Jan. 8, 1935. P. F. BOEYE 1,987,461

BOX

Filed March 31, 1932 2 Sheets-Sheet 1

Fig. 1

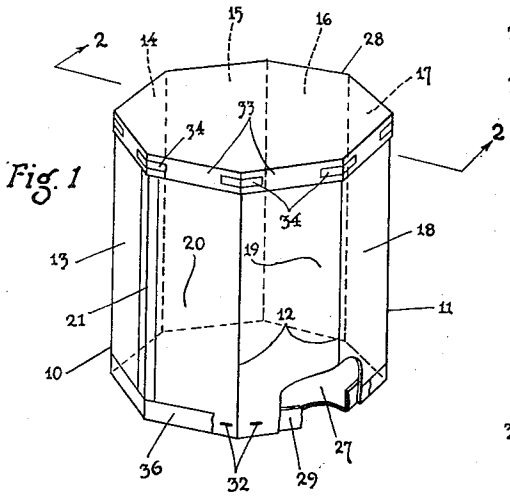


Fig. 2

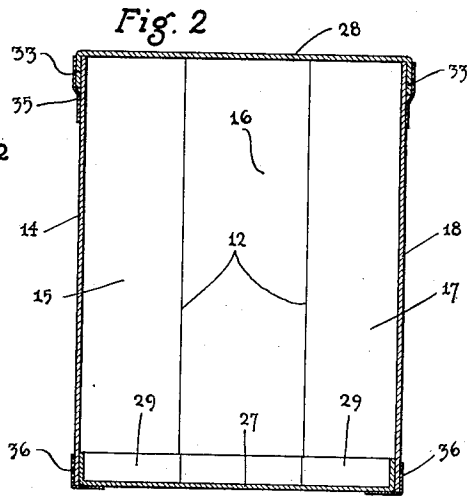


Fig. 3

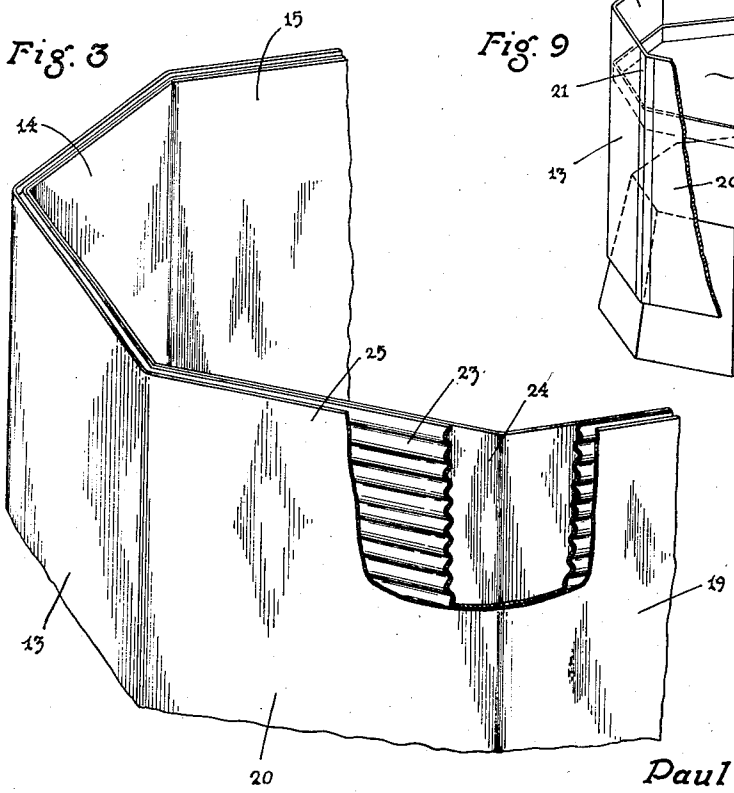
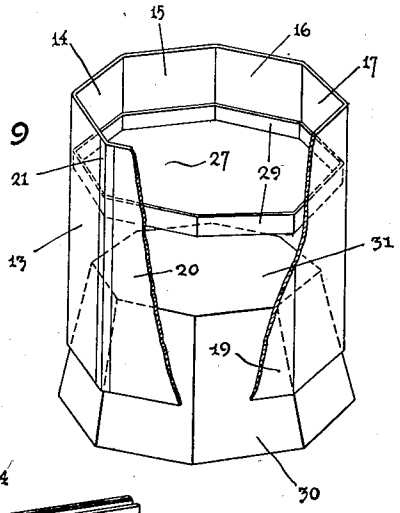


Fig. 9



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Jan. 8, 1935. P. F. BOEYE 1,987,461

BOX

Filed March 31, 1932 2 Sheets-Sheet 2

Fig. 4

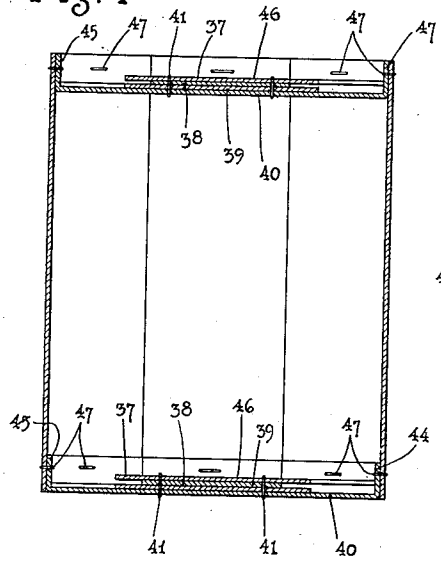


Fig. 5

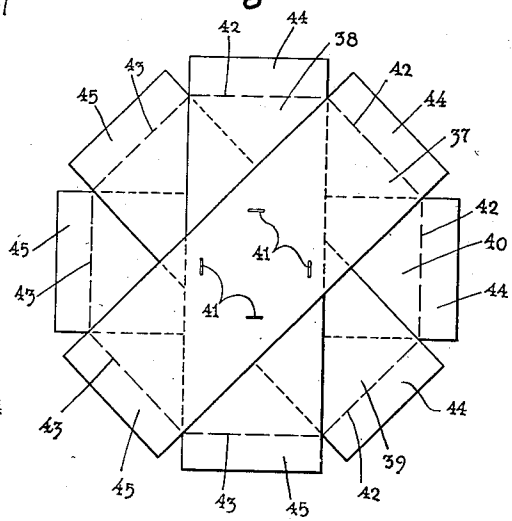


Fig. 8

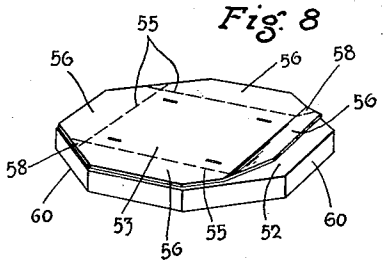
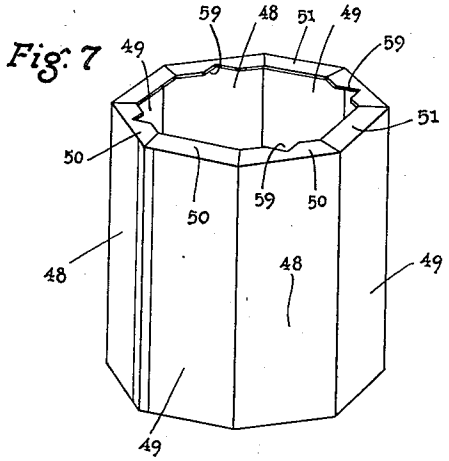


Fig. 7



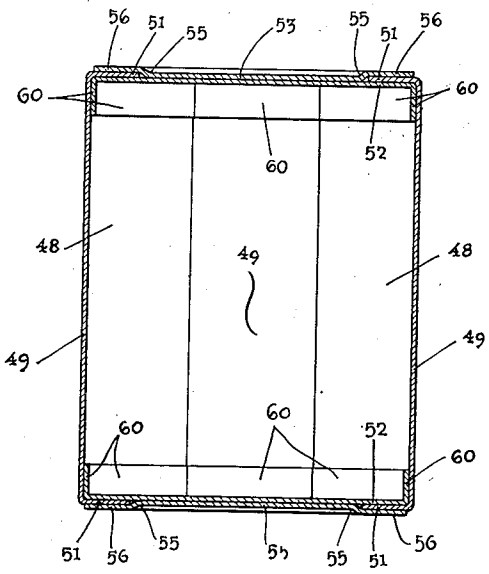


Fig. 6

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Patented Jan. 8, 1935 1,987,461

UNITED STATES PATENT OFFICE

1,987,461

BOX

Paul F. Boeye, St. Paul, Minn., assignor to Waldorf Paper Products Company, St. Paul, Minn., a corporation of Minnesota

Application March 31, 1932, Serial No. 602,177

3 Claims. (Cl. 229—23)

My invention relates to boxes and has for its object to provide a box in which commodities may be firmly packed without causing bulging of the sides of the box.

A feature of the invention resides in providing a box which may be constructed of paper board or similar material and which is particularly adaptable for use in shipping butter and similar commodities.

Another object of the invention resides in providing a box which is considerably less expensive than the ordinary wooden tubs now used for the purpose of shipping butter.

A still further object of the invention resides in providing a box having a body portion formed with a number of sides greater than four and having a top and bottom attached thereto.

An object of the invention resides in constructing the body of the box in one piece folded along parallel lines to cause the sides of the box to form obtuse angles with respect to one another.

Another object of the invention resides in constructing the box of a corrugated board arranged so that the corrugations thereof extend across the folds of the walls of the box.

A still further object of the invention resides in constructing the corrugated board with a corrugated member having sheets of paper attached thereto and arranged so that the grain of said sheets extends at right angles to the direction of extent of the corrugations of the board.

A feature of the invention resides in arranging the corrugations of the board in a manner to extend parallel with the upper and lower edges of the walls of the box and at right angles to the folds of the body portion.

An object of the invention resides in forming the box open at one end and in providing a closure for the box employing a plurality of sheets of material arranged in overlying position to form a composite structure operating to completely close the open end of the box.

Another object of the invention resides in constructing said sheets of material of widths equal to the widths of the wall of the box and of less width than the width of the box proper and in arranging said sheets in overlying position to form a composite structure completely closing the open end of the box.

A still further object of the invention resides in bending flanges outwardly from the ends of said sheets adapted to lie along the walls of the box to effect a closure therebetween.

Another object of the invention resides in providing a closure for the box consisting of two sheets of material conforming in configuration to the open end of the box and secured together inwardly from the edges thereof.

A feature of the invention resides in constructing the box with flanges bent inwardly from the walls thereof and adapted to lie between the sheets forming said closure.

A still further object of the invention resides in scoring the outer sheet of the closure along lines parallel to the free edges of alternate walls of the box and forming tabs adapted to be folded back to permit of the insertion of the corresponding flanges of said walls between the two sheets of the closure.

An object of the invention resides in constructing the intermediate flanges of the body of the box with notches adapted to receive the corners of the flaps when in folded position and to permit of the folding of said flanges in between the walls of the box.

Other objects of the invention reside in the novel combination and arrangement of parts and in the details of construction hereinafter illustrated and/or described.

In the drawings:

Fig. 1 is a perspective view of a box illustrating an embodiment of my invention.

Fig. 2 is an elevational sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a perspective view of a portion of the box shown in Fig. 1 with the cover removed and with parts of the box cut away to show the construction thereof.

Fig. 4 is a view similar to Fig. 2 showing a modification of the invention.

Fig. 5 is a plan view of the closure for the box illustrated in Fig. 4 detached from the box and showing the flanges in the plane of the closure proper.

Fig. 6 is a view similar to Fig. 2 showing still another form of the invention.

Fig. 7 is a perspective view of the body of the box shown in Fig. 6 from which the cover proper has been removed.

Fig. 8 is a perspective view of the cover for the box shown in Fig. 6 and illustrating one of the flaps folded to receive the flange of the corresponding wall of the body of the box.

Fig. 9 is a perspective view of a box and the device used in conjunction therewith by means of which the box may be quickly and accurately erected.

In the packing and shipping of butter in bulk and other similar articles, it has heretofore been impractical to employ paper boxes due to the

fact that the walls thereof bulge and the boxes quickly lose their shape and fail to function in a manner to protect the bulk butter disposed within the same. The present invention provides a box which may be constructed of ordinary materials such as corrugated paper board and the like by means of which butter may be safely shipped and in which the walls of the box will not bulge or break during shipment.

In the carrying out of my invention I have found that a box having a number of sides in excess of four and preferably eight sides can be constructed as brought out so as to be sufficiently strong to withstand the misuse to which it is subjected in the shipment of the same.

For the purpose of illustrating my invention, I have shown in Fig. 1 a box 10 which consists of a body portion 11 constructed of a single sheet of material and open at the top and bottom. This sheet is scored along parallel lines 12 to divide the box into eight juxtaposed sides or walls 13, 14, 15, 16, 17, 18, 19 and 20. The two end walls 13 and 20 may be secured together through a tape 21 which is pasted to the edges thereof whereby a perimetric body portion is formed which is adapted to be folded into a compact flat form or to be moved into extended position for use.

The body 10 is constructed of a corrugated board and its construction is shown in detail in Fig. 3. The board from which the body of the box is constructed, is indicated at 22 and consists of a corrugated member 23 having two sheets of material 24 and 25 glued or pasted thereto. In the construction of the board 22 the grain of the two sheets 24 and 25 is caused to run at right angles to the direction of extent of the corrugations 26 of the corrugated member 23. The board 22 is so arranged in the construction of the box that the corrugations 26 extend perimetrically about the body portion of the box and across the various corners of the box formed through the score lines 12 thereon. When the box is constructed in this manner the span of the various walls of the box is greatly reduced and the corrugations 26 of the corrugated board become so arranged as to greatly stiffen the walls and provide an extremely rigid structure. By running the grain of the two sheets 24 and 25 in the opposite direction, considerable rigidity is also given the board lengthwise, though the greatest rigidity is had in a cross-wise direction. Although corrugated board has heretofore been used in boxes the corrugations have always been run in a manner to reinforce the box in the direction of its greatest length. In the use of corrugated members I arrange the corrugations in exactly the opposite manner and in addition to forming the walls of the box of narrow width, run the corrugations so as to reinforce the walls of the box in the direction of their shortest dimensions rather than in the direction of their greatest dimensions as has heretofore been the customary practice.

In Fig. 1 I have shown a bottom 27 and a closure 28 for the box. The bottom 27 is constructed of any suitable material and may be constructed of corrugated board such as used for the body portion of the box and indicated at 22. This bottom is octagonal in form to conform to the shape of the box and is constructed at its edges with inwardly extending flanges 29 which are bent from the bottom proper and which are adapted to lie along the lower ends of the various walls of the box and upon the inner surface thereof.

In the erection of the box the body portion 11, which comes folded flat, is placed over a truncate octagonal pyramid 30 as shown in Fig. 9 which causes the body of the box to assume its ultimate form. Thereafter the bottom 27 may be applied to the open end of the box and forced into the same until said bottom rests upon the truncate surface 31 of the pyramid 30. Thereafter the box is removed and the bottom pushed clear down into the lower end of the box where the flanges 29 of the bottom may be attached to the various walls of the box through staples 32 or in any other suitable manner. The cover 28 used in closing the box is constructed similar to the bottom 27 and is formed with flanges 33 adapted to overlie the outer surface of the various walls of the body portion proper. These flanges may be secured together along the corners through strips of tape 34 or in any other suitable manner.

When the box is to be used for the packing of butter the interior is first sprayed with a coating of paraffin and a liner consisting of a sheet of waxed or similarly prepared paper is then placed upon the interior of the box to line the same. Such paper is of a length slightly greater than the height of the box. In application the paper is first moistened and thereafter applied to the interior of the box, the upper edge being turned over the free edge of the box. Through the moisture in the paper the liner adheres to the box proper and is easily caused to fit snugly upon the interior of the same, the lower edge being turned inwardly upon the bottom of the box. An end sheet is then placed upon the bottom of the box and overlying the inwardly turned end of the liner. Due to the fact that the box is constructed with obtuse angles, the liner may be easily applied within the box and brought into the corners of the same. Thereafter the butter or other commodity to be packed in the box is placed therein and the upper surface leveled off by running a scraper over the upper edge of the box. The folded over upper edge of the liner is next turned inwardly and an upper end sheet of similar material placed upon the end of the butter. The cover 28 may then be applied to the box. If desired, strips of tape, indicated at 35 and 36 may be run about the joints formed between the cover and bottom of the box and the body portion thereof to completely seal the box and protect the contents of the same.

In the form of the invention shown in Figs. 4 and 5 a different type of closure has been illustrated which consists of four strips or sheets of stock 37, 38, 39 and 40 which are each of a width equal to the width of one of the walls 13, 14 etc. These strips are of a length somewhat greater than the distance between opposite walls of the box and are disposed one upon the other in overlapping position and secured together through staples 41 or in any other suitable manner. The various sheets 37, 38, 39 and 40 are scored near their ends as designated at 42 and 43 to form flanges 44 and 45 which are adapted to be bent outwardly from the body of the closure and to fit along the various walls of the body of the box previously referred to. The score lines 42 and 43 may be located so as to bring the flanges 44 and 45 within the interior of the box as shown in Fig. 4 or the same may be constructed so that

these flanges extend about the exterior of the box in a manner similar to closures 28 and 41.

In the form of the invention shown in Figs. 4 and 5 the entire box may be made with ordinary machinery and without any die cutting whatsoever, thereby greatly reducing the initial expense in the manufacture of the box. The bottom for the box shown in Fig. 5 is applied to the box in identically the same manner as the bottom 27. If desired, however, the closure may be inverted as designated at 46, whereby the same may be attached to the body proper through staples 47 which pass through the various flanges in the closure and the box proper. When the box is so constructed, the parts may be applied after the contents of the box have been inserted.

In Figs. 6, 7 and 8 still another form of my invention is shown in which a different type of closure is employed. In this form of the invention the walls of the box are constructed the same as in the other form of the invention and are designated by the reference numerals 48 and 49. There are eight of these walls and the said walls are constructed at the top and bottom with flanges 50 and 51 which are folded inwardly from said walls as clearly shown in Fig. 7. In conjunction with both the top and bottom of the box, a closure, such as shown in Fig. 8 is employed. This closure consists of two sheets of material 52 and 53 which are secured together through staples 54 or in any other desired manner. The staples 54 are located considerably inwardly from the box to leave the marginal portions thereof free. Along four of the edges of the sheet 53 are formed four score lines 55 which are disposed inwardly from said edges a distance somewhat greater than the width of the various flanges 50 and 51. These score lines form flaps 56 on the closure which are adapted to be bent outwardly as shown in Fig. 8 to permit of the insertion of the various flanges 51 therebetween. It will be noted that only four score lines 55 are provided forming four flaps 56 which receive the four flanges 51 formed on the body portion. It will be further noted that corners 58 are provided at the intersections of the score lines 55 and the flanges 50 are formed with notches 59 which receive said corners and permit of insertion of the said flanges in between the flaps 56 when the two adjoining flaps are simultaneously folded outwardly. By means of this construction four flaps are provided which are easier to handle than eight flaps and which do not weaken the closure as much as the eight flaps and which at the same time swing outwardly in a convenient manner to receive the various flanges of the box body proper. If desired the sheet 52 may be formed with flanges 60 along the edges thereof which extend outwardly from the closure and which are adapted to lie along the inner surfaces of the walls of the box.

In the application of the closure shown in Fig. 8 to the box shown in Fig. 7, one of the flaps 56 is bent outwardly and the corresponding flange 51 of the box proper inserted into the same. Thereafter the adjoining flap is folded outwardly and the two corresponding flanges associated therewith inserted in between the two sheets of material. This procedure is repeated until all of the flanges of the body of the box have been received within the space provided between the two sheets of material. Thereafter the joint between the closure and body may be sealed through adhesive tape or in any other suitable manner.

My invention is highly advantageous in that an extremely rugged and substantial box is formed in which various commodities, such as butter and the like, may be packed and shipped without injury to the contents of the box. The liner employed with the box is readily inserted in the same and requires little or no inconvenience in the causing of the same to fit snugly about the inner walls of the box. The box can be constructed of ordinary materials such as are now available for the purpose and the materials are so utilized as to bring about the most effective results. The closures for the box can be readily applied to the same and through the use of the erecting block provided, can be quickly and easily erected. With the invention the entire contents can be sealed through the use of adhesive tape or in any other suitable manner so as to completely protect the commodity contained within the box. The invention is highly meritorious in that the box can be constructed at a fraction of the cost of wooden tubs heretofore used for similar purposes.

Changes in the specific form of my invention, as herein disclosed, may be made within the scope of what is claimed without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. In combination with a box open at one end and having an even number of juxtaposed walls, each forming an obtuse angle with respect to one another, a closure for said box comprising two sheets of material conforming in configuration to the open end of the box and overlying one another, means for securing said sheets together inwardly of the edges thereof, flanges formed on the ends of said walls and bent inwardly to fit between the sheets forming said closure, the outer of said sheets being scored along lines parallel with the edges of alternate walls of the box to form flaps adapted to be turned back to receive the corresponding flanges of the box, the intermediate flanges of the box being notched to clear the corners formed between adjoining flaps while said flanges are folded into position between the sheets of the closure.

2. In combination with a box open at one end and having an even number of juxtaposed walls, greater than four, each forming an obtuse angle with respect to the adjacent wall, a closure for said box comprising two sheets of material conforming in configuration to the open end of the box and overlying one another, means for securing said sheets together inwardly of the edges thereof, flanges formed on the ends of said walls and bent inwardly to fit between the sheets forming said closure, the outer of said sheets being scored along a number of lines equal to one-half the number of walls of the box and parallel with some of said walls, said lines forming flaps adapted to be turned back to receive the corresponding flanges of the box and converging at localities opposite the other flanges of the box, the flanges of the box opposite the converging ends of the score lines being notched to clear the corners formed by the adjoining flaps while said flaps are folded back to receive said flanges.

3. In combination with a box open at one end and having eight juxtaposed walls, each forming an obtuse angle with respect to one another, a closure for said box comprising two sheets of material conforming in configuration to the open end of the box and overlying one another, means for securing said sheets together inwardly of the

edges thereof, flanges formed on the ends of said walls and bent inwardly to fit between the sheets forming said closure, the outer of said sheets being scored along four lines, the ends of said lines converging toward one another and forming flaps adapted to be turned back to receive the corresponding flanges of the box and to form corners between said flaps overlying portions of some of said flanges, said last named flanges being notched to clear the corners formed between adjoining flaps while said flanges are folded into position between the sheets of the closure.

PAUL F. BOEYE.