April 5, 1932. L. A. BECKER ET AL 1,852,394

METHOD FOR CUTTING WEB MATERIAL

Filed Nov. 17, 1930

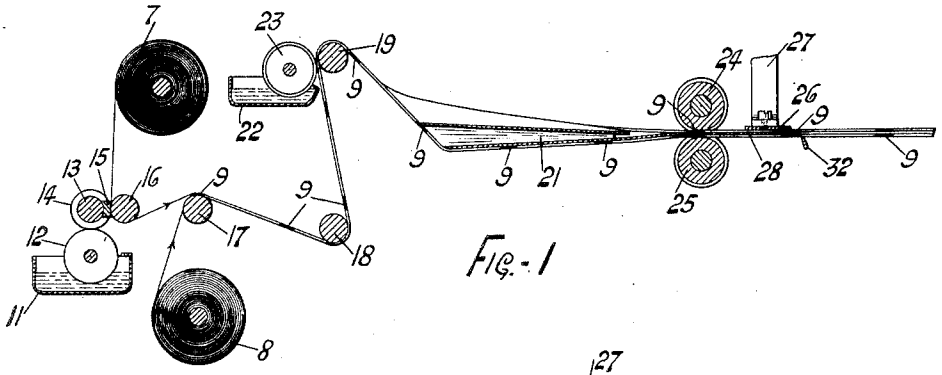

FIG. 1

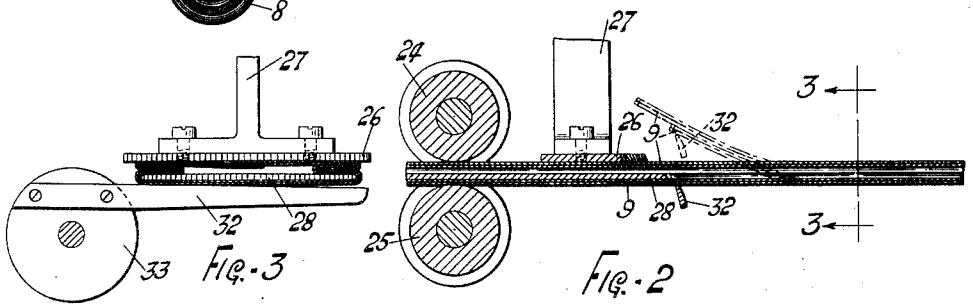

FIG. 3

FIG. 2

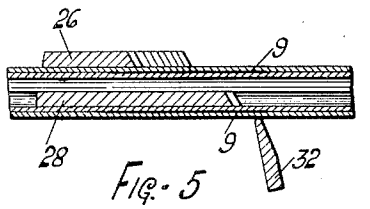

FIG. 5

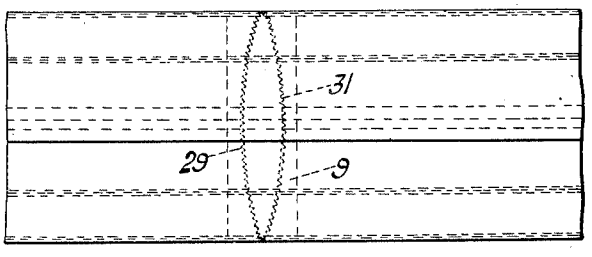

FIG. 4

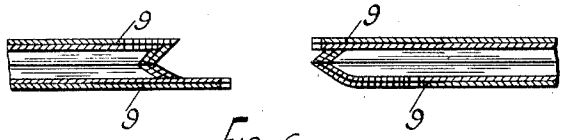

FIG. 6

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Patented Apr. 5, 1932 1,852,394

UNITED STATES PATENT OFFICE

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METHOD FOR CUTTING WEB MATERIAL

Application filed November 17, 1930. Serial No. 496,122.

This invention relates to a method for cutting web material, and more definitely to a method for striking off lengths from a multiple-walled tube formed of a plurality of layers of web material, and particularly web material of transparent regenerated cellulose, such as known in the trades as "cellophane".

It has been found that the methods and apparatus used in cutting and striking off webs and tubes of paper cannot be successfully used in conjunction with "cellophane", due primarily to the glasslike qualities of the "cellophane". Attempts to strike off "cellophane" have resulted in cracking and flying of the "cellophane", and particularly in the formation of minute tears or cracks along the struck off edge of the material. A sheet of "cellophane", the edge of which is smooth and unbroken, will resist tearing to a very considerable degree. If a tear is started, however, the sheet offers little resistance and will tear apart with little effort. This peculiar property of "cellophane" has made it impractical heretofore to adopt the rapid and efficient striking off method to the fabrication of bags or envelopes of "cellophane".

It is the general object of the invention to overcome the above enumerated difficulties of the prior art by the provision of a process by which "cellophane" web material, particularly in the form of a multiple-walled tube, can be struck off rapidly and effectively.

It is an object of the invention to provide a method which eliminates the formation of and the possibility of fracture of the bag along any minute cracks such as caused by the strike off apparatus.

A further object of the invention is to provide a method which can be readily adapted to the cutting of flat or tubed webs, of one or more layers or walls, and of substantially any web material of paper or "cellophane", or any combinations thereof.

The foregoing and other objects of the invention are achieved by the process described herein, and illustrated in the accompanying drawings wherein:

Figure 1 is a diagrammatic sectional view of suitable apparatus whereby the embodiment of the method herein specifically described may be performed;

Figure 2 is an enlarged view of the strike off mechanism illustrated in Figure 1;

Figure 3 is a vertical sectional view taken on line 3—3 of Figure 2;

Figure 4 is a plan view of a portion of the tubed material illustrating in dotted lines the cuts to be made;

Figure 5 is an enlarged view of Figure 2 taken adjacent the cutting knives; and

Figure 6 is a vertical longitudinal section of the tube after cutting with the ends of the tube separated.

In the embodiment of the invention chosen to best illustrate the principles thereof, which embodiment is described below and illustrated in the accompanying drawings, the numerals 7 and 8 indicate reels of web material. As the invention has been particularly designed for use with "cellophane", the reels may be of this material, one being of the moisture proof variety and one of the normal or non-moisture proof, or both reels may be of the same variety. Again one reel may be of "cellophane", and the other of paper of any variety, or both reels may be of paper as will be understood.

From the reel 7 the web material is passed by a gum or glue applying station where a longitudinal strip of gum is applied along one edge of the web, and where a bar or wide strip 9 of gum is periodically applied transversely of the web. To this end suitable means are provided which may include a gum pot 11, a wide gum roller 12 dipping in the pot 11, and a roll 13 journaled parallel with the roller 12. To apply the longitudinal gum strip and to apply the transverse strip 9, a disk 14 and a bar 15 respectively are secured to the roll 13. A roll 16 is provided about which the web material is wrapped, and with which the gum applying means cooperate.

The web material from the reel 8 is passed to and united with the web material adjacent a roll 17. When the webs are united the longitudinal and transverse strips of gum are of course, between the webs, as will be seen from a study of Figure 1. From the roll 17 the united webs pass over rolls 18 and 19 to

a suitable former 21, about which the webs are formed into a tube. Adjacent the roll 19 is a gum applying means, including a pot 22 and a gum applying disk 23, which means serve to apply a longitudinal strip of gum along the edge of the united webs so that when the united webs are folded about the former 21, the longitudinal strip applied by the disk 23 will secure the overlapping edges of the tube together.

A pair of draw rolls 24 and 25 are provided beyond the former 21, as is the usual practice, and a knife 26 is secured to a suitable support 27, so that the knife 26 is held just above the surface of the tube. Secured to the former 21, and extending therefrom up to a point adjacent the knife 26, is a flat knife 28. Both knives 26 and 28 are formed with toothed edges, and in the embodiment shown, the edge of the knife 26 is curved concavely, and the edge of the knife 28 convexly, so that the tube is struck off or cut as indicated in dotted lines at 29 and 31 of Figure 4. The usual strike off bar 32, mounted on any suitable means 33, cooperates with the knives 26 and 28 as will be understood and as illustrated in Figure 2.

As shown in Figure 5, the arrangement of parts is such that the transverse strips 9 of gum are passing adjacent the strike off knives 26 and 28 just as the strike off bar 32 comes up to strike off the tube; thus the cuts 29 and 30 are made in the area of the gum 9. In this manner the formation of minute cracks and tears along the line of the cuts is substantially prevented, and even if some cracks are formed, the gum, together with the multi-ply construction of the tube, will prevent tearing of the material along such cracks as may be formed.

The gum, glue or adhesive which is employed is preferably of a quick drying variety, which will adapt itself to the process as herein outlined.

The steps of the process will undoubtedly be clear from the foregoing description. However, it should be noted that the principles of the invention are applicable in a plurality of other relations for example, the gum may be applied to but a single web in order that the web can be cut without tearing. Again, the gum may be applied between more than two webs for the same purpose. It will also be obvious that the cut or strike off can be made either with the webs flat or tubed, and that as described above, the material in the webs or tubes can be of substantially any type of paper or "cellophane", or any combination thereof.

In conformity with the patent statutes, a specific embodiment only of the invention has been particularly described and illustrated, it being understood that the scope of the invention is not limited thereby, but is defined by the appended claims.

What is claimed is:

1. That method of forming tubular blanks which comprises applying longitudinal and transverse strips of gum to a web of material, forming the web into a tube so that the longitudinal strips of gum will hold the web in tubular shape, and cutting off the tube in the area of the transverse strips of gum.

2. That method of forming tubular blanks which comprises applying gum to a web of material, forming the web into a tube and cutting off the tube in the area of the gum.

3. That method of forming multi-ply tubular blanks which comprises applying longitudinal and transverse strips of gum to a web, joining another web to said first named web, forming the combined webs into a tube, and striking off the tube in the area of the transverse strips of gum.

4. That method of forming multi-ply tubular blanks which comprises applying gum to a web, joining another web to said first named web, forming the combined webs into a tube, and striking off the tube in the area of the gum.

5. That method of forming multi-ply tubular blanks of regenerated cellulose, which comprises applying gum to a web of regenerated cellulose, joining another web of regenerated cellulose to said first named web, forming the combined webs into a tube, and striking off the tube in the area of the gum.

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