

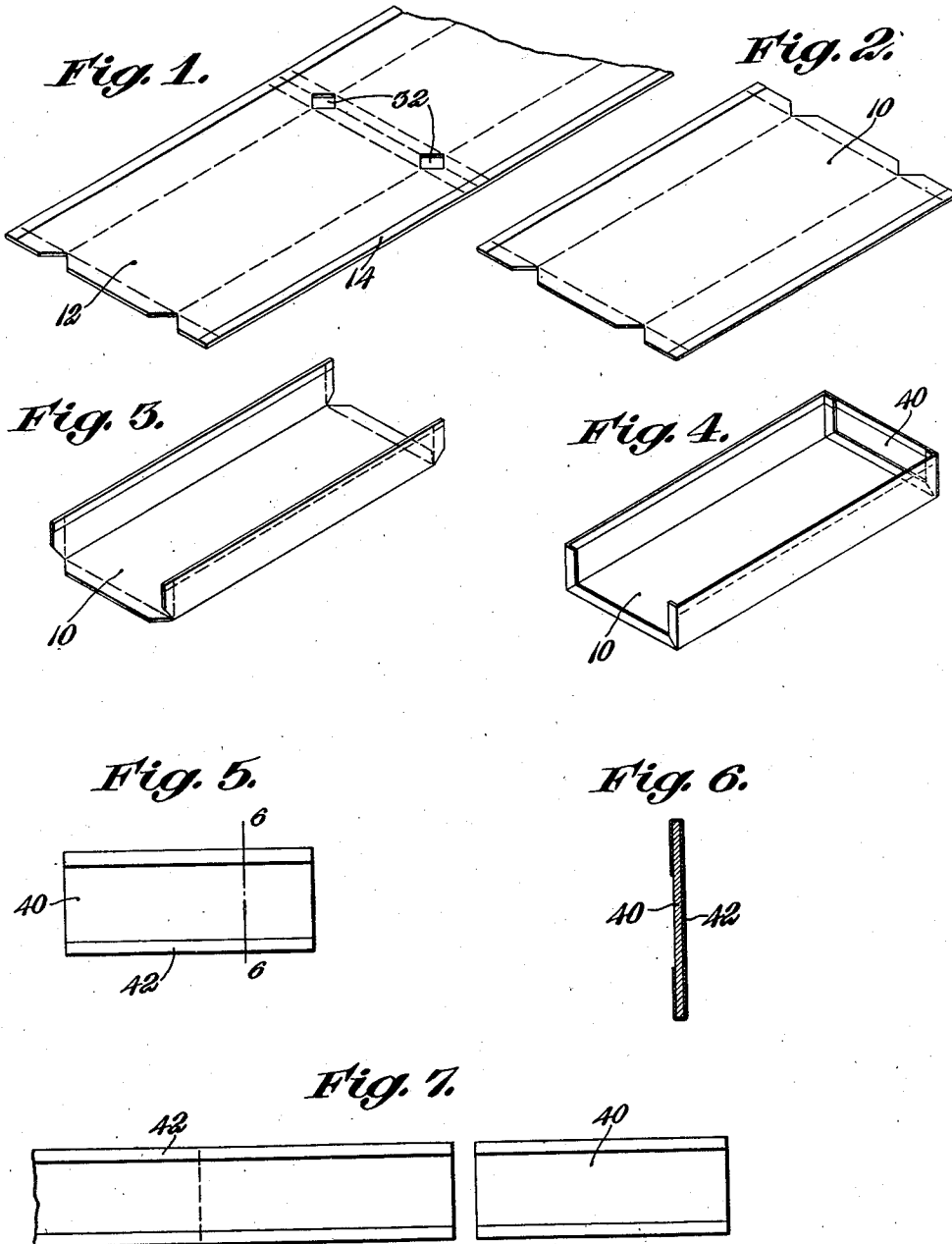
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W. S. CLEAVES
METHOD OF MAKING PAPER BOXES

Filed Sept. 29, 1926

2 Sheets-Sheet 1



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Fig. 8.

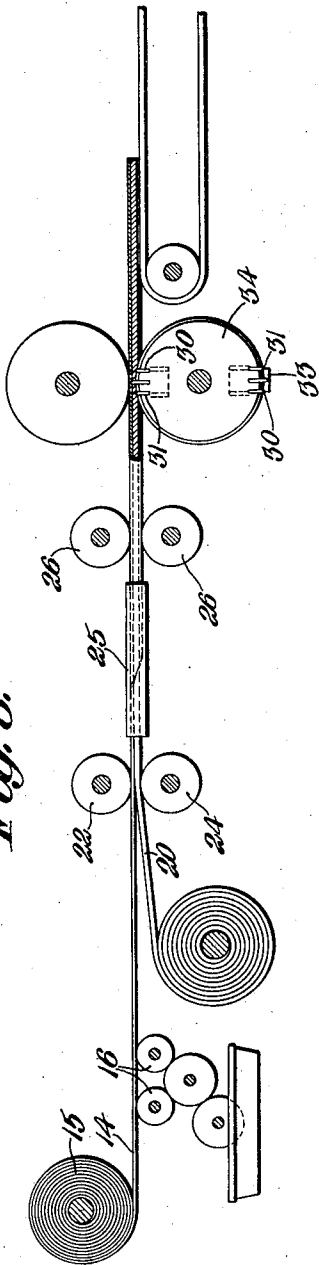
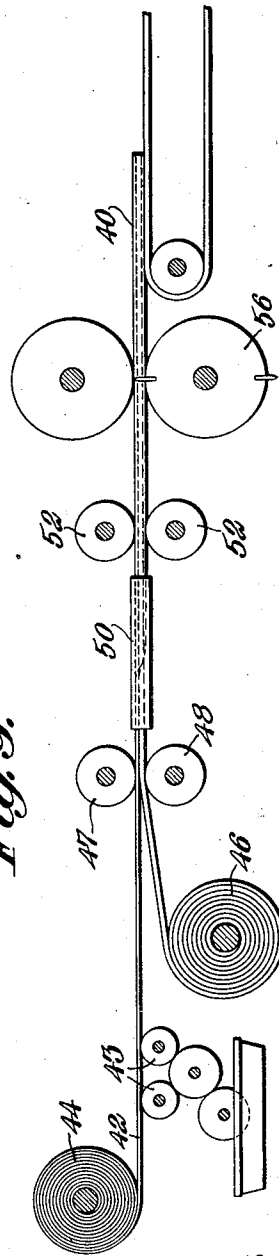


Fig. 9.



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METHOD OF MAKING PAPER BOXES.

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This invention relates to a method of making a covered paper box.

The invention has for an object to provide a novel method of making a covered paper box of the character in which the ends of the box are formed from end blanks separate from a blank forming the bottom and sides of the box, and which method eliminates manufacturing expenses incident to the method now in use.

With this object in view, and such other objects as may hereinafter appear, the invention consists in the method and various steps thereof, hereinafter described and claimed.

In the drawing illustrating the preferred embodiment of the invention, Figure 1 is a perspective of a strip containing a plurality of body blanks; Fig. 2 a similar view illustrating a single body blank; Fig. 3 a perspective view of the body blank after the sides have been folded; Fig. 4 a similar view of the blank with the end flanges at one end folded inwardly, and with the end blank affixed to the end flanges at the other end of the box; Fig. 5 is a plan of a single end blank; Fig. 6 a section on line 5—5 of Fig. 5; Fig. 7 a plan of a strip from which a plurality of end blanks may be formed; and Figs. 8 and 9 are diagrammatic views illustrating one method of forming the covered body and end blanks respectively.

In the manufacture of so-called covered paper boxes, and particularly the covered paper boxes of the type employed as shoe boxes and the like, the body of the box is formed from a single blank of cardboard or similar fibrous material and the blank is usually creased and then folded to form the sides and bottom of the box. The ends of the box are formed by individual end blanks separate from the body of the box, which are adhesively secured to the sides and bottom of the box, and in practice end flanges are provided at the ends of the sides and bottom of the box which are bent inwardly and to which the separate end forming blanks are adhesively secured to form the ends of the finished box. At the present time uncovered paper boxes of this construction are produced by standard box making machines of the construction illustrated in the United States patent to Walter S. Davis No. 655,434, August 7, 1900. A single box making ma-

chine of this character is capable of producing a large number of boxes per day, in the neighborhood of 30,000, so that in order to manually wrap a covering sheet around the sides of the completed boxes and to fold the upper and lower edges of the covering sheet over the top and bottom edges of the sides and ends of the box, a large number of operators are usually employed.

One feature of the present invention aims to provide a method of making covered paper boxes, and particularly covered paper boxes of the character at present made by standard machines of the construction illustrated in the Davis patent above referred to, by which the manufacturing expenses incident to the manual wrapping of a covering sheet around the completed box are eliminated, and at the same time to provide a method by which the box forming operations may be performed by the standard box forming machines.

Referring to the drawing, in accordance with the present method, the body blank 10 from which the bottom and sides of the box are to be formed is produced preferably from a strip 12 of the cardboard or other fibrous material of a length sufficient to permit the formation therefrom of several body blanks 10 and a covering sheet 14 is affixed thereto to cover the portions of the blank 10 that are to form the sides of the box and preferably to cover the entire surface of the blank. As herein shown, this may be conveniently accomplished by suitable apparatus such as is diagrammatically illustrated in Fig. 8, wherein the covering strip or sheet 14 is fed from a roll 15 over paste rolls 16 by which adhesive is applied to the under surface thereof, and thereafter the adhesive covering sheet 14 and the continuous strip 20 from which the blanks are to be formed are caused to pass between pressure rollers 22, 24, by which the covering is adhesively affixed to one surface of the blank strip. The covering sheet 14 is preferably made of such a width and is applied to the blank strip 20 so as to leave projecting side edge portions which extend beyond the edges of the blank strip, and the same are then folded over and adhesively secured upon the under side of the blank strip. In practice this folding operation may be accomplished by a suitably shaped folding sleeve 25 and presser rolls 26 through which the covered

strip is drawn, as illustrated in Fig. 8. The covered strip thus produced is preferably of a length sufficient to form a plurality of the covered blanks and is then creased longitudinally and transversely and cut or died out into the desired shape to form the body blank. In practice the creasing and cutting operations may be performed by creasing knives 30, 31, and the diamond shaped portions 32 may be cut out by a suitable shaped cutter 33, both being mounted on a driven roll 34, and with which a presser cooperates to support the covered strip during these operations. Thereafter the strip may be severed to form the individual blank 10 and the end flanges formed upon the side forming portions and the bottom of each individual blank are subsequently, as will be described, folded inwardly during the subsequent box forming operation, and in their folded positions constitute end surfaces to which separate end forming blanks or pieces 40 are adhesively secured in the formation of the preferred form of box.

Provision is also preferably made for covering the end blanks or end forming pieces 40 prior to their embodiment in the finished box, and for this purpose a covering sheet 42, preferably in the form of a continuous strip or a width slightly greater than the width of the end forming piece or blank 40, is coated upon its under surface with adhesive by being passed over paste rolls 43, or in any other suitable manner, and then the adhesive covering sheet 42 is applied to the end forming pieces 40 in such a manner as to leave projecting portions extending beyond the sides of the end blank. As herein shown, both covering sheet and the end forming blanks are formed from continuous rolls 44, 46, and after the adhesive has been applied to one surface of the covering sheet 42, both strips may be passed through pressure rollers 47, 48, and thereafter the projecting portions of the covering sheet may be folded over the sides of the end blank and adhesively secured on the opposite surface thereof by a suitable folding sleeve 50 and presser rolls 52. The individual covered end forming blanks 40 are then formed by cutting off predetermined blanks from the covered strip thus produced in any suitable manner as by the knife roll 56.

After the covered body blank 10 and the covered end pieces 40 have thus been formed, the body blank is folded upon the crease lines to form the sides of the box and also to turn in the end flanges to which the end pieces are to be secured. The individual covered end pieces are then adhesively affixed to the ends of the body blank, preferably being adhesively secured to the surfaces formed by the inwardly turned end flanges. In practice these operations may and preferably will be performed by standard box forming machines of the construction illustrated in the above-men-

tioned Davis Patent No. 655,434. The construction and operation of such box forming machines are clearly disclosed in such Davis patent, and reference is made to this patent for a complete description and disclosure of the same. Briefly, however, the body blank constituting the bottom and sides of the box, having end flanges to which the end blanks are to be secured, is fed in a flat form from a pile at one end of the machine to a point beneath a reciprocatory plunger of the exact size of the inside of the box to be produced. The plunger is forced downwardly and operates to force the body blank through a die or opening by which the sides of the box are bent up and the end flanges turned inwardly, the blank having been previously creased to facilitate these operations. As the plunger continues downwardly and carries the body blank past the periphery of the paste rolls by which the outer faces of the end flanges are coated with paste, thereafter the end blanks are automatically fed into position and applied to the end flanges under pressure by pressure heads. The box thus produced then drops from the plunger onto the conveyer where it is conveyed from the machine.

From the description thus far, it will be observed that the present method of producing the covered box is such as to permit the covering operation to be performed by machinery of simple design and construction and by which the body blanks and end pieces may be covered in a rapid and economical manner. The character of the machinery necessary for performing these covering operations is such that the operations may be performed with a minimum amount of manual labor, thus saving the expense in the manufacture of the covered box incident to the employment of a large number of operatives as is the case in the present manufacture of boxes of this character, wherein the covering operations are manually performed upon the completed box. In addition, the present method of producing the covered box is such as to enable the standard box forming machines to be employed for folding the body blank and for applying the end pieces, thus enabling the manufacturer to utilize his present equipment in the manufacture of the improved covered paper box.

While the preferred embodiment of the invention has been illustrated and described, it will be understood that the same may be embodied in other forms within the scope of the following claims.

Having thus described the invention, what is claimed is:—

1. The method of making a double ended box, which consists in severing a cardboard strip to form a plurality of blanks, each including a bottom portion, side portions integral therewith, and end flanges upon the side portions, severing a second cardboard

strip to form a plurality of individual detached end blanks, adhesively affixing finishing strips to the outer surfaces of both cardboard strips before formation of the blanks, and folding, while the cardboard is in strip form, the finishing material over the side edges of the first strip and over the side edges of the end forming strip, and thereafter assembling a body blank and two of the detached end blanks in box forming relation and adhesively affixing the end blanks to said end flanges.

2. The method of making a double ended box, which consists in withdrawing from a supply roll, a cardboard strip of a width sufficient to form a body blank comprising a bottom portion and side portions integral with the bottom portion, withdrawing from another supply roll a second cardboard strip of a width equal to the height of the box, adhesively affixing finishing strips to the outer surfaces of said cardboard strips, folding the finishing material over the side edges of the side portions of the body blank and over one side edge of the second strip, sever-

ing the strips to form a plurality of body and detached end blanks, assembling a body blank and two detached end blanks in box forming relation, and adhesively affixing the end blanks to the ends of the bottom and sides of said body blank to form the box.

3. The herein described method of making a double ended box, which consists in withdrawing from a supply roll a cardboard strip of a width such as to form a body blank comprising the bottom portion and side portions integral with the bottom portion, withdrawing a second cardboard strip from a second supply roll, adhesively affixing finishing material in strip form to the outer surfaces of said cardboard strips and forming from the composite strips thus formed a double ended box having separate end blanks affixed to the ends of the bottom and integral sides of the body blank and having finishing material lapped over the upper edges of the sides and ends of the box to finish the same.

In testimony whereof I have signed my name to this specification.

WILLIAM S. CLEAVES.