(No Model.)

I. W. HOLLETT.

PROCESS OF MAKING PAPER BOXES.

No. 332,713. Patented Dec. 22, 1885.

Fig 1.

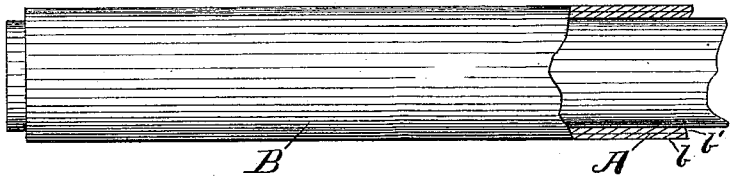


Fig 2.

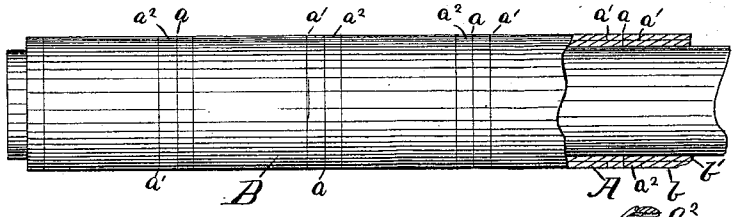


Fig 3.

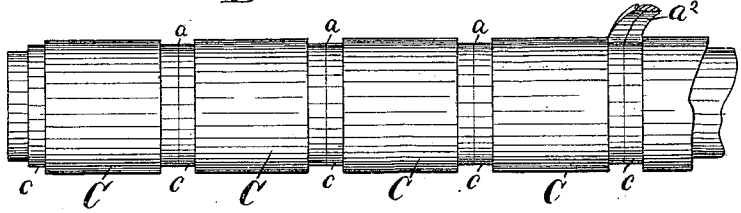


Fig 4.

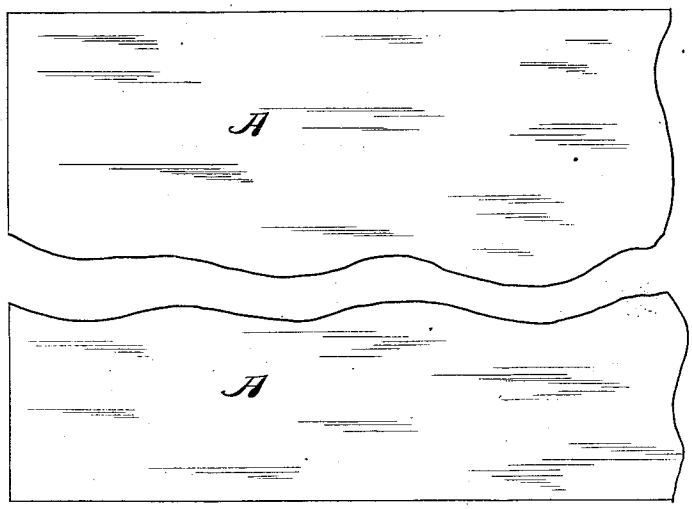


Fig 5.

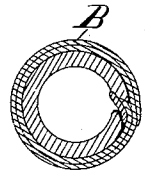
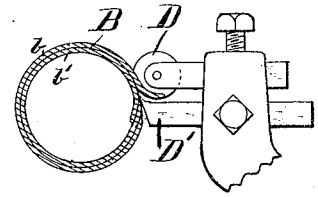


Fig 6.



Witnesses:
Taylor E. Brown
A. W. Munday.

Inventor:
Ira W. Hollett
By Munday, Evarts & Adcock
his Attorneys:

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

IRA W. HOLLETT, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CHICAGO LIQUID SACK COMPANY, OF SAME PLACE.

PROCESS OF MAKING PAPER BOXES.

SPECIFICATION forming part of Letters Patent No. 332,713, dated December 22, 1885.

Application filed November 17, 1884. Serial No. 148,077. (No model.)

To all whom it may concern:

Be it known that I, IRA W. HOLLETT, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Art or Process of Making Paper Boxes, of which the following is a specification.

My invention relates to the manufacture of necked cylindrical paper boxes.

Heretofore necked paper boxes have usually been made either from two separate pieces or blanks, one of which is wider than the other, the wider strip being first wrapped around a mandrel in a cylindrical form, and then the narrower strip wrapped around the former, thus making a neck or shoulder at either one or both ends of the cylindrical box, as may be desired; but this method is hardly practicable, on account of the great amount of labor and time required, as the narrower strip of paper must necessarily be wrapped by hand, because its forward edge cannot be caught by the usual mouth or lip on the mandrel. The other method, and the one which has been most generally employed, is that illustrated, for example, in Letters Patent No. 227,143, granted May 4, 1880, to M. F. Wilson; but this method is also somewhat tedious, owing to the necessity of first cutting the paper into a blank of peculiar form, which operation of course requires the use of an expensive stamping machine and dies.

The object of the present invention is to provide a cheap, simple, and rapid method or process of manufacturing either double or single necked paper boxes; and to this end my invention consists in first wrapping an ordinary rectangular blank or sheet of paper into a cylindrical form two or more times around a suitable mandrel, and then scoring or cutting the paper cylinder about half-way through its thickness or through one fold of the paper near the end or ends of each box into which the cylinder is to be divided, and then peeling off the narrow strip of paper between the score-marks, so as to form the necks of the boxes. The cylinder may preferably be severed by other cutters into the desired box-lengths at the same time that the score-marks to form the necks of the boxes are made, and the narrow strips of paper between the score-marks can also preferably be peeled off just behind the cutters that make the scores, and by the same operation.

In practicing the invention I preferably mount the peeler-knife on the same rock-shaft or sliding table that carries the cutter-wheels which make the scores for the necks of the boxes, and which cut the separate boxes apart.

In the accompanying drawings, which form a part of this specification, and in which similar letters of reference indicate like parts, Figure 1 shows a paper cylinder wrapped in the usual manner one or more times around a mandrel. Fig. 2 shows the same after it has been cut into box-lengths and scored to form the necks of the several boxes. Fig. 3 shows the same after the narrow strips between the neck-scores have been peeled off and the several boxes completed. Fig. 4 represents the paper blank or sheet before it is wrapped into cylindrical form. Fig. 5 is a a cross-sectional view of the paper cylinder and mandrel; and Fig. 6 is a similar view, showing one of the score-cutters and one of the peeler-knives in operation.

In said drawings, A represents the paper blank, which is or may be of the usual rectangular form that the sheets come in, and of sufficient length to wrap two or more times around the mandrel, so as to form a paper cylinder, B, composed of two or more thicknesses, *b b'*, of the paper. Glue or paste is applied to one side of the paper as it is wrapped into the form of a cylinder, so as to unite the several thicknesses together securely.

The cylinder may preferably be formed by use of a mandrel and automatic machine—such, for example, as that illustrated in Letters Patent No. 217,035, granted to M. F. Wilson, July 1, 1879; but any suitable mandrel may be employed having a lip or mouth to hold the front edge of the paper blank or other device for causing the paper to adhere to the mandrel. After the paper cylinder has been formed in this or any other suitable manner, I next, by means of suitable knives or cutter-wheels, which may be either mounted in an automatic machine or held in the hand of the operator,

sever the paper cylinder into suitable lengths to form the separate boxes, as indicated by the lines *a*, and preferably at the same time make the score marks or cuts *a'* near the ends of the boxes, which scores or cuts extend, preferably, about half-way through the thickness of the paper cylinder or through the outer fold or wrap, *b*, of the paper, to form the necks of the boxes. I then peel off the narrow strip a^2 between the score-mark *a'* to the depth of said score-marks, thus forming the necks *c* of the separate boxes C. A neck, *c*, may be formed on each end of the box, as illustrated in Figs. 2 and 3, or, if desired, a neck may be formed on only one end of the boxes by simply omitting one of the scores *a'* at one end of the box, in which case the strip a^2 will be narrower, and the peeler-knife must of course correspond in width with the strip to be removed.

In Fig. 6, D represents one of the cutter-wheels, and D' a peeler-knife, which in an automatic machine may preferably be mounted on the same arm of the rock-shaft, so that all the peeler-knives, as well as all the cutter-wheels, may be brought up to the paper cylinder by the same movement. The mandrel should be of sufficient length to accommodate the ordinary sheet of paper without requiring any preliminary cutting, and the number of cutter-wheels and peeler-knives will of course depend upon the length and size of the boxes to be formed from the paper cylinder. In this way necked paper boxes may be formed with great facility, as the sheet of paper does not require any preliminary stamping or cutting, and as the necks may be formed at the same time by the same movement of the rock-shaft that brings the cutters in operation to sever the cylinder into separate boxes. By this method, also, as the shoulder for the neck is cut upon the completed cylinder, no difficulty is experienced in making the shoulder true or at right angles to the axis of the cylinder, and the necks will also be of uniform length, whereas under said Wilson method, unless the greatest care is exercised in starting the blank true upon the mandrel, the necks will be of unequal lengths and the shoulders spiral, instead of at right angles, and even with skilled workmen many boxes have to be discarded, owing to untrue wrapping.

It should be observed that the narrow strip a^2 should be peeled off before the glue uniting the several thicknesses of the paper cylinder hardens.

It will of course be understood that if the blank is only wide enough to form one box the neck-scores will only be made at each end of the single box; or, if it is desired to make a box having only one neck, only a single neck-score will be made.

The narrow strip which is peeled off to form the neck of the boxes may obviously be peeled off either before or after the separate boxes are cut apart without departing from my invention.

I hereby disclaim the method shown and described in Patent No. 306,632 to H. Milchsack, dated Octobe. 14, 1884, wherein the inside layers of a paper cylinder are cut entirely through when such inside layers are wrapped upon the mandrel, and then, after such cutting, the cylinder completed by wrapping on the outside layers. It is obvious that such method is not applicable to making necks upon the outside of paper boxes or cylinders.

In my invention the paper cylinder is first completely wrapped or formed and then the outside layer or layers of paper scored through, leaving the inside layer or layers uncut and projecting to form the neck of the box, and then the outside layer or layers removed to the depth of the score at the end of the box.

I claim—

1. The process or method of making necked paper boxes, consisting in first wrapping a rectangular blank or sheet of paper into a cylinder composed of two or more thicknesses, and then cutting or dividing the same into separate box-lengths and cutting or scoring partially through the thickness of the paper cylinder from the outside thereof, near the end of each box, and finally removing from the outside of said cylinder a narrow strip at the end of each box to the depth of such score, substantially as specified.

2. The art or process of making necked paper boxes, consisting in first wrapping a rectangular blank into cylindrical form of two or more thicknesses, then cutting or scoring partially through the thickness of the paper cylinder from the outside thereof near the end of the box to be formed, and finally removing from the outside of said cylinder the narrow strip between such score and the end of the box or cylinder, substantially as specified.

IRA W. HOLLETT.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.