

E. G. CORWIN.
NON-HEAT CONDUCTING RECEPTACLE.
APPLICATION FILED JUNE 20, 1912.

Patented Dec. 15, 1914.

2 SHEETS—SHEET 1.

1,121,072.

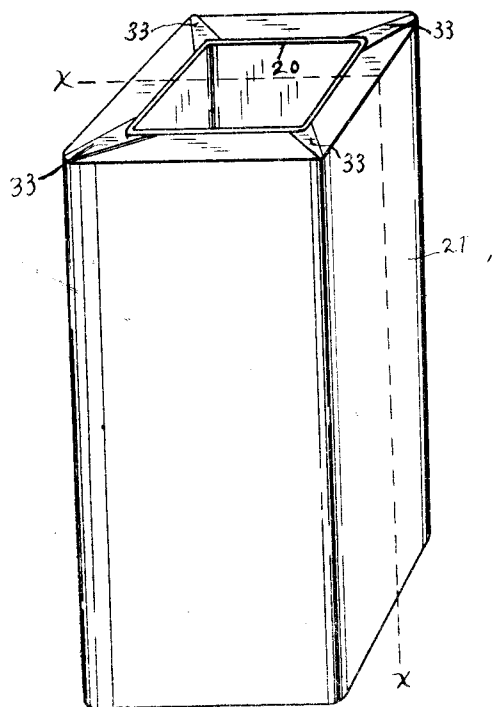


Fig. 1.

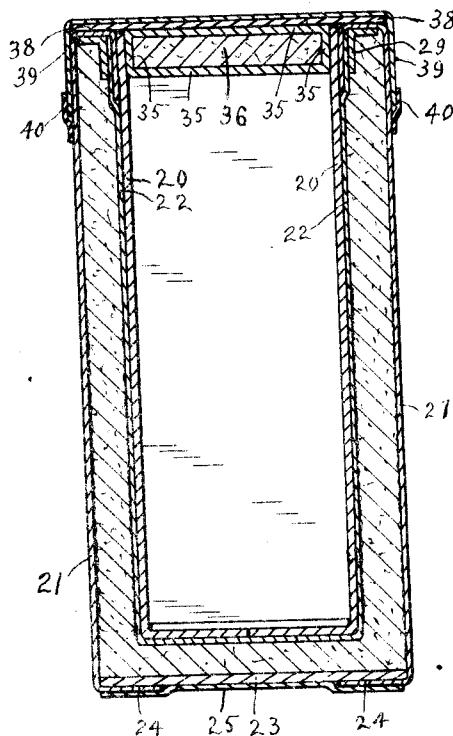


Fig. 2.

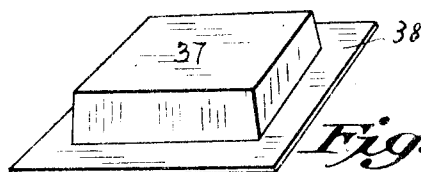


Fig. 3.

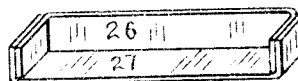


Fig. 4.

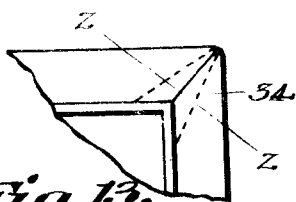


Fig. 5.

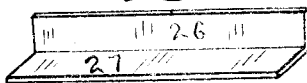


Fig. 7.

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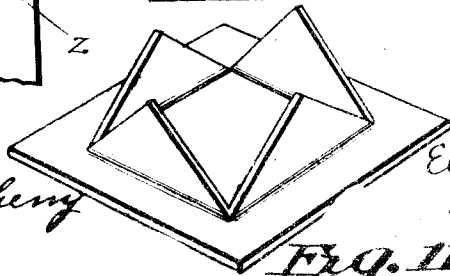


Fig. 8.

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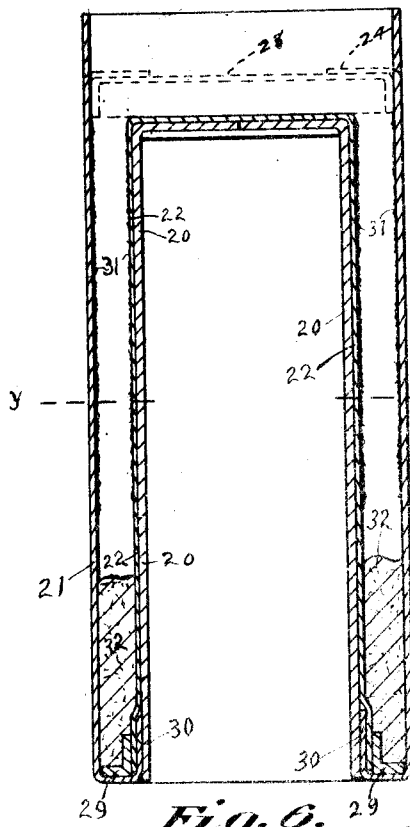


Fig. 6.

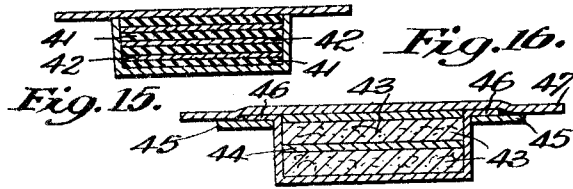


Fig. 15.

Fig. 16.

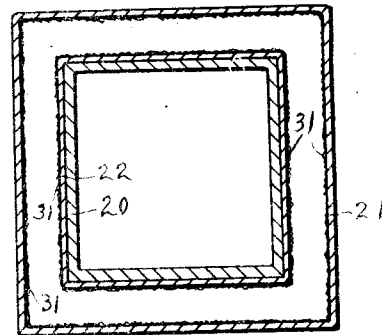


Fig. 7.



Fig. 12.

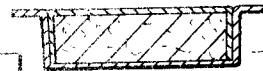


Fig. 8.

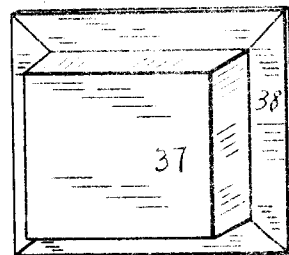


Fig. 9.

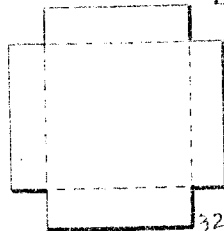


Fig. 14.

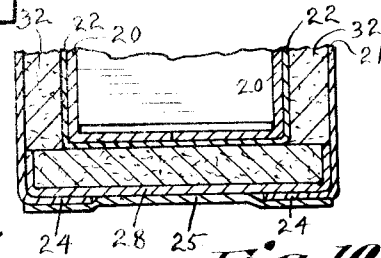


Fig. 10.

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NON-HEAT-CONDUCTING RECEPTACLE.

1,121,072.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ELMER G. CORWIN, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented a certain new and useful Improvement in Non-Heat-Conducting Receptacles, of which the following is a specification.

My invention relates to improvements in boxes that have double walls between which walls may be confined a non-heat-conducting material as, for instance, sawdust, crushed charcoal, granulated cork, shredded paper or the like, which boxes are adapted to retard the radiation or conduction of heat to or from anything that may be stored within them; and the object of my improvements is to provide such boxes so constructed that their inner walls shall be stable and rigid to withstand abnormal strains tending to collapse them while their outer walls shall have adequate tensile strength to resist abnormal strains which tend to bulge or burst them; and a further object of my improvement is to provide means whereby the corners of such boxes shall retain their form and means whereby the non-heat-conducting material that may be disposed between their inner and outer walls shall be retained in a state of equal distribution whereby such material may not gradually settle and more densely pack thereby to create an empty space between such walls; and a still further object of my improvement is to provide a plan of construction whereby such boxes may be made of pieces of sheet material of such form that little, if any, of such sheet material shall be wasted and, moreover, by reason of such plan of construction a cheaper quality of such sheet material may be employed without detracting from the merits of the boxes made thereof. I attain these objects by devices illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view in elevation of a box embodying my invention without its means for closing its open top, Fig. 2 is a view of the same structure in vertical-section on broken line $x-x$ of Fig. 1, but in which is shown one form of means for closing the top of such structure, Figs. 3—4— and 5 each illustrates by perspective view one form of a detail that may be embodied in my invention, Fig. 6 shows by a view in vertical-section a modified structure embodying my invention as it appears at one

stage in the process of its manufacture at which stage the structure is inverted, Fig. 7 is a view in cross-section of the same on broken line $y-y$ of Fig. 6, Fig. 8 is a view in vertical-section of one form of a detail of my invention, Fig. 9 is a view in perspective of the same, Fig. 10 is a fragmentary view in vertical-section showing a modified plan of construction of the lower portion of a structure containing my invention, Fig. 11 is a view in perspective of one form of a detail of my invention, Fig. 12 is a view in vertical-section of a modified form of a detail of my invention, Fig. 13 is a fragmentary plan view of one of the upper corners of a structure embodying my invention wherein a modified manner of folding sheet material to form a corner thereof is shown, Fig. 14 is a plan view of a form of a detail of my invention, Fig. 15 is a vertical-section of one form of a detail of my invention, Fig. 16 is a view in vertical-section of one form of a detail of my invention, Fig. 17 is a plan view of the same detail on a reduced scale and Fig. 18 is a view in vertical-section, on broken line $z-z$ of Fig. 13, showing more clearly the plan of folding sheet material to form a corner of a structure embodying my invention.

Like reference numerals indicate like parts throughout the drawings.

Heretofore boxes have been provided for preventing a rapid change in the temperature of articles disposed within them and such boxes have been made with double walls between which non-heat-conducting material was disposed but such boxes have been defective with respect to degrees of structural strength, stability, cleanliness and efficiency; for instance, in such boxes the inner walls easily collapse and the outer walls frequently bulge or burst in handling and during transportation or in the operation of filling the space between such walls with a non-heat-conducting material whereby such material may find passageway to leak out to soil the contents of the boxes or surrounding objects, and further, the handling of such boxes in transportation often causes the non-heat-conducting material to settle or pack more densely thereby leaving empty spaces which reduce the stability of their walls and which reduce their heat insulating qualities and further, such boxes easily become deformed whereby air may gain access to their interior thus reducing their

efficiency. By my invention all of such defects are greatly lessened in degree or wholly obviated even when constructed of less expensive material.

5 Referring to the drawings, Fig. 1 illustrates a non-heat-conducting box embodying some essential features of my invention, which box is shown without its top being closed by its cover or stopper. Its inner walls 20 are made of comparatively thick, stiff sheet material, as of straw-board, adapted to resist a strain that would tend to cause it to collapse, while its outer walls 21 are preferably made of a thin, pliable and tough sheet material, as of wrapping paper that may be folded without breaking and which, by reason of its tensile strength, may resist strains tending to bulge, burst or tear it.

Fig. 2 illustrates in vertical section, on broken line $x-x$ of Fig. 1, the interior construction of a box containing essential features of the structure of Fig. 1 and also shows one form of device for closing and sealing the top of such structure. The outermost sides of the stiff inner walls 20 are wrapped with a thinner sheet material, as tough paper adapted to be dust-proof and air-tight, to form a shield 22, whereby no dust nor air can gain access to the outermost surface of the inner walls 20. This shield 22 is caused to adhere to the outside of the inner walls 20 by glue or other adhesive means. The outer walls 21 are folded at the lower end to extend for a distance on the reverse side of a square piece of stiff, thick sheet material, as of heavy straw-board, which forms a bottom 23 for supporting the outer walls 21 which bottom 23 is glued to folds 24 of the bottom portions of the walls 21. The folds 24 and the bottom 23 are covered by gluing a square piece of strong sheet material to form a bottom binder 25 which serves to bind together more securely the bottom 23 and the folds 24 and further serves to give a smooth and finished appearance to the bottom end of the structure. For some purposes it may be desirous to further strengthen the lower portions of the walls 21, where they unite with the bottom 23 and the binder 25, in which case there may be disposed within the walls 21, at their bottom ends, angular pieces formed as shown in Fig. 4 or in Fig. 5 one of which pieces would be disposed against each of the four walls 21 and on the bottom 23, the vertical side 26 of such angular pieces being glued to each of such four walls 21 and the horizontal side 27 of such angular pieces being glued to the said bottom 23.

Another plan of strengthening the bottom corners of the structure is to substitute for the bottom 23 of Fig. 2 a piece of strong material formed and disposed as the bottom 28 illustrated in the fragmentary view of Fig. 10 which bottom 28 is formed with

upturned edges which may be glued to the walls 21 and to the folded portions 24 of said walls as shown in said Fig. 10.

Fig. 3 illustrates the structure of Fig. 1 in an inverted position when at one stage of the process of making such structure, and shows the disposition of angular braces 29 which may be similar in form to the device shown in Fig. 4 or in Fig. 5 and further shows how the walls 21 are turned and folded so that their end portions 30 are disposed between the inner walls 20 and the shield 22, said angular pieces 29 and adjacent parts of the structure being glued or firmly stuck together by adhesive material. In said Fig. 6 the roughened irregular lines 31 serve to indicate glue or other sticky material smeared to the inner surface of the outer walls 21 and to the outer surfaces of the shield 22, which glue or sticky material 31 is smeared in its place just before the non-heat-conducting material 32 is packed into the space between the walls 21 and the shield 22 which packing is effected when the structure is inverted as shown in Fig. 6 wherein the dotted lines near the top of the figure indicate the folds 24 and the bottom 28 of the Fig. 10. The function of this glue or other suitable adhesive material when employed, as shown in Fig. 6, I have found to be important, since the non-heat-conducting material as it is introduced engages with and adheres to the walls of the structure and thereupon serves to bind or hold a portion of such material in place and such fixed portion of such material serves to prevent the loose portions of such material from moving to settle and pack more densely.

In Fig. 6 the non-heat-conducting material is shown as only filling a portion of the space between the outer walls 21 and the shield 22 while Fig. 2 shows such space filled as when the structure is completed.

Fig. 7 by a view in horizontal-section more clearly shows the disposition of the glue indicated by the roughened surface 31 on the outer surface of the shield 22 and the inner surface of the walls 21.

The angular pieces 29 of Fig. 6 and Fig. 2 may have substituted in their place, if desired, a piece of stiff material of form like that illustrated by perspective view in Fig. 11 or by a piece shown by a plan view in Fig. 14 such pieces being adapted by their dimensions to fit and be glued in the end of the structure between the walls 21 and the shield 22 to stiffen such end of the structure.

In the structure as shown in Fig. 1 when the outer walls 21 are turned or folded over and inwardly to engage with the outer surface of the inner walls 20 such turning or folding produces an excess of material on the end of such structure at each corner and, excess material is then cut neatly to form external folds 33 as shown in Fig. 1. 11

Figs. 13 and 18 show another plan of disposing such excess sheet material by tucking the material inwardly to form the folds 34 as shown in Fig. 18 and indicated by dotted lines in Fig. 13 whereby the end surfaces of the structure may be more even.

Fig. 2 illustrates one plan of closing and sealing the top of a structure embodying my invention wherein is shown a cover or stopper 37 comprising a box-like device whose exterior form is shown in Fig. 3 in an inverted position, within the walls 35 of which box-like device is disposed non-heat-conducting material 36 as shown in Fig. 2. On the upper surface of the stopper 37 is glued or otherwise fastened a piece of stiff sheet material to form a lid 38 of an area equal to the area of the top of the structure which it is designed to close or cover. This stopper 37 is adapted to fit closely and engage with the walls 20 of the structure to make it air tight. Over the lid 38 is pasted or glued a cap 39 (which may be made of sheet material of a form shown by a view, on a reduced scale, in Fig. 17) whose sides are turned downwardly to be glued or pasted to the sides of the structure as shown in Fig. 2 and around the edges of such cap 39 is pasted or glued a tape 40 to more securely seal such cap 39 to the structure.

Figs. 8 and 9 show a modified form of stopper adapted to be substituted for the stopper 37 and like the stopper 37 contains granular non-heat-conducting material within its walls.

Fig. 15 shows on a reduced scale in vertical-section another form of stopper where within its walls is disposed non-heat-conducting devices comprising alternate layers of thick pieces 41 and thin pieces 42 of non-heat-conducting sheet material whereby a stopper may be obviously more stable.

Fig. 16 by a view on reduced scale illustrates another modified form of stopper wherein two compartments 43 may be filled with granular non-heat-conducting material such compartments 43 being separated by a stiff partition 44 which serves to brace and make the walls stronger whereby such stopper may be subjected to greater strain without injury.

A gasket 45 of square form and of soft flexible or elastic material is disposed beneath the flanges 46 and cap 47 which gasket 45 may serve to engage with the top edges of the inner walls 20 of a structure whereby the structure may be more securely sealed to prevent ingress or egress of air. Obviously such gasket 45 may be employed in connection with any stopper of the form herein described.

Fig. 12 illustrates by view in vertical-section another form of stopper, constructed of three pieces of stiff sheet material, as shown, adapted to contain granulated non-heat-

conducting material which form may be used advantageously for some purposes.

It is manifest that a box embodying my invention as hereinbefore illustrated and described will maintain its shape under normal conditions of use by reason of the reinforced corners, the rigidity of its inner walls 20, the tensile strength and pliability of its outer walls 21 and the non-liability of the non-heat-conducting material settling or packing more densely thus to create empty spaces within the double walls and, moreover, by reason of the shield 22, under conditions of use, none of the non-heat-conducting material is likely to find access to the contents of the box to soil such contents.

Obviously a box made according to my invention may be modified with respect to form and dimensions without departing from the spirit of my invention, as for instance, a box of cylindrical or oval form or of a form having semi-circular corners, may be made to embody thick stiff walls 20 inclosed in a shield 22 and tough pliable walls 21; the inner side of walls 21 and the exterior of the shield 22 being smeared with adhesive material by which the non-heat-conducting material may be retained in position.

What I claim is:

1. A box formed of sheet material comprising an outer casing, an inner casing positioned therein, a shield surrounding the inner casing and adhesively secured thereto at points adjacent to the top of the wall, the walls of the outer casing being inwardly bent at their tops and adhesively secured between the tops of the inner casing and the shield, and an angular brace within the space between the inner and outer casing adhesively secured to the top overturned portion of the outer casing walls and the top portion of the inner casing, the walls of the casings having an adhesive applied thereto, a dish-shaped bottom positioned within the outer casing beneath the bottom of the inner casing, the bottom portions of the side walls of the outer casing being lapped inwardly and adhesively secured to the lower side of the bottom, and a bottom binder adhesively secured to the outer side of the bottom and overlapped lower portions of the outer casing.

2. A sheet paper box comprising an outer casing, an inner casing positioned therein, a shield surrounding the inner casing and adhesively secured thereto to points adjacent the top thereof, the walls of the outer casing being inwardly bent at their tops and adhesively secured between the tops of the inner casing and the shield, an angular brace within the space between the inner and outer casing and adhesively secured at the top portion of the inner casing, a bottom position within the outer casing beneath the

bottom of the inner casing, the bottom portions of the side walls of the outer casing being lapped inwardly and adhesively secured to the lower side of the bottom, a bottom binder adhesively secured on the outer side of the bottom and overlapped portions of the outer casing, and a closure member for the box.

3. A box structure comprising an inner rigid casing adapted to resist collapsing strain, a paper shield disposed over the external surfaces of the sides and bottom of said rigid inner casing, and a larger outer

pliable casing of tough sheet material adapted to resist outward disrupting strain, the top corner portions of said outer casing being intumed and underlapped and adhesively secured to the outer sides of the top portion of said casing.

In witness whereof, I hereunto subscribe my name this 11th day of June A. D., 1912.

ELMER G. CORWIN.

Witnesses:

F. M. CHRISTIAN,
ANNA HASKINS.