R. G. INWOOD.

BOX.

APPLICATION FILED AUG. 5, 1914.

1,328,328. Patented Jan. 20, 1920.

Fig. 1.

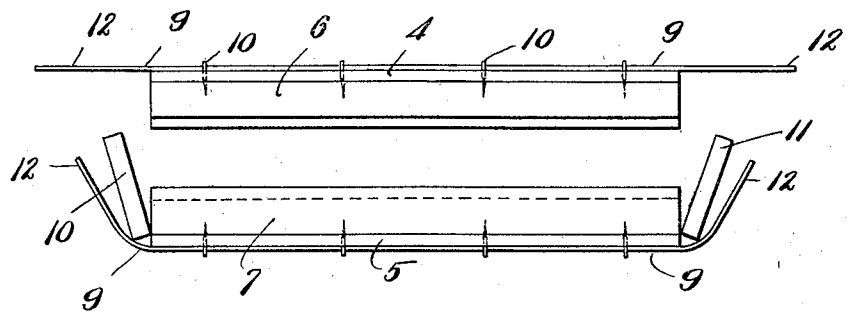


Fig. 2.

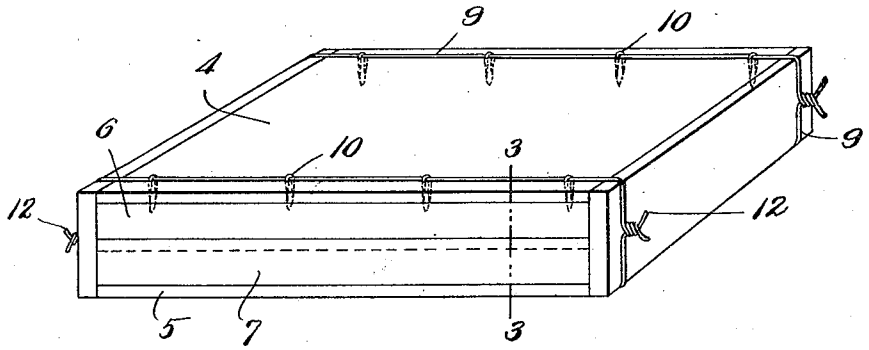
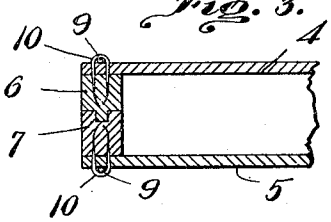


Fig. 3.



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UNITED STATES PATENT OFFICE.

RICHARD G. INWOOD, OF SOUTH BEND, INDIANA, ASSIGNOR TO WIREBOUNDS PATENTS COMPANY, OF KITTERY, MAINE, A CORPORATION OF MAINE.

BOX.

1,328,328. Specification of Letters Patent. **Patented Jan. 20, 1920.**

Application filed August 5, 1914. Serial No. 855,282.

To all whom it may concern:

Be it known that I, RICHARD G. INWOOD, a citizen of the United States, residing in South Bend, St. Joseph county, Indiana, have invented an Improvement in Boxes, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention relates to boxes and the like and is intended to provide a novel construction of box blank and box and a method of making the same.

Among other objects, the invention is intended to provide a box which shall be simple and economical to manufacture; which shall be susceptible of manufacture upon automatic or partly automatic machinery; and which in the finished box shall be strong and durable and preferably tight.

For purposes of illustration the invention will be described herein as embodied in a flexible sectional box composed of separate cleated side sections connected by binding wires encircling the side sections and secured to the cleats. It is to be understood, however, that the invention is not limited to this specific type of box.

In the drawings, Figure 1 is a side elevation of illustrative box sections embodying features of the invention and about to be assembled in box form; Fig. 2 is a perspective showing the finished box made from the parts shown in Fig. 1. Fig. 3 is a transverse section through illustrative cleats and side material, on a line 3—3 of Fig. 2.

The illustrative box parts of Fig. 1 comprise two side sections having respectively the side sheets 4 and 5, secured to respective cleats 6 and 7. Separate lengths of binding wire 9 are secured respectively to the side sections by staples 10, 10 which straddle the wires and pass through the side sheets into the cleats as shown in Fig. 3. Projecting ends 12, 12 of the wires are arranged to be twisted or otherwise secured together as shown at 12 in Fig. 2, thereby to complete the continuity of the wire binding. As will be evident to those skilled in the art, it is not indispensable that the wire or other binding be applied in separate lengths to the box sections but it is preferred, where a binding means is employed, that it encircle the box substantially continuously when the box is completely closed.

For the purposes of the specific illustrative box, the cleats are so proportioned relatively that they will coöperate in some such manner as that shown in Fig. 2, so that a group of cleats at each end of the box substantially close the end without necessitating the provision of any additional end pieces. With such an arrangement the cleated side sections may include in and of themselves not only the box sides but also the box ends. Also means may be provided for engaging one of the nesting cleats with another as by the tongue and groove arrangement shown in Fig. 3.

For the nested arrangement of cleats shown in Fig. 2, the cleats 6 and 7 are of the same length and are arranged to contact lengthwise when the blank is folded; and said cleats 6 and 7 have lengths equal to the widths of their respective box sides. With these two cleats 6 and 7 disposed as shown in Fig. 2 they completely or substantially close and constitute the ends of the box.

When the described side sections comprising side sheets 4 and 5 are assembled one on the other they constitute what may be called the top and bottom of the box, the nesting cleats forming the ends. To form the remaining sides of the box, preferably loose strips 11 are provided to be assembled as shown.

According to a preferred method, a box embodying the features described may be made by forming four separate and unattached side sections including the two sides 11.

The sheets 11 are each sufficiently wide to overlap adjacent ends of the cleats 6 and 7 and the edges of sheets 4 and 5. Preferably one or both of the side pieces 11 is or are of heavy enough material to constitute stiffening means to increase the stiffness and strength of the box.

It is preferred that the side sheets be so related at their edges that the wires will be tensioned over the corner edges of the box when the box is folded; and this may be accomplished, in the illustrative form of box, by drawing the wire-ends 12, 12 tight and twisting or otherwise drawing them together so as to tension the wires over the box

corners and perhaps to embed the wires somewhat into said corners as shown in Fig. 2. This tensioning of the wire serves to hold the overlapping sheets securely tight and also to contribute to the stiffness and elasticity of the box.

It has been customary in wirebound boxes heretofore made to provide end pieces to be inserted inside the cleats and to be secured to the cleats; but in the specific construction of box shown, no end piece is necessary since the cleats, when arranged in some such manner as that shown, sufficiently close the box ends. Thus, the entire box may be made simply by forming separate side sections, assembling the sections in box form and then completing the continuity of the binding means.

A box embodying the features of this invention may have a flexible character which is extremely desirable. For instance, if the box of Fig. 2 is subjected to distorting forces acting in a diagonal direction, there may be a substantial tendency for adjacent edges of the side material to shift longitudinally relative to each other; and this shifting may occur within reasonable limits without substantial danger of rupturing the side material. When the tongue and groove arrangement of cleats is employed as illustrated in Fig. 3, or the cleats are otherwise inter-engaged, such inter-engagement may somewhat reduce the flexibility of the box and thereby, for some purposes, desirably increase its stiffness; but the connections between the adjacent pieces of side material being only by means of the wires, they are permitted considerable relative shifting at their meeting edges which may result in a bending of the wires to resist distortion by the tensile strength of the wires without substantially endangering the side material itself.

The described box, besides being flexible without material danger of breakage, is also desirably elastic in that when it has been distorted, within reasonable limits, and the flexible wire and other parts have been thereby put under increased tension, they tend to restore themselves to their original box form.

The box parts described above are very easy to assemble about the load for the box. For instance, in packing tin plate or the like, for which the box is particularly well adapted, the bottom section comprising side 5 and cleats 7 may receive the load of tin plate. The disconnected top section comprising the side 4 and cleats 6 may be entirely removed and out of the way, but to be superposed on the bottom section after the load has been placed in position. Then the side pieces 11 may be introduced and the wires twisted together or otherwise connected as shown in Fig. 2.

It is to be understood that this invention is not limited to the particular construction, organization and method of manufacture hereinbefore described for illustration. On the contrary, the relations of the box parts and the materials therefor may be variously modified in form and dimensions, and the method of making the box may be modified in various particulars, all of which will appear to those skilled in the art. Furthermore, it is not indispensable that all the features of the invention be used conjointly since they may be employed separately in combinations and subcombinations defined in the following claims.

It is to be understood that the words "box", "ends", "sides", and similar words are employed herein as words of convenient designation and not words of limitation since obviously the features of the invention may be applied to other receptacles and containers than those ordinarily described by the word "box" (and which are intended to be included under that name as herein used); and it is immaterial what particular part of a box is employed in any given instance as its "end" or "side".

Claims:

1. A box comprising, in combination, two cleats substantially closing the ends of the box; material for sides of the box the cleats being attached to the face of said material; and binding means encircling the box substantially parallel to the ends thereof.

2. A box comprising, in combination, cleats substantially closing the ends of the box; material for sides of the box; binding means encircling the sides of the box and secured to side material and cleats substantially parallel to the ends thereof; the structure in set up condition permitting a relative longitudinal shifting of one cleat upon another under stress.

3. A box comprising, in combination, cleats substantially closing the ends of the box; sectional side material for sides of the box; and wire binding secured to side material and cleats so as to be laterally flexible to accommodate relative longitudinal shifting of adjacent edges of sections of side material.

4. A box consisting of separate box sections, comprising sections having side material and cleats; two said sections being arranged to have their respective cleats contact longitudinally, two other sections when the box is assembled arranged to coöperate with the first two sections to substantially complete the closure of the box; and wire binding for connecting the sections to hold them in box form encircling the box substantially parallel to the ends thereof, the structure in set up condition permitting relative longitudinal shifting of one cleat upon another under stress.

5. A box comprising, in combination, a pair of cleats coöperating substantially to close each end of the box; side material secured to said cleats; wire binding connecting the cleats; and a loose strip embraced by the wire binding to form a third side of the box.

6. A box comprising, in combination, cleats substantially closing the box ends; side material forming opposite sides of the box; wire binding connecting the sides and a loose side strip embraced by the wire binding which is tensioned over said strip.

7. A box comprising, in combination, a pair of cleats contacting lengthwise substantially to close each end of the box; side material flush with the ends of said cleats; a loose strip overlapping the ends of the cleats and edges of the side material; and wire binding under tension extending over said strip and securing it to the other sides and cleats.

8. A set of box parts comprising side sections to form a completed box, including reinforcing cleats secured to non-adjacent side sections only, and wire binding means secured to said non-adjacent side sections and reinforcing cleats and adapted to bind and strengthen the box under tension when completed while permitting relative longitudinal shifting of adjacent edges of side sections.

9. A wirebound box designed as a shipping container for a relatively heavy pile of metal plates, which comprises, in combination, side-forming material for successive box sides and end cleats arranged and coöperating to form a complete box with the cleats constituting of themselves the end closures, there being a pair of longitudinally contacting cleats at each end of the box attached to the inner faces of opposite side material, and metal bindings encircling the box longitudinally of the cleats and holding parts thereof in place with one another.

10. A box blank consisting of separate box sections, comprising sections for opposite non-adjacent box sides provided with end cleats; intervening sections unprovided with cleats adapted when the box is set up to cooperate with said cleated sections to complete the four sides of the box; and wire bindings to encircle and bind the sections together in box form extending parallel with and attached to said cleats.

11. A box blank consisting of separate box sections, comprising sections for opposite non-adjacent sides of the box provided with end cleats attached to the inner faces thereof; binding wires attached to said sections parallel with the cleats and adapted to inclose and bind in box form said cleated sections and intervening sections for the intermediate box sides; and said intervening sections unprovided with cleats.

12. A set of parts for a wirebound box including a plurality of cleats for each end of the box adapted to coöperate to outline the ends; sections of material to form successive box sides around the ends defined by the cleats; sections for opposite non-adjacent box sides only being secured to cleats; and binding wires to encircle and bind the box in set-up form secured to side sections parallel with the ends of the sections.

13. A box blank consisting of separate box sections, comprising sections for opposite non-adjacent box sides provided with end cleats; intervening sections unprovided with cleats adapted when the box is set up to coöperate with said cleated sections to complete the four sides of the box; and wire bindings to encircle and bind the sections together in box form extending parallel with said cleats and attached to said cleats and their accompanying sections.

14. A set of parts for a wirebound box including a plurality of cleats for each end of the box adapted to coöperate to outline the ends; sections of material to form successive box sides around the ends defined by the cleats; sections for opposite non-adjacent box sides only being secured to cleats; and binding wires to encircle and bind the box in set-up form secured to side sections and to cleats of said sections parallel with the ends of the sections.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD G. INWOOD.

Witnesses:

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