rollers 10 and 11. Lengths of cord 12 suitable for forming handles are cut off by the blades 13 and fed to the cylinder 3 also at a handle-forming position. Each handle-forming device 4 consists of a fixed former block 14 and a moving former 15 with cord gripping means 16 and patch-holding suction holes 17.

In FIG. 3 details of the handle-forming device are shown; the length of cord 12 is fed into position against the fixed block 14. The original position of the cord is shown in dotted lines. Clamping rods 18 operate to grip the central portion of the cord and the moving former 15 bends the ends of the cord 12 at right angles to the central portion. The ends are then gripped between the gripping devices 16. Springs 19 return the clamps to their normal position when the moving former 15 is withdrawn.

In operation the web of paper 1 is fed between two rollers 20 one of which acts to apply adhesive to the web at suitable intervals. It then proceeds between cylinder 3 and a pressing roller 21 where handle-forming patches 6 are applied to the gummed portions of the web. The handle-holding patches 6 are cut from a web 5 adhesive being previously applied as already stated to each patch on the parts where the ends of the handle cord will be placed, mechanism for doing this being shown in FIGURES 2 and 4, and consisting of glue applicator roll 6a which is supplied with glue from the glue pan 6b. Then handle lengths of cord 12 are cut off and both cord and patch supplied to the rotating cylinder 3. The cord lengths are gripped by means 26 to hold them in position as the cylinder rotates.

The timing is arranged so that one cord and one patch are applied to each handle-forming device 4. The handle-forming device is operated to bend the cord into the shape of a handle whereupon the two ends are placed upon the parts of the patch coated with adhesive. The cylinder 3 carries the patch with cord attached on round its circumference passing a consolidating roller 22 which presses the cord 12 on to the patch 6. Thereupon it passes to roller 21 where it meets the adhesive coated part of the bag-making web 1. The spacing of the handle-forming devices on the cylinder 3, its rate of rotation and the rate of movement of the web 1 are arranged so that handles are applied in spaced apart pairs (i. e. one handle on each of the 2 main panels of each bag length). The web is later cut into its bag-lengths and the bags formed by conventional means.

After the handle lengths of cord 12 are cut off by the blades 13 and the rollers 10 and 11, each length passes round a grooved roller 23 on to the cylinder 3. In order to hold the handle length in the groove as it passes round the roller 23, means such as a light chain passing round toothed wheels not shown, can be arranged to guide the cord.

Furthermore, in order to straighten the end portions of the bent cord and hold them in the correct positions before they reach the consolidating roller 22 a moving chain 24 which carries two guide plates 25 is provided adjacent to the cylinder 3 and set diagonally to the cylinder so as to contact and stroke out the said end portions of the cord. The guide plates 25 hold the end portions of the cord in position. The chain moves at such a speed that the guide plates hold the cord until or just prior to reaching the consolidating roller 22 which then consolidate the handles thereunder.

The moving former 15 is caused to reciprocate to bend the cord lengths round the fixed former 14 by any suitable means such as a lever operated by a cam from which motion is transmitted through bevel gears to a rack and pinion.

As explained above, the handles may conveniently be formed by bending the lengths of cord into U-shaped or D-shaped formations, and if desired, each pair of handles may be so arranged as to fit or nest one within the other by suitable adjustment of the size of each alternate handle forming device. To assist in securing the ends of the cord handles to the supporting or reinforcing patches and/or the bag walls, they may be flattened or spread to provide a greater area of adhesion.

After attachment of the handles to the bag walls, the bag is completed by carrying out where appropriate the operation of severing the bag making material into individual bag sections, forming the bag sections into tubes, adhesively securing the seam at one side of the bag and finally carrying out the bag bottoming operation.

It will of course be appreciated that whilst I have described the preferred arrangement of apparatus for carrying out the method of my invention I do not limit the scope of my invention in this respect. For instance the apparatus for forming the cord handles could quite well comprise a laterally moving anvil block adapted to operate against a fixed fork shaped forming member.

Furthermore, when utilising two webs to form front and rear walls of the bags, two rotating drums fitted with handle forming devices could be employed, each said drum applying handles in succession upon its respective web.

By another arrangement a single web may be used and folded longitudinally to form the two walls of the bags. By this arrangement two rotating drums could be utilised so as to operate on the two opposed longitudinal edges of the web thereby to apply pairs of opposed handles which register with each other when the web is folded longitudinally.

Whilst in the preferred form I have described a method and apparatus for the manufacture of bags having continuous reinforcement around the open ends or mouth of the finished bags, such reinforcement may well be omitted.

Alternatively, edge reinforcement of the open ends or mouths of the bags may be provided after the handle assemblies have been attached to the bag making material, and for this purpose slits or slots are cut at intervals along the longitudinal edge of the said bag making material to provide clearance for each "leg" of the cord handles when the said longitudinal edge is folded over. The handle assemblies according to this alternative arrangement may, if desired, be so placed that at least part of each handle reinforcing patch is situated beneath the edge reinforcement at the mouths of the bags.

Preferably the folded edge reinforcement is adhesively secured to the walls of the bags.

I claim:

1. In an apparatus for making handled bags, means providing for a traveling paper web destined to form the body of the bags and upon which handles and securing patches are to be deposited and adhesively secured thereto at spaced intervals, a revoluble, handle forming drum operatively disposed with respect to the traveling web, a patch receiving station on said drum, means for feeding thereto cut patches which may bear thereon glue for subsequent engagement with the handle legs, and means for retaining them thereon, a handle cord receiving station upon said drum axially removed from said patch receiving station and operatively disposed with respect thereto, means for feeding cut lengths of cord to said cord receiving station and for retaining same in place opposite said patch receiving station, a handle forming die on said drum, means for actuating same to form the cord lengths into handles with the legs of each handle projected over upon a patch whereby, upon continued rotation of said drum, said handle and patch are deposited as a unit upon said web with the handle legs between the web and the patch.

2. The apparatus according to claim 1 including a handle leg straightening device operative to straighten said legs after the handle has been secured to the patch and while they are both attached to the rotating drum.

3. The apparatus according to claim 2 in which said device consists of an endless chain having thereon cord engaging means movable along the handle legs.

4. The apparatus according to claim 1 including a compacting roll effective to press the handle legs upon said patches, the latter having received spots of glue for securing said legs.

5. The apparatus according to claim 1 including means for cutting off patches from a continuous web of patch material, and means for applying glue patches thereto.

6. The apparatus according to claim 1 in which a plurality of sets of patch receiving stations and cord length receiving stations are disposed upon said roll, together with means for releasing the patch and cord assemblies upon contact thereof with said web.

7. The apparatus according to claim 1 in which the axis of said drum is disposed normal to the longitudinal axis of the web whereby the cord an patch assemblies are deposited successively in position along a longitudinal edge of the web.

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