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A. POTDEVIN ET AL

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METHOD OF AND APPARATUS FOR MAKING BAGS AND THE LIKE

Original Filed Jan. 6, 1937

3 Sheets-Sheet 1

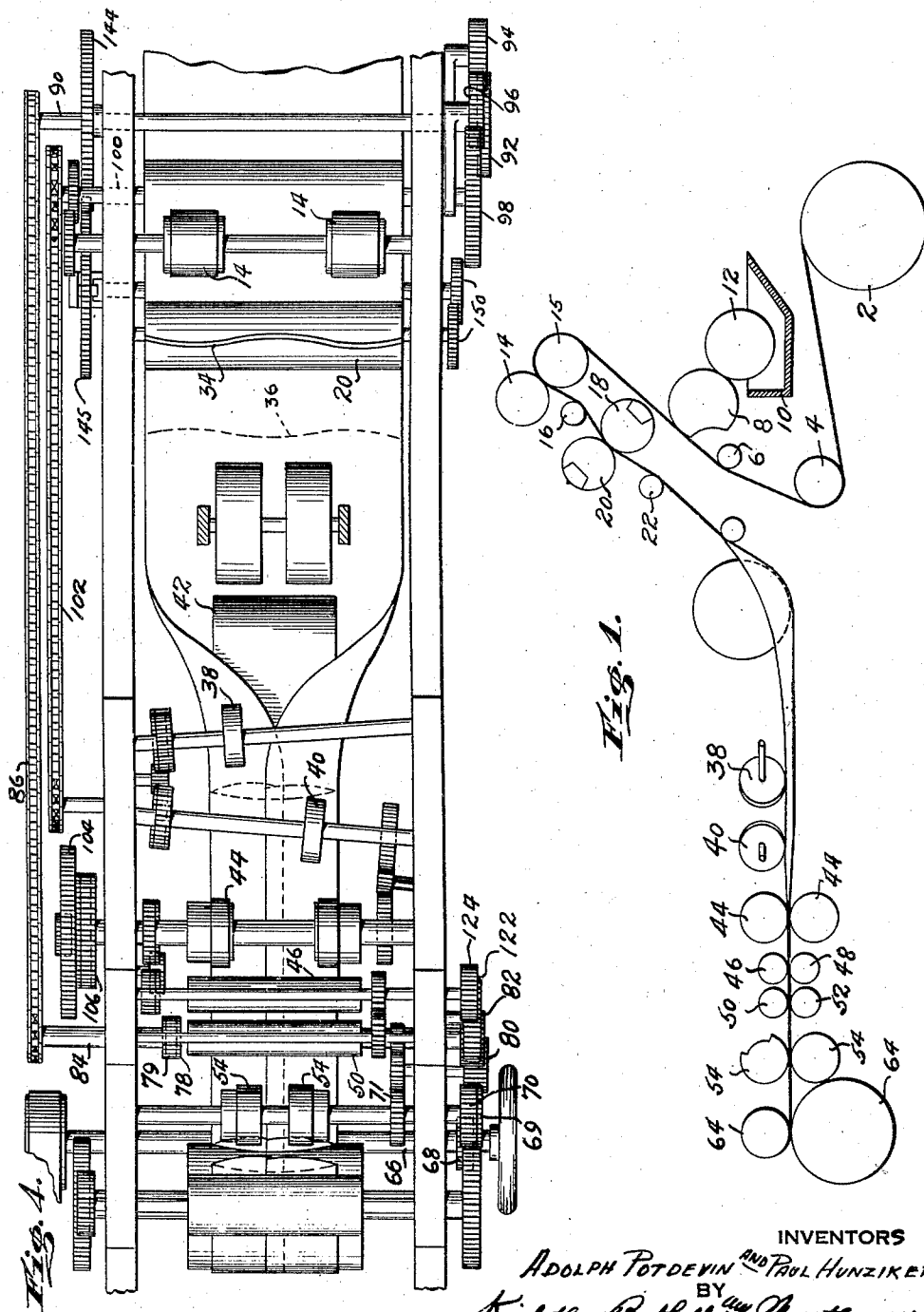


Fig. 1.

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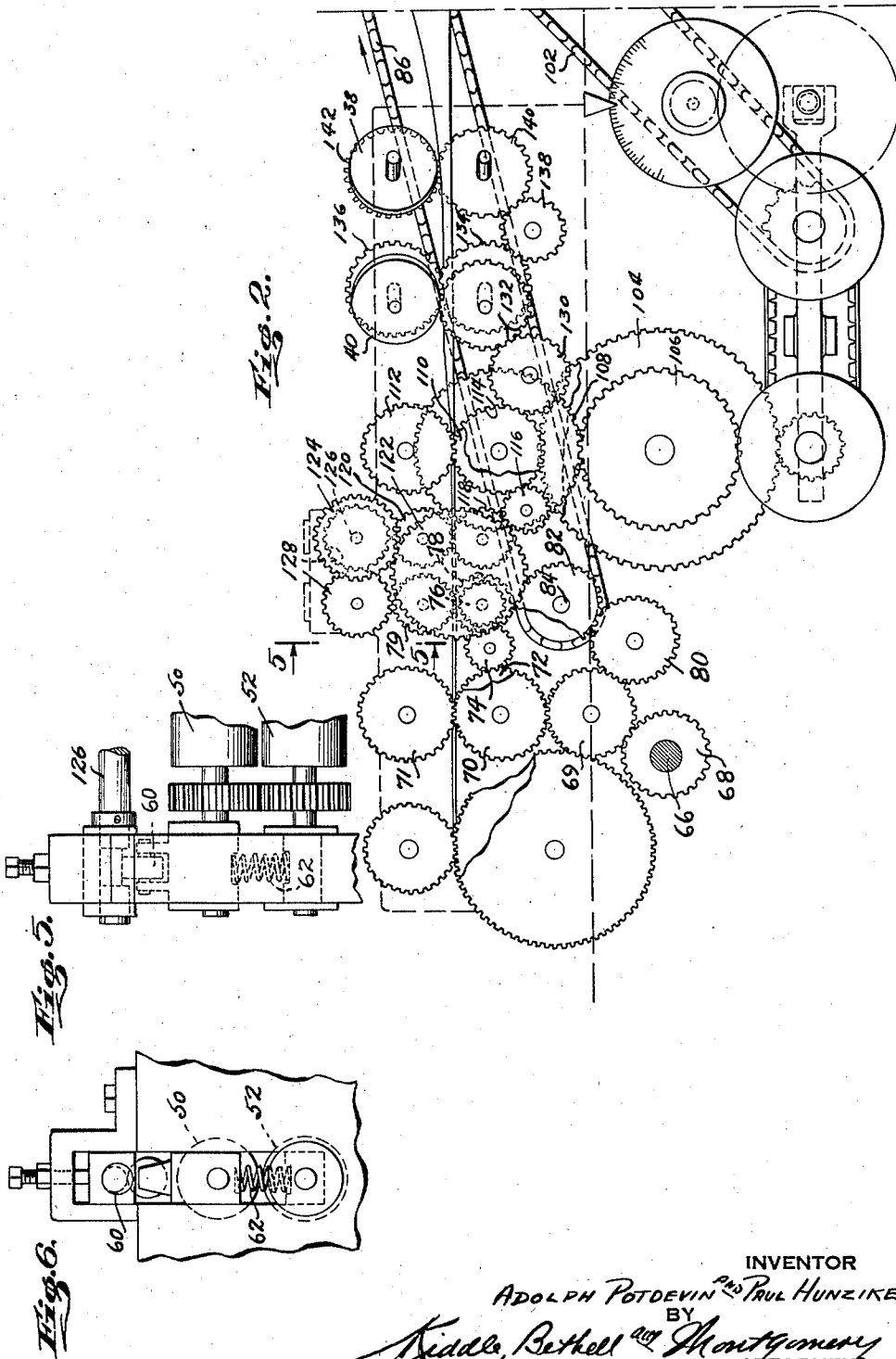
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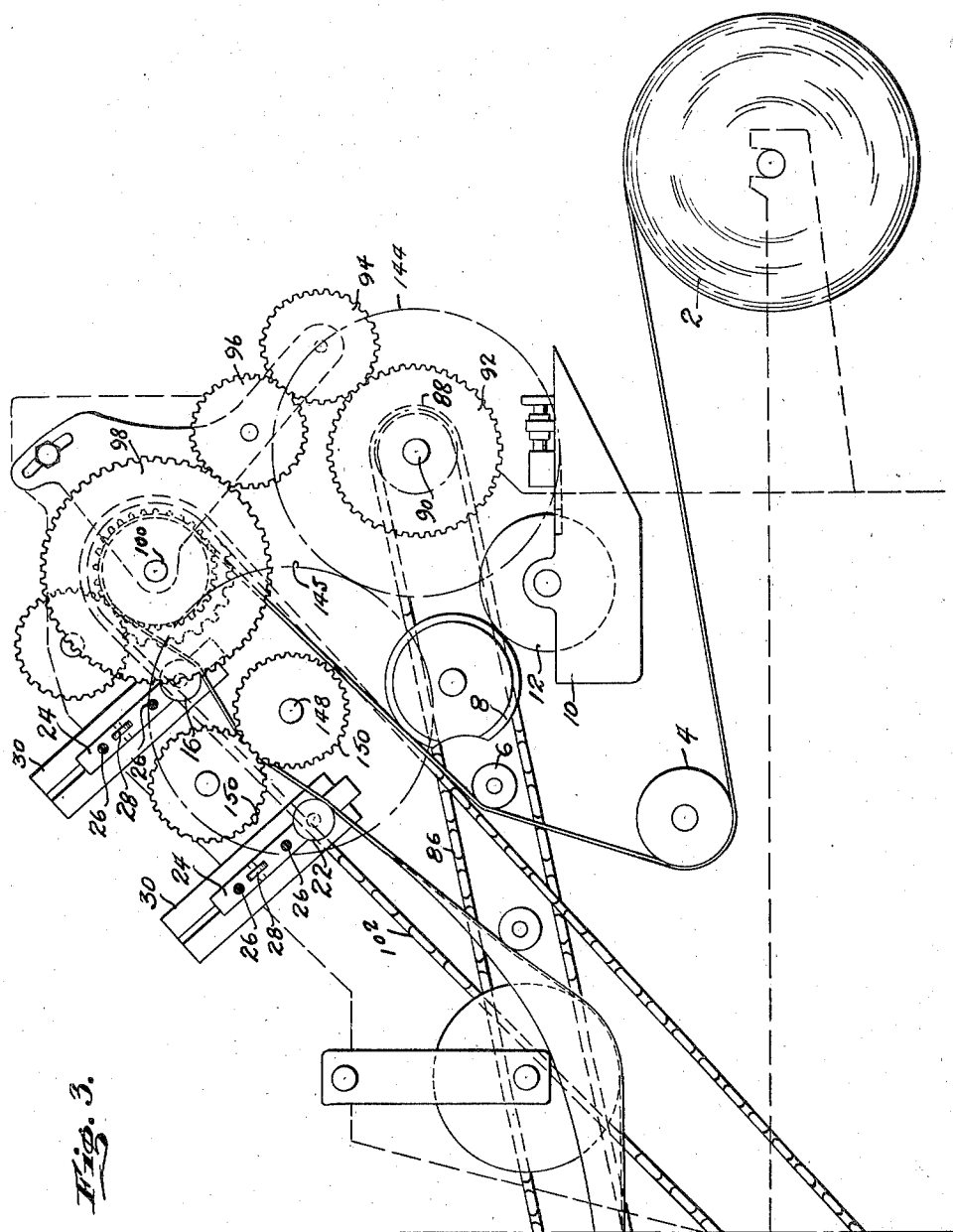


Fig. 3.

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2,216,212

METHOD OF AND APPARATUS FOR MAKING BAGS AND THE LIKE

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Original application January 6, 1937, Serial No. 119,218. Divided and this application November 13, 1937, Serial No. 174,336

7 Claims. (Cl. 93—19)

This invention relates to an improved method of and apparatus for making bags and the like.

This application is a division of our co-pending application Serial No. 119,218 filed January 6, 1937.

It is an object of the present invention to provide a method and apparatus for making bags particularly from materials such as Cellophane, Glassine and the like wherein the speed of manufacture is greatly increased and wherein there is a minimum waste of material. It is to be understood that while we have mentioned various bag materials to which the present invention is particularly well adapted we do not wish to be limited to these materials as obviously bags can readily be made by my improved method from other materials.

Another object of the invention of the present application resides in the provision of a novel method and apparatus whereby the bag material is perforated transversely from edge to edge at bag length intervals while the material is in the web; we then tube the material and place the same under sudden periodic longitudinal tension to divide the tubed material along the perforations.

Other objects of the present invention will be manifest from the following description and the accompanying drawings:

In the drawings:

Fig. 1 is a diagrammatic view illustrating an apparatus for carrying out our invention;

Fig. 2 is a side view of the apparatus;

Fig. 3 is an elevational view of the starting end of the machine;

Fig. 4 is a plan view;

Fig. 5 is a view taken on line 5—5 of Fig. 2; and

Fig. 6 is a view taken at right angles to Fig. 5.

Referring to the drawings in detail, 2 designates a roll of material from which the bags are to be made this roll being supported at the starting end of the machine. The material is passed from this roll about idler rollers 4 and 6 and past paste-applying roller 8 by which paste is applied to one edge of the web. The paste pot is shown at 10 and the roller which supplies paste to the paste-applying roller 8 is shown at 12.

After the application of the paste, the web is passed between forwarding rollers 14 and 15 and then beneath a tensioning roller 16, and then between perforating rollers 18 and 20, under another tensioning roller 22 and from thence to the tubing mechanism where the web is tubed.

Each of the tensioning rollers 16 and 22 is

mounted in a frame comprising side members 24 disposed in parallel relation and secured to each other with the roller between them by rods 26. These side frame members are provided with rollers 28 and the assembly is mounted in end track plates 30 which are rigidly mounted on the machine and which extend upwardly substantially at right angles to the face of the web. It will be evident that with this arrangement each tensioning member is free to move freely on the end plates 30 vertically thereof.

It will be equally apparent that each tensioning assembly merely yieldingly rests by gravity upon the upper face of the moving web.

As already pointed out, a tensioning device is provided at each side of the perforating rollers to insure the right amount of tension on the web at the time the same is perforated to enable the perforating operation to be performed properly, while at the same time the tensioning arrangement being yieldingly mounted will not impose too much tension on the web, thereby enabling the web to continue its advance through the machine, without danger of premature severing of the web.

The perforating is only the first step in severing the bag material into bag lengths, and as will be seen is performed with the bag material in the web and without interrupting the steady advance of the web. The final step in the severing operation is performed after the web has been tubed.

The perforating step of this invention is carried out by the perforating rollers 18 and 20 above referred to. The upper roller 20 is equipped with a plate or knife 34 extending lengthwise of the roller. This plate is of course of any desired shape, depending upon the shape of the line of perforations to be made in the web. The perforated line in the web is shown at 36 in Fig. 4.

The plate 34 may be of any suitable construction and is adapted to roll into contact with the face of the roller 18 whereby the web lying between the two rollers will be perforated or punctured or cut through. The perforating rollers shown in our copending application Serial No. 119,218, of which the present application is a division, may be employed in the structure of the present application.

After leaving the perforating rollers 18 and 20 the web passes through the tubing mechanism, which may be of usual construction, except for two driven rollers 38 and 40, beneath which the material passes as it is tubed about

the former plate 42. These rollers are driven about an axis which is oblique to the path of the traveling web, and tend to draw or work the material about the former plate 42, thereby materially assisting in tubing the web.

The tubed material is now advanced between feed rollers 44, and a pair of rollers 46 and 48 driven at the same peripheral speed as the feed rollers 44 and from thence between a pair of similar rollers 50 and 52 and another pair of rollers 54. The rollers 50, 52 and the rollers 54 are overspeeded with respect to the feed rollers 44 and the rollers 46, 48 and as will be brought out hereinafter the timing of the machine is such that when the tubing in its passage through the machine reaches the point where the perforations 36 lie intermediate the rollers 46, 48 and the next set of rollers 50, 52 a longitudinal tension will be suddenly applied to the tubing to pull the tubing apart along the line of perforations therein, thereby to divide the tubing into bag lengths.

The rollers 46 and 48 are so mounted in their bearings that the tubing is not pinched except when the severing operation is to be performed, that is to say, not until the perforations 36 in the travel of the tubing have reached a point between the rollers 46, 48 and the next set of rollers 50, 52.

The arrangement by which the rollers 46 and 50 are brought into cooperative relation with companion rollers 48 and 52, respectively, is shown in Figs. 5 and 6. It will be seen from these two views that the upper rollers 46 and 50 are mounted for vertical bodily movement in their respective bearings, being moved downwardly toward their companion rollers by cam 60 and moved upwardly away from their companion rollers by a spring 62. This bodily movement of the rollers is properly timed, as will be explained hereinafter, so that the rollers will be moved downwardly toward their companion rollers when the perforations in the tubing are in proper position for the completion of the severing operation.

After the severing or dividing operation has been completed the bag lengths are forwarded by cylinders 64 to bottoming mechanism or other mechanism for finishing.

Power for driving my improved machine is taken off the main drive shaft 66. This shaft is equipped with gear 68 for driving a train of gears 69, 70 and 71 which drives the cylinder or rollers 54.

The overspeeded rollers 50 and 52 are driven from gear 72 on the same shaft as the gear 70, a gear 74 meshing with the gear 72 and in mesh with gear 76 on the shaft of the roller 52. This shaft also carries a gear 78 which meshes with gear 79 on the shaft of the upper roller 50.

Meshing with the gear 69 is gear 80 meshing with a gear 82. This gear 82 is mounted on shaft 84 carrying a sprocket and sprocket chain 86, the other end of this chain being carried by sprocket 88. On the end of the shaft 90 carrying the sprocket 88 is a gear 92 meshing with gear 94 in turn meshing with intermediate gear 96, driving gear 98 on shaft 100. This shaft carries one end of the chain 102 of a Reeves drive. The Reeves drives two gears 104 and 106. The gear 106 drives gears 108, 110 and 112 to drive the rolls 44.

The gear 110 drives gear 116 in mesh with gear 118 on the shaft of lower roll 48, the gear

118 meshing with gear 120 to drive the upper roll 46.

The gear 82 above referred to meshes with gear 122 to drive gear 124 on the shaft 126 of one of the cams 60 the shaft of the other cam 60 being geared to this first mentioned shaft by gears 128.

On the shaft with gear 110 is a gear 114 driving intermediate gear 130 meshing with gear 132, for driving gear 134 meshing with gear 136 on the shaft of the wiping roller 40. Gear 134 through intermediate gear 138 and gears 140 and 142 drives the other wiping roller 38.

The perforating rollers are driven off the shaft 90 which carries a gear 144 meshing with gear 146 on the shaft 148 of the roller 18. The two rollers are geared together by a pair of gears 150.

It is to be understood that changes may be made in the details of construction and arrangement of parts herein illustrated and described and in the arrangement of the steps of our improved method within the purview of our invention.

What we claim is:

1. In the making of bags and the like, the combination of spaced members for applying yielding pressure to unsupported areas of an advancing web of material to tension the web, perforating rollers intermediate said spaced members for perforating the material transversely from edge to edge at bag length intervals, while the material is in the web and moving forward, and while said spaced members are applying a yielding pressure to the web at each side of the area to be perforated.

2. In the making of bags and the like, the combination of continuously advancing means for a web of bag material, floating means for applying yielding pressure to the advancing web at spaced areas, perforating means for perforating the web transversely from edge to edge and at bag length intervals intermediate said spaced areas, while the material is in the web and moving forward, means for forming the perforated web into a tube, and tensioning rollers for dividing the tubed material into bag lengths at the perforations by imposing sudden longitudinal tension on the tube in opposed directions at each side of the perforations.

3. In the making of bags and the like, the method which comprises continuously advancing material in the web, tensioning the web by applying yielding pressure to unsupported areas of the advancing web at each side of an area to be perforated, and perforating the advancing web intermediate the areas of application of the yielding pressure and at bag length intervals.

4. In the making of bags and the like, the method which comprises continuously advancing material in the web, tensioning the web by applying yielding pressure to unsupported areas of the advancing web at each side of an area to be perforated, perforating the advancing web intermediate the areas of application of the yielding pressure and at bag length intervals and thereafter dividing the material into bag lengths at the perforations.

5. In the making of bags and the like, the method which comprises continuously advancing material in a web, tensioning the web by applying yielding pressure to unsupported areas of the advancing web at each side of an area to be perforated, perforating the advancing web intermediate the areas of application of the yielding pressure and at bag length intervals tubing the

perforated material and finally dividing the tubed material at the perforated areas.

6. In the making of bags and the like, the method which comprises advancing material in the web, perforating the advancing web transversely from edge to edge at bag length intervals, tensioning the web by applying yielding pressure to the web at unsupported web areas at each side of that part of the web being perforated during the perforating operation, tubing the perforated web and then dividing the tubed material into bag lengths at the perforations by imposing sudden longitudinal tension on the tube in opposed directions at each side of the perforations.

7. In the making of bags and the like, the combination of means for continuously advancing the bag material in the web, means for applying a yielding pressure to the material at unsupported spaced areas in the web to tension the web, perforating rollers intermediate said pressure members for perforating the material from edge to edge and at bag length intervals, means for tubing the perforated web, and means for applying sudden longitudinal tension on the tube at the perforations to divide the same into bag lengths.

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