

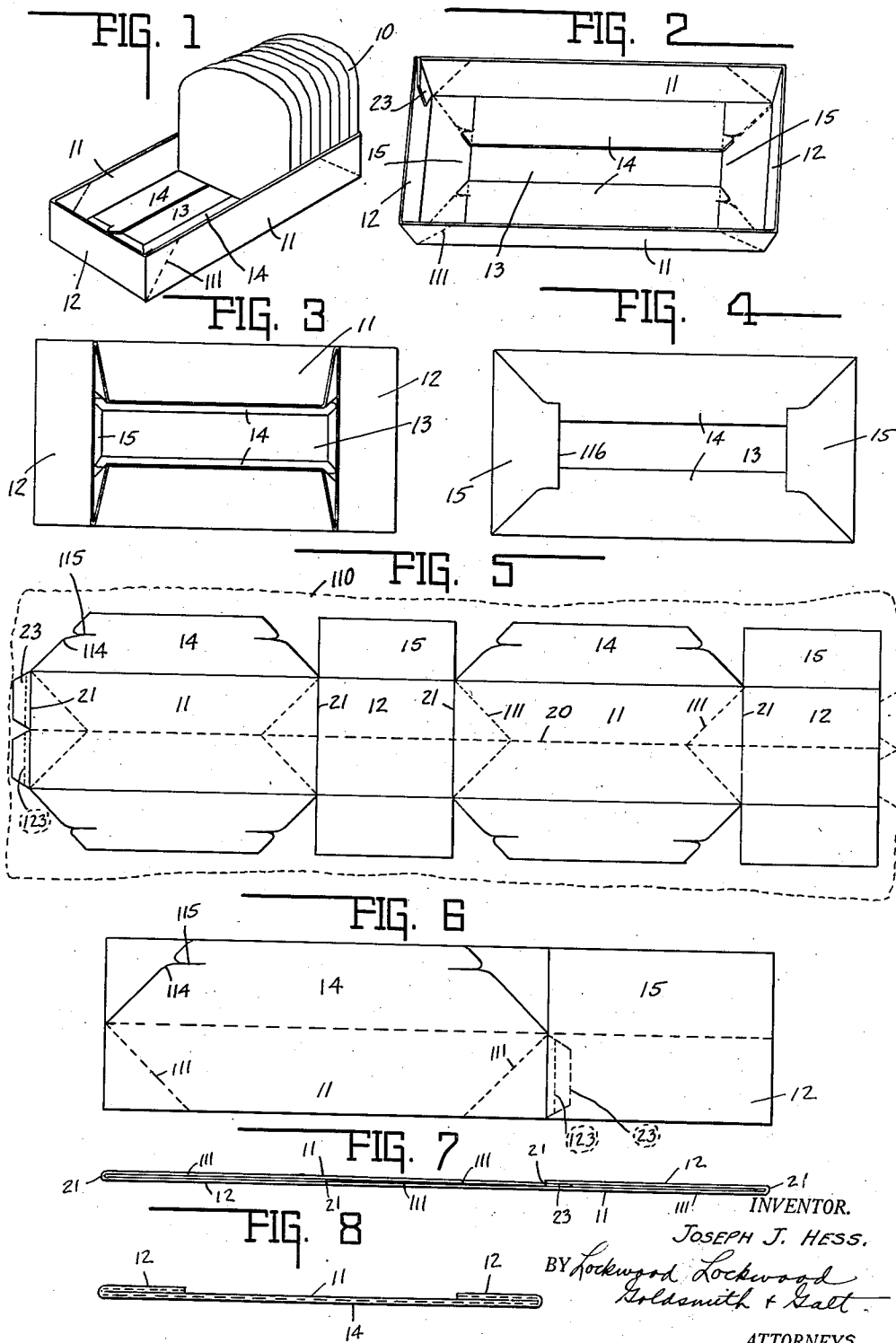
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J. J. HESS

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OPEN BOTTOM VENTILATED PAPER TRAY AND PROCESS FOR MAKING THE SAME

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JOSEPH J. HESS, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO INTERNATIONAL PRINTING COMPANY, OF INDIANAPOLIS, INDIANA, A CORPORATION

OPEN BOTTOM VENTILATED PAPER TRAY AND PROCESS FOR MAKING THE SAME

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This invention relates to an open bottom ventilated paper tray and the process of making the same and is an improvement upon the invention disclosed in my co-pending application Serial No. 395,272 filed September 26, 1929.

The chief object of this invention is to increase the advantages of the tray disclosed in the copending application by insuring substantially rectangular or tray forming positioning upon arrangement of the parts from the collapsed position into tray forming relation, a reduction in the number of operations from three to one in the movement of the parts from a collapsed position into a tray forming relation, and the interlocking connection of the several parts such that independent movement of a part is substantially prevented.

The before mentioned application discloses the formation of a plurality of tray forming blanks in united relation. The present invention discloses the formation of a plurality of blanks in connected relation and from a sheet of suitable paper stock material, the strips being positioned side by side and arranged in end to end relation and across the width of the sheet whereby continuous movement of the sheet through the forming mechanism is possible for the continuous formation of the strip blanks or step by step movement of the sheet is possible through the blank forming mechanism so that a multiplicity of blanks are simultaneously formed and progressively formed from a sheet of paper stock material supplied to the forming mechanism.

One machine at present employed in the formation of blanks of the aforesaid character is one capable of forming eighteen strips in end to end relation across the width of the sheet, and mechanism for forming the blanks when of the cylinder type provides for the continuous formation of the strips in side to side relation. A machine of this character has operated to form ten thousand side by side positioned strips per hour which with eighteen strips arranged end to end results in the production of approximately one hundred and eighty thousand blanks per hour.

One feature of the present invention con-

sists in the formation of the tray blank with interlocking bottom forming flaps.

Another feature of the invention consists in the formation of the tray with a pair of opposite flaps substantially rectangular whereby a substantially rectangular form of the tray is obtained and maintained.

A third and commercially more important feature of the invention is the scoring of a pair of opposite sides of the tray whereby the intermediate sides or ends and the scored sides may be readily collapsed for positioning parallel to the bottom so that such a tray can be collapsed instantly and flattened to a very thin small strip for convenient and economical packing and shipping and which when presented for use can be instantly opened in one operation and upon opening will assume the tray forming position.

The full nature of the invention will be understood from the accompanying drawing and the following description and claims:—

In the drawing Fig. 1 is a perspective view of the new tray half full of sliced bread or the like. Fig. 2 is a perspective top view of the tray showing the interlocking portions and the rectangular formation insuring rectangular tray formation. Fig. 3 is a perspective view of the tray blank partially opened and represents the position that the blank automatically assumes upon being released from the collapsed pressure applied position. Fig. 4 is a bottom plan view of the tray. Fig. 5 is a plan view of a portion of a sheet of paper stock showing the formation of a double blank for a pair of trays and adjacent portions of the blanks surrounding the same. Fig. 6 is a side view of a single blank and represents a secondary stage in the formation of the tray. Fig. 7 is an end view thereof. Fig. 8 is an end view of the tray in its collapsed position after the parts have been successively rearranged from that shown in Figs. 6 and 7 and in Figs. 3 and 4.

The tray shown in the drawing herein is adapted for holding or packaging bread in loaf form or in sliced form or other bakery products. The tray is such that the bread or contents is held in position but with the major portion of the surface thereof exposed

to the atmosphere. This is desirable because of the seasoning of the bread after it is baked and before it is used. An opening must be provided to permit as much evaporation of moisture as possible and yet prevent uneven seasoning thereof or the imparting of disagreeable odors thereto.

The tray is made from stiff but relatively flexible paper stock having some thickness and has sides 11 and ends 12 which are not very high and when used for a loaf or sliced bread its height is not more than one-third of the height of the loaf. The tray is rectangular in form and usually about the size adapted to receive a loaf of bread. There is provided a ventilating opening 13 in the bottom and extending substantially for the length of the tray. To form this there are narrow bottom portions 14 adjacent the sides 11 and there are bottom portions 15 adjacent the ends 12. Each bottom portion is integral with the adjacent side or end portion and the several bottom portions are separate from each other and each is spaced an appreciable distance apart from the opposite bottom portion. The two adjacent bottom portions or flaps overlap for reinforcement and preferably the width of each bottom portion or flap is materially less than one-half the length of the first bottom portion so that an appreciable central opening 13 for ventilation is provided preferably with its length exceeding half the length of the tray.

110 indicates the sheet of paper stock material and the sheet is cut both longitudinally and transversely to form a series of connected double blanks such as shown in Fig. 5. The double blank shown in Fig. 5 is separated along the longitudinal central line 20 and each identical portion is adapted to form a single tray. Each blank includes the side portions 11, the end portions 12, the end supported flaps 15, the side supported flaps 14 and a uniting tab or flap 23. The latter is suitably reduced at opposite ends as illustrated.

In the formation of the blank each side wall is angularly scored as at 111 and the angle of scoring is substantially 45°. Each bottom flap 14 has its opposite ends angularly reduced as at 114 and each reduced end is slotted longitudinally as at 115. Each bottom flap 15 is substantially rectangular and integral with its adjacent end 12 and therefore flap 15 extends completely across the end of the tray and forms a portion of the bottom and insures substantially parallel positioning of the sides 11 and the transverse positioning of the ends 12 therebetween so that a substantially rectangular tray is formed thereby.

The inner edge 116 of the flap 15 is receivable by the adjacent longitudinal slots 115 when the adjacent bottom forming flaps 14 and 15 are interlockingly associated together.

Herein the end supported flap overlies the side supported flap. Thus trays may be moved along an open track and the end flaps will not have a tendency to drop below the level of the bottom of the tray and engage any obstructions below such level.

The aforesaid solves one of the objections to the specific form of tray shown in the beforementioned application. Likewise the rectangular formation of the end supported bottom flap positively insures rectangular tray formation, thus solving another objection to the specific form of the invention shown in the co-pending application.

After the double blank has been formed the same may be separated, or if a plurality of blanks are formed in succession each would be individually separated from the remainder. The individual elongated strip blank is folded along one of the vertical scorings or corner forming lines 21 and the tab 23 overlaps the adjacent end for securing the blank in doubled formation as shown in Figs. 6 and 7. This bending of the blank at the scored portion may take place automatically prior to the separation of each blank from an adjacent blank or the interconnected blanks, that is those positioned side by side, but only after the end to end arranged adjacent blanks have been separated. Preferably the side 11 supporting tab 23 is folded toward the other end of the blank and the remote end portion is likewise folded toward the center of the blank and is positioned over the tab so that the tab lies within the tray as shown in Fig. 2 when the tray is formed.

After the blank has been thus formed in the flat the same is opened into tubular arrangement with the bottom forming flaps aligned substantially in the same planes as the supporting side wall portions of the tray. The two end supported bottom forming flaps are then turned inwardly and the two side wall supported flaps are then turned inwardly and interlockingly connected with the end wall supported bottom forming flaps. The sequence of the infolding may take place with the bottom forming flaps turned inwardly and upwardly or the same may take place with the bottom forming flaps being turned inwardly and downwardly. In the latter event the tray is completed in inverted position.

The completed tray is then gripped at the four corners by the two hands of the operator and the side walls are pulled inwardly and then the end walls are folded inwardly and over the same, the side walls "breaking" or bending at the scoring 21. When thus arranged the completed tray has all of its parts positioned as shown in Figs. 3 and 4. Additional pressure is then applied to the end walls to fully collapse the same into parallel position relative to the bottom, and this

position is shown in Fig. 8. The fully collapsed trays are pyramided one upon the other and are then packaged in large lots and hermetically sealed for sanitary purposes.

5 Upon breaking of the seal and release of the restraint each successive carton when removed from the pile immediately assumes the position shown in Fig. 3. This is due to the inherent spring action of the folded inside walls
10 and their tendency to open up.

The operator in filling the tray merely inserts the fingers adjacent the end walls and pulls outwardly toward each end which immediately causes the side walls to open outwardly with the end walls and leaves the tray
15 in substantially rectangular and open formation ready for article reception.

The invention claimed is:

1. A blank for a rectangular tray having
20 scored portions in successive relation for the two ends and two sides of the tray, a bottom portion in scored connection with each side portion with its ends beveled substantially
45° and with a longitudinal slit in each end
25 thereof, and the bottom end portions being rectangular and in scored connection with the ends of the tray and adapted in forming the tray to enter said slits in the ends of the longitudinal bottom portions, substantially as
30 set forth.

2. A double blank for two rectangular trays with a central longitudinal score line for separating said blank into two separate tray blanks when desired to form the trays, said
35 double blank being similarly but oppositely formed on both sides of said central score line and the sides and end portions of the trays to be formed being adjacent to each other at said central score line and the corresponding bottom members being remote
40 from each other, said bottom members consisting of two rectangular end flaps and two side portions alternating with said bottom end flaps and their ends beveled forty-five
45 degrees from the adjacent side portions and having about midway of their ends longitudinal slits for receiving the bottom end flaps, substantially as set forth.

In witness whereof, I have hereunto affixed my signature.

JOSEPH J. HESS.

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