

June 20, 1939.

H. C. FISHER ET AL

2,163,316

METHOD AND APPARATUS FOR MAKING CONTAINERS

Filed April 10, 1937

4 Sheets-Sheet 1

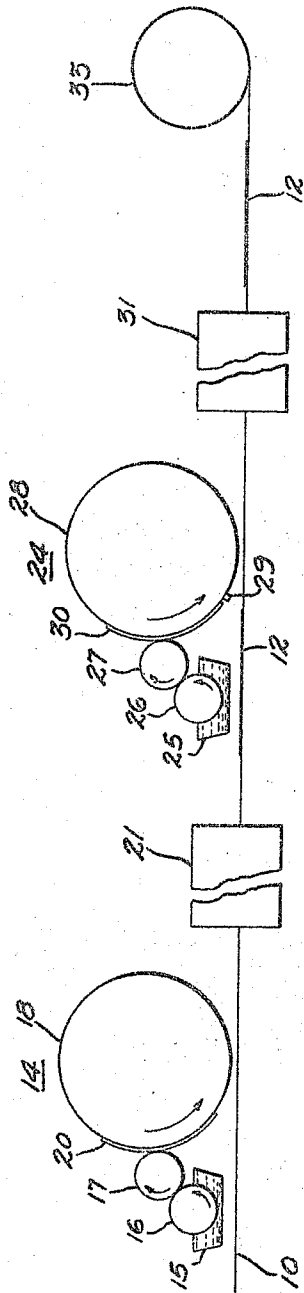


Fig. 1

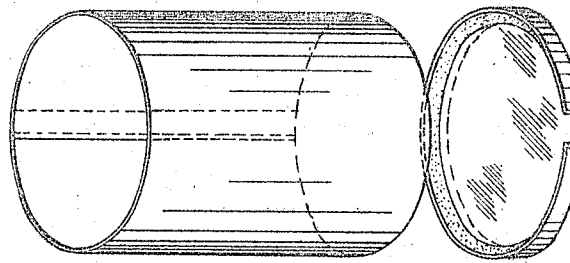


Fig. 3

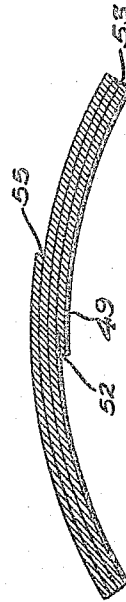


Fig. 4

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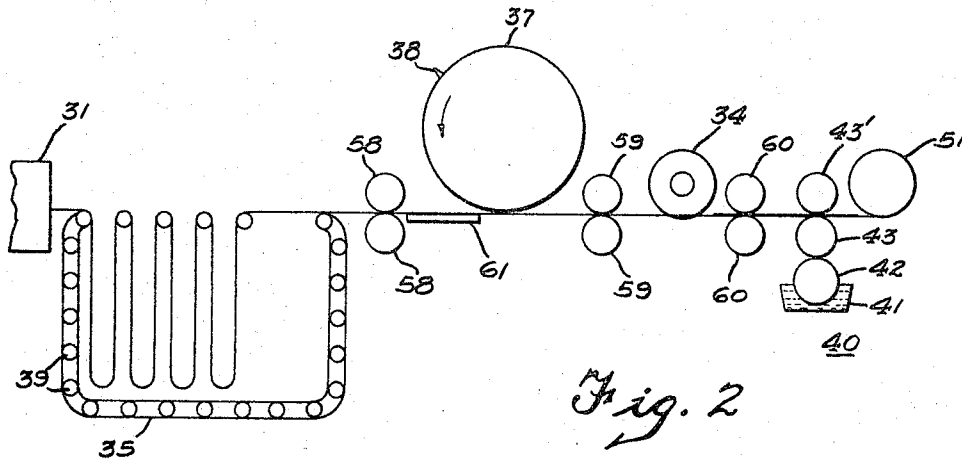
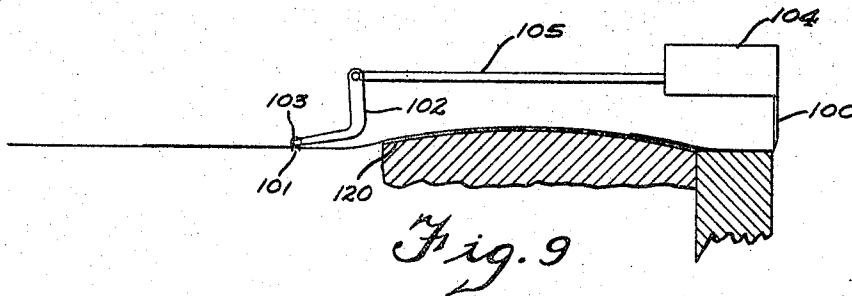
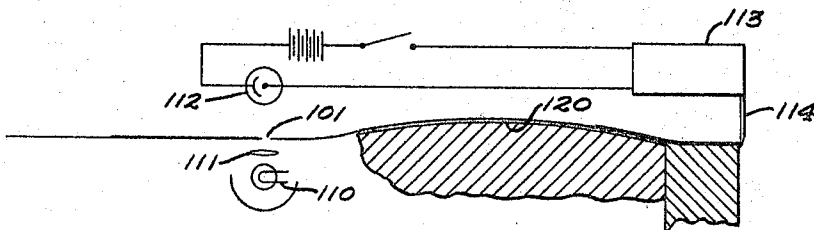
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METHOD AND APPARATUS FOR MAKING CONTAINERS

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4 Sheets-Sheet 2



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METHOD AND APPARATUS FOR MAKING CONTAINERS

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4 Sheets-Sheet 3

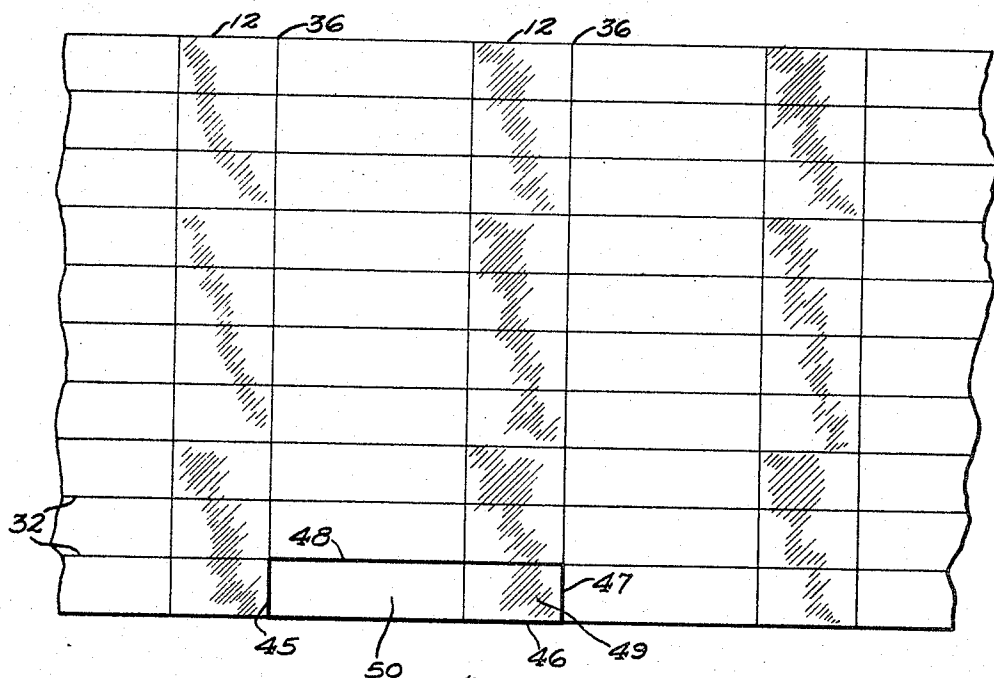


Fig. 5

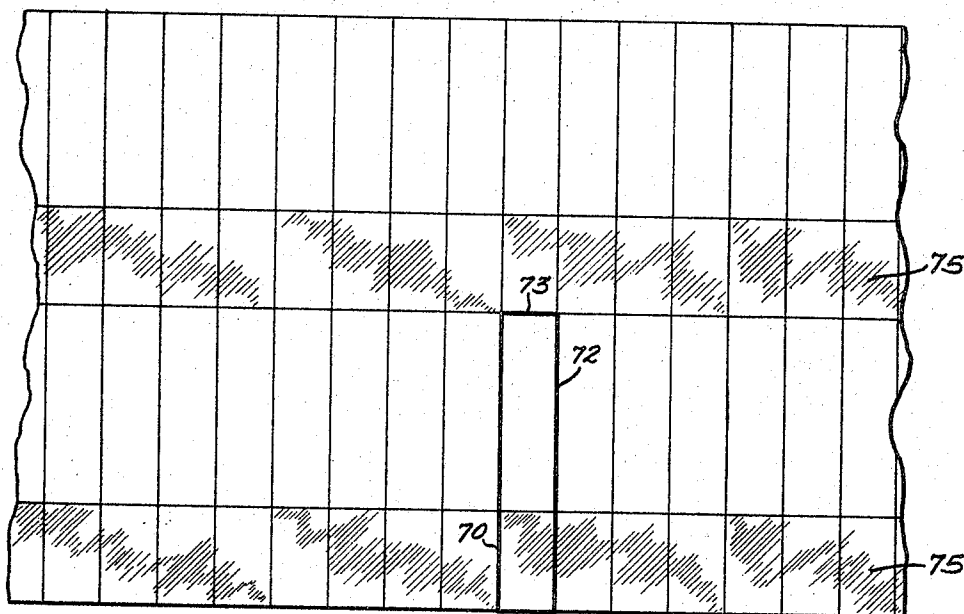


Fig. 6

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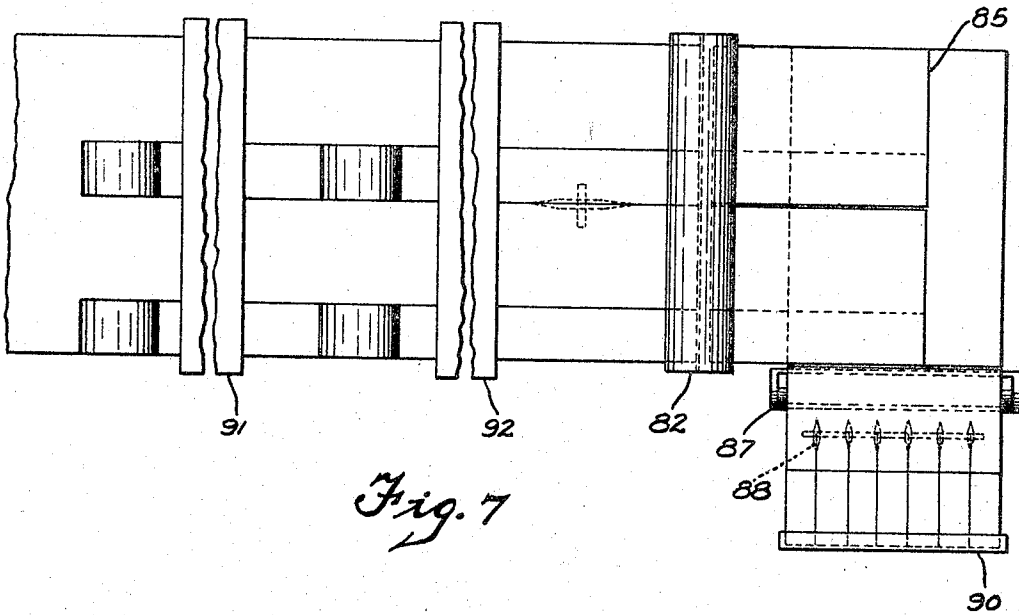
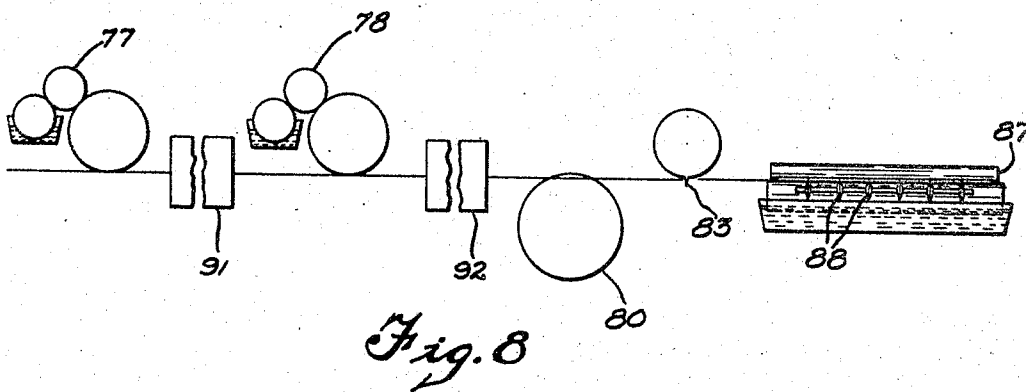
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METHOD AND APPARATUS FOR MAKING CONTAINERS

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4 Sheets-Sheet 4



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METHOD AND APPARATUS FOR MAKING
CONTAINERS

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Application April 10, 1937, Serial No. 136,142

10 Claims. (Cl. 93—39.1)

This invention relates to the manufacture of containers, and more especially to containers formed from paper material, such as paper, paperboard, or the like.

5 The principal object of this invention is to provide a method of forming an inexpensive and effective container from paper material and having desired characteristics of greaseproofness, waterproofness, or the like, and in which the
10 paper material is treated in sheet form with a surfacing on predetermined limited areas where it will be present upon and substantially confined to the inner surface of the formed container.

It is also an object of this invention to provide
15 a simple and effective method of applying a coating or surfacing to a sheet of paper which is adapted to be subsequently formed into a container or the like, the coating being applied to the paper in predetermined selected areas in a manner to provide coating only on predetermined
20 portions of the formed container.

Another object of this invention is to provide a container made in accordance with this method in which a multi-layer body portion of paper material has a surfacing applied thereto and limited to the area of maximum effectiveness.

Another object is to provide an effective and economical container in which a multi-wall paper material body portion has applied thereto an impervious proofing surfacing substantially confined to the inner area of the formed container with which the contents come in contact and in which provision is made for maintaining the impervious surfacing at the inner seam of the
35 paper body portion.

A further object is to provide suitable apparatus for the carrying out of such methods and for the production of such containers.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawings, and the appended claims.

In the drawings—

Fig. 1 is a diagrammatic elevational view showing an apparatus suitable for use in forming
45 coatings in accordance with the present invention;

Fig. 2 is a similar view of additional apparatus for receiving the coated web and completing its manufacture into container bodies;

Fig. 3 is an exploded perspective view of an end member and a completed body portion of a container embodying the present invention, a portion of the end member wall being broken away
55 to show the presence of the sealing material.

Fig. 4 is a fragmental transverse section on a greatly enlarged scale of the container shown in Fig. 3;

Fig. 5 is a plan view, on a somewhat reduced scale, of the web of Fig. 1;

Fig. 6 is a view similar to Fig. 5 but showing a modification;

Fig. 7 is a diagrammatic plan view of a modified form of apparatus;

Fig. 8 is a diagrammatic elevational view of the apparatus shown in Fig. 7;

Fig. 9 is a diagrammatic elevational view of a modified form of cutoff knife, and control mechanism therefor; and

Fig. 10 is a similar view showing a modified
15 form of control mechanism.

In the manufacture of containers having a main body portion formed of paper material, it is desirable to provide an inner surfacing on the container having characteristics coordinated with respect to the field of use of the container. For instance in the provision of such a container for the packaging of oily or greasy material such as lubricating oil, paints, foodstuffs of an oily or greasy nature, and the like, the interior of the container is provided with a suitable surfacing having desired proofing characteristics. The invention contemplates the provision of surfacings suitable for a variety of uses, with the surfacing selected in accordance with the proofness desired, as, for example, greaseproofness, oil-proofness, waterproofness, or the like. As an illustrative embodiment, the invention will be described more particularly in relation to a container adapted for the packaging of lubricating
25 oil or the like.

In accordance with the present invention the surfacing is applied economically and by the use of simple coating applying apparatus to the paper material while still in web form, thereby securing a smooth homogeneous coating of readily controlled thickness. And the application of the coating is so regulated that the coating is applied only to certain predetermined areas of the web, and not to the entire area thereof as customary heretofore. The coated areas are those which will constitute the interior of the formed container, and the remainder thereof, except for a small underlap area is free of coating material. Thus a material reduction in quantity of coating is secured; and further an ordinary and relatively inexpensive adhesive may be successively used between the non-coated layers of the body of the can, rather than the special adhesives required for securing coated surfaces. The invention
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therefore has the advantages of ease and simplicity of manufacture and of satisfactory performance of the coating layer which are secured by application of a coating prior to forming, and combines therewith economies of manufacture by restricting the coating areas to predetermined parts of the paper material. Further economies are made possible in that the requirements for the adhesive are less rigid, and consequently a more economical adhesive substance may be used.

Referring now to the drawings in detail, which show apparatus adapted to carry out the method and produce a container in accordance with the present invention, in Fig. 1, 10 indicates a continuous travelling web of paper material, supplied as from the customary roll. The width of this web is for greatest economy made approximately a multiple of the height of the body portion of the finished container.

In accordance with this form of the invention spaced transverse coated areas 12 are applied to the web extending across its entire width. These coated areas are formed from a coating material having the desired characteristics, as for example greaseproofness. Means are provided for applying these coated areas at properly spaced intervals, and if a multiple coating is desired, two or more such means are employed, and are coordinated to apply the separate layers of such composite coating in proper register. Where the nature of the coating material requires it, suitable means are provided for drying or otherwise conditioning the coatings, individually or collectively.

Suitable apparatus for applying composite coatings to spaced areas, and with the layers of the coating in proper register, is shown in Fig. 1, in which there is a first coating applying means indicated generally at 14. The coating material for the base layer of the composite coating is shown in liquid form contained in fountain 15, from which it is carried by pick-up roll 16 dipping into the fountain 15, and from there transferred to transfer roll 17. Means are provided for controlling the amount of coating supplied, as by providing for adjusting the contact between rolls 16 and 17. Coating applying roll 18 has thereon a raised offset portion 20, which comes in contact with transfer roll 17, picking up the coating therefrom and applying it to the web 10 at portion 12. Coating applying roll 18 has a circumference commensurate with the length of the container blank, and raised portion 20 has a peripheral extent commensurate with the width of the coated area, measured longitudinally of the web. The raised offset portion 20 on coating applying roll 18 has a peripheral speed equal to the speed of the web travel, at least during the time that it is in contact with the web. It is thus apparent that since the perimeter of roll 18, as measured on the raised offset portion 20, is equal to the blank length, the part of the blank which will be coated will correspond to the peripheral extent of raised offset portion 20. When used to form a container in which an interior coating is located on the inner face of the completed body portion, it is preferred to give this coating a width, measured longitudinally of the web and blank, which is slightly in excess of the inside perimeter of the completed body portion, thus providing, when wound, a container body the entire exposed interior surface of which is coated, and in addition has a small underlap of coating. This underlap produces an effective joint, as will be more fully described below.

Means are provided for drying or otherwise conditioning the first coat, when this coat is of such nature as to require it. As illustrated, drying means, such as a conventional tunnel drier, is indicated at 21 positioned beyond the first coating applying means and surrounding web 10 which passes therethrough, the passage of the web through the drier being regulated to give the desired drying action.

When desired, a composite greaseproof coating on the selected areas may be produced by applying a second or top coating in register with the first. For this purpose, a second coating applying means, indicated generally at 24 is used. This coating applying means is similar to first coating applying means 14, and comprises fountain 25, pickup roll 26, transfer roll 27, coating applying roll 28, and raised portion 30 on coating applying roll 28. As with the first coating applying means, provision is made for controlling the amount of coating supplied, as by adjusting the contact between rolls 26 and 27. Second coating applying roll 28 likewise has a peripheral speed equal to the speed of the web, and a circumference equal to the blank length, both being measured on raised offset portion 30. When desired, drying or conditioning means may be provided for the second coat, as for the first coat. Such means is indicated at 31, and may be similar to drier 21 previously mentioned.

Provision is made for the registration of the coating layers. The two coating applying means are so positioned with respect to each other, and are operated in suitably timed relation to each other so that the coating applied by the second means coincides on the web with the first applied coating. The second means may be spaced from the first a sufficient distance (preferably a multiple of the blank length) to afford time for the first coating to dry before application of the second, if drier 21 is omitted.

After the application of the coating to the selected areas, and, if desired, the drying or other conditioning treatment has been given, the paper material is then ready for the steps which form it into the container body portions. The web may pass directly to suitable apparatus for these further converting steps, or it may be rolled, cut into sheets, or otherwise stored at the termination of the steps already described, and then subsequently have the further container forming operations performed thereon. Fig. 1 illustrates one way in which the web may be handled when the subsequent container forming steps are not to be performed upon the web immediately, the web upon leaving drier 31 being wound into roll form, as indicated at 33. If other ways of storing the roll are preferred, one or more of the slitting operations, to be described below, may be performed upon the web as it leaves drier 31, thus providing cut pieces of material which may be stored as desired.

The further container forming steps include the division of the web into blanks of suitable size and with the cuts suitably positioned on the web to produce blanks in which the coated and uncoated areas are suitably located. In addition, the material has applied thereto a suitable adhesive, and it then undergoes a container forming or winding operation, the container being wound to any desired section and shape, such as the illustrated cylindrical form.

Referring to Fig. 5, a portion of the coated web is shown, on which are indicated the coated areas 12, and the lines upon which the web is divided

to form the individual blanks. The web is divided longitudinally by a series of cuts 32. These cuts are spaced apart a distance equal to the width of a single blank, this dimension also corresponding substantially to the overall height of the finished container body portion. The web is also divided by a series of transverse cuts 36, which are spaced from each other by a distance equal to the length of a single blank. The position of these transverse cuts 36 is coordinated with the transverse coated areas 12, in order that each blank may have its coated portion lying on the proper part of the blank. Thus transverse cuts 36 are preferably located at an edge of transverse coated areas 12, in order to insure the presence of coating at the extreme end of the part of the blank which is to form the container interior. When the web passes directly from the coating applying apparatus to the other container forming apparatus, it is preferred to locate cuts 36 at the forward edge of each coated area. In this way the individual blanks arrive at the winding means with the coated portions properly located. A single blank, formed by cut lines as just described, is indicated in Fig. 5 by heavy lines 45, 46, 47 and 48. It is seen that such a blank comprises a coated portion 49 at its forward end, and an uncoated portion 50 forming the remainder of the blank. When wound into a container body portion, the coated portion 49 forms the interior of the container, together with a slight underlap, while the uncoated portion 50 forms the remainder of the lapped portion of the body. The length of portion 50 is chosen to give the desired number of plies and amount of overlapping of the blank ends. For example in the 3 ply container illustrated, in which an overlap is provided, portion 50 will have a length somewhat in excess of twice the periphery of the container.

Apparatus suitable for carrying out the subsequent container forming steps is shown in Fig. 2. The means for applying the adhesive, the means for producing the right angularly related cuts in the web to produce the blanks, and the winding means, are all adapted for use either upon a web which is fed directly from coating apparatus, or upon a web which has been stored as a roll or in other suitable form. Fig. 2 indicates more particularly the treatment of a web directly received from the coating apparatus. Such a web leaves drier 31, such drier being indicated both in Fig. 1 and in Fig. 2, which show how the entire apparatus is associated.

If desired, provision may be made for the continuous operation of the apparatus in spite of temporary deviation from synchronism of the different parts with each other, and even to permit of a temporary shut-down of one part of the apparatus without interrupting the entire production. Thus, means may be provided for introducing slack in the feed of the web between the different parts of the apparatus. As illustrated, this slack is introduced by feeding the web, as it leaves drier 31, into a conventional festooner or looper 35, in which loops of the web are received and temporarily stored on travelling supports 39. In event the web after coating has been wound into roll form, it can be fed into the festooner from a position corresponding to that of drier 31, in Fig. 2.

Means are provided for forming the two sets of cuts illustrated in Fig. 5, namely, transverse cuts 36, and longitudinal cuts 32. These cuts may be

performed in any desired sequence, and in any chosen relationship to the location of the adhesive applying means to be later described. As illustrated in Fig. 2, the transverse cuts 36 are produced by a rotary knife 37 carrying blade 38. As the cuts 36 produced by knife 37 are spaced apart by the length of the blanks, it is preferred to form rotary knife 37 with a diameter equal to that of coating applying rolls 18 and 28 as measured on the raised offset portion. The rotary knife can then be operated at a peripheral speed equal to the linear travel of the web and the web is then so fed with respect to the angular location of blade 38 as to locate transverse cuts 36 at the desired place on the web. It is thus seen that in the particular embodiment illustrated, the location of these transverse cuts is obtained by coordinating the parts of the apparatus, and the feeding of the web. If transverse cuts 36 are made before the other cuts, the web at this point has been divided into a series of sheets having a dimension in the web direction commensurate with the length of a blank.

As illustrated in Fig. 2, the transverse cuts 36 are produced by rotary knife 37 carrying blade 38. Before and after this cut is made the web is propelled forward by pairs of draw rolls 58—58, 59—59 and 60—60, 37 lying between 58—58 and 59—59, and rotary slitting knives 34 (later to be described), lying between 59—59 and 60—60. Since the peripheral speed of these rolls is that of the speed of travel at the web, the transverse cut web thus is propelled forward to the winding means 51. Transverse cuts 36 are facilitated by the support given the web on bed 61, over which the back of the sheet passes.

Means are provided for the application of adhesive to the web to secure the wound container permanently in wound form. It is preferred to apply this adhesive to the under side of the web, and the adhesive may be applied at any convenient stage during the container formation. As illustrated, the adhesive is applied to the under side of the web just before the container is wound. The adhesive may be applied as a continuous coat; this results in the outer surface of the finished container carrying a layer of adhesive, and where the container formation is to be immediately followed by the application of an outer covering such as a container label, this outer layer of adhesive may be utilized to secure such covering. If this outer layer of adhesive is not desired, the adhesive applying means may be constructed to apply a discontinuous layer of adhesive, such as by means of a raised offset portion on roll 43 in a manner generally similar to that used in coating applying rolls 14 and 24, but with the extent of the offset portion corresponding to the area to which it is desired to apply the adhesive. As illustrated, the means for applying the adhesive comprise fountain 41 for receiving the adhesive material, adhesive pick-up roll 42, and adhesive applying roll 43. As with the coating units, means are provided for controlling the amount of adhesive supplied, as by varying the contact between rolls 42 and 43. Adhesive applying means 40 is equipped with roll 43' which serves to guide the forward end of the transverse cut edge of the web to the winding means 51.

The web may then be fed to a suitable winding means and wound into its desired shape, the coated area of the blank being located on the interior of the container. The formed body is

then suitable for use as the container body, or it may be cut into shorter sections each of which is of suitable height to form the body portion of the container.

5 Preferably however a web is utilized which has a width greater than the height of a container body, and having been coated as described, and before being wound into container form is slit longitudinally into a plurality of blanks each adapted to form a single container body. Means 10 are provided for the formation of longitudinal slits 32, spaced apart a distance equal to the blank width, as previously described. Such means may take the form of series of rotary slitting knives 34, properly positioned in the path 15 of the web. After the formation of these slits, together with the other steps previously described, the blanks thus formed are then ready for winding, and are fed to suitable winding 20 means.

The winding means illustrated preferably comprises the customary form of mandrel 51 equipped to grip the blank ends, and is adapted to wind a number of blanks in side by side position substantially equal to the width of the web at a 25 single winding operation. The blanks are fed to the winding means with coated areas 49 at the forward part of the blank, to form the inner surface of the wound container. During the 30 winding, the adhesively coated portion of the blank is brought into contact with overlying portions and adhesively secured thereon. With the coating spaced as shown, and with the adhesive located on the under side of the web, it will be 35 seen that during the winding operation the uncoated area 50 of the blank, together with the underlapping coated portion, will be brought into contact with the adhesive on the opposite face of the blank, and the blank thus adhesively secured 40 upon itself.

When desired, transverse cuts 36 may be made by apparatus in which separate knife controlling means are incorporated, rather than depending upon the various parts of the apparatus 45 remaining in synchronism, as above described. Figs. 9 and 10 indicate modifications in which such control means are included, these control means being actuated by indexing means on the web itself, formed on the web in fixed relationship to the points at which the transverse cuts 50 are desired. Such indexing means on the web may take the form of a small aperture, preferably located in a marginal strip on the web. Provision for the forming of such apertures is 55 conveniently made by aperture forming means on one of the coating applying rolls; thus insuring a fixed spacing between the aperture and the coated areas. As illustrated in Fig. 1, a cutting die 29 is formed upon coating applying roll 60 28. This die cuts an aperture at each revolution, and the aperture serves to cooperate with the knife control means, as will presently be described. This aperture may conveniently take the form of a square hole of the order of a quarter-inch or less on a side. Fig. 9 illustrates a 65 form of control means responsive to the indexing means on the web, and is illustrated as applied to a reciprocating or guillotine type of knife, indicated at 100, although such control means is applicable to other types of knives. Knife 100 performs a cutting operation upon each 70 movement of the control means into aperture 101, formed in the web as previously described. As shown, the control means consists of ball 75 crank 102, carrying aperture engaging means

such as roller 103, and connected to the knife actuating mechanism 104 by link 105.

In place of the mechanically actuated type of control shown in Fig. 9, other suitable knife control means may be used. As illustrated in Fig. 10, for example, a light-actuated knife control 5 mechanism is employed, in which light from light source 110 passes through lens 111 which directs it at the web so as to intercept the path travelled by the apertures formed in the web. As 10 aperture 101 comes into register with the light beam, the beam passes therethrough and is received by light-responsive means, such as photocell 112. Photocell 112 is suitably connected to the actuating mechanism 113 of knife 114 to 15 produce a cutting stroke of the knife each time the light beam falls upon the cell.

When a guillotine type of knife is used, a momentary stoppage of web travel occurs at the knife during cutting. To prevent damage to the 20 web as a result of this stoppage, it is preferred to form the web supporting surface immediately ahead of the knife with an upwardly convex top 120, which causes the web to bulge slightly upwardly during stoppage by the knife. 25

There is thus produced a completed body portion of the container as indicated in Figs. 3 and 4. The coated portion 49 now forms the coated interior of the container, and as shown particularly at 52 in Fig. 4, underlaps the inner edge of 30 the paper web by a predetermined amount. It will be noted from Fig. 4 that except for the underlapped area 52, there is no coating throughout the wound portion of the body of the container and as indicated at 53, the adhesive se- 35 cures the layers directly to each other. Preferably the blank is of such length that the outer end extends beyond and overlies the inner end of the paperboard, to provide a zone of additional thickness and strength, as indicated at 55. With- 40 out this overlap, a vertical line of weakness is present which both tends to weaken the container body and to jeopardize the adhesion and seal at underlap 52, this undesirable effect being more pronounced the fewer the laminations. 45

Suitable ends are provided for the container, and may be of any desired form. It is convenient to use a metal end which is crimped on to the paperboard body portion, and the joint between 50 the end and body portion preferably has a sealing compound applied thereto prior to crimping, forming a luted joint adapted to maintain the impervious grease-proof character of the interior of the container. If desired, paper material, suitably proofed, may be used for the ends, and these 55 secured in any desired manner, a proper sealing compound being used to form a luted joint.

The sealing compound may have a double action. It may proof the end of the container body and unite with the upper layer of the proofing 60 coating and also act as a lute to fill in any space between it and the metal or other material that is crimped onto the container body. While this double function usually can be performed in one operation by a single sealing compound, some- 65 times it is preferable to make more than one application of the same compound or to use two or more different compounds, drying between applications.

The interior joint in the container at the area 70 of underlap 52 is preferably given an application of sealing material. Such material may be sprayed or extruded on for example, and preferably comprises a substance which is adapted to unite with the upper layer of the proofing coating, 75

thus forming a homogeneous interior. During application a certain amount of the material will disseminate into other portions of the interior wall, and a part of it tends to work its way in between the layers of the body portion. The material which thus works its way in between the layers unites with the underlapped portion 52 of the coating, and thus insures a satisfactory joint. Thus a completely satisfactory treated paperboard container is obtained, and one which may be manufactured with the utmost economy.

In the embodiment just described, the containers are formed in the usual manner with the grain of the paper running around the periphery of the container. Figs. 6, 7, and 8 show a modification of the invention in which the blanks are coated in predetermined areas and are then wound into containers in which the grain runs substantially parallel with the axis of the container. As indicated in Fig. 6, in which a blank is shown in heavy outline at 70, 71, 72 and 73, the long dimension of the blank lies transverse to the web, and coated areas 75 have the form of continuous longitudinal strips on the web. The relation of the coated area to the individual blanks is in general similar to that in the other embodiment, in that the blanks are so cut as to have a forward end carrying the coating. The proportioning of the coated area and of the blank with respect to the size of the completed container is in all respects the same as in the other embodiment.

Figs. 7 and 8 indicate a form of apparatus adapted to carry out this embodiment. A first coating applying means 77 and second coating applying means 78 serve to apply the continuous strips of coating material 75. Since these strips are continuous, there is no problem of synchronization. It is preferred however to operate the coating applying rolls at a peripheral speed equal to the travel of the web. The width in a transverse direction of these coating applying rolls is the same as the width in a longitudinal direction of the spaced areas 12 on the web in the other embodiment. In other words this dimension is equal to the inside periphery of the completed container plus the predetermined amount of underlap. The rolls are spaced apart laterally a distance corresponding to the length of the non-coated portion of the blank. With this form of apparatus, as with the apparatus previously described, suitable means may be used to dry or otherwise condition the coating when the nature of the coating is such as to require it. Such means are conveniently positioned following the coating applying means, and when a composite coating is used, either or both coats may be so conditioned, as desired. As illustrated, conventional tunnel driers are shown at 91 and 92, positioned to receive the web when it leaves coating applying means 77 and 78.

The web is cut longitudinally, as by rotary knife 80, to provide a series of strips, the width of which is equal to the entire length of the blank.

The transverse cuts which divide these strips into the individual blanks are separated by a distance equal to the height of the completed container body portion, or in other words the blank widths, and are preferably performed in two stages. The first cutting operation of these two serves to cut off portions or sheets 85 of the web, the length of which is some chosen multiple of the blank width, and therefore adapted to be cut into the proper number of blanks for a single

feeding operation to the multiple winding means. These web portions are then fed to the winding means, and are there given the second cuts, thus producing the blanks of final size.

As shown in Fig. 7, the first of these transverse cuts is performed by a rotary cutter 82, which extends the full width of the web and has blade 83 located thereon in outwardly extending position. This cutter rotates at a peripheral speed commensurate with the web travel, and may have a circumference which is equal to the length, in the longitudinal direction of the web, of the cut portions 85. Cut portions 85 are then stacked and fed at right angles to their direction of travel in web form, to the container forming mandrel. If desired, guillotine cutters may be used in place of the rotary cutters, operated and controlled as described above. As in Fig. 2, suitable draw rolls may be used.

As shown these cut portions 85 are coated with adhesive, preferably on the underside by means of adhesive applying means 87. These portions then pass through a series of cutting means, shown as rotary knives 88, which divide the portions into blanks, the rotary knives being spaced apart a distance equal to the blank width. The individual blanks thus formed are fed into winding means 90, it being noted that the blanks are fed to the winding means with the coated portion leading and facing the winding means, to be positioned on the interior of the container, as in the other embodiment.

Thus a container is formed in which the surfacing is applied to the portion of the web which will form the interior exposed surface of the formed container, and the remainder of the web is free of coating, except for a small lapped area beneath the inner end of the web which provides additional protection and security against failure of the container. The grain of the paper in this embodiment runs at right angles to that in the other form, that is, it runs substantially parallel to the axis of the container.

While the surfacing material applied may be varied as desired, the invention has been particularly described with reference to the provision of a greaseproof surfacing for forming a container for lubricating oil, greases, and the like, and suitable types of coating to be applied for such purpose are those disclosed in Swan Patents 1,957,368, 1,957,369, and 2,039,361, assigned to the same assignee as this application.

While the method, article, and apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to this precise method, article, and apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. The method of forming a container of the character described from a blank of paper material which includes the steps of applying in fluid condition to the blank a discontinuous coating upon a predetermined selected area of the blank, and thereafter winding said coated blank into container form with the coated portion thereof exposed upon the interior of the formed container and extending a predetermined limited distance under the lapped portion of the body wall, the coated underlapped portion providing protection and security against failure of the container, the remainder of the overlapped body walls being substantially free of coating.

2. The method of making a greaseproof container having a multi-layer paper material body portion and a greaseproof coating on a surface thereof, comprising applying a greaseproof coating in fluid condition to only a selected area of a web of paper material, cutting a blank from the web with the coating on the blank in predetermined position, and winding the blank to form the body portion with the coated portion positioned on the inner surface of the completed body portion and extending a predetermined limited distance under the lapped portion of the body wall, the coated underlapped portion providing protection and security against failure of the container, the remainder of the overlapped body walls being substantially free of coating.

3. The method of forming a container of paper material, the container having a multi-layer body wall and an interior greaseproof coating which comprises coating a web of paper material with a greaseproof surfacing on the area to be formed into the container interior wall and extending therebeyond a predetermined limited distance, cutting the web to form blanks of a width substantially equal to the height of the finished container and of a length sufficient to wind into the required number of layers, the blanks being so cut as to position the greaseproof area at one end thereof, applying adhesive to an uncoated portion of the blank, also applying adhesive to be effective upon said predetermined limited coated area, and winding the blank with the coated portion facing inwardly and with the inner end of the blank overlying the coating which extends beyond the container interior wall portion and adhesively secured thereto.

4. The method of making greaseproof containers having a paper material body portion with a greaseproof coating on the surface thereof, the body portion being of multi-layer construction, which comprises applying a greaseproof coating to spaced areas of a web of paper material, the areas having a width substantially equal to the perimeter of the completed container plus a predetermined limited underlap, cutting the web into blanks of a size to wind into a multi-layer body portion and having ends cut from the coated areas and with the widths of the coated area extending longitudinally of the blanks, and winding and adhesively securing the blanks upon themselves with the inner end of the blank overlying the coating underlap.

5. The method of making greaseproof containers having a paper material body portion with a greaseproof coating on the surface thereof, the body portion being of multi-layer construction, which comprises applying a greaseproof coating to spaced portions of a traveling web, the width of a coated area being substantially equal to the perimeter of the completed container plus a predetermined limited underlap and the distance between the coated areas being equal to the length of the remaining overlapped portion of the container, cutting the web into blanks having edges coincident with similarly located edges of adjacent coated areas, winding and adhesively securing the blanks upon themselves, and coating the interior seam with a greaseproofing material adapted to unite with the coated interior to form a homogeneous interior coating effectively impervious.

6. The method of making greaseproof containers having a paper material body portion with a greaseproof coating on the interior surface thereof, the body portion being of multi-layer

construction, which comprises applying a coating of greaseproofing material to a web of paper material in spaced transverse areas of a width substantially equal to the perimeter of the completed container and spaced apart a distance substantially equal to the length of the overlapped part of the body portion, applying adhesive material to an uncoated portion of the web, cutting the web transversely in predetermined positions at similarly located edges of each transverse coated area to form sheets each of which has a coated portion at one end, slitting the sheets to provide a plurality of blanks of a width substantially equal to the height of the completed container, and winding the blanks starting with the coated end and with the coated surface facing inwardly, the blanks adhesively attaching upon themselves during winding.

7. The method of making greaseproof containers having a paper material body portion with a greaseproof coating on the interior surface thereof, the body portion being of multi-layer construction, which comprises applying a first coating to a web of paper material in spaced transverse areas of a width substantially equal to the perimeter of the completed container and spaced apart a distance substantially equal to the length of the overlapped part of the body portion, applying a second coating upon and in register with the first coating to form a composite greaseproof coating, applying an adhesive material to the underside of the web, cutting the web transversely in predetermined positions at similarly located edges of each transverse coated area to form sheets each of which has a coated portion at one end, slitting the sheets to provide a plurality of blanks of a width substantially equal to the height of the completed container, and winding the blanks starting with the coated end and with the coated surface facing inwardly, the blanks adhesively attaching upon themselves during winding.

8. The method of forming a container of the character described which comprises applying a continuous coating in fluid condition to a portion of the width of a web of paper to form a thin surface film thereon, the coated portion having a width substantially equal to the perimeter of the completed container plus a predetermined limited underlap, and winding said web about an axis substantially parallel with the longitudinal extent of the web with the coated portion exposed upon the interior of the formed container and with the inner end of the blank overlying the container underlap and with overlapping body walls of the formed container otherwise free of coating to produce a container in which the variation in wall thickness at the seam area is limited to substantially the thickness of the web.

9. The method of forming a greaseproof container of the character described from a web of paper material which includes the steps of applying to the web a discontinuous greaseproof coating in a predetermined selected portion of the web, the coated portion having an extent substantially equal to the perimeter of the completed container plus a predetermined limited underlap, winding said coated web into container form with the coated portion thereof exposed upon the interior of the formed container and with the inner end of the web overlying the coating underlap and with overlapping body walls of the formed container substantially free of coating, coating the interior seam with a greaseproofing material adapted to unite with the coat-

ed interior and overlapped portions, applying a luting and greaseproofing material to the body portion ends, and attaching end members to the body portion ends.

- 6 10. Apparatus for use in the manufacture of proofed containers having a multi-layer paper material body portion and a proofing coating on a surface thereof, comprising first coating applying means for applying proofing material to a 10 web of paper material in spaced transverse areas of a width substantially equal to the perimeter of the completed container and spaced apart a distance substantially equal to the length of the overlapped part of the body portion, second coat-

ing applying means for applying a second coating upon and in register with the first coating, means for applying an adhesive material to the under side of the web, means for cutting the web transversely at similarly located edges of each 5 transverse coated area to form sheets each of which has a coated portion at one end, and means for slitting the paper material in a direction transverse to the cuts produced by said cutting means, the cuts and slits providing a plu- 10 rality of blanks suitable for winding into a container body portion.

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