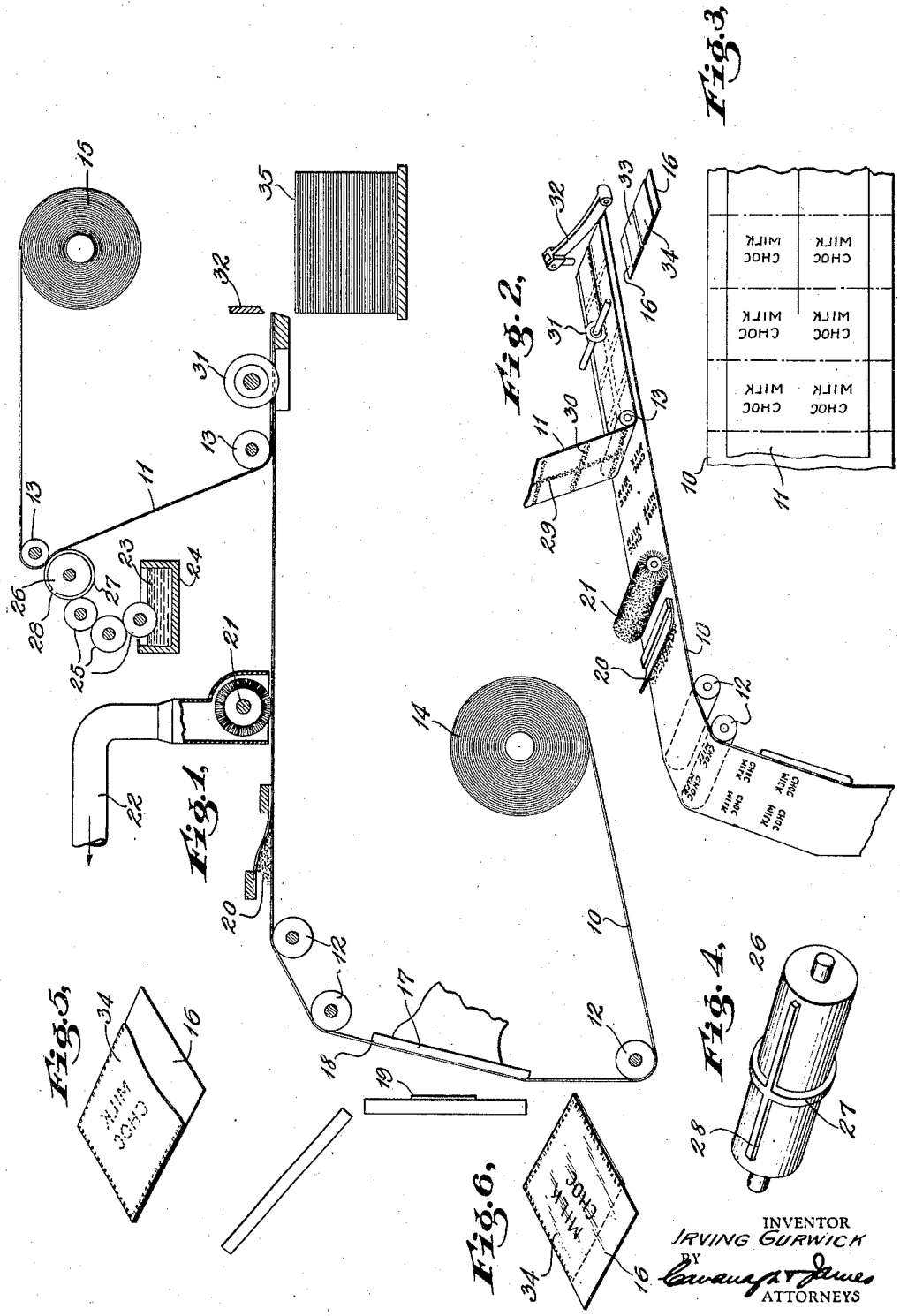
Feb. 12, 1929. 1,702,115

I. GURWICK

ENVELOPE AND PROCESS OF MAKING THE SAME

Filed July 7, 1927 2 Sheets-Sheet 1



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ENVELOPE AND PROCESS OF MAKING THE SAME

Filed July 7, 1927 2 Sheets-Sheet 2

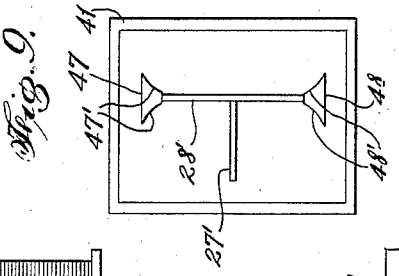


Fig. 9.

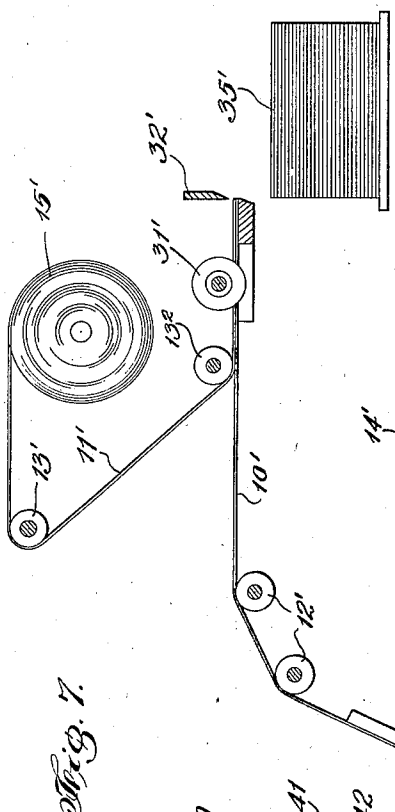


Fig. 7.

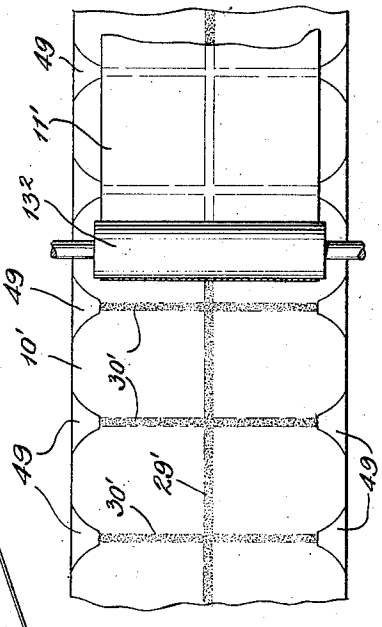
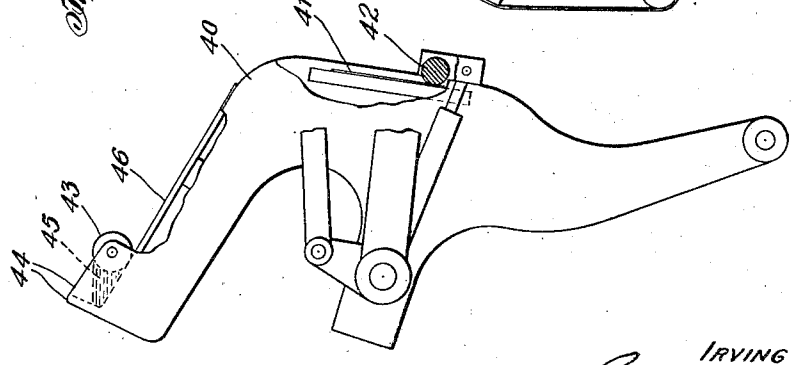


Fig. 8.



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UNITED STATES PATENT OFFICE.

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ENVELOPE AND PROCESS OF MAKING THE SAME.

Application filed July 7, 1927. Serial No. 204,107.

This invention relates to bags or envelopes or similar containers, and to the process for their manufacture.

While the invention as disclosed in this application comprises the combination of steps of printing with the steps of pasting and making of bags or envelopes, it will become obvious as the description of the process proceeds, that the steps which go to the making of the bag or envelope as distinguished from the steps which I direct to the printing are of general application in themselves in the art of bags and envelopes. This phase of the invention, namely the process of making envelopes or bags, which is of general application, may be utilized with any flexible material that comes in sheet form and that is generally used for the making of bags and envelopes.

The distinguishing feature of the bag which is the object of the present invention is that the sealed edges of the bag have no overlapping portions. The front and back of the bag or envelope are both of the same width and sealing is accomplished by applying a layer of adhesive on one of the adjacent surfaces of the front and back along a narrow portion thereof immediately adjacent the sealing edges.

Broadly, one phase of the invention disclosed in the present application lies in the manner of sealing two bodies of sheet material so as to provide a bag or envelope of the kind described. The process of making the bag or envelope as thus conceived has particular application in the making of bags or envelopes or similar containers out of thin, transparent sheet material such as cellophane. Cellophane is a pure wood pulp product produced in sheet form in a variety of thicknesses and colors and is used extensively as a wrapper or container for various products in the retail trade. In its most popular form it is colorless and transparent and very thin, its thickness varying from approximately one thousandth of an inch to seven thousandths of an inch. One of the advantages which flow from the use of cellophane is that the consuming public may observe the product or package in its life-like reality. It is therefore the object of the present invention to provide a bag or envelope which will not in any sense mar the appearance of the article contained therein. When any of the old methods of making bags or envelopes are applied to cellophane, the sealing edges of the bag or envelope mar the appearance of the article displayed therein. In addition to this, the making of bags or envelopes out of cellophane involves other difficulties such as the wrinkling of the material along the lines where the portions of the bag or envelope are sealed. It is therefore the object of this invention to make the bag or envelope in such a manner that the above difficulties are avoided and the resultant bag or envelope may be used for displaying the articles contained therein without marring the appearance of the article.

Another object of the present invention is to provide a bag or envelope made of cellophane or similar material having printed insignia thereon. Cellophane or similar materials have a highly lustrous appearance. In the making of the present printed bag or envelope, this highly lustrous appearance is taken advantage of to lend the printed matter on the envelope a lustrous and attractive appearance. This is accomplished by applying the printed negative impressions on the inner face of the front of the bag or envelope. The transparency of the cellophane makes the printed matter visible on the front of the bag or envelope, and lends the printed matter a lustrous and attractive appearance, regardless of the type of ink utilized.

Another phase of the invention disclosed herein, therefore, resides in the process of printing cellophane. Still another phase of the present invention resides in the printing of cellophane in such a manner that the printing and the making of the bag or envelope may proceed simultaneously and continuously.

Other objects of the invention will become apparent from the description and from the drawings, in which

Fig. 1 illustrates the process,

Fig. 2 is a detailed showing more clearly illustrating the steps involved in the making of the bag or envelope,

Fig. 3 is a detailed showing illustrating the condition of the webs at one stage of the process,

Fig. 4 illustrates the roll used for applying adhesive,

Fig. 5 is a back view of the resulting bag or envelope,

Fig. 6 is a front view thereof, and

Figs. 7 to 9 are views which illustrate a modified process of the invention.

In the drawings, 10 and 11 are webs of cellophane or other similar material which are fed intermittently and at the same rate by means of the feeding rolls 12 and 13 off the reels 14 and 15.

The bags or envelopes made by the process illustrated in the drawings are provided with flaps 16. For this reason the web 10 which goes to make the front of the bag or envelope having the printed insignia thereon is wider than the web 11 by an amount subtantially equal to twice the depth of the flaps 16. It is obvious, however, that if it is desired to make envelopes or bags having no flaps, the two webs 10 and 11 may be of the same width.

The web 10 is fed over the stationary bed 17 of a printing press where the face 18 of the web 10 receives negative printed impressions by the intermittent operation of the printing plate 19. The operation of the plate 19 is timed with the feeding of the webs in such a manner that the impression is applied to the web 11 during the hiatus in the feeding of the web. The printing form 19 is in the form of a negative of the printed matter and being applied to the face 18 of the web 10 which subsequently becomes the inner face of the front of the bag or envelope, the printed matter takes on the appearance of a positive when observed from the front of the bag or envelope. This is clearly illustrated in Figs. 5 and 6 where the printed insignia are shown in the negative form in Fig. 5 and in the positive form in Fig. 6.

After having received the printed impression the web 10 passes through a bath of drying powder 20 which is yieldingly applied to the printed face of the web. Some of this powder will adhere to the ink to dry it, and the excess powder is removed by the revolving brush 21. The dust formed by this brushing step is drawn off by suction through the flue 22.

The invention as described to this point is entirely directed to the printing operation and as such it may be utilized with cellophane or any other type of flexible thin and transparent sheet material, whether such material is immediately converted into bags or envelopes or is utilized for other purposes. The advantages derived from this process are manifold when applied to this type of material. One advantage is that the lustre of the material lends a very attractive lustrous appearance to the printed matter. The immediate application of the drying powder to the wet ink prevents the wet inked portions of the material from wrinkling.

The above described printing process is particularly advantageous when applied to the present process of making bags for the reason that the continuous web of sheet material having the printed matter thereon is now available for immediate use in the bag making process without the possibility of any offsetting of the printing resulting therefrom.

The process of bag making described hereinafter is designed to cooperate with the printing process, each constituting a part of the whole process and cooperating in the manner described herein. It is apparent, however, that the bag making process described herein may be utilized without the preceding printing and drying operations. Moreover, while the bag making process described herein is particularly advantageous when applied to cellophane and other thin transparent sheet material, it is apparent that the same process may be applied to other sheet material.

In the present process no folding or overlapping of any sort takes place. The entire process comprises the simple steps of applying adhesive to a flat and broad surface of a web of material, joining said web with another web by the aid of said adhesive, and cutting.

In the present process the layers of adhesive which serve to join the web with another web each serve to form a sealed edge for two bags or envelopes. The layers are applied in suitable widths and the webs are subsequently cut into individual bags, envelopes or other wrappers or containers along lines which lie wholly within the area of the layer or which divide the layer of adesive longitudinally into two strips, thus forming two sealed edges in one operation. The manner in which these steps are accomplished will become apparent from a further and detailed description of the process.

The web 15 is fed simultaneously with the web 14. The adhesive 23 in the bath 24 is transferred by means of the transfer rolls 25 to the roller 26. The roller 26 is illustrated in Fig. 4 and as shown is provided with a raised circular ridge 27 disposed substantially half way intermediate its length and is additionally provided with a longitudinal ridge 28. The adhesive is therefore applied to the roll 26 only on the surface of the ridges 27 and 28. The web 11 passing between the roll 26 and one of the feeding rolls 13 receives adhesive in the manner clearly shown in Fig. 2. The continuous contact of the ridge 27 with the web 11 applies a continuous longitudinal layer of adhesive 29 of suitable width to the inner face of the web 11. The ridge 28 applies the layers of adhesive 30 along lines disposed transversely of the web 11.

After having the adhesive applied thereto, the web 11 is superposed over the web 10 and the two webs are caused to adhere along the lines of adhesive and are thereafter fed together as one continuous web. In this form the two webs are cut longitudinally by the ro-

tating circular knife 31 along the longitudinal line which substantially bisects the layer of adhesive 29. During each hiatus in the feeding of the webs the cutter 32 operates to substantially bisect the layer of adhesive 30. The product resulting from these two cutting operations is illustrated in Fig. 2 showing in perspective two bags or envelopes 33 and 34, each being provided with the flaps 16. These bags or envelopes are stacked at 35 as shown in Fig. 6.

The reel 15 and the web 11 are so disposed with relation to the reel 14 and the web 10 that when the web 11 is superposed on the web 10 it will be equally spaced from the longitudinal edges of the web 10 to provide for the flaps 16 of the bags or envelopes.

The steps of the process described above are so corelated that a printing operation takes place simultaneously with the operation of the cutter 32. In other words, both webs are fed step by step, each web being fed a length equal to the width of the bag or envelope. Feeding is then interrupted and the printing press operates to apply an impression of the printed matter on web 10 and at the same time the cutter 32 which is normally in its raised position operates to cut across one of the lines 30 and gives two finished bags or envelopes, this series of operations being repeated until the reels 14 and 15 are exhausted.

While as shown, the roll 26 is provided with one longitudinal ridge 28 to apply the transverse layers of adhesive 30, it is obvious that if desired this roll may be provided with a plurality of such ridges. The size of the roll is selected in accordance with the width of the envelope desired. If it is desired to make a wider bag or envelope, a larger roll may be used, namely a roll having a circumference equal to the width of the bag or envelope. Where a roll having a plurality of ridges 28 is used, such ridges must be spaced from each other a distance equal to the width of the bag or envelope desired.

As shown in the drawings the roll 26 is provided with one circumferential ridge 27 disposed approximately midway of the length of the roll. This roll is so designed for the reason that in the present embodiment of the invention it is desired to make two sets of bags or envelopes of the same length. If, however, it should be desired to make sets of envelopes or bags differing in lengths, the ridge 27 may be so placed circumferentially of the roll 26 and the cutting knife 31 may be so disposed as to bring about the desired end. Moreover, it will be understood that if it is desired to make more than two sets of envelopes the roll 26 may be designed to accomplish that end, and if necessary, a plurality of cutters 31 may be provided. The same process may also be utilized for making only one set of bags or envelopes by disposing the ridge 27 at one end of the ridge 28 and by properly disposing the web 11 with relation to the web 10.

It will be seen that by the process disclosed herein, the printing of the web takes place simultaneously with the making of the bags or envelopes and is a part of the process of making the bags or envelopes and cooperates therewith in such a manner that no offsetting of the printed matter takes place for the reason that the printed matter is dried in the process. Moreover, the printing cooperates with the bag or envelope making in that it takes place simultaneously with the operation of the cutter 32 during a hiatus in the feeding of the webs.

The resulting product shown in Figs. 5 and 6 is a bag or envelope having both its front and back face made of a continuous sheet of transparent material and having no overlapped portions to mar its appearance or to interfere in any way with the view of the articles contained in the bag or envelope.

In Figs. 7 to 9 of the drawings I show a modification of the process embodying the principles of my present invention wherein the application of the adhesive is performed by a modified printing press apparatus in the making of bags or envelopes without ink printed surfaces. In this form of my invention I also show preferred means for cutting away or excising part of the material or the sheet of cellophane or other material used to produce a bag or envelope flap of curved or other ornamental contour.

In this modification of the invention I employ two reels of sheet material 14′ and 15′ similar to those heretofore described in connection with Fig. 1 of the drawings, the web 11′ coming from the reel 15′ being fed and superposed on the web 10′ coming from the reel 14′ in a manner similar to that heretofore described by means of the feeding rolls 12′, 12′ and 13′, 13², the feeding roll 13′ serving also as a pressure roll for causing the top web 11′ to adhere to the bottom web 10′ along the lines of adhesive produced thereon in the manner to be described presently.

In this modified form of the process, in lieu of employing the adhesive applying apparatus shown in Fig. 1 of the drawings, I employ a printing press mechanism generally designated as 40 having a printing plate formation 41 shown more in detail in Fig. 9 of the drawings, the said printing plate formation being provided with a transverse ridge 28′ and a median longitudinal ridge 27′, which ridges receive a coating of adhesive for application to the web 10′. The adhesive is applied to the ridged plate 41 by means of an application roller 42 such as is employed in usual printing presses, which roller moves from the position shown in Fig. 7 of the drawings to a position for receiving a charge of adhesive from a rotatably mov-

able supply roll 43 journaled at the top of the printing press apparatus 40. The supply roll 43 and the side and end walls 44, 44 of the printing press define a chamber which contains a supply of adhesive 45 which coats the supply roll 43. The platen 46 serves to apply an even coating of adhesive to the application roller 42.

As will be understood, the printing plate 41 after receiving its charge of adhesive moves towards the stationary bed 17′ of the printing press to transfer its charge to the web of material 10′, this taking place during the dwell period of the operation of the web feeding elements. As a result of this operation the underneath web 10′ receives a continuous longitudinal line of adhesive 29′ running substantially midway its side edges, and the transverse lines of adhesive 30′, 30′ producing a formation similar to that described in connection with the web 11 of the form of the process shown in Figs. 1 to 6 of the drawings.

In the further operation of the machine, the cutter or rotating circular knife 31′ severs the webs longitudinally in a manner to bisect the layer or line of adhesive 29′, and the cutter 32′ operates to substantially bisect each of the lines or layers of adhesive 30′, 30′ in a manner similar to that heretofore described in connection with Figs. 1 to 6 of the drawings, producing individual envelopes or bags which are stacked as at 35′.

I have found that this printing press method of applying the adhesive to one of the webs permits of very rapid and efficient operation of the machine.

In practicing this method of Figs. 7 to 9 of the drawings in the preferred manner, I embody means in the printing adhesive applying plate 41 for excising or cutting away some of the material of the wider web 10′ so as to produce ornamentally curved flaps. To accomplish this I provide two similarly contoured cutting devices 47 and 48 arranged at the opposite ends of the ridge or bar 28′, said cutting devices providing the cutting edges 47′ and 48′ shown particularly in Fig. 9 of the drawings. By the provision of this means, the web 10′ is cut as best shown in Fig. 8 of the drawings to produce the cut-away sections or portions 49, 49 which may be completely severed or cut away in the adhesive printing step, but which preferably are cut away so as to "hang on" to the web until the web reaches the stacking station 35′ where an operator removes the excised portions by hand. Viewing Fig. 8 of the drawings, it will be seen that this operation produces a curved flap for the bags, or any flap which may have an ornamental configuration or design.

It will be apparent that while I have shown and described my inventions in the preferred forms, many changes and modifications may be made in the structure disclosed or the processes used without departing from the spirit of the invention defined in the following claims.

I claim:

1. The method of manufacturing bags comprising the steps of simultaneously feeding two webs of sheet material, one of said webs having a width equal to a multiple of the length of the bag, and the other web being wider than the first to provide a flap for each bag, applying to the first web layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and another longitudinal layer of adhesive of suitable width along a longitudinal line on said first web, superposing said first web on the second web equally spaced from the longitudinal edges thereof, causing the two webs to adhere along the lines of adhesive, and cutting said webs along the said lines.

2. The method of manufacturing bags comprising the steps of simultaneously feeding two webs of sheet material, the said webs having a width equal to a multiple of the length of the bag, applying to at least one of said webs layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and at least one longitudinal layer of adhesive of suitable width along a longitudinal line thereof, superposing said first web on the second web, causing the two webs to adhere along the lines of adhesive, and cutting said webs along the said lines.

3. The method of manufacturing bags comprising the steps of simultaneously feeding two webs of sheet material, applying to said webs layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and at least one longitudinal layer of adhesive of suitable width along a longitudinal line on one of said webs, superposing the first web on the second web, causing the two webs to adhere along the lines of adhesive, and cutting said webs into individual bags.

4. The method of manufacturing bags comprising the steps of simultaneously feeding two webs of sheet material, applying to the sheet material of one web layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and another longitudinal layer of adhesive of suitable width along a longitudinal and median line on said first web, superposing said first web on the second web, causing the two webs to adhere along the lines of adhesive, cutting the webs along the said longitudinal line, and cutting said webs along the said transverse lines.

5. The method of manufacturing bags comprising the steps of simultaneously feeding two webs of sheet material, one of said webs

having a width equal to twice the length of the bag, and the other web being wider than the first to provide a flap for each bag, applying to at least one of said webs layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and applying to at least one of said webs a longitudinal layer of adhesive of suitable width along a longitudinal and median line thereon, superposing one web on to the other web equally spaced from the longitudinal edges thereof, causing the two webs to adhere along the lines of adhesive, cutting the webs along the said longitudinal line, and cutting said webs along the said transverse lines.

6. The method of manufacturing bags comprising the steps of simultaneously feeding two webs of sheet material, applying adhesive to at least one of said webs along lines dividing said webs into sections having the dimensions of the bag, superposing one web on the other web, the said lines of adhesive being arranged within the area of the superposed meeting faces of said webs, causing the two webs to adhere along the lines of adhesive, and cutting said webs into individual bags.

7. The method of making bags comprising the steps of applying adhesive to a body of sheet material along a series of lines forming an open-ended polygon, superposing said body over another body of sheet material, the said lines of adhesive being arranged within the area of the superposed meeting faces of said bodies of sheet material, causing the two bodies to adhere along said lines, and cutting said bodies into individual bags.

8. The method of making bags of thin transparent sheet material comprising the steps of feeding a web of thin transparent sheet material, printing negative impressions on successive portions of one face of said web, applying a drying powder to said impressions, removing the excess powder, simultaneously feeding another web, applying adhesive to said second web along lines dividing said web into sections having the dimension of the bag, superposing said webs with the face having the adhesive thereon in contact with the face having the printed impressions thereon, causing said webs to adhere along the lines of adhesive and cutting said webs into individual bags.

9. The method of making bags of thin transparent sheet material having printed insignia on the inside face of its front body portion comprising the steps of feeding simultaneously and intermittently two webs of said material, printing negative impressions of said insignia on successive portions of one face of said web, applying a drying powder to said impressions, removing the excess powder, applying to the other web layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and a longitudinal layer of adhesive of suitable width along a longitudinal and median line, superposing said other web over the printed face of the first web equally spaced from the longitudinal edges thereof, causing the two webs to adhere along the lines of adhesive, cutting the webs along the said longitudinal line, and cutting said webs along the said transverse lines, the second cutting operation taking place simultaneously with the printing operation during the hiatus in the feeding of the webs.

10. The method of making bags of thin transparent sheet material having printed insignia on the inside face of its front body portion comprising the steps of feeding simultaneously and intermittently two webs, printing negative impressions of said insignia on successive portions of one face of one web, drying said impressions, applying to the other web layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and another longitudinal layer of adhesive of suitable width along a longitudinal line, superposing said other web over the printed face of the first web, causing the two webs to adhere along the lines of adhesive, cutting the webs along the said longitudinal line, and cutting said sheets along the said transverse lines, the second cutting operation taking place simultaneously with the printing operation during the hiatus in the feeding of the webs.

11. The method of making bags of thin transparent sheet material having printed insignia on the inside face of its front body portion comprising the steps of feeding simultaneously and intermittently two webs of thin transparent sheet material, printing negative impressions of said insignia on successive portions of one face of one of said webs, applying to the other web layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and another longitudinal layer of adhesive of suitable width, superposing said other web over the printed face of the first web, causing the two webs to adhere along the lines of adhesive, and cutting said webs into individual bags simultaneously with the printing operation during a hiatus in the feeding of the webs.

12. The method of making bags of thin transparent sheet material having printed insignia on the inside face of its front body portion comprising the steps of feeding simultaneously and intermittently two webs of thin transparent sheet material, printing negative impressions of said insignia on successive portions of one face of one of said webs, applying to the other web layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and another longitudinal layer of adhesive of suit-

able width along a longitudinal and median line, superposing said other web over the printed face of the first web causing the two webs to adhere along the lines of adhesive, cutting the sheets along the said longitudinal line, and cutting said sheets along the said transverse lines.

13. The method of making bags having printed insignia thereon comprising the steps of feeding simultaneously and intermittently two webs, printing impressions of said insignia on successive portions of one face of said web, applying to the other web layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and another longitudinal layer of adhesive of suitable width along a longitudinal line, superposing said other web over the first web, causing the two webs to adhere along the lines of adhesive, and cutting said webs along the said transverse lines.

14. The method of making bags comprising the steps of feeding two webs, applying layers of adhesive to one face of at least one of the webs, said layers being of suitable width and spaced to one of the dimensions of the bag, causing said webs to adhere along said layers of adhesive, and cutting said webs along lines lying within the area of said layers.

15. The method of making bags comprising the steps of feeding two webs, applying layers of adhesive to one face of one web, causing said webs to adhere along said layers of adhesive and cutting said webs along lines substantially bisecting the layers of adhesive longitudinally.

16. The method of making bags of thin transparent sheet material comprising the steps of printing negative impressions on successive portions of one face of a web of said material, applying a drying powder to said impressions, removing the excess powder, applying adhesive to a second web of said material along lines dividing said web into sections having the dimensions of the bag, superposing said webs, causing said webs to adhere along the lines of adhesive and cutting said webs into individual bags.

17. The method of making bags of thin transparent sheet material having printed insignia on the inside face of its front body portion comprising printing negative impressions of said insignia on successive portions of a web of said material, applying to another web of said material layers of adhesive of suitable width along lines disposed transversely thereof and spaced to the width of the bag and another longitudinal layer of adhesive of suitable width along a longitudinal line, superposing said webs, causing said webs to adhere along the lines of adhesive and cutting the webs along the said lines to form individual bags.

18. The method of making bags comprising the steps of superposing two bodies of sheet material having a series of lines of adhesive on and within the area of the superposed meeting faces of said bodies forming open ended polygons, causing said bodies of sheet material to adhere along said adhesive lines and cutting said bodies into individual bags.

19. The method of manufacturing bags comprising the steps of superposing two bodies of sheet material having lines of adhesive on and within the area of the superposed meeting faces of the bodies which divide the bodies into sections having the dimensions of the bags, causing the bodies to adhere along the lines of the adhesive, and cutting said bodies into individual bags.

20. The method of manufacturing bags comprising the steps of superposing two bodies of cellophane material having lines of adhesive on and within the area of the superposed meeting faces of the bodies which divide the bodies into sections having the dimensions of the bags, causing the bodies to adhere along the lines of the adhesive, and cutting said bodies into individual bags.

21. The method of making bags of thin transparent sheet material comprising the steps of feeding two webs of sheet material, printing negative impressions on successive portions of one face of one of said webs, applying adhesive to one of said webs along lines dividing the web into bag sections, superposing said webs and causing the same to adhere to each other along the lines of adhesive and cutting the webs into individual bags.

Signed at New York, in the county of New York and State of New York this 24th day of June, A. D. 1927.

IRVING GURWICK.