R. J. GRUENBERG.

PAPER BOX AND METHOD OF MANUFACTURE THEREOF.

APPLICATION FILED JULY 5, 1917.

1,367,378.

Patented Feb. 1, 1921.

2 SHEETS—SHEET 1.

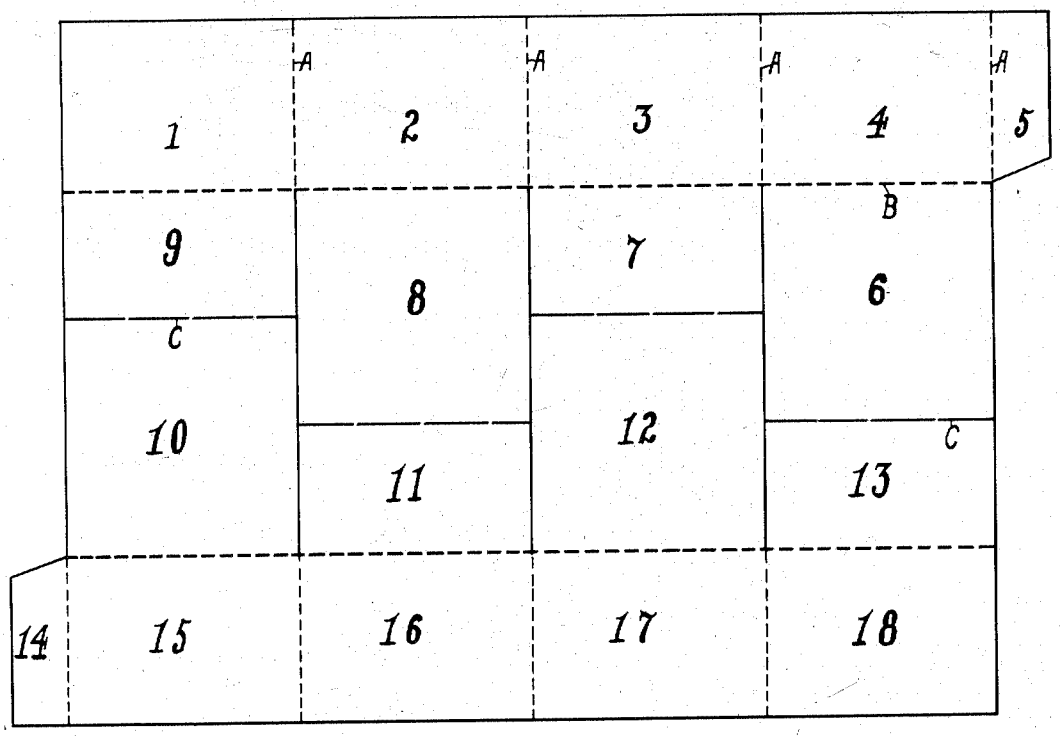


Fig. 1

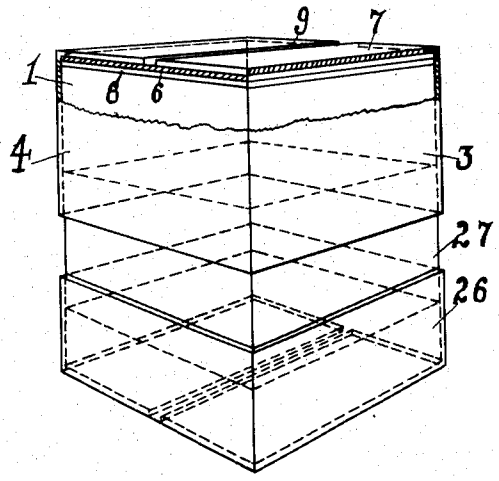


Fig. 2

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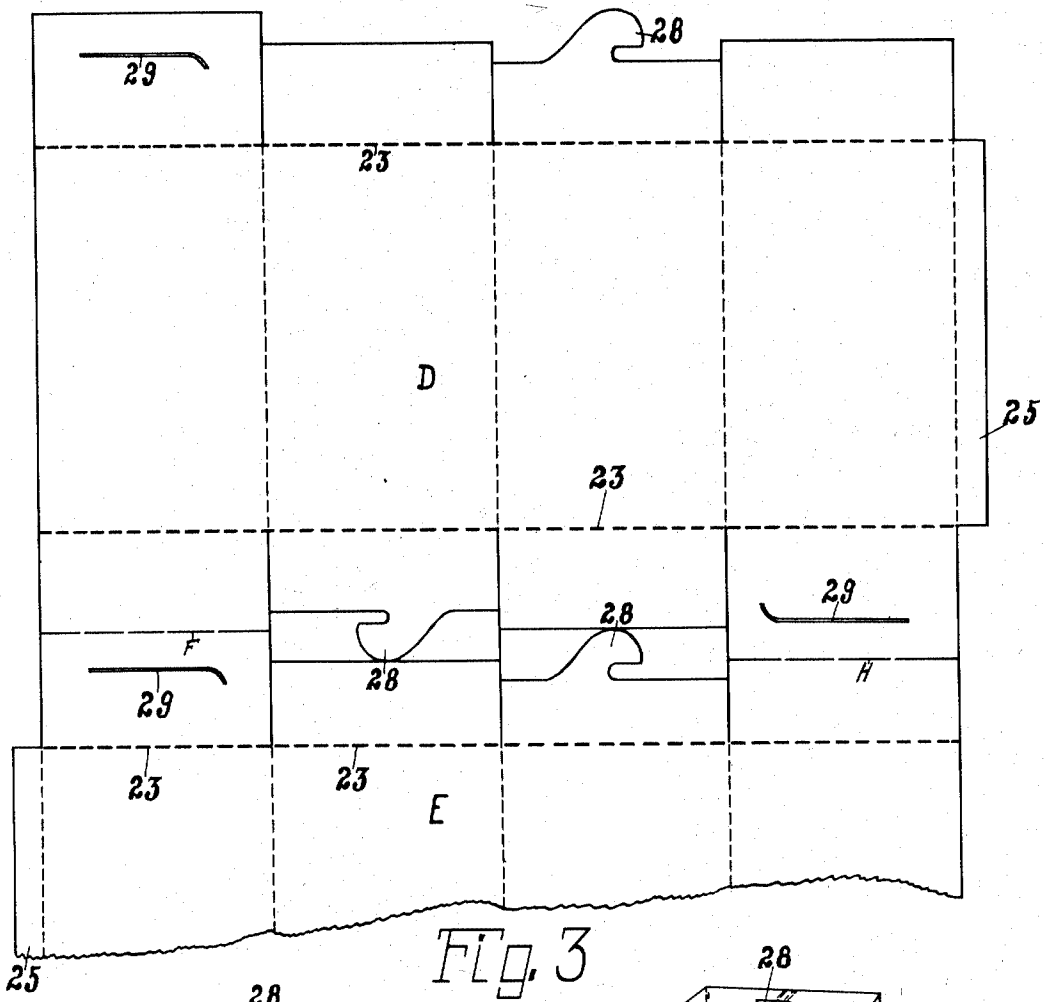


Fig. 3

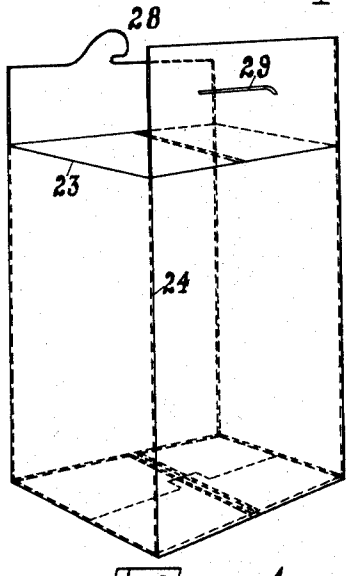


Fig. 4

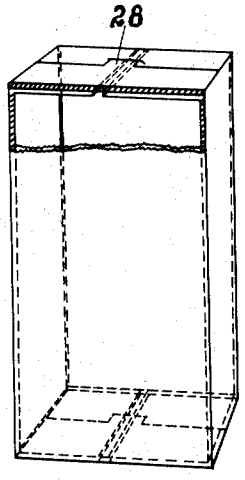


Fig. 5

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UNITED STATES PATENT OFFICE.

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PAPER BOX AND METHOD OF MANUFACTURE THEREOF.

1,367,378. Specification of Letters Patent. Patented Feb. 1, 1921.

Application filed July 5, 1917. Serial No. 178,650.

To all whom it may concern:

Be it known that I, RAOUL J. GRUENBERG, citizen of the United States, residing at San Francisco, in the county of San Francisco, State of California, have invented a new and useful Paper Box and Method of Manufacture Thereof, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to the manufacture of paper boxes and an object of the invention is to produce a paper box which will have the ends closed by the hinged flaps thereon of sufficient strength without at the same time wasting the material of which the box is made.

It will be understood by those skilled in the art that many of the boxes used for teas, coffees and so forth, must be of a given strength to be acceptable. However, what is sufficient for the side strength is not sufficient for the ends, and it is necessary to so cut the box blank as to produce with the least waste a strong box end as well as to so cut the flaps as to enable them to stiffen the box end laterally.

Another object of the invention is to provide means whereby the end creases may be more deeply cut than the side creases, the object being to make the end flaps turn down easier while at the same time not interfering with the necessary hinge strength of a side of the box. There being at least three overlying layers on the box end, there is not the necessity for a strong hinge at that line of folding.

Another object of the invention is to so cut the box blanks as to leave two or more of them attached together for the purpose of printing the cartons while at the same time they are readily broken apart after having been printed upon.

Another object of the invention is to shorten the end or lock flaps of cartons to nest the cartons to reduce waste and to sharp crease or perforate the cartons along the bending lines where there is ample strength, while certain of the bends are made along creases which leave the stock full strength.

Other objects of the invention will appear as the description proceeds.

An embodiment of the invention is shown in the drawings in which the same reference numeral is applied to the same portion throughout, but I am aware that there may be modifications thereof.

Figure 1 represents a development of the box blank showing two of them attached together as they come from the die cutting press,

Fig. 2 is a perspective view of a box formed in accordance with the invention,

Fig. 3 shows a pair of box blanks used in connection with a so called hook flap,

Fig. 4 is a perspective view of a box formed from the blanks shown in Fig. 3 with two of the end flaps unlocked, and

Fig. 5 shows a side elevation partly in section of the box shown in Fig. 4 when closed.

The numerals 1 to 18 inclusive refer to the several box sides and ends, one portion of the blank being nested into another portion thereof. Between the parts 1 to 5 inclusive, there are four creased scores *a*, while between the parts 1 to 4 inclusive and the flaps 6 to 9 inclusive there is a sharply cut and scored line *b*. Between the flaps 9 and 10, and between the flaps 6 and 13 there is a sharply cut line *c*, said line being so positioned with respect to the sizes of the carton being made as to bring the shorter flaps edge to edge, while the flaps 6 and 8 are folded over the top of the carton, one over the other. Two covers or bottoms are formed by the blank, but a number may be cut at one time.

A flap 5 and a flap 14 are used for securing the box body edges together to form the set up box. The flaps 7, 8 and 11, 12, are cleanly cut away from each other and along the lines between them and the flaps 9, 10 and 6, 13. Between the flaps 9, 10, and 6, 13, there is a deeply cut and scored line *c*, which enables the two portions of the box blank to be readily separated while it holds them together sufficiently for the purpose of passing a blank through a printing machine after it has been manufactured and formed into the cut blank. The scores between the sections 1 to 5 inclusive, and 9 to 6 inclusive, are deeply scored to enable the box to be quickly set up, but since there are three thicknesses of the box material across the top of the box, and since those flaps have their edges either in contact one with an-

other, as is the case with the flaps 7, 9 and 11, 13, or in contact with three sides of the box and the other flap therein, great strength is given to the box in view of such construction.

In Figs. 3, 4 and 5, there is a slightly modified form of box shown in that the box ends instead of being glued are merely connected together with a hook.

In Fig. 3 the blanks are indicated at *d* and *e*, while the broken lines *f*. *h*. indicate the line of separation of the two blanks. Said lines as indicated at *f*. and *h*. are perforated, but the blanks are not separated in order to enable the boxes to be printed in series and not as a single box. In this instance, the box is sharply creased along the line 23 forming the end flaps, while it is smoothly creased along the corners 24. The end flaps are connected by having the hooks 28 inserted in the slots 29.

When set up, the boxes are glued together with the ordinary flap 25 along one of the vertical corners.

It will be understood that the boxes shown in Figs. 1 and 2 may be either used in conjunction with a neck type bottom 26 having the neck 27 fitting into the top, or they may be used in conjunction with a bottom, which the top completely covers.

The essence of this invention lies in the changing of the length of the flaps of the box at right angles to their folding lines to produce a box strengthened in a given manner, with the least material; in the use of incomplete cuts, to permit the boxes to be printed after having been cut out, and before they have been set up and in the use of sharp cuts to form certain of the folds whereby the box may be more easily set up, while at the same time said cuts are so positioned as not to seriously reduce the strength of the box.

It is to be understood that the word "crease" is used herein to indicate a score line which leaves the material marked and full strength so it will easily bend, while "deeply cut score" means a line either perforated or deep cut to weaken the material enough to permit the flaps to fold easily without too greatly reducing the strength of the joint between the flap and side.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States, is as follows, express reservation being made of permissible modifications:

1. The improvement in the art of making telescopic and neck style boxes consisting of having two of the end flaps of top or bottom sections of full length, and two of half length so that they can be dovetailed or nested while in the process of cutting and creasing, the lines between adjacent cartons being only partially cut through to permit a number of the cartons to be printed on in one operation, the corner folds being creased and the end flaps being deeply scored.

2. A neck or shoulder style carton whose top or bottom sections have a plurality of flaps to cover one end, two of said flaps being substantially the same area as said end, while two are substantially half the area of said end, said flaps being cut completely away from each other at the sides and incompletely cut away from the carton next adjacent along offset lines, the flaps being joined to the sides along deeply scored lines while the box corners along the sides are lightly creased to permit the blanks to be printed without separation.

In testimony whereof I have hereunto set my hand this 28th day of June, A. D. 1917.

RAOUL J. GRUENBERG.