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S. ROSENTHAL

PAPER BOX AND PROCESS OF MAKING THE SAME

Filed Aug. 2, 1926

FIG. 1.

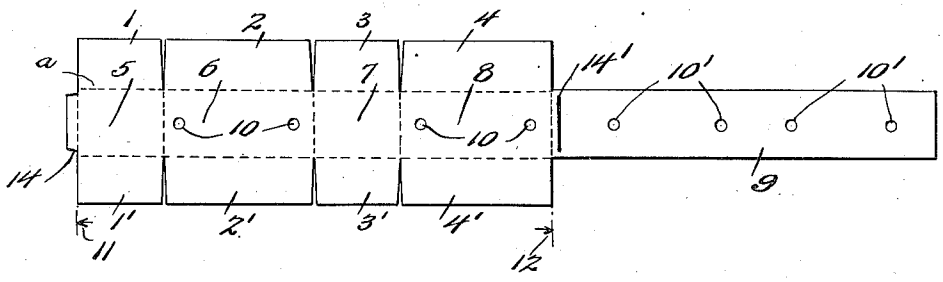


FIG. 2.

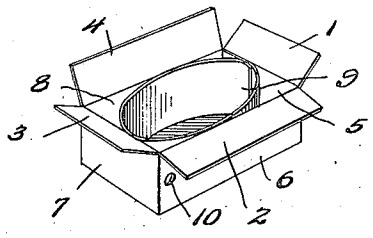
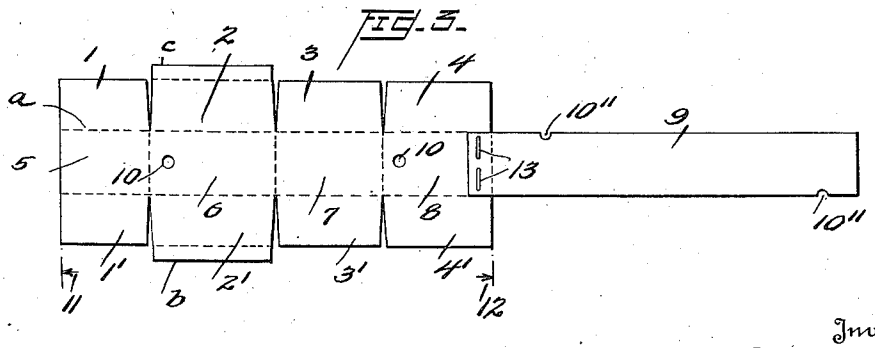


FIG. 3.



Inventor

Sam Rosenthal

By Wolfe & Price

Attorney

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UNITED STATES PATENT OFFICE.

SAM ROSENTHAL, OF NEW YORK, N. Y., ASSIGNOR TO THE PONY FRUIT CORPORATION, OF NEW YORK, N. Y.

PAPER BOX AND PROCESS OF MAKING THE SAME.

Application filed August 2, 1926. Serial No. 126,581.

This invention relates to a new form of paper box principally adapted for packing vegetables but which is of general value in packing various materials. The paper box of this application is particularly adaptable to the packing of tomatoes.

The object of my invention is to provide a box preferably of square or rectangular cross section in which the tomatoes do not come into contact with the sides, but in which there are held within a liner which in the case of a square box is preferably circular in form, so that the liner proper will touch the interior of the box at four points in the middle of the sides thereof and will not come in contact with the exterior square or rectangular box at other points.

By using the circular liner within a square box, I greatly lessen the tendency of the tomatoes or other vegetables of similar character to crush one another, and moreover it is no longer necessary to wrap each individual tomato or similar vegetable in tissue paper. By using a box of this construction I also give a much better support to the top and bottom of the box, and by using the square exterior the box will stand rough handling and shipping, while at the same time, the round interior will reduce the tendency of the tomatoes to crush in the corners.

It formerly was customary to pack readily crushable vegetables, such as tomatoes, in either a box constructed of wood made by cutting a regular tomato crate in half by running it through a sawing machine or in a large box made of corrugated paper.

The use of a wooden box was undesirable because the readily crushable vegetable along the side and top of the box would become bruised and valueless because of the pressure of the box upon the contents, and moreover since the box used was a large box it was found necessary to place three small wooden containers called tills within it, in which the tomatoes were placed, and since these tills were not in a fixed position they frequently in handling the box would slide against each other, crushing and bruising the tomatoes.

A wooden box of this character was very expensive, due to the fact that a special sawing machine was necessary to cut the box into the proper size and it was also necessary to line the inside of the box with paper sheets to prevent the tomatoes from coming into contact with the sides of the box, and often to further protect the tomatoes it was found necessary to wrap each individual tomato in a special tissue paper wrapper, all of these things increasing the cost of materials and labor. This type of box was not strong enough to bear much pressure and often the entire contents of a box were found to have become crushed because of the weight of other boxes placed upon it.

The other alternative, the large corrugated paper box, is also undesirable for many of the above reasons and for the further reason that it is necessary to place tills within it which slide about within the box crushing the tomatoes. This corrugated paper package has a large unprotected top which often buckles in in the center when any considerable weight is placed upon it. This box as well as the wooden one is designed to hold about from 20 to 25 pounds of tomatoes and the tomatoes were often crushed by their own weight. In this box it was also often necessary to wrap each tomato in an individual tissue paper wrapping to prevent its coming into contact with the top and sides of the box, thus bruising and crushing the tomatoes.

Both of these boxes because of their large size were unwieldy and hard to handle and stow into cars when shipping, and moreover the storage of these boxes before the vegetables were packed into them occupied a great deal of space.

In my box containing an integral liner the vegetables will all be contained within a liner and since the box can be made of small size very readily it is unnecessary to place tills within it, thus obviating an expensive and at the same time a very destructive feature of the old types of box, and moreover it is not necessary to wrap individual tomatoes in a tissue wrapper. Due to the presence of a liner the top and bottom of the box are much more able to withstand outside pressure and there is much less possibility of a box being crushed. No expensive sawing machines are required nor any other expensive machinery in making the box of this application.

In this manner I am also enabled to put in staggered ventilating holes which will admit air to the interior of the box, and will at the same time prevent direct introduction of air currents or other materials which are

liable to injure the tomatoes. The paper material of which my box is constructed may be of cardboard, corrugated paper or other paper material. It may also be desirable when using corrugated paper to use corrugated double-faced board that is smooth faced on both sides, or to use only single faced board the smooth faced side being on the exterior of the box.

In making my box if I use the same material for both the exterior and the liner I can stamp it out in one piece in such a manner, that by folding the box it can readily be made up for packing the vegetables and at the same time is very readily made by stamping or cutting machines and easily stored.

In case the exterior is made of different material from the liner, I would make my exterior by stamping out paper of desired paper material and also make my interior by stamping the desired paper material and then connect the exterior and liner by means of staples or wire so that they will together form the same stamping as if the whole had been stamped from a piece of the same material, and in this way the conveniences of storage and the ready preparing of boxes by folding for use is achieved. It is very desirable to have the liner of one piece so that there will be a continuous circular or oval surface within the box when it is used with as few breaks in the surface as possible.

My invention is made more clear by the drawing which is described as follows:

In the drawing, Figs. 1 and 3 represent pieces of paper which have been stamped or cut out from cardboard, corrugated paper or other suitable material which when folded will give a box of the desired characteristics. The manner in which the box looks when the folding is completed is illustrated in Fig. 2. In Fig. 1 parts 5, 6, 7 and 8 represent the sides of the box; *a* represents the scoring lines along which the paper will fold. 1, 2, 3 and 4 represent parts which can be folded over to form the top of the box and 1^1, 2^1, 3^1 and 4^1 represent parts which can be folded over to form the bottom of the box. In Fig. 1 the part 9 is cut out or stamped out integrally with the remaining portion. 10 represents air-holes in the sides of the box. These may be decreased in number or eliminated if so desired. 10^1 represents air-holes in the liner which are preferably staggered in relation to the air-holes 10 on the exterior sides of the box. 14 is a flap which will fit into 14^1 of the liner and prevent the box from unfolding. The flap 14 after being fitted into 14^1 is retained in place by means of mucilage or by other means.

The preferred arrangement of ventilating holes is as follows. They should be equally spaced from each other and from the corners of the box and on only two opposite sides of the box. The inner elliptical strip must be cut for ventilation in the same fashion.

In Fig. 1 the paper material comprising the body of the box itself that is between points 11 to 12 is of the same material as the liner to the right of 12 and can, therefore, all be stamped out or cut out in one piece. In Fig. 1 the box will be rectangular in horizontal cross section, so that when the liner is placed within the box it will assume an elliptical form as shown in Fig. 2.

When the box is folded the liner will touch the part 5 for a short distance but it will not touch the box in any other point except at the center of the sides thereof, so that any material which will be packed in the box will be exposed to only one edge of paper in the liner and will be separated from the exterior wall of the box at all places by the liner. The liner 9 is made long enough, so that it will overlap a portion of itself and form a completely elliptical liner. This overlapping portion being unsecured will permit a change in the length of the perimeter or circumference of the liner. This will have the very important advantage of permitting a change in the circumference or perimeter of the box to accommodate distortion of the external square or rectangular box and in this manner a substantially constant volume will be maintained within the liner so as to prevent crushing of the vegetables contained therein.

Fig. 3 represents certain changes which can be made in the box of Fig. 1. When it is desired to make the external box portion of one paper material such as cardboard and the liner of another material such as corrugated paper, the liner and the exterior box portion will be stamped out or cut out separately and then later stapled together at 13 in the manner indicated; instead of staples other means of attachment such as glue or paste may be used. In Fig. 3 the air-holes on the exterior of the box are greatly decreased in number and an alternative method of admitting air to the interior within the liner is shown at 10^{11}. 2 and 2^1 are shown slightly elongated with flaps *b* and *c* on the outside thereof, so that there will in this manner be able to form lids for the bottom and top of the box when folded.

Although throughout the specification I have described the use of a circular or elliptical liner, nevertheless, it is possible to use in place of such a liner a liner of hexagonal, octagonal or other horizontal cross section which will perform the functions of the circular or elliptical liner and which may be considered as completely rounded liners. When the primary purpose is to prevent the vegetable from touching the exterior walls of the box and it is not so important to avoid the presence of sharp corners, even a

triangular liner could be used. These liners could be readily made by scoring the portion which has been stamped out to form a liner in the desired places.

The exterior of the box instead of being of rectangular or square cross section could also be of other cross sections such as octagonal, hexagonal or even triangular, but the box of square or of rectangular cross section is much preferred since it is better for packing and shipping purposes and is much stronger and can be readily handled.

If a box whose exterior has a circular cross section is desired the interior cross section could be made square or of some other shape so as to prevent contact between the vegetable and the exterior wall of the box, but the preferred form of my invention consists in the use of a box, the exterior of which is square or rectangular and the interior liner of which is circular or elliptical.

Having described my invention what I claim is:

1. A flat paper form which can be folded into a rectangular box for packing materials which comprises a portion which can be folded into an exterior and another portion integrally attached thereto which when folded will form a completely rounded liner completely encircling the contents of the box said liner being of such construction that it will overlap a portion of itself, said overlapping portion being unsecured.

2. A paper box of rectangular horizontal cross section containing a completely rounded liner which is made by folding a flat paper form, in which paper form is contained a portion, which forms a one piece liner, said liner portion being integrally attached to the portion which will form the external walls, and which liner will entirely surround the material within the box and prevent it from touching the external side walls of the box at any place, said liner being of such construction that it will overlap a portion of itself, said overlapping portion being unsecured.

3. A paper box for packing materials provided with external and internal walls, the internal wall being completely rounded in horizontal cross section, external walls being rectangular in horizontal section cross section, said box being formed by folding a flat piece of paper material which piece of paper material will contain forms for the exterior part of the box and the liner, said liner form being integrally attached to the form for the external part, said liner preventing any contact between material packed within it and the exterior side walls, said liner being of such construction that it will overlap a portion of itself, said overlapping portion being unsecured.

4. A flat paper blank which can be folded into a box of rectangular horizontal cross section containing a completely rounded liner, comprising portions for the four side walls and in continuation of the portion for the side wall an integral portion for the liner and flaps attached to each side wall which will fold over and make a top and bottom for the box, said liner being of such construction that it will overlap a portion of itself, said overlapping portion being unsecured.

In testimony whereof I affix my signature.

SAM ROSENTHAL.