

(No Model.)

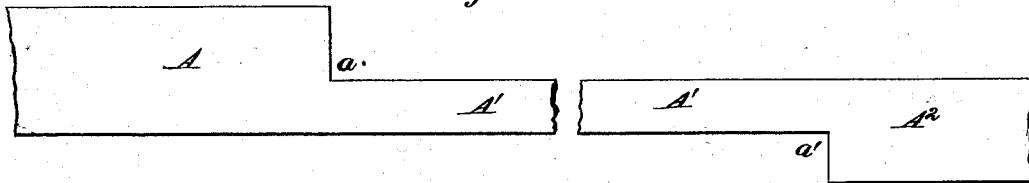
D. E. POWERS.

PAPER BOX.

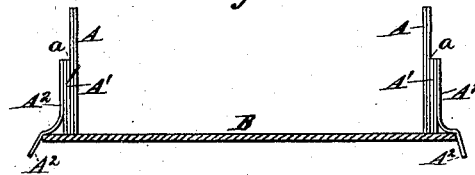
No. 261,871.

Patented Aug. 1, 1882.

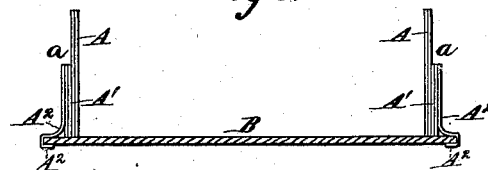
*Fig. 1.*



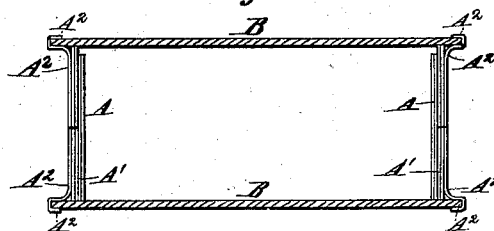
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



WITNESSES

Charles K. Searle.  
Benj. Ed. Grafford

INVENTOR

Daniel E. Powers  
by his attorney,  
Thomas S. Stetson

# UNITED STATES PATENT OFFICE.

DANIEL E. POWERS, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND  
JOHN S. CHASE, OF SAME PLACE.

## PAPER BOX.

SPECIFICATION forming part of Letters Patent No. 261,871, dated August 1, 1882.

Application filed June 14, 1881. Renewed January 11, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL E. POWERS, of New York, in the county of New York and State of New York, have invented certain new and useful Improvements Relating to Paper Boxes, of which the following is a specification.

My invention may be applied to the manufacture of large boxes of thick material known as "pasteboard," "mill-board," "straw-board," &c., and of rectangular and other forms; but I will describe it as applied to small boxes of circular form, such as are used for inclosing pills and other small articles.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 shows the form of the strip of paper while extended before being wound. Fig. 2 is a central section through the box in process of manufacture. Fig. 3 shows the same completed. Fig. 4 is a section of the box with the cover applied.

Similar letters of reference indicate corresponding parts in all the figures.

I cut by hand or by machinery a strip of flexible paper of the desired quality, having offsets on the edges, as indicated in Fig. 1. A is a portion extending from the beginning to the offset *a*. A' is a narrower portion extending from the offset *a* to the offset *a'*. This latter offset is opposite the edge of the strip, and is a broadening offset, by which I mean one beyond which the paper is wider instead of narrower. From the shoulder or offset *a'* extends a breadth, A<sup>2</sup>. This extends to the end of the strip. Its length should be sufficient to reach once around the box.

Except for a short length at the beginning, the strip is coated on one face (the inner face) with rye-paste or other adhesive cement, and is coiled or wrapped around a mandrel, (not represented,) with the bottom edges even with each other, and adapted to match fairly against the face of the circular piece B. The latter is of pasteboard or other paper material, of the required thickness and stiffness to form the bottom. The edges of the paper should be sufficiently supplied with paste to cause a strong adhesion to the circular piece.

In what I esteem the best means of carrying out the invention the circular bottom piece, B, which I will term a "head," using the same name for the corresponding part of the cover, is caused to adhere by suction or otherwise to the end of the mandrel, (not shown,) and is revolved at a moderate speed. The strip A is wound on the mandrel with the bottom edge of the strip presented fairly against the inner face of the head B. So soon as it is wound once around, the previously-pasted inner face of the strip applies on the coil or layer previously wound. It cements it strongly, and by continuing the winding operation a body of two, three, or other number of thicknesses of the strip is formed. This operation continues until the strip down to the offset *a* is reached. Then the further winding similarly coils or winds the narrow portion A' of the paper. This, like the previously-wound portion A, is pressed, each layer upon the other, with sufficient firmness to distribute the paste thoroughly between the two surfaces. When the second offset, *a'*, is reached and the wide portion A<sup>2</sup> is wound on, a new state of things is developed.

In the previous winding of the wide part A and of the narrower part A' the lower edge of the strip of paper was guided so as to lie evenly abutting against the head B. Now that the part A<sup>2</sup> begins to be wound on the work, it is so guided that the increased width of the strip extends over and beyond the head B. This length of the paper should extend far enough to run once around the box and a little more. At the same time, or afterward, this projecting edge of the thin outer paper is folded inward upon the outer face of the head B, and is pressed gently or sufficiently down to cause it to adhere. The result is a smoothly-completed box-body with the sides of two different thicknesses at different points. The upper portion is thin, having only the wide paper A. The lower portion is thick, having the several layers of paper due to the portion A, and also the narrower part due to the portion A'. The offset *a*, when the work is complete, becomes more or less conspicuous on the box, according to how many times the thin portion A' of the paper is wound on a given box. If

the narrow portion is only once wound around, the offset *a*, when the box is complete, will only be slight; but it will be very considerable if the narrower portion *A'* of the paper is made  
 5 sufficiently long to extend ten or other number of times around. The portion *A*<sup>2</sup> is wound on with its upper edge coinciding with the upper edge of the narrower part *A'*, and adds to the shoulder at *a*. The folding can, if preferred, be done by machinery.

The circular portion *B* is preferably of greater diameter than the body of the box, so that the last coil of paper performs a considerable detour to reach over it and be folded inward on  
 15 its other face. This conduces to the strength and beauty of the box; but care must be taken not to carry this feature beyond what the yielding quality of the paper employed will allow.

The cover, it is understood, is a little larger, so that it will fit over the thin upper portion of the box and extend down to and rest on the shoulder *a'*. The strip of paper for the cover is cut without the narrow portion *A'* and without the first offset, *a*. There is only one  
 25 offset. It is the offset where the material suddenly widens on the edge which is presented to the head. When the cover is wound the edge of the paper *A*<sup>2</sup> projects beyond the head *B*, and is folded over and secured down upon  
 30 the head in the same manner as before described.

My boxes may be made rapidly by hand, providing only a simple revolving mandrel to facilitate the winding of the strips; but I propose to apply machinery for doing nearly all  
 35 the work. Such machinery may be made the subject of one or more further applications for patent.

Modifications may be made. Instead of making the offsets *a a'* square, with the re-entering angles sharp, I can make the offsets square or oblique, with rounded corners. I can vary the width of the strip and the relative widths of the portions *A A' A*<sup>2</sup> within wide limits. It is im-

portant that the portion *A'* be just sufficiently  
 45 narrower than the part *A* to make the proper offset for receiving the cover, and that the widening of the last portion, *A*<sup>2</sup>, be sufficient for a finishing-layer of paper to be smoothly extended around or beyond the edge of the disk or head *B*, with sufficient margin to extend inward and take a firm hold of the outer face of the head.  
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When it is desired to give a different surface to the different parts of the box-body such  
 55 may of course be colored in any ordinary way after the box is finished; but I prefer to prepare the surface beforehand. I can, for example, surface the portion *A*<sup>2</sup> with gilt-paper, leaving the parts *A* and *A'* in their ordinary  
 60 condition.

I propose in some cases to form the original strip of two distinct parts lapped a little upon each other and pasted. These strips thus prepared of different colors or of different material are then rolled up and worked, as before described.  
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I claim as my invention—

1. The within-described method of manufacturing paper boxes by first cutting the paper strip with offsets *a a'*, winding the same, with a suitable cement, on the head *B*, and extending beyond the head, and folding inward and cementing the edge of the last coil or layer, all substantially as and for the purposes  
 75 herein specified.

2. The paper box described, formed of the plane piece *B* and flexible strip *A A' A*<sup>2</sup>, having the offsets *a a'*, applied together, as herein specified.  
 80

In testimony whereof I have hereunto set my hand, at New York, N. Y., this 13th day of June, 1881, in the presence of two subscribing witnesses.

D. E. POWERS.

Witnesses:

CHARLES C. STETSON,  
 M. F. BOYLE.