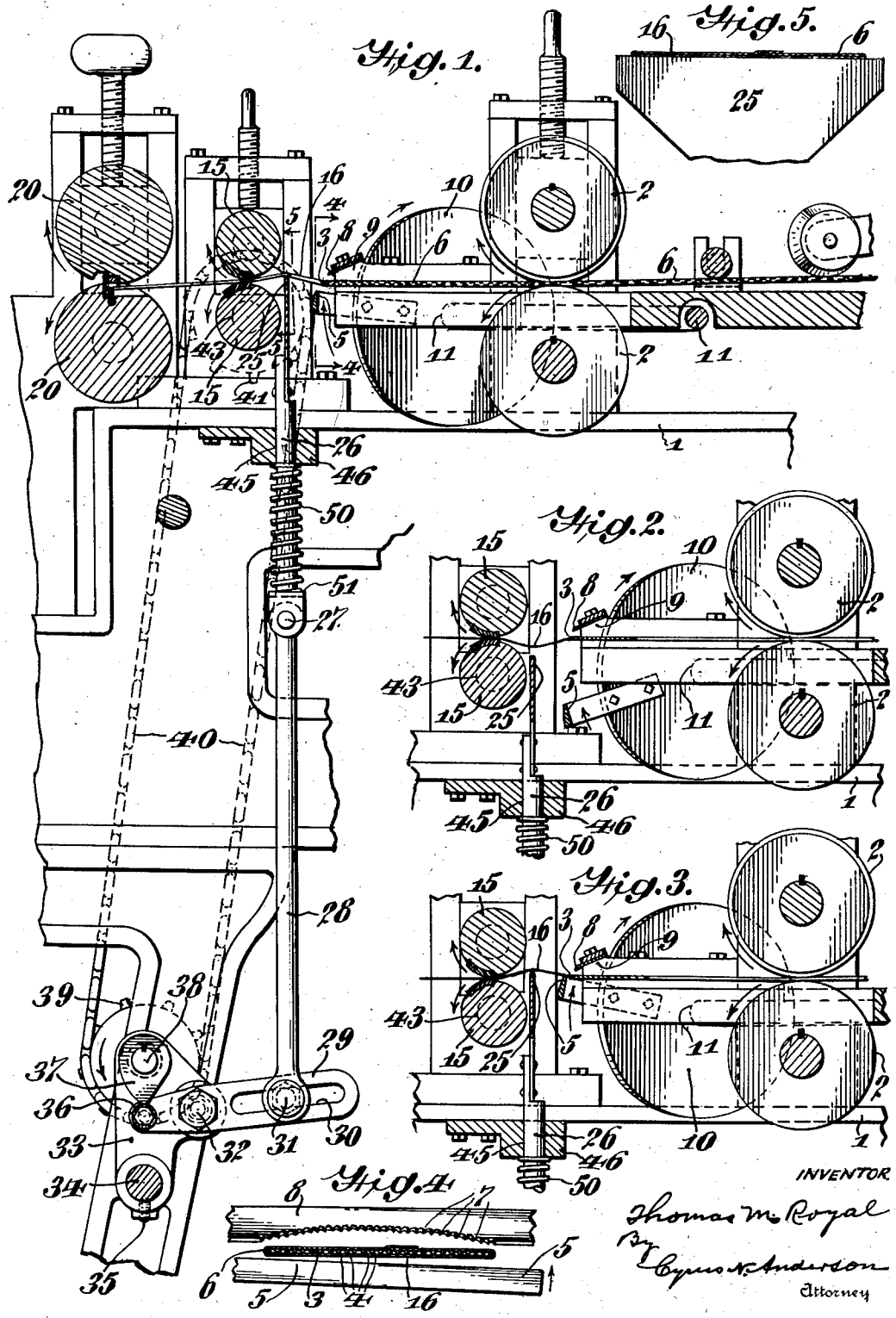
Oct. 23, 1934. T. M. ROYAL 1,977,647

BAG MAKING MACHINE

Filed June 7, 1930



Patented Oct. 23, 1934

1,977,647

UNITED STATES PATENT OFFICE

1,977,647

BAG MAKING MACHINE

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Application June 7, 1930, Serial No. 459,690

7 Claims. (Cl. 164—68)

My invention relates to bag making machines and more particularly to the means for severing a tubular web into sections of desired length from which the bags are formed. While it is adapted for use in the severing of paper of various thicknesses commonly employed in the manufacture of bags yet it is especially well adapted for and useful in the manufacture of bags of thin paper, particularly the very thin transparent product known in the trade as "cellophane."

While the invention is illustrated as embodied in a machine for the manufacture of bags it is to be understood that it may be employed in any case where it is desired to sever sheets of paper at intervals so as to divide a web of paper of relatively great length successively into a number of sections of any desired length.

The general object of the invention is to provide means for cooperation with severing means employed in a bag machine or other similar machine for facilitating the severing of a sheet or web of paper successively into sections of desired length.

It also is an object of the invention to provide means of novel construction for cooperation with the severing means of a bag making or other similar machine which will cause the severing instrumentality to sever the paper without tearing it in directions transversely of the line along which it is severed.

A further object of the invention is to provide means of novel construction for cooperation with the severing means employed in the cutting of a tubular web of paper employed in the manufacture of bags to take up the slack in the web of paper in adjoining relation to the forming means employed in such machines to thereby prevent jamming of the paper between cutting ends provided upon and adjacent to the forming means and the severing knife or other cutting instrumentality.

A still further object of the invention is to provide means of novel construction for controlling the slack in the section of web in adjoining relation to the rear end of the forming means to thereby facilitate the severing of such section from the remaining portion of the web of paper which is being severed into sections of greater or less length.

Without attempting to set forth at this point in the specification other objects and advantages of the invention I shall now proceed with a detailed description thereof wherein other objects and advantages will be specifically referred to or else will become apparent from such description.

In order that the invention may be readily understood and its practical advantages appreciated reference should be had to the accompanying drawing wherein I have illustrated one mechanical embodiment of the invention. However it is to be understood that the invention may be embodied in other forms of construction than that shown and that changes in the details of construction may be made within the scope of the claims without departing from the invention or the principle thereof.

In the drawing:

Fig. 1 is a longitudinal elevation, partly in section, of a portion of a bag making machine provided with means embodying my present invention.

Fig. 2 is a similar view showing a portion of the structure illustrated in Fig. 1, certain of the parts being in different positions from those shown in Fig. 1.

Fig. 3 is a view similar to that shown in Fig. 2 with certain parts in still another position.

Fig. 4 is a sectional view taken on the line IV—IV of Fig. 1; showing a fragmentary portion of the structure, and

Fig. 5 is a sectional view taken along the line V—V Fig. 1; showing the tubular web in cross section and a portion of the means for controlling the slack in the section of web which is to be severed.

Referring to the drawing, I have shown at 1 a portion of the frame of a machine, being a bag making machine in the construction illustrated, upon which the various instrumentalities embodying the invention are mounted.

As already indicated, the invention is illustrated as being embodied in a bag machine which includes means, not shown, for folding a web of paper about the former, as is usual. The web is folded into tubular form and is fed rearwardly toward the bag forming mechanism in part at least by the feed rollers 2. The rear end of the former is shown at 3 and it is provided with downwardly extending saw-teeth 4 which cooperate with the upwardly moving severing knife 5 for severing the lower wall or ply of the flattened tubular web 6. The upper wall or ply of the said tubular web is severed by the co-action of the knife 5 with the saw-teeth 7 provided upon the rear edge of a plate 8 supported upon suitable brackets, one of which is shown at 9, above the upper wall or ply of said web 6. The severing knife 5 is of usual construction and is mounted as usual upon a disc

10 which in turn is mounted upon a shaft 11 which extends diagonally of the length of the machine. The shaft 11 with the disc 10 thereon is rotated in the usual manner by means of gears, not shown. The tubular web 6 extends from the rear end of the former 3 to slacker rolls 15, suitably rotated; the speed of rotation of these rolls being such as to cause the formation of slack in the section of web 6^a between the rear end of the former 3 and the said rolls. The severed sections of material go from the slacker rolls 15 to the creaser and paster rolls 20.

The construction as thus far described is known and for that reason it is believed to be unnecessary to describe the same in greater detail.

Heretofore in the severing of tubular webs of paper in the manufacture of bags or for other purposes it has not been customary to control the slack in the section of the web 6^a between the rear end of the former 3 and the slacker rolls 15 and in consequence it sometimes happens that the paper doubles up and jams against the rear end of the former, thus interfering with the efficient operation of the severing means, and it also sometimes happens that the paper is split in directions transversely of the line along which it is being severed, thus resulting in multilation of the severed section rendering it unfit for use either in the manufacture of a bag or for such other purpose as it may have been intended.

I have found that by taking up or partially taking up the slack present in the section 6^a between the rear end of the former 3 and the slacker rolls 15 and controlling the same during the severing operation I am enabled to cause the severing means to sever the web of paper without mutilating the same, and also am enabled to prevent jamming of the paper against the rear end of the former. Thus the efficiency of the apparatus is greatly enhanced.

For the purpose of taking up and controlling the slack of the section 6^a during the severing operation I have provided a member 25 for contacting with the said section together with means for causing said member to move toward and from the said section and to contact with the same in proper timed relation to the movements of the severing knife 5.

In the construction illustrated the contact member 25, whose top edge is adapted to contact with the under wall or ply of the section 6^a of the web 6, is mounted upon the upper end of a rod or bar 26 which is pivotally connected at 27 to the upper end of a connecting rod 28 the lower end of which is adjustably connected with the outer end portion of a lever 29. For the purpose of connecting the lower end of the connecting rod 28 to the outer end portion of the lever 29, said outer end portion is provided with a slot 30 which is adapted to be engaged by a bolt 31 by which the lower end of the said rod is fastened in adjusted position to the said lever. The lever 29 is pivoted intermediate its ends upon a pivot 32 mounted upon a bracket 33 which is adjustably mounted upon a stationary support 34 mounted upon the frame of the machine. The bracket 33 is held in adjusted position by means of a set screw 35. The end of the lever 29 opposite its slotted portion 30 is provided with a friction wheel 36 which is in engagement with a cam 37 mounted upon a shaft 38 having a sprocket wheel 39 thereon in engagement with a sprocket chain 40. The opposite portion of the said sprocket chain is in engagement with a sprocket wheel 41 upon the driving shaft 43 upon which one of the slacker rolls 15 is mounted. Upon rotation of the shaft 38 the lever 29 is oscillated to cause reciprocatory movements of the connecting rod 28 and the rod or bar 26 connected thereto. The upper end of the bar 26 extends through an opening 45 in a stationary bar 46. A spring 50 is interposed between the lower side of the bar 46 and a shoulder 51 at the lower end of the said bar. The said spring is under compression and tends to hold the said bar 26 and the connecting rod 28 in their lowermost positions. When the high part of the cam 37 contacts with the roller 36 upon an end of the lever 29 the opposite end of the latter is elevated so as to move the contact member 25 upwardly into engagement with the section 6^a of the tubular web to control the amount of slack in the latter. The movements of the contact member 25 take place in timed relation to the movements of the severing knife 5. That relationship is such that practically simultaneously with the beginning of the severing operation the contact member 25 begins its downward movement so that at the moment of severing the section 6^a from the remaining portion of the tubular web the said section is not held taut but nevertheless the amount of slack therein is controlled so as to prevent doubling up and jamming of portions of the paper between the knife 5 and the rear end of the former 3. It may be noted that while the necessary gearing is not shown, the shaft 11 and the shaft 38 are driven from the same shaft 43.

Upon reference to Fig. 4 of the drawing it will be noted that the cutting edge of the severing knife 5 during the cutting operation is located in a plane which makes a small angle with the plane of the former 3 so that severing or shearing of the under wall or ply of the web 6 is effected first at one edge thereof and successively throughout its width, being similar in that respect to the shearing action of a pair of scissors or shears. Substantially the same cooperation takes place between the severing or cutting edge 7 of the knife 5 and the cutting edge portion of the cutter plate 8.

Although in the construction illustrated the contact member or device 25 is mounted upon a reciprocable bar 26 yet it will be understood that such contact member or device may be mounted and operated in any other manner found to be desirable and at the same time practical. The essential thing is that means be provided for controlling the slack in the portion or section 6^a of the web which is being severed from the remaining portion of said web.

As has been indicated already, the invention may be employed for controlling the slack in papers of various kinds and of various thicknesses but it is particularly useful when employed for controlling the slack of very thin papers such, for example, as that known in the trade under the name of "cellophane".

Although the invention is illustrated as embodied in a machine for the manufacture of bags wherein a flat web of paper is converted into tubular form in known manner, yet the invention may be employed for cooperation with the severing means in the severing of a single sheet or web of paper. The latter, as already indicated, may be of various thicknesses. However, the invention is of especial value and utility when employed for cooperation with the severing means for the purpose of severing sheets or tubular webs of extremely thin paper of the character hereinbefore indicated.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a machine of the character described, the combination of means for severing sections of paper from a continuously moving web of paper; said means causing slackness in said web, and means for controlling the slack portion of said web to position said slack portion in the section of the web that is severed whereby the slackness does not accumulate in the following portion of the web but is removed with the severance of each web section.

2. In a machine of the character described, the combination of means for severing sections from a continuously moving sheet of paper of indefinite length; said severing means causing slack in said sheet, and means controlling said slack to cause it to occur in the severed section of the sheet.

3. In a machine of the character described, the combination of means for severing sections from a sheet of indefinite length, means producing slack in said sections previous to their severance, a device for controlling the slack and located adjacent to the section to be immediately severed at the moment of severance, and means for moving said device toward and from succeeding sections of the sheet; said device holding said sections in deflected relation to a horizontal plane during the cutting action of the severing means.

4. In a machine of the character described, the combination of means for severing sections from a continuously moving web of paper, with means for causing the slackness present in the web and occasioned by the severing operation to be accumulated in the section severed from the web.

5. In a machine of the character described, the combination of means for feeding a web of paper longitudinally through the said machine, severing means for cutting sections of desired length successively from the said web, a contact device located in proximity to a side of a section to be severed, yielding means tending to hold the said device away from said section, and means for causing reciprocatory movements of said contact device toward and from said section; the initial movement of said contact device away from said section taking place practically simultaneously with the cutting operation of the said severing means.

6. In a machine of the character described, the combination of means for feeding a web of paper through said machine, severing means for successively cutting sections of desired length from said web, means for producing slack in the said successive sections, a contact device for contacting with said sections to control the amount of slack therein, a reciprocable bar for supporting said contact device, a connecting rod having pivotal connection with an end of said reciprocable bar, and means for actuating the said connecting rod for causing reciprocatory movement of the said bar and the contact device carried thereby.

7. In a bag making machine, the combination with means for severing sections from a tubular web of indefinite length, slacker rolls for producing slack in the successive sections prior to severance, a knife for severing said sections successively from the said web, a contact device located in adjoining relation to one wall or ply of a section to be severed, and means for moving said device transversely to deflect a section from the plane of the web from which it is being severed to thereby control the slack in said section at the moment of severance and retaining said section in deflected position during the severing operation.

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