April 13, 1943. H. B. ROYCE 2,316,457

PAPER BOX

Filed Dec. 30, 1940

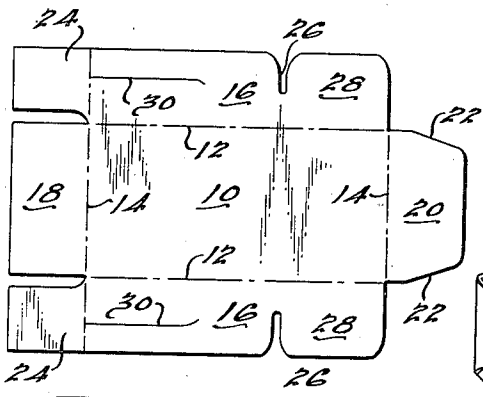


Fig. 1.

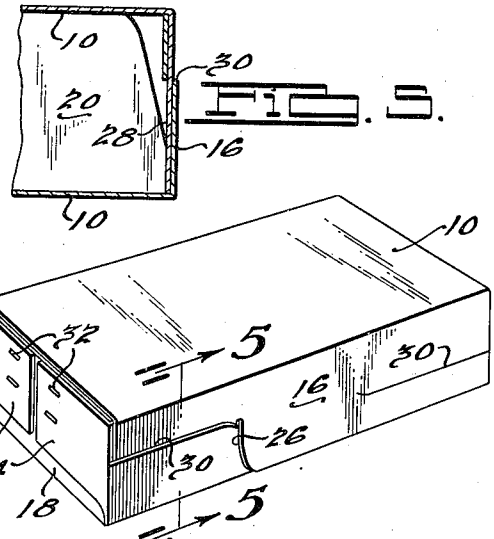


Fig. 4.

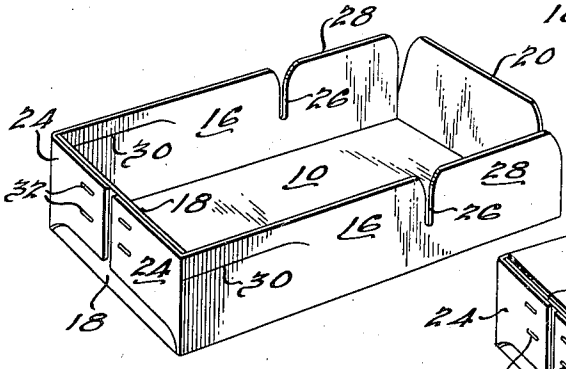


Fig. 2.

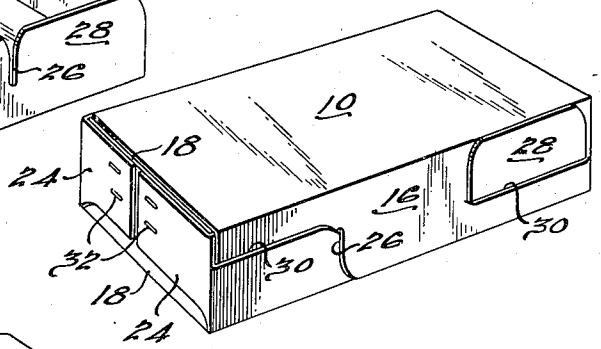


Fig. 6.

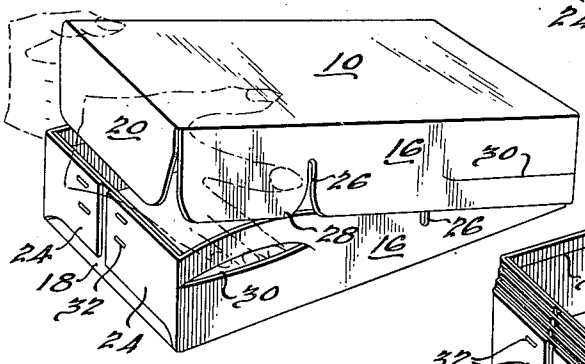


Fig. 3.

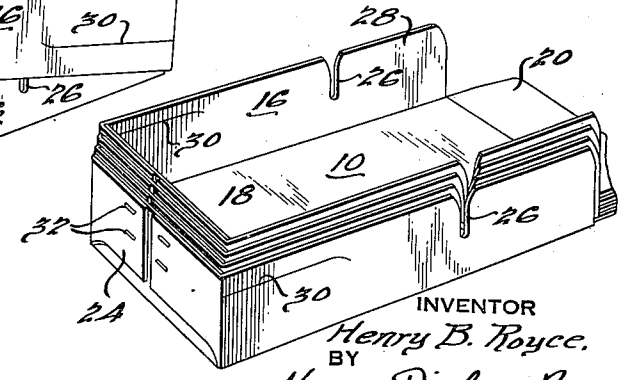


Fig. 7.

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Patented Apr. 13, 1943

2,316,457

UNITED STATES PATENT OFFICE

2,316,457

PAPER BOX

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Application December 30, 1940, Serial No. 372,247

3 Claims. (Cl. 229—23)

This invention relates to boxes and particularly to boxes formed of paper, cardboard or material having similar characteristics, the principal object being the provision of a box of the type described that is simple in construction, easily handled and assembled and economical to produce.

Objects of the invention include the provision of a box of the type described having top and bottom sections identical to each other and either of which may form the bottom or the top of the box; the provision of a box of the type described in which the top and bottom parts of the box are each formed of a single piece of material; the provision of a box of the type described so constructed and arranged as to particularly adapt it for reuse; the provision of a box of the type described in which the top and bottom sections of a plurality of boxes may be nested one within the other whereby when the boxes are not assembled they may be stored in a minimum space; the provision of a box of the type described having identical top and bottom sections, each section having a slot in each side thereof adjacent one end thereof and a tongue or tab on each side thereof adjacent the opposite end thereof, the tongues of at least one of the sections adapted to be engaged in the slots of the other of said sections when assembled to aid in maintaining the boxes in assembled condition; the provision of a box as just above described in which one end of each section is free of attachment to the adjacent sides of the corresponding section; and the provision of a box of the type described that is adaptable for a wide range of uses but which is particularly adaptable for boxes intended to be reused.

The above being among the objects of the present invention, the same consists in certain novel features of constructions and combinations of parts to be hereinafter described with reference to the accompanying drawing, and then claimed, having the above and other objects in view.

In the accompanying drawing which illustrates a suitable embodiment of the present invention and in which like numerals refer to like parts throughout the several different views,

Fig. 1 is a plan view of the blank employed for forming the top and bottom sections of one size and shape of box in accordance with the present invention;

Fig. 2 is a perspective, slightly enlarged view of the resulting box section formed from the blank illustrated in Fig. 1;

Fig. 3 is a perspective view illustrating two sections of the construction shown in Fig. 2 being assembled together in the preferred manner to form a completed box;

Fig. 4 is a perspective view illustrating the parts shown in Fig. 3 in finally assembled condition to form a completed box;

Fig. 5 is an enlarged, fragmetnary, transverse sectional view taken on the line 5—5 of Fig. 4 to better illustrate the inter-engagement between the tongue or tab of the cover section with the slots of the bottom section;

Fig. 6 is a view similar to Fig. 4 but illustrating a modified method of assembling the top and bottom sections wherein the tongues or tabs of both sections are inter-engaged with the corresponding slots of the other sections; and,

Fig. 7 is a slightly reduced perspective view illustrating the manner in which the tops and bottoms of a plurality of boxes may be nested together for transporting or shipping purposes with each of the sections completely formed.

While the box of the present invention is adaptable for substantially any use that a heavy paper, pasteboard, cardboard or corrugated paper box may be generally employed for, it is particularly adaptable for use in those cases where reuse of the box is possible and desirable. To illustrate one of such latter uses it is pointed out that in the baking industry it is common practice for the bakeries to place an order or a part of an order of baked goods in a box for transportation by the delivery truck driver to the customer which may be a store, restaurant, or the like. The truck driver upon reaching his destination carries the box of baked goods into the store or restaurant, removes the baked goods from the box and places them in the show case, counter or the like and is then supposed to return the box to the bakery where it may be reused.

In the case of the specific illustration above given it will be appreciated that the box should be of such character as to enable it to be readily and quickly assembled at the bakery, to be easily handled by the truck driver without undue danger to the structure of the box itself or to the contents thereof, and should be of such character that it does not cause too great an inconvenience to the driver in returning the empty box to the bakery. In this last respect most bakeries have found it desirable, if not necessary, to pay the drivers a bonus based on the number of boxes returned as compared to those taken out as otherwise, where the boxes are relatively inconvenient to handle, the drivers are

liable to throw them away instead of returning them to the bakeries.

The present invention provides a box which meets all of the desirable qualities above listed. The box itself is relatively simple in construction and, therefore, economical to manufacture. It is readily assembled at the bakery and when assembled forms a box assembly amply strong to protect the contents and when handled with reasonable care is capable of being reused many times. The top and bottom sections of the box are identical to each other which not only aids in the economy with which the box may be constructed but facilitates the assembly of the box at the bakery inasmuch as the worker assembling the box does not have to distinguish between the top and bottom sections, and the two sections of the box are so constructed and arranged that either the top or bottom section may be assembled one within the other in nested relation. This latter feature permits any number of top and bottom sections to be assembled together in nested relationship whereby when empty a relatively large number of boxes may occupy but a small space. This fact enables a delivery driver to keep reducing the volume occupied by the boxes in his truck as he progresses over his route, the empty boxes thus not materially interfering with his picking out the required filled boxes from his load to deliver to a particular customer and consequently they do not constitute such an inconvenience to the driver that he has a tendency to throw away the boxes rather than return them to the bakery. This fact thus aids in effecting a material saving at the bakery itself.

It will, of course, be understood that the box of the present invention is of either square or rectangular shape and it makes no difference whether the box is wider than it is long or whether it is square, and, of course, may be made of a variety of depths depending upon the intended use. Ordinarily the box will be rectangular and of greater length than width and it is this type of box that is illustrated in the drawing by way of illustration.

Referring now to the accompanying drawing, there is shown in Fig. 1 a blank such as is used for both the top and bottom sections of the box, both sections being identical to each other as above described. As will be noted the blank in Fig. 1 comprises a main section 10 which eventually comprises either the top or bottom of the box depending upon which use the particular section is put to, this section 10 being defined in the blank between the side of the score lines 12 and end score lines 14 which bound the same. Side portions 16 are integrally joined with the main portion 10 for the full length of each side of the main portion and are separated therefrom by the score lines 12. As will be appreciated the side portions 16 are of a length equal to the length of the main section 10 and both of equal width. An end member 18 is formed integrally with one end of the blank and is of a length equal to the width of the blank and of a width equal to the width of the side portions 16. The other end member 20 is of a length equal to the width of the main portion 10 and of a width equal to the width of the side portions 16 but its outer corners are cut off as at 22 in order to narrow the free extremity to enhance its ease of insertion in the cooperating section as will hereinafter be more apparent.

The end member 20 is not adapted to be rigidly fixed to the side portions 16 but is intended to have a more or less hinged relationship with respect to the main portion 10 in service and, therefore, is secured only to the main portion 10. The side portions 16 are adapted to be rigidly fixed to the end member 18 and although this may be accomplished in any suitable or desirable manner, as by stitching, gluing, by a lock corner or the like, one means which may be employed for the purpose of effecting this latter condition comprises suitable flaps 24 which may be formed on either the side portion 16 or the end portion 18, the flaps 24 being illustrated as being formed integrally with the corresponding ends of the side portion 16 in the case shown by way of illustration.

The side portions 16 are identical to each other except that they are righthand and lefthand. Each side portion adjacent that end thereof closest to the end portion 20 is inwardly slotted from its outer free edge as at 26 to form a tab or tongues 28, the slots 26 in the case shown being of a length, transverse to the length of the corresponding side portion 16, approximately equal to half the width of the side portions 16 as indicated. The outer corners of the tab or tongue portions 28 are rounded off as indicated as are also the outer corners of the portions 16 to the left of the tongues or tabs 28 as viewed in Fig. 1. Each side member 16 at that end thereof opposite the tongues or tabs 28 is slitted as at 30 in a direction parallel to the length of the portion 16 and extending from the creased line 14 between the side portions 16 and the corresponding flaps 24 towards the corresponding tongue or tab 28 for a distance approximately equal to the distance of the slots 26 from the corresponding ends of the sections 16. The righthand end of the slits 30 as viewed in Fig. 1 are preferably turned inwardly towards the main portion 10 as indicated and each slit 30 is preferably located slightly outwardly of the centerline of such side portion from the corresponding creased line 12.

In assembling the blank shown in Fig. 1 and thus described into a box section, the end section 18 is first bent upwardly into perpendicular relationship with respect to the plane of the main section 10. The flaps 24 are then bent upwardly into perpendicular relationship with respect to the corresponding side portions 16 and the side portions 16 are then bent upwardly into perpendicular relationship with respect to the main section 10 in which condition the flaps 24 are brought outwardly across the outer face of the end section 18 as illustrated in Fig. 2. The flaps 24 are then secured to the end section 18 in any suitable or conventional manner as by gluing, stitching or the like, the same being shown stitched to the end section 18 by means of staples 32 as a matter of illustration. The end section 20 may then be bent upwardly to a perpendicular relationship with respect to the plane of the main section 10 if desired, or this operation may be put off until the section is being initially assembled to form a box if desired. When the end section 20 is bent upwardly as described the completed box section then assumes the shape and condition illustrated in Fig. 2.

When it is desired to assemble two of the sections such as shown in Fig. 2 to form a completed box, one section is placed so that it opens upwardly as illustrated in Fig. 2 and then an identical section, but arranged with its open side facing downwardly and with the end 18 thereof

arranged over the end **20** of the first mentioned section which is to be used as the bottom of the box, is then forced downwardly over the bottom section. In performing this last operation the tongues or tabs of the upper section are forced into the slits **30** of the bottom section to bring about an assembled condition such as illustrated in Fig. 4 and if desired, but ordinarily not necessary, the tongues or tabs **28** of the lower section may be inserted through the slits **30** of the upper section to bring about the assembled condition illustrated in Fig. 6.

Where the box is to be used for the specific case above described, namely for transporting baked goods from a bakery to a store or restaurant, the method of assembly illustrated in Fig. 4 will ordinarily be desirable and an easy method of carrying this out is illustrated in Fig. 3. As illustrated in Fig. 3, it will be noted that the operator places the lower section with the end portion **18** thereof toward him and then grasps that end of the upper section closest to the end portion **20** between his two hands, hooks the end **18** of the upper section downwardly over the end **20** and sides **16** of the lower section, and then by a kind of hinging action brings the nearer end of the upper section downwardly, inserting the fingers of each hand through the slits **30** of the lower section to open them up and to guide the tabs or tongues **28** of the upper section downwardly thereinto, it being understood that the end **20** of the upper section is inserted inwardly of the end **18** of the lower section. The assembly of the two sections in the manner described will, of course, be understood to be capable of accomplishment in only a fraction of the time necessary to describe the operation.

Because of the inter-engagement of the tongues or tabs **28** of the upper section in the slits **30** of the lower section, as particularly brought out in Fig. 5, it will be appreciated that the upper section is frictionally secured to the lower section and where the weight of the paper or other material from which the sections are formed is sufficient, the two sections are thus locked together with surprising firmness. To remove the top section from the lower section in order to get at the contents of the box thus formed, a reverse of the assembly procedure described will, of course, readily provide the desired results.

It will be appreciated that one reason for the ease of assembly of the two sections into a complete box is the end member **20** which although integrally secured to the main portion **10** is free of the side portion **16** and, therefore, may readily hinge inwardly during assembly to provide all the necessary clearance between the two sections during assembly. After the sections are assembled together, one section cannot move longitudinally of the other because of the inter-engagement of the tabs or tongues **28** with their cooperating slits **30**, as will be readily appreciated.

The hinging effect of the end sections **20** also permits another very important advantage of a box constructed according to the present invention to be realized as particularly illustrated in Fig. 7, from which it will be seen that a plurality of such sections are nested one within the other. Any number of such sections may thus be nested so that a relatively large number of completed sections may, when nested together as illustrated in Fig. 7, be contained in a relatively small space. This feature is particularly important from a standpoint of returning empty boxes to the bakery or other points where they are to be refilled inasmuch as the delivery driver continues to reduce the apparent volume of his load as he progresses around his route and delivers his goods and does not provide a substantially constant volume of boxes to handle as occurs when the usual type of boxes are employed. Once these sections are returned to the bakery or other points where they are to be refilled, it will be appreciated that the workers who are refilling the boxes are not required to select separate bottoms and tops as in the case of the ordinary type of boxes but may pick up the first section within their grasp to accomplish the desired results.

Formal changes may be made in the specific embodiment of the invention described without departing from the spirit or substance of the broad invention, the scope of which is commensurate with the appended claims.

What I claim is:

1. A box formed from paper or the like comprising separable and identical top and bottom sections, each of said sections comprising a main portion forming the top of the box in the upper of said sections and the bottom of the box in the lower of said sections, each of said sections including side and end walls, one of said end walls of each of said sections being secured to both side walls of the corresponding section and the remaining end wall of each of said sections being free of direct attachment to the side walls thereof, each side of each of said sections being transversely slotted from its free edge for at least part of the width thereof to form a tongue adjacent that end of said sides nearest the last mentioned end, and each of said sides being slitted longitudinally thereof intermediate opposite edges thereof adjacent that end thereof closest to the first mentioned of said ends, said sections adapted to be assembled together with their open sides opposed to each other and with one of said sections received within the other thereof, and the tongues of at least one of said sections projecting through the slits of the other of said sections whereby to frictionally lock said sections together.

2. A paper or the like box comprising, in combination, a pair of identical sections each of which includes a main portion of generally rectangular configuration having opposite side walls and opposite end walls, one of said end walls being fixed to said main portion and both said side walls and the opposite of said end walls being free of connection with said side walls, the last mentioned end walls being bendable about their lines of connection with their corresponding main portions whereby they may be bent outwardly away from the interior of the corresponding sections to permit said sections to be nested one within the other with said sections opening in the same direction and with the first mentioned end walls at the same end of the nested assembly, tongues at that end of each of said side walls adjacent the corresponding bendable end wall and formed by transversely slotting said side walls from the free edge thereof, each of said side walls having a slit therein adjacent that end thereof next to the corresponding first mentioned end wall, said slits extending longitudinally of said side sections intermediate the inner and outer edges thereof, said sections adapted to be assembled together to form a box by arranging said sections with their open sides facing each other and with the first mentioned end walls at opposite ends of said box, and in-

serting one of said sections within the other of said sections with the tongues of the outer of said sections projecting through the slits of the inner of said sections.

3. A box formed from paper or the like comprising separable and identical top and bottom sections, each of said sections comprising a main portion forming the top of the box in the upper of said sections and the bottom of the box in the lower of said sections, each of said sections including side and end walls, one of said end walls of each of said sections being secured to both side walls of the corresponding section and the remaining end wall of each of said sections being free of direct attachment to the side walls thereof, said sections assembled one within the other and with the last-mentioned end wall of one of said sections at the opposite end of said assembly from the last-mentioned end wall of the other of said sections, and each of said side walls of both of said sections being transversely slotted from its free edge for at least a portion of the width thereof and each of said side walls having one face thereof on one side of said slot therein engaging one face of the associated side wall of the other of said sections and the opposite face thereof on the opposite side of said slot engaging the opposite face of said associated side wall of said other of said sections.

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