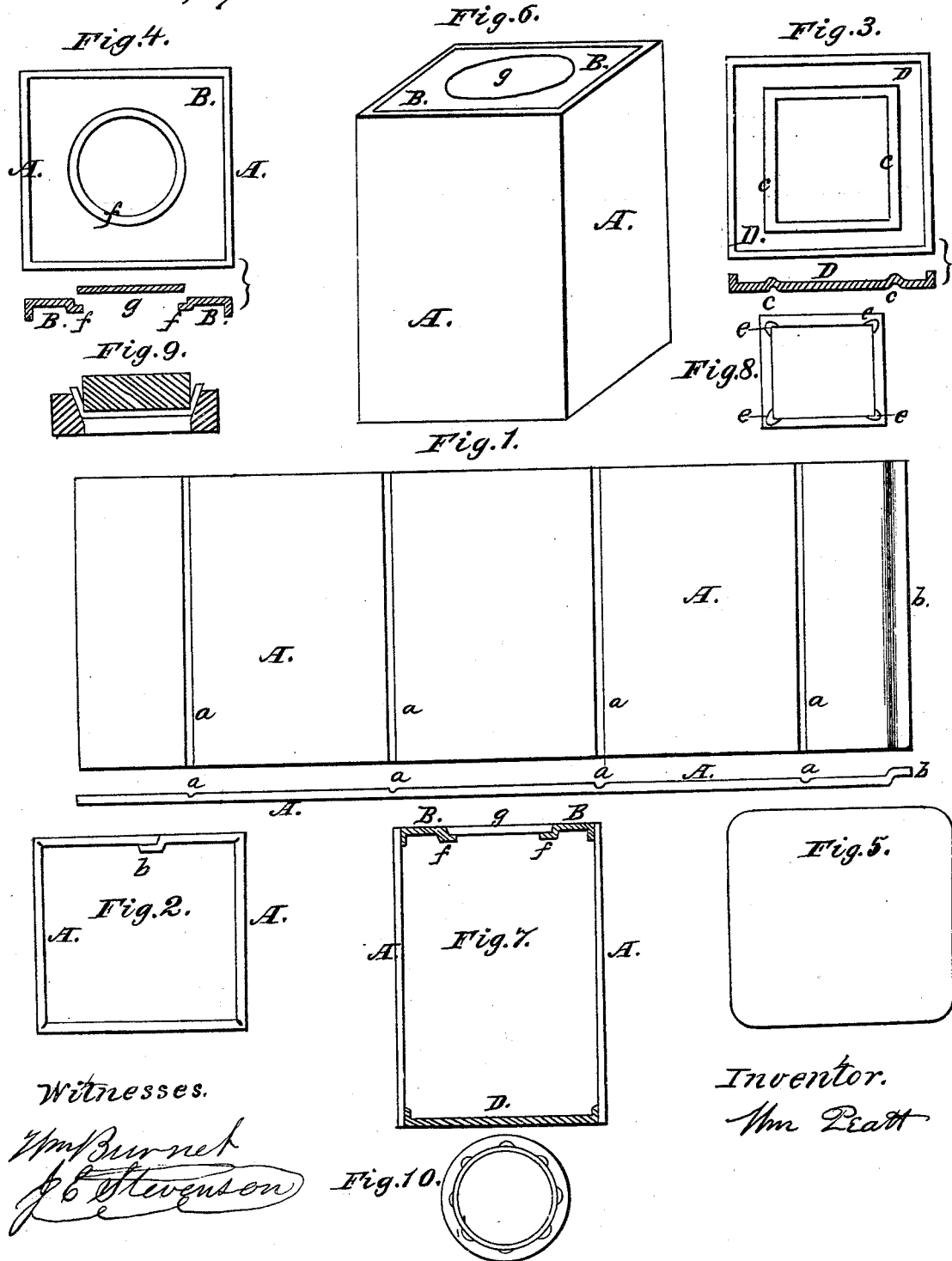


W. Pratt.
Pasteboard Box.

No. 112,075.

Patented Feb. 21, 1871.



Witnesses.

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IMPROVEMENT IN PASTEBOARD BOXES.

Specification forming part of Letters Patent No. **112,075**, dated February 21, 1871.

I, WILLIAM PRATT, of the city, county, and State of New York, have invented certain Improvements in Pasteboard Boxes, for the purpose of packing such articles of merchandise as have hitherto been stored in tin, wood, or earthenware vessels; and that others may understand the nature of my invention and the method of carrying it out, I give the following description thereof, illustrated by the drawing, which is referred to in this schedule by the figures and letters marked thereon.

My object is to construct a pasteboard box without scoring or cutting the stock for the sides at the angles, without scarfing or rabbeting for the overlap or seam, and to make the tops and bottoms in such a manner that while they have a large adhering surface to the sides, and are as strong as a thick bottom or top, they do not materially lessen the holding capacity, by which mode of structure, while the box is much stiffer than the same weight of stock made up in the old methods, it is still elastic and sufficiently yielding to bear the shocks of handling and transportation, and is furthermore so far completed before filling that it requires no skilled labor to seal them up tightly for labeling.

The box which I take to illustrate my invention is one intended for holding lard, coffee, spices, mustard, and articles of like nature, where it is an object to have the form rectangular and without projections, on account of close stowage in larger cases, where lightness of weight, tightness, and firmness are requisites, both on account of transportation and the preservation of the contents, and where it is also desirable to have the box finished entirely, except sealing, before it passes to the hands of the packers.

Description of Drawing.

The letters in all the different figures refer to the same parts, so far as seen in the view given.

Figure 1 represents a sheet of paste or straw board of the shape required for the sides or body of a box. *a a a a* are grooves rolled into it, to facilitate folding into the rectangular form. *b* is a recess or rabbet rolled into one margin of the sheet, of sufficient depth to al-

low the other edge to lie into it in the manner seen at *b*, Fig. 2, which is a transverse section of the box.

It will be seen that as all these grooves are made by compression, no stock is taken away, and the straw-board is not weakened thereby, and as the folding is toward the grooves, there is no material to act as a fulcrum, and thus strain the outer layers of the board, as would be the case if these grooves or compressions were not made.

It will be seen, also, that the joint or seam, instead of weakening, actually stiffens the box, and this without any projections on the outside of it.

After the piece *A A* has been folded up at the grooves *a a* and cemented together, as seen in section at Fig. 2, it may be further pressed by slipping onto a square block, and by pressure on the sides evened up, and, if desired, embossed with any desirable figure in the operation. The square form being given to the body *A A*, it is now ready to receive the top and bottom, which are made as follows: Blanks or disks are cut or punched out of the straw-board by means of a punch-press, about one-fourth or three-eighths of an inch larger on every side than the interior of the open ends of the box, the corners of this blank being slightly rounded, as in Fig. 5. The object of this rounding is to prevent the stock in the next operation from gathering too much in the corners of the die. These blanks are next put under a press in dies.

The female die (shown on a reduced scale in Fig. 8) is made flaring on its upper face, while the orifice on the lower side is of just the size of the interior of the end of the box. The corners of this die on the upper face are slightly rounded out, as at *e e e e*, to facilitate the passage of the stock through it. The male die is made enough smaller than the female die to allow the disk to pass through it with some compression, and yet without tearing. Both dies in section, with the pasteboard between, are shown at Fig. 9. It will be seen that after passing through the dies the blank of straw-board comes out with its edges turned up into a cup-shaped form, as seen at section in Fig. 3.

When the box is of large size, or thin material is used, it may be stiffened by means of

corrugations pressed into it by means of a bed-piece lying directly under the drawing-up die, as seen both superficially and in section at C C, Fig. 3. This square-shaped cupped piece is now glued or cemented on its edges and put into the open end of the body, and by sliding onto it a square beveled-mouth cast-iron clamp, which is slightly heated, the sides and bottom are compressed together and the cement or glue dried at the same time. The position of this bottom, and its form in section, and its surface, which adheres to the sides, are seen in section at D D, Fig. 7.

It will be seen from the above description that that surface of the bottom which adheres to the sides is much greater than if a simple flat plate or sheet of straw-board were used, and that from the fact that no corner cutting is made the bottom is continuous, and materially stiffens the box, and with much less liability to leak or become detached if the box is roughly used.

The top, Fig. 4, is made in the same manner as the bottom, with the exception that it has a square or circular depression made in its center, as at *f*, and of sufficient depth to receive a cover or disk of straw-board just fitting it superficially, and not protruding above the surface of the top. A hole is punched in the center of this depression, leaving sufficient margin to attach, by cement or glue, the center corner or disk *g*. In Figs. 4 and 6 these parts are seen, and in section at B B, *g*, and *f f* in Fig. 7, as they appear when the box is sealed up.

I would here remark that in all these operations of grooving and drawing up and pressing the stock it should be slightly moistened, either by steaming or brushing its surface with water, as it much more easily takes form without cracking.

In making boxes by the method I have above described, I do not confine myself to the square or rectangular form, because round ones and those of polygonal shape may be made with equal facility by changing the shape of the tools and dies.

If a sheet over-cover is needed, it may be drawn up of sufficient depth for a round box by making the flaring mouth of the female die scalloped at regular intervals, as seen in Fig. 10, the object being to take up the surplus stock on the part that is turned up regularly and condense it into a smooth rim, which cannot be done without this method of constructing the female die. If sufficient depth cannot be obtained in one operation, it may be passed through a second die made slightly smaller than the first, care being taken that the male die of this last operation shall leave the drawn-up piece of the right size to shut closely over the edge of the box.

It will be seen from the above description that a stronger box can be made of the same weight of stock, and with economy both of material and labor, than by any other method. At the same time the box is finished in all re-

spects but sealing before the contents are placed in it, and the sealing becomes a simple operation, requiring no particular skill; and, furthermore, the box is smooth on all its sides, and will pack closely, and can also be readily covered and labeled.

Where articles likely to permeate the substance of the box are placed within it, or where it is desirable to retain the flavor or aroma, it is only necessary to coat the inside with any of the well-known articles, as shellac, gum-arabic, or varnishes.

I am aware that boxes have been made up from detached parts, these being formed of the desired shape and sizes directly from the pulp or paper stock, as in Wheeler & Jerome's patent of 1867, No. 61,969, and that hollow paper articles have been made directly from the pulp, as in Wheeler & Jerome's patent of 1867, No. 61,968; also that blanks made directly from the pulp have been furnished with creases to facilitate the bending, and blanks for tops and bottoms of boxes have been formed in sheets to save corner cutting, as in the patent of Wheeler & Jerome, 1867, No. 66,920; also that boxes made of buckram, stiffened with starch, and pressed into form by means of heated dies, have been made, as in the patent of G. H. Hawkins, 1867, No. 71,571.

I am aware also that boxes have been made for many years where the tops and bottoms have been inserted in the body or sides. Therefore I do not claim any of these devices; but I am not aware that the drawing up or pressing the parts necessary to form a box from the ordinary commercial straw or paste board has ever before been successfully accomplished.

In the description of my invention I have given no details of peculiar machinery to effect the manufacture, as these will be the subjects of future applications for Letters Patent; but I have described both processes (and tools in common use) to enable skilled persons to practice my invention.

It will be seen, also, that it is by no means necessary in all cases that the tops and bottoms of the boxes should be inserted in the body, for these may be made to shut over equally as well, and where it is of advantage to have air-space around and between the packages after they are placed in bulk in larger cases, this form may be desirable. Therefore, while I do not, as before stated, claim the devices to which I have referred,

What I do claim as novel and useful is—

1. A box the body of which is made of straw or paste board, having straight grooves rolled or compressed therein at the lines where the board is bent to form the angles, and without cutting away any of the material or scoring for that purpose, and also having its lapping edges for the seam rabbeted by pressure or rolling, and without cutting or scarfing the material for such purpose.

2. A top or bottom for a box made of straw

or paste board by drawing the blank through and compressing it in dies, so as to leave the edges turned up at right angles to the blank, and without scoring or partial cutting to effect this, and without corner cutting at the angles of the same.

3. A paste or straw board box, with the sides formed by compressing grooves into the angles of the same, and rabbeting by compression the margin of the stock for the joint or seam, and wherein the tops and bottoms

are turned up by compression and fastened by a broad surface to the sides, and where the top is so formed that it may be sealed by means of a disk cemented into a rabbeted mouth pressed into the same, and having no projection above the surface of the box when sealed up.

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Witnesses:

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