

June 15, 1937.

C. T. WALTER

2,083,969

MEANS FOR FORMING LAMINATED TUBES FROM WEB MATERIAL

Filed June 5, 1935

2 Sheets-Sheet 1

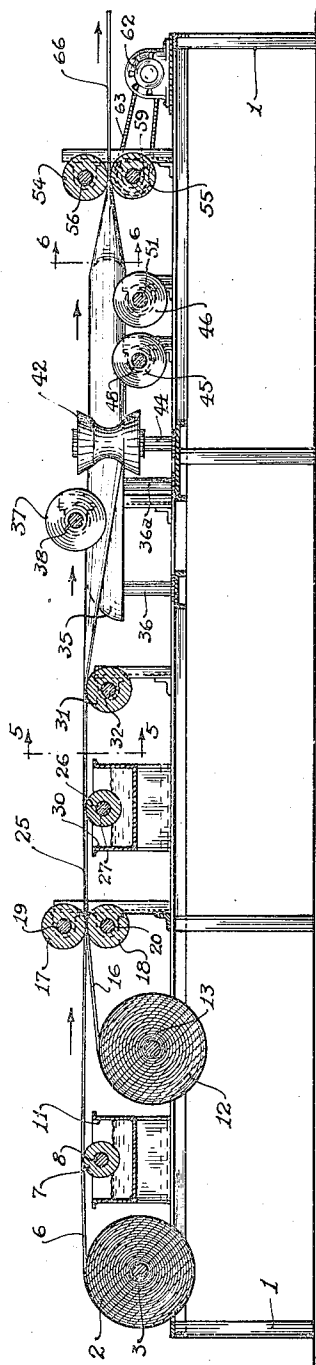


Fig. 1

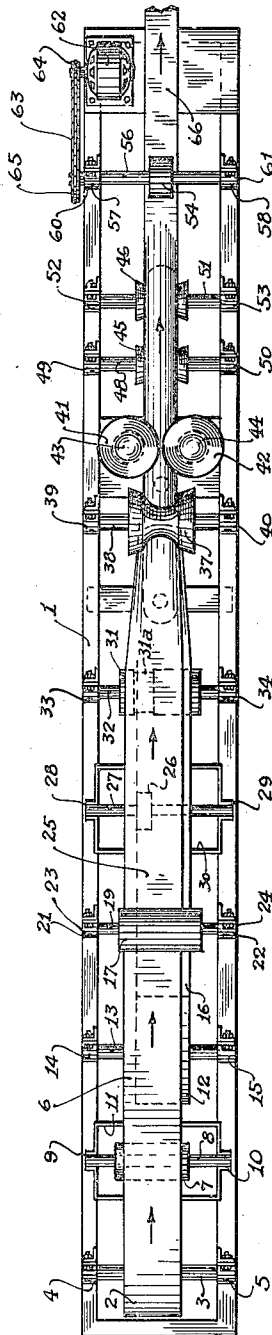


Fig. 2

Charles T. Walter
INVENTOR

BY

Stan W. Johns
ATTORNEY

WITNESS -
Wm C. Meiser

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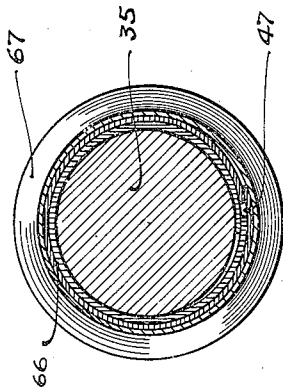


Fig. 4

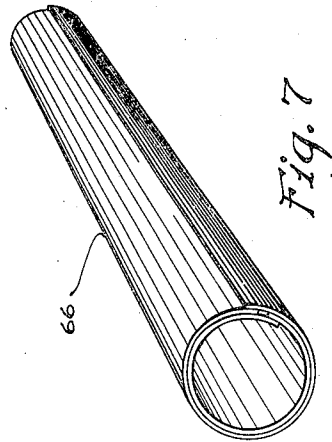


Fig. 7

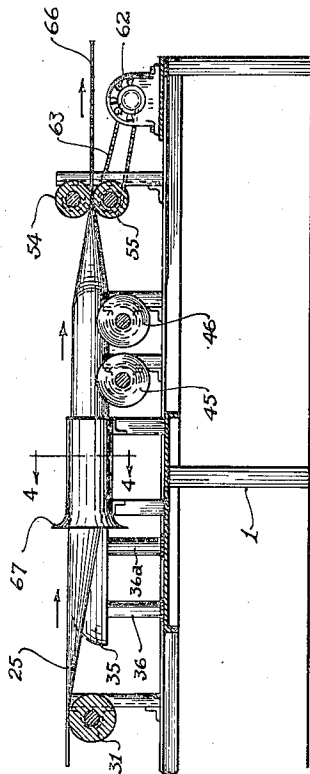


Fig. 3

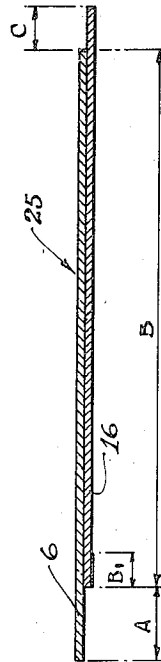


Fig. 5

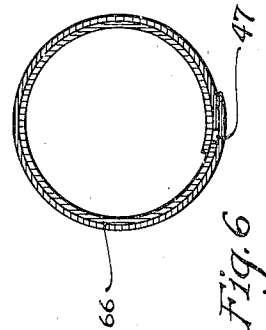


Fig. 6

WITNESS -
Wm C. Meiser

Charles T. Walter
INVENTOR

BY *For W. Johns*
ATTORNEY

UNITED STATES PATENT OFFICE

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MEANS FOR FORMING LAMINATED TUBES
FROM WEB MATERIAL

Charles T. Walter, Chicago, Ill., assignor to Industrial Patents Corporation, Chicago, Ill., a corporation of Delaware

Application June 5, 1935, Serial No. 25,176

2 Claims. (Cl. 93—82)

This invention relates to an improved apparatus for forming laminated tubes from web material.

One of the objects of the invention is to provide apparatus for forming synthetic sausage casings from web cellulose material.

Another object of the invention is to provide means for forming laminated tubes from web material in a continuous manner.

Other objects of the invention will be apparent from the description and claims which follow.

In the accompanying drawings similar reference characters in the several figures indicate similar parts.

Figure 1 is a sectional view illustrating one embodiment of the apparatus of the present invention.

Figure 2 is a plan view of the apparatus shown in Figure 1.

Figure 3 is a side view partly in section showing another embodiment of the apparatus.

Figure 4 is a cross sectional view of the forming horn and mandrel taken on 4—4 of Figure 3.

Figure 5 is a sectional view of the laminated web from which the casing is formed taken on line 5—5 of Figure 1.

Figure 6 is a sectional view of the casing after forming taken on the line 6—6 of Figure 1.

Figure 7 is a perspective view of a portion of casing prepared with the apparatus of the present invention.

Referring now more particularly to Figure 1:

The various elements of the apparatus are mounted upon frame 1. A roll of web cellulosic material 2 unwinds from shaft 3, rotatably supported in brackets 4 and 5. As cellulosic web 6 is unwound from roll 2 it passes over glue roll 7. Glue roll 7 is mounted on shaft 8 which is rotatably mounted in brackets 9 and 10. Glue roll 7 picks up liquid glue or cement from pan 11 and applies the glue or cement to the under surface of web 6 as it is drawn tautly over applicator 7. Roll 12 of web cellulose material is wound on shaft 13 which is rotatably mounted in brackets 14 and 15. Cellulosic web 16, as it is unwound from roll 12, passes between rollers 17 and 18 as does web 6. Roller 17 is mounted on shaft 19 and roller 18 is mounted on shaft 20. Shaft 19 is rotatably mounted in brackets 21 and 22 and shaft 20 is rotatably mounted in brackets 23 and 24. Rollers 17 and 18 serve to press web 6 and web 16 together forming a laminated web 25.

It will be noted by reference to Figure 2 that roll 12 and roll 2 are positioned on respective shafts 13 and 3 such that the laminated web 25

formed of webs 16 and 6 is formed with the laminations offset. This may be clearly seen in Figure 5. This construction, it will be seen by reference to Figure 5, results in the area A of single thickness, area B of double thickness and the area C of single thickness.

Laminated web 25 after passing between rollers 17 and 18 which have served to firmly and smoothly form the laminated web 25 from webs 16 and 6 passes over glue applicator roll 26.

It will be noted by reference to Figure 2 that applicator roll 26 is narrow and serves to apply a band B₁ of glue or cement upon area B as indicated in Figure 5. Applicator roll 26 may or may not be large enough to apply glue or cement as well to area A. This, however, is unnecessary since area A has already received glue or cement from applicator 7. Applicator roll 26 is mounted on shaft 27 which is rotatably mounted in brackets 28 and 29. Applicator roll 26 picks up glue from glue box 30. After passing over applicator roll 26 laminated web 25 passes over tensioning roll 31. Tensioning roll 31 is mounted upon shaft 32 which is rotatably mounted in brackets 33 and 34. It will be noted that roll 31 is provided with groove 31a to avoid contact with area B₁. In the form of the apparatus shown in Figures 1 and 2 web 25 is then fed over mandrel 35 supported by risers 36 and 36a.

Web 25, which is, of course, moving in the direction of the arrows, is pressed downwardly by forming spindle 37. Spindle 37 is rotatably mounted on shaft 38 which is mounted in brackets 39 and 40. Side spindles 41 and 42 serve to complete the forming of the cylindrical tube. Spindle 41 is rotatably mounted on shaft 43 which is rigidly affixed to frame 1. Spindle 42 is rotatably mounted on shaft 44 which is also rigidly affixed to frame 1.

The formed casing then passes over spindles 45 and 46 which serve to seal the joint 47. Spindle 45 is rotatably mounted on shaft 48 which is supported in brackets 49 and 50. Spindle 46 is rotatably mounted on shaft 51 which is supported in brackets 52 and 53. The completed casing is then passed between presser rollers 54 and 55. Roller 54 is mounted on shaft 56 supported in brackets 57 and 58. Roller 55 is mounted on shaft 59 supported in brackets 60 and 61. Presser rollers 54 and 55 are positioned closely in order to provide sufficient friction to draw the material through the apparatus. Rollers 54 and 55 are somewhat narrower than the casing to avoid creasing the casing too sharply at the edges. Roller 55 is driven by motor 62 through chain 63

and sprockets 54 and 55. After passing between rollers 54 and 55 the completed casing 56 may be cut into desired lengths as shown in Figure 7.

In the embodiment of the forming means shown in Figure 3 forming horn 67 is substituted for spindles 37, 41 and 42 and serves a function similar to that served by the spindles.

It will be seen that by use of the apparatus of the present invention, there is provided a laminated cellulosic casing of great strength, the casing being formed from web cellulose or other suitable material in a continuous manner and being provided with a lap joint as may be readily noted in Figure 6.

I claim:

1. An apparatus for forming tubular casings from web material comprising means for supporting a first web roll, means offset relative to the supporting means for supporting a second web roll so that one of the longitudinal edges of the web of the first roll will project beyond the corresponding longitudinal edge of the web of the second roll and the other longitudinal edge of the web of the second roll will project beyond the corresponding longitudinal edge of the web of the first roll, means for simultaneously feeding the webs of the several rolls, means for applying an adhesive to one entire surface of the web of the first roll, means for bonding the webs of the several rolls, means for applying an adhesive near the longitudinal edge of the web of the second roll adjacent the projecting edge of the web of the first

roll and means for forming the resultant laminated web in the form of a tube with the longitudinal edges of each of the webs of the several rolls in over-lapping relationship to provide a double lapped seam.

2. An apparatus for forming tubular casings from web material comprising means for supporting a first web roll, means offset relative to the supporting means for supporting a second web roll so that one of the longitudinal edges of the web of the first roll will project beyond the corresponding longitudinal edge of the web of the second roll and the other longitudinal edge of the web of the second roll will project beyond the corresponding longitudinal edge of the web of the first roll, means including presser rollers for simultaneously feeding the webs of the several rolls, means for applying an adhesive to one entire surface of the web of the first roll, means for bonding the webs of the several rolls, means for applying an adhesive near the longitudinal edge of the web of the second roll adjacent the projecting edge of the web of the first roll and means for forming the resultant laminated web in the form of a tube with the longitudinal edges of each of the webs of the several rolls in over-lapping relationship to provide a double lapped seam, the presser rollers of the feeding means being of less width than the formed tube and adapted for applying pressure against the lapped seam of the formed tube.

CHARLES T. WALTER.