

March 5, 1935.

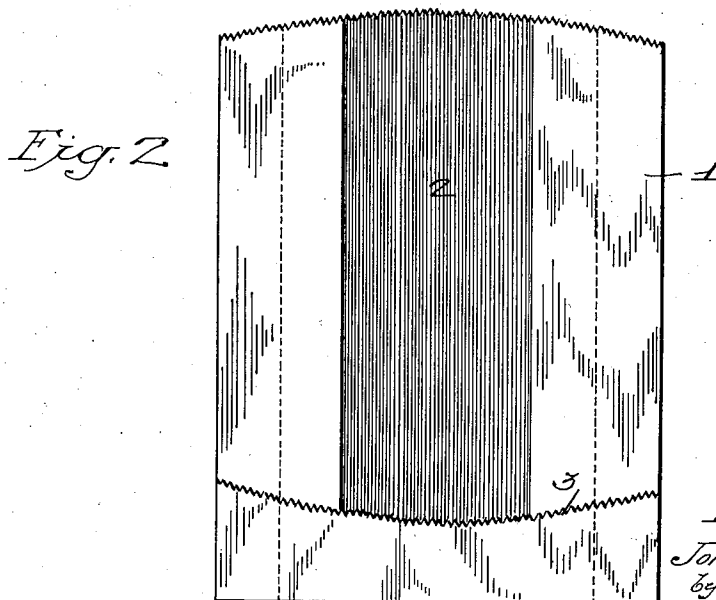
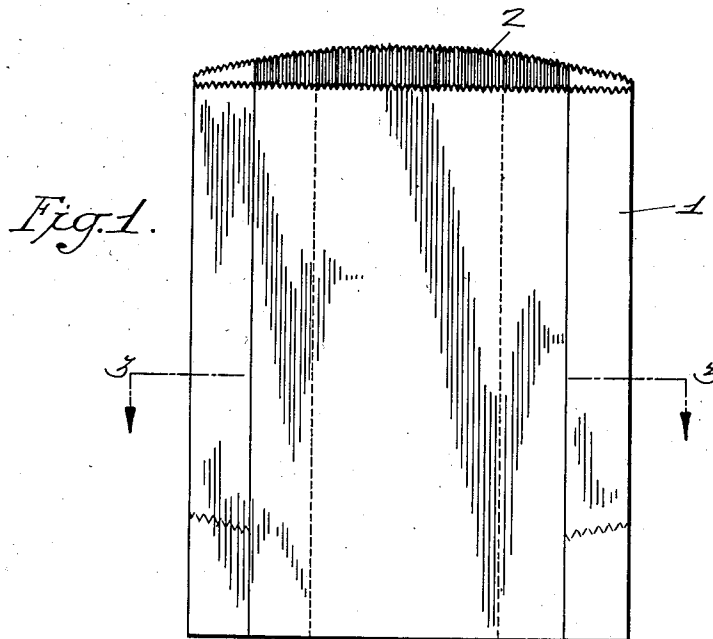
J. M. DRIVER

1,993,052

MACHINE FOR FABRICATING CONTAINERS

Filed June 28, 1933

5 Sheets-Sheet 1



Inventor
John M. Driver
by his Attorneys
Howson & Howson

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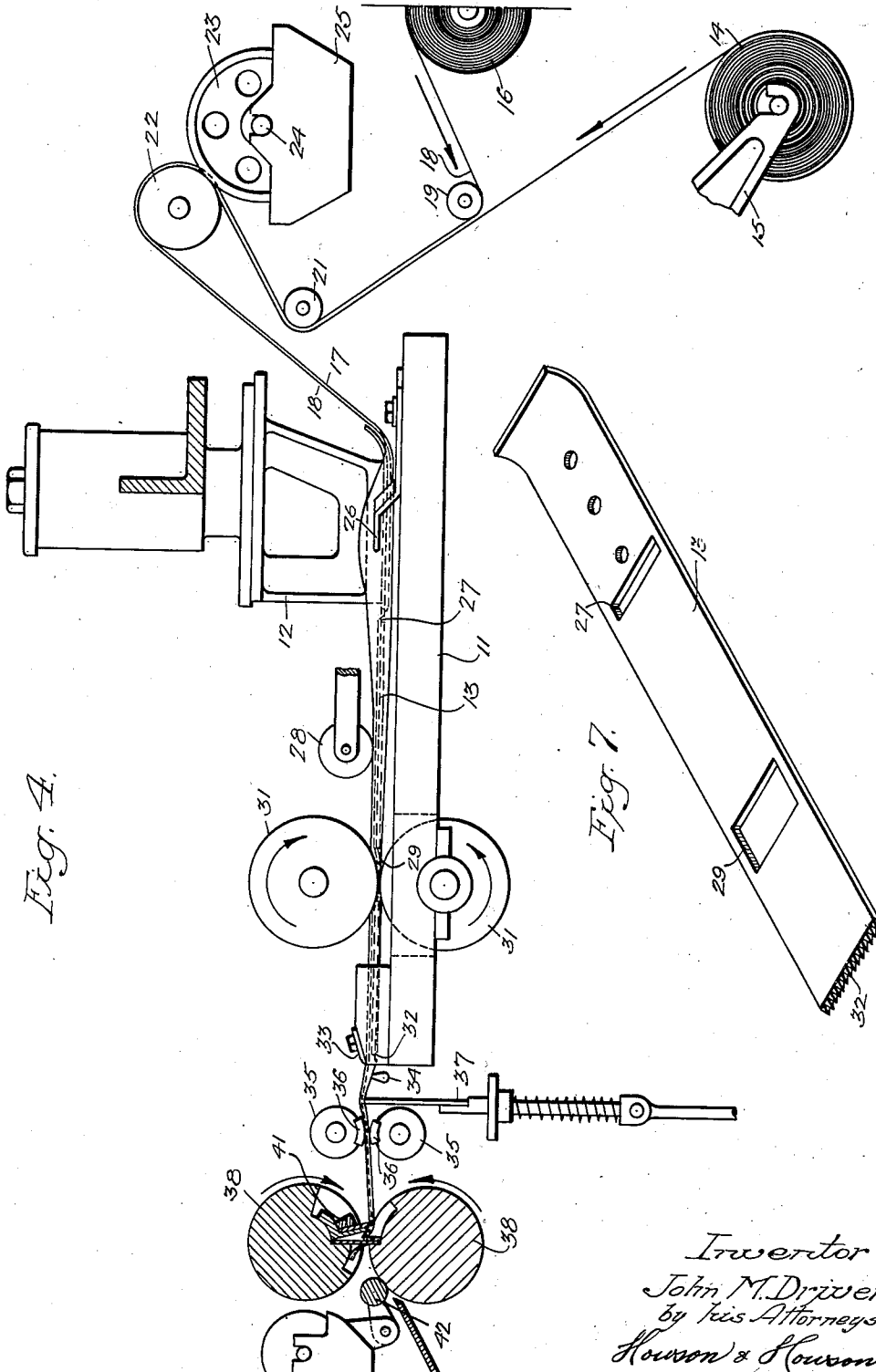
J. M. DRIVER

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MACHINE FOR FABRICATING CONTAINERS

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5 Sheets-Sheet 2



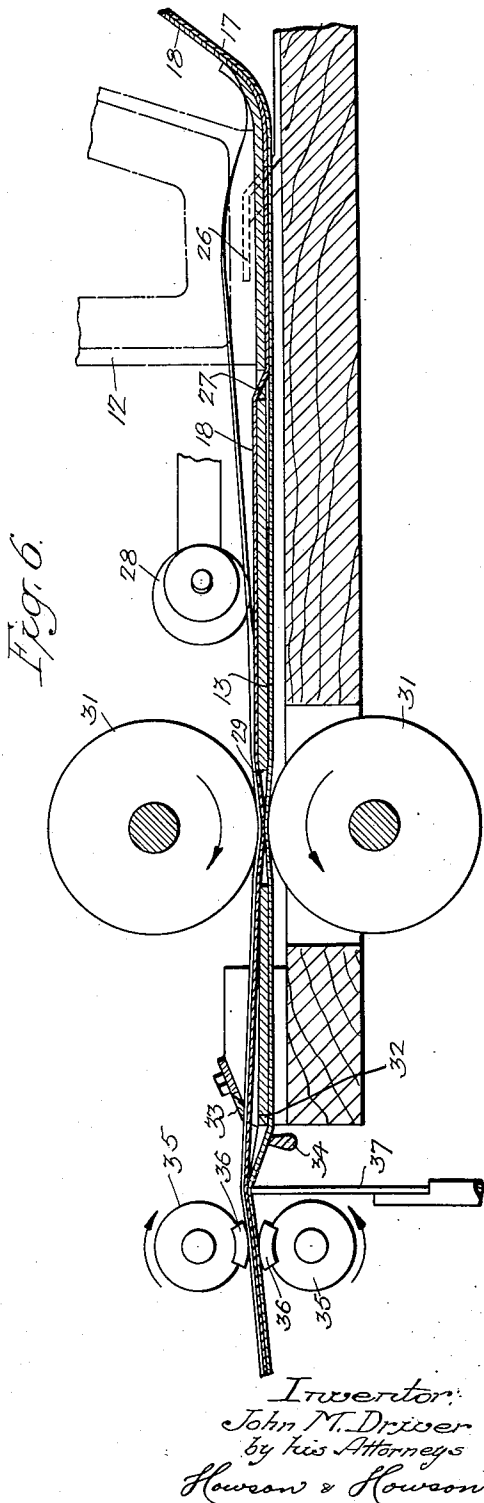
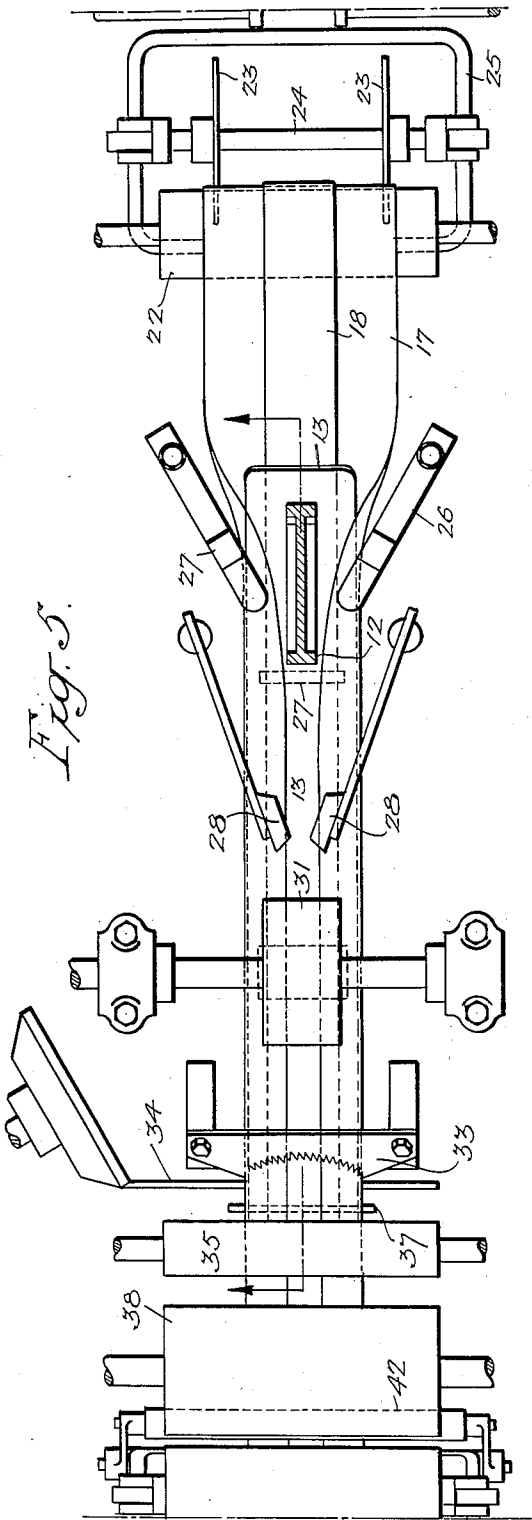
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J. M. DRIVER

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MACHINE FOR FABRICATING CONTAINERS

Filed June 28, 1933. 5 Sheets-Sheet 3



Inventor:
John M. Driver
by his Attorneys
Howson & Howson

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J. M. DRIVER

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Fig. 8.

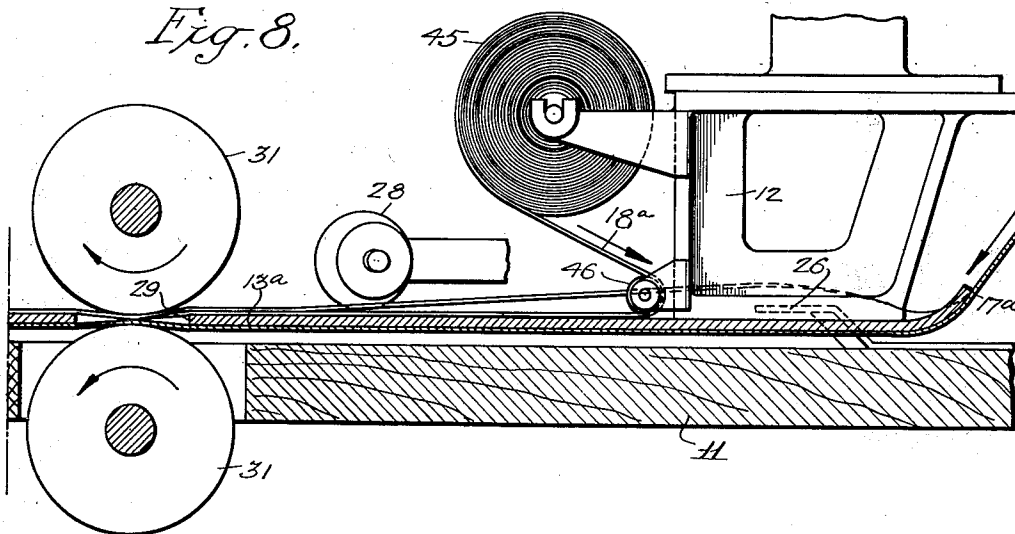
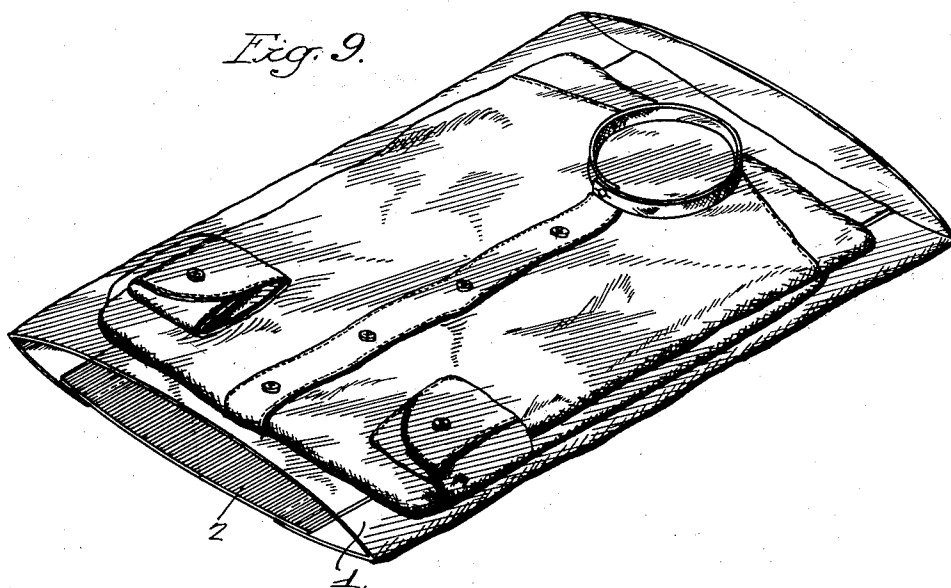


Fig. 9.



Inventor
John M. Driver;
by his Attorneys
Houson & Houson

March 5, 1935.

J. M. DRIVER

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Fig. 10.

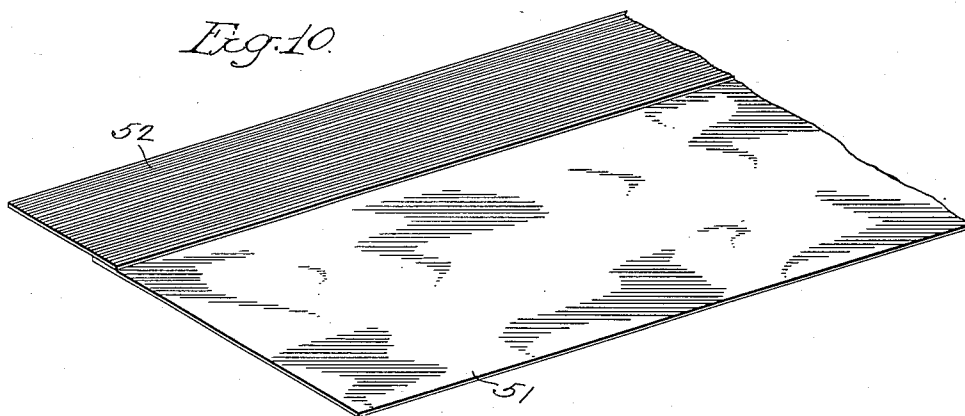


Fig. 11.

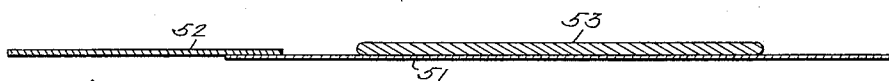


Fig. 12.

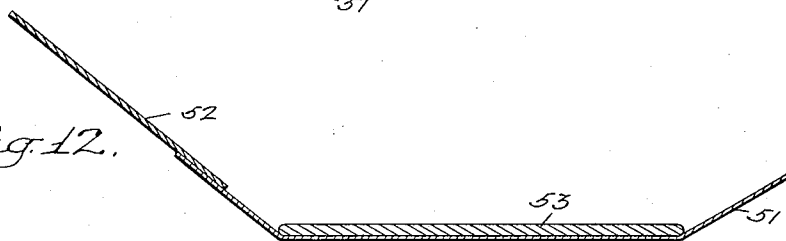


Fig. 13.

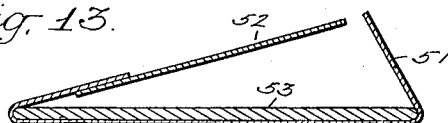
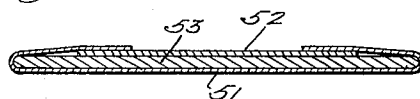


Fig. 14.



Inventor:
John M. Driver.
by his Attorneys.
Hawson & Hawson

UNITED STATES PATENT OFFICE

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MACHINE FOR FABRICATING CONTAINERS

John M. Driver, Wynnewood, Pa.

Application June 28, 1933, Serial No. 678,086

4 Claims. (Cl. 93—18)

This invention relates to containers, and more particularly to that type of container comprising a tubular body formed by strips of paper or other suitable material adhering along their longitudinal edges. Containers of this character are commonly formed by machinery, the paper or other stock from which the product is made being passed into and through the machine in continuous longitudinal strips or webs and being glued together and divided longitudinally into sections affording containers of the desired length. Where the containers take the form of bags, the machines also are equipped to fold over and seal one end of the individual tubular blank to thereby form a bottom closure, the other end being left open for insertion of the contents.

It has been proposed to form this type of container of regenerated cellulose or similar transparent sheet material, thereby to render the contents visible. This has been found more or less impracticable, however, for several reasons. Regenerated cellulose is inherently flimsy and unsubstantial, and containers made of this material assume the same characteristics. Such containers are extremely difficult to handle, and the operation of inserting the contents is both tedious and expensive. Also the container affords no support for the contents so that the package itself usually lacks firmness and form and is undesirable in that respect. Another undesirable feature of the all regenerated cellulose container is the tendency of the sides to adhere together, it being difficult and sometimes quite impossible to open the bags to receive the contents. This difficulty is aggravated by the weakness of the material in certain directions and its tendency to tear under very slight strains.

It has also been proposed to form containers with a strip of regenerated cellulose forming a narrow window at the front through which a limited portion only of the contents is visible, but machine-made containers of this character, requiring in manufacture the use of three separate strips inclusive of the strip of regenerated cellulose, are made by a method differing in essential respects from that constituting my invention, and the container itself is not comparable either to the all regenerated cellulose container or to one made in accordance with my invention. Such containers, aside from affording only a limited view of the contents, are necessarily of poor appearance due to the impracticability of creating a smooth seam between the regenerated cellulose and the bond or other paper forming the body of the bag. Unequal expansion and contraction

of these materials in the gluing operation causes a puckered appearance along the seam which renders the front of the bag unattractive, and for this reason alone the utility of the container is very limited.

I have provided a bag which shall be in all desirable respects a substantial equivalent of a container made entirely of regenerated cellulose and which shall be the superior of the all-regenerated cellulose article by reason of a complete absence of the essential defects, outlined above, which render the latter container commercially impracticable. My container is essentially a regenerated cellulose container improved in fundamental respects to a point affording an article of high utility and desirability.

More specifically, I have further provided a regenerated cellulose container which shall have sufficient "body" to render it readily handled and to afford a package of adequate firmness and definite form.

An object of my invention is to provide an improved machine for manufacturing bags or containers of the general character set forth above and which is particularly well adapted to the production of regenerated cellulose containers of the improved characteristics named.

A further object of my invention is to provide a novel machine capable of producing essentially regenerated cellulose containers without limitation as to size except as imposed by the maximum capacity of the machine.

Another object is to provide a machine for producing containers of the general character set forth which avoids the necessity of producing a composite strip prior to the forming operations.

In the attached drawings:

Figure 1 is a front view of a bag made in accordance with my invention;

Fig. 2 is a rear face view of the bag;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a diagrammatic side elevational view, partly in section, of a bag machine by means of which the bag illustrated in Figs. 1 and 2 may be manufactured;

Fig. 5 is a plan view of the machine shown in Fig. 3;

Fig. 6 is an enlarged fragmentary vertical sectional view illustrating details of the mechanism;

Fig. 7 is a detached perspective view of one of the elements of the mechanism;

Fig. 8 is a fragmentary partial sectional and side elevational view of a modified form of mechanism;

Fig. 9 is a view in perspective of a package

employing a container made in accordance with my invention;

Fig. 10 is a view in perspective of a section of a composite strip that may be used in the production of my container in accordance with a modified procedure, and

Figs. 11 to 14, inclusive, are diagrammatic sectional views illustrating successive steps in said procedure.

10 Regenerated cellulose is a highly desirable material for use in the manufacture of containers for certain purposes but, as set forth above, this material by reason of certain inherent physical characteristics is generally unsuitable. I have discovered that by introducing at the back of a regenerated cellulose container of the stated type a longitudinal strip or panel of a relatively heavy, tough and durable sheet material, such as bond or glazine paper, it is possible to provide a container in which all of the undesirable features arising from the physical characteristics of the regenerated cellulose are eliminated, the container having all of the desirable characteristics of one made in its entirety of regenerated cellulose but lacking the undesirable features previously mentioned. Thus, with reference to Figs. 1 to 3 of the drawings, a container made in accordance with my invention may comprise a tubular body, a major portion 1 of the circumference of which is composed of regenerated cellulose or similar transparent sheet material, while the lesser portion 2 is composed of a relatively heavy, tough and durable sheet material, such as bond paper, which by reason of its inherent physical characteristics shall be capable of providing in the tubular body as a whole the body, strength and resistance to mutilation lacking in the regenerated cellulose. The parts 1 and 2 extend longitudinally of the tube and are joined at their longitudinal overlapping edges by means preferably of a suitable adhesive, and the tubular body, 1—2, is so folded that the transparent portion 1 forms the entire front of the bag as well as side edge portions of the back, of which latter the part 2 constitutes a central reinforcing panel.

A container constructed as above lacks the flimsiness of the all regenerated cellulose container and has sufficient "body" to render handling easy, and to afford a package of desirable firmness. Such a container is relatively strong and durable and is not liable to tearing to anywhere near the same degree as the all regenerated cellulose container. In these respects the reinforcing panel 2 compensates for the physical deficiencies of the regenerated cellulose. Furthermore, there is no tendency for the regenerated cellulose to adhere to the bond or glazine paper so that there is no difficulty, as in the all-regenerated cellulose article, in opening the container to admit the contents. It is to be noted, also, that for all practical purposes and in all desirable features the container is the substantial equivalent of the all-regenerated cellulose article.

65 I have found it practicable, utilizing a novel method of procedure and by incorporating certain inexpensive mechanical modifications making said method practicable, to manufacture this type of container on the standard bag machines now available in the market. Such a machine, modified in accordance with my invention, is illustrated in Figs. 4 to 7, inclusive. With reference to these figures, 11 designates a bed-plate and 12 an overhanging depending frame or bracket, to the under side of which is secured a

forming plate 13 extending longitudinally of the bed-plate. 14 represents a roll of regenerated cellulose of suitable width rotatably supported in arms 15, and 16 is a roll of relatively narrow width of bond paper or other suitable sheet material, this roll being also suitably supported for rotation in the relatively fixed structure of the machine. Webs 17 and 18 from the rolls 14 and 16 are conducted, as indicated by the arrows in Fig. 4, over and around guide rollers 19 and 21 and over a roller 22 which constitutes one element of a gluing device, this device comprising also a pair of rotary disks 23, 23, mounted on a shaft 24 journaled in suitable bearings in a glue pot 25, the disks 23 being immersed in glue contained in the receptacle 25 and being in peripheral contact with the edge portions of the strip 17 of regenerated cellulose as the latter passes over the roller 22. It will be noted by reference to Fig. 5 that the strip 18 passes between the disks 23 and is not affected thereby. By means of this gluing apparatus, the edge portions of the regenerated cellulose strip confined between the roller 22 and the disks 23 receive from the latter continuous narrow ribbons of the adhesive. From the roller 22 the two strips 17 and 18 pass downwardly under the upwardly curving rear end of the forming plate 13, at which point the edge portions of the strip 17 come into engagement with two inwardly projecting diagonal arms 26, 26, which cause the outer edge portions of the strip 17 to fold upwardly and over the longitudinal edges of the forming plate, as illustrated in Fig. 5. The regenerated cellulose strip 17 continues to advance under the forming plate 13, while the strip 18 passes upwardly through a slot 27 in the said plate, and continues its movement from this point forwardly over the upper surface of the plate and under the intumed side portions of the regenerated cellulose strip 17, all as illustrated in Figs. 5 and 6. In this manner, the adhesive-bearing edge portions of the regenerated cellulose strip are brought into overlapping relation with the strip 18, and rollers 28, 28 are arranged to bear upon the tops of the intumed edges of the strip 17 to force the adhesive-bearing portions into intimate contact with the edge portions of the strip 18 whereby the longitudinal edge portions of the two strips are made to adhere together to form in effect a tube embracing the forming plate 13.

The plate 13 has in its forward end an opening 29 through which a pair of feed rollers 31, 31 grip both of the strips and the tubular body formed thereby, and draw the latter forwardly over the forming plate, the rollers being wider than the strip 18 so as to engage at the top both the intumed edges of the regenerated cellulose strip and the strip 18. From the rollers 31, the tubular blank passes over the outer edge of the forming plate 13, which as shown in Fig. 7 is provided with sharp serrations or teeth 32, and under a recessed similarly toothed plate 33, the serrated edges of the plate 13 and of the member 33 cooperating with a suitably actuated blade 34, which is brought sharply upward under the bottom of the tubular blank, to sever the tubular member into predetermined lengths constituting individual tubular containers or bag blanks. A pair of gripping rolls 35 is provided outwardly of the blade 34, each of which carries a pad 36 which jointly grip the tubular blank at the moment that the blade 34 acts thereon, and a spring-pressed reciprocatory tensioning finger 37 is also provided which maintains in the tubular body inter-

mediate the serrated edges of the plate 13 and member 33 and the rolls 35 a suitable amount of slack required for efficient operation of the blade 34 in severing the outer end portions of the tube.

5 Simultaneously with the severing operation, rollers 38, 38 equipped with suitable gripping elements function to turn over the forward edge of the blank, as illustrated in Fig. 4, and to secure the fold in position through the medium of an adhesive applied through a suitable applicator 41. The bag then passes under a roller 42 which presses down the turned-back lower end portion and secures it in position with the adhesive applied as previously described.

15 Novel features of the above described mechanism which make practicable the manufacture of containers of the previously described form are the slotted formation of the forming plate which affords passage for the strip 18 to the upper surface of the plate in a position underlying the turned-over edges of the strip 17, and the use of the rollers 31 acting through the aperture 29 in the said plate 13 to engage not only the strip 17, but also the narrow strip 18 forming the reinforcing panel at the back of the finished article.

20 In Fig. 8, I have illustrated a modified form of machine in which the slot 27 in the forming plate is eliminated, the roll 45 (corresponding to the roll 16 of the previously described embodiment) being mounted at the front of the bracket 12 and the strip 18a from this roll passing around a guide roller 46 and directly to the top of the forming plate 13a under the inturning edge portions of the strip 17a which is fed under the former in the usual manner.

25 Figs. 10 to 14, inclusive, illustrate a modified method of manufacturing a container in accordance with my invention. In such method, I may form a composite strip including a major portion 51 of regenerated cellulose and a minor longitudinal edge portion 52 of bond paper or other material suitable for use as the reinforcing element of a container made in accordance with my invention. This composite strip may be passed 30 through the standard tubular bag machine of the type of those illustrated in the preceding figures of the drawings in accordance with the usual practice, the strip as illustrated in Fig. 11 being passed under the forming plate 53 and, as illustrated in Figs. 12, 13 and 14, folded upwardly over the edges of the said plate to produce the tubular blank. The strip 51-52 is so disposed with respect to the plate 53 that the edge portion 52 of the strip, when the latter is folded into the tubular form, occupies a position as shown in Fig. 14, at the top mid section of the forming plate whereby the said portion 52 in the finished tubular container forms a reinforcing central panel at the back in accordance with the principles of my invention 35 as previously set forth.

40 It will be understood that containers made in accordance with my invention may vary from that shown in Figs. 1 to 3 of the drawings. Therein is illustrated but one well known form of bag, whereas the invention is equally applicable to bags of the square, satchel or automatic bottom type, and to bags having the tuck-in sides. In Fig. 9, I have shown a tubular container made in accordance with my invention in which both 45 ends are left open. The width of the reinforcing panel 2 also may vary in accordance with the requirements, and the regenerated cellulose may, without departure from the invention, extend completely across the back of the container, the strip 2 secured to the resulting regenerated cellu-

lose tube functioning in the manner previously described to afford a desirable form of container. While I prefer to secure the reinforcing panel within the edges of the regenerated cellulose strip, the panel 2 may be secured externally without departure from the invention. It will be understood further that the material of the reinforcing strip may vary widely without departure from the invention, and there is to be no limitation in this respect. I may for example use a reinforcing strip of regenerated cellulose, thus affording a completely transparent container; this, however, is considered relatively undesirable by reason of certain previously mentioned qualities in this material, and I prefer to employ a reinforcing strip of a material other than regenerated cellulose. It will also be understood that in its broader aspects the invention is not restricted to the use of regenerated cellulose, or, in fact, to transparent material of any character, 50 and that the principles of the invention may be used beneficially in the manufacture of containers of various materials where a reinforced or modified construction at the back is required.

I claim:

25 1. In a machine for forming tubular containers, the combination with an elongated forming plate, of means for feeding superimposed strips of sheet material longitudinally to one side of said plate, the inner of said strips being relatively narrow and said plate having an aperture through which said relatively narrow strip is passed to the other surface of the plate, means for folding the projecting side edges of the said strip of greater width over the edges of said plate, said folds overlapping the relatively narrow strip at the surface of the plate, and means for causing said strips to adhere in their overlapped portions to form a tubular blank embracing said plate.

40 2. In a machine for forming tubular containers, the combination with an elongated forming plate, of means for feeding superimposed strips of sheet material longitudinally to one side of said plate, the inner of said strips being relatively narrow and said plate having an aperture through which said relatively narrow strip is passed to the other surface of the plate, means for folding the projecting side edges of the said strip of greater width over the edges of said plate, said folds overlapping the relatively narrow strip at the surface of the plate, means for causing said strips to adhere in their overlapped portions to form a tubular blank embracing said plate, and a pair of feed rollers operative intermediate the ends of the said plate on both of the strips forming said tubular blank.

55 3. In a machine for forming tubular containers, the combination with an elongated forming plate, of means for feeding superimposed strips of sheet material longitudinally to one side of said plate, the inner of said strips being relatively narrow and said plate having an aperture through which said relatively narrow strip is passed to the other surface of the plate, means for folding the projecting side edges of the said strip of greater width over the edges of said plate, said folds overlapping the relatively narrow strip at the surface of the plate, means for causing said strips to adhere in their overlapped portions to form a tubular blank embracing said plate, and means for severing 60 said tubular blank into longitudinal sections of desired length.

70 4. In a machine for forming tubular containers, the combination with an elongated forming plate, of means for feeding superimposed strips of sheet 75

material longitudinally to one side of said plate, the inner of said strips being relatively narrow and said plate having an aperture through which said relatively narrow strip is passed to the other surface of the plate, means for folding the projecting side edges of the said strip of greater width over the edges of said plate, said folds overlapping the relatively narrow strip at the surface of the plate, means for causing said strips to

adhere in their overlapped portions to form a tubular blank embracing said plate, means for severing said tubular blank into longitudinal sections of desired length, means for turning back an end portion of each of said severed sections, and means for securing said turned-back end portion in place to form the bottom of said container.

JOHN M. DRIVER.