Nov. 21, 1933. A. G. S. LINDGREN 1,936,136

METHOD OF MANUFACTURING A CARDBOARD BOX

Filed March 17, 1933

Fig. 1.

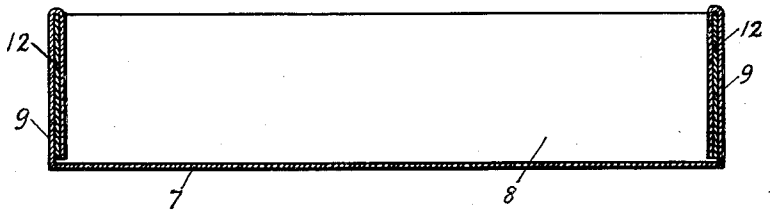


Fig. 2.

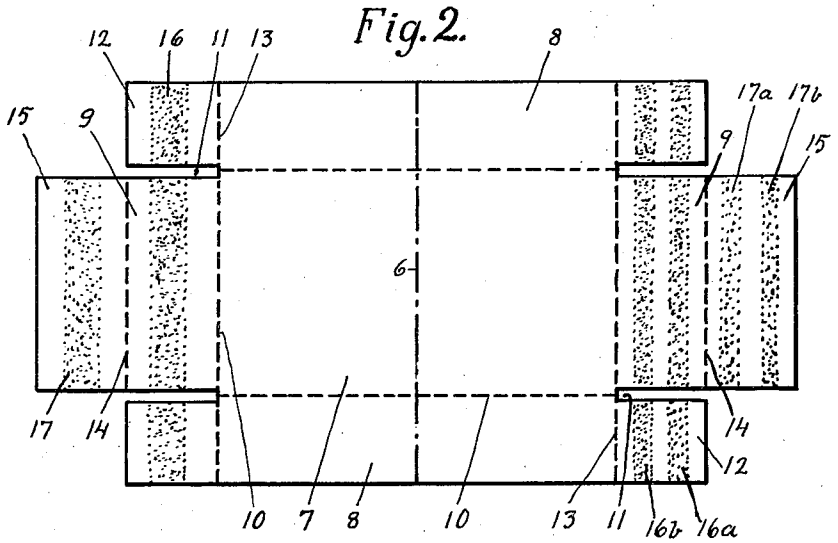


Fig. 3.

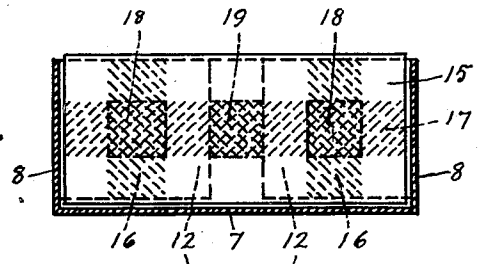
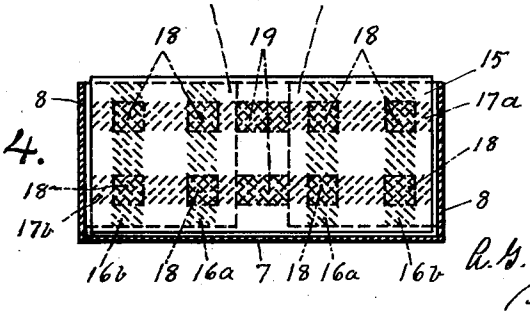


Fig. 4.



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METHOD OF MANUFACTURING A CARDBOARD BOX

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5 Claims. (Cl. 93—36)

This invention relates to such boxes, which are stored in flat condition in the shape of square pieces of cardboard provided with slits and creases round the bottom part of the box, and in which the side portions of the cardboard blank are to be folded along the creases and its corner flaps tucked in for the purpose of being secured to the adjacent side piece by fastening means, such as staples, clips or glue.

The object of my invention is a method of manufacturing such blanks of cardboard or other suitable material without using staples or clips and without requiring to use glue or other adhesive liquid, when the blank shall be set up into a box. Another object of my invention is to provide cardboard blanks that are so formed and on one side only are so coated with an adhesive solution that they can be stored in piles without sticking together and afterwards set up without using any other adhesive means nor any moistening of the adhesive means previously applied, thereby providing a blank which is cheap, simple and easily packed and transported. The solution to be used has the property that the coated parts when brought together stick strongly to each other even after the drying of the adhesive solution and without being moistened, but do not stick to uncoated portions. The portions of the cardboard blank that shall be fastened to each other, are consequently both provided with adhesive coatings. The caoutchouc solution mentioned is obtained in a known way, for instance by dissolving caoutchouc in benzole (C_6H_6). This solution sticks to the paper and remains even after the benzole has evaporated and the caoutchouc solution thus has dried. This dried caoutchouc does not smear and the cardboard blank can thus, when the adhesive solution has dried, be handled and the cardboard blanks be piled up without sticking to each other. On the other hand the dry caoutchouc sticks to another dry coating of caoutchouc. If thus the cardboard piece is coated only on one side and this side is always turned up, there is no risk of the coating on the different cardboard pieces coming into contact with each other by stapling and storing the cardboard blanks. Moreover, if the cardboard blank is given such a form that, in spite of the adhesive existing only on one side of the cardboard blank, it will become applied on the two portions of the cardboard blank, which are going to be fastened to each other, a great advantage is obtained also from the point of view of the manufacture, as in such a case the manufacture can be done in such a manner that only one adhesive coating is required and one drying operation. If the cardboard blanks are fed forward continually one after the other under gluing rollers or the like which dip into the adhesive solution this will be applied in straight stripes parallel to the moving direction and the coating operation will thus be very simple. If the rollers thereby are kept spaced from the edges of the blank the solution will be prevented from running over the edges. Otherwise inconveniences might appear later on in the storing of the blanks when the solution on different blanks comes into contact with each other and thereby cause the blanks to stick to each other.

The accompanying drawing illustrates a few embodiments of the invention. Fig. 1 shows a box in longitudinal section, Fig. 2 the same box unfolded in the form of a cardboard blank, the coating of one end portion thereof being in accordance with one embodiment and the coating of the other end in accordance with an other embodiment, Figs. 3 and 4 cross sections of the same box showing each one of the embodiments of Fig. 2.

The box blank 6 comprises a bottom portion 7 and hinged thereto sides 8 and 9 which when folded up along folding lines 10 form the rim of the box. Through incisions or slits 11, a flap 12 is formed at each end of the opposed sides 8, said flaps being hinged to the respective end portions, and these flaps are adapted upon folding-up of the sides to be brought in contact with the adjacent sides 9 by being folded about folding lines 13. The opposed side portions 9 of the box are of a greater width than the sides 8, so that when folded about the folding line 14 disposed at the edge of the finished box they form an end portion 15 clasping about the flaps 12. On one side of the box blank 6, the flaps 12 and the end portions 15 of the sides 9, and possibly also the sides 9, are provided with a coating 16 and 16*a*, 16*b* respectively, and with a coating 17 and 17*a*, 17*b* respectively, which coatings are so applied that in the finished box they will make mutual contact with one another in the manner illustrated in Figs. 3 and 4. With a coating applied on each side of the folding line 14, as shown on the left hand side of Fig. 2, the coating 17 of the end portion 15 will stick to the coating 16 of the flaps 12, at the portions designated by 18 in the latter figure, and will also stick to the portion 19 of the coating of the box side 9 between the ends of the flaps 12. At the right hand portion of Fig. 2, conditions

will be similar, with the difference only that each flap 12 will show four adhering places 18 at the end portion 15, while this end portion will at the same time have two adhering places 19 on the box side 9. As will be seen from Fig. 4, a better distribution of the adhering surfaces is obtained with the latter disposition which results in more effective adhering. Hereby a certain saving of coating material is obtainable with the latter disposition, without diminishing the adhering force.

It is evident that the adhering surface, depending on the width of the coatings, may be selected according to the requirements, and thus there is nothing that prevents applying of coatings over the whole of the flaps 12 and the end portions 15. Likewise, the size of the adhering surface 19 may be varied by increasing or reducing the length of the flaps and thus also the reinforcement of the retention of the flaps at the box sides 9 attained through this adhering. Furthermore, the flaps may of course be made of such a length that their ends coincide, although with this arrangement the adhering surface 19 and thus also the said reinforcement disappear.

With cardboard boxes, the clips hitherto used as fastening members are done away with and, above all, the work involved in applying the clips and in effecting the pasting or moistening of the coatings on the boxes is obviated. Furthermore, considerable saving of time is attained in setting up the boxes according to the invention.

The details of the arrangement may obviously be subjected to alterations, without departing from the principle of the invention. For example, the invention may be advantageously applied also in packing casings consisting of other material than paper and paste-board. The arrangement is also applicable for the production of covers or lids for packing casings made in the form of boxes. To set up the box blank shown in Fig. 2, it is possible, instead of folding up the sides 8 and 9 and the flaps 12 so that they will be located on the inside of the rim, to fold the sides downwardly, in which case the flaps as well as the folded end portions 15 will be located on the outside of the rim. The coatings 16, 17 may also be applied otherwise than above described. For example, the coatings 16 on the sides 9 may be omitted or limited to the central portion of the sides. More than two parallel coatings may also be applied to the respective parts of the packing casing.

I claim:—

1. A method of manufacturing a cardboard blank for a box from a square piece of cardboard provided with slits and creases to form a bottom portion, four sides hinged to said bottom portion and corner flaps hinged to said sides, consisting in the coating of such parts of the sides and flaps, which are to be fastened to each other when forming the box, with an adhesive solution such as a solution of rubber in benzole, by feeding the piece of cardboard against rollers which apply the coating in straight stripes across the sides and flaps.

2. A method of manufacturing a cardboard blank for a box from a square piece of cardboard provided with slits and creases to form a bottom portion, four sides hinged to said bottom portion and corner flaps hinged to said sides, consisting in the coating of such parts of the sides and flaps, which are to be fastened to each other when forming the box, with an adhesive solution such as a solution of rubber in benzole, by feeding the piece of cardboard against rollers which apply the coating in straight stripes across the sides and flaps and forming the blank so that only one coating operation on one side of the blank is required.

3. A method of manufacturing a cardboard blank for a box from a square piece of cardboard provided with slits and creases to form a bottom portion, four sides hinged to said bottom portion and corner flaps hinged to said sides, consisting in the coating of such parts of the sides and flaps, which are to be fastened to each other when forming the box, with an adhesive solution such as a solution of rubber in benzole, by feeding the piece of cardboard against rollers which apply the coating in straight stripes across the sides and flaps, thereby leaving an uncoated stripe along the edge of the blank.

4. A cardboard blank for a box provided with slits and creases to form a bottom portion, four sides hinged to said bottom portion, a corner flap hinged at each end of two opposed sides, the other two opposed sides being made wider than the first named sides and provided with creases at the edge of the finished box to form a foldable end portion, one side of the blank being coated with an adhesive solution such as a solution of rubber in benzole on all the corner flaps and on the double foldable edges.

5. A method of manufacturing a cardboard blank for a box from a square piece of cardboard provided with slits and creases to form a bottom portion, four sides hinged to said bottom portion and corner flaps hinged to said sides, comprising the coating of such parts of the sides and flaps, which are to be fastened to each other when forming the box, with an adhesive solution such as a solution of rubber in benzole and forming the blank so that only one coating operation on one side of the blank is required.

ANDERS GUSTAV SEBASTIAN LINDGREN.