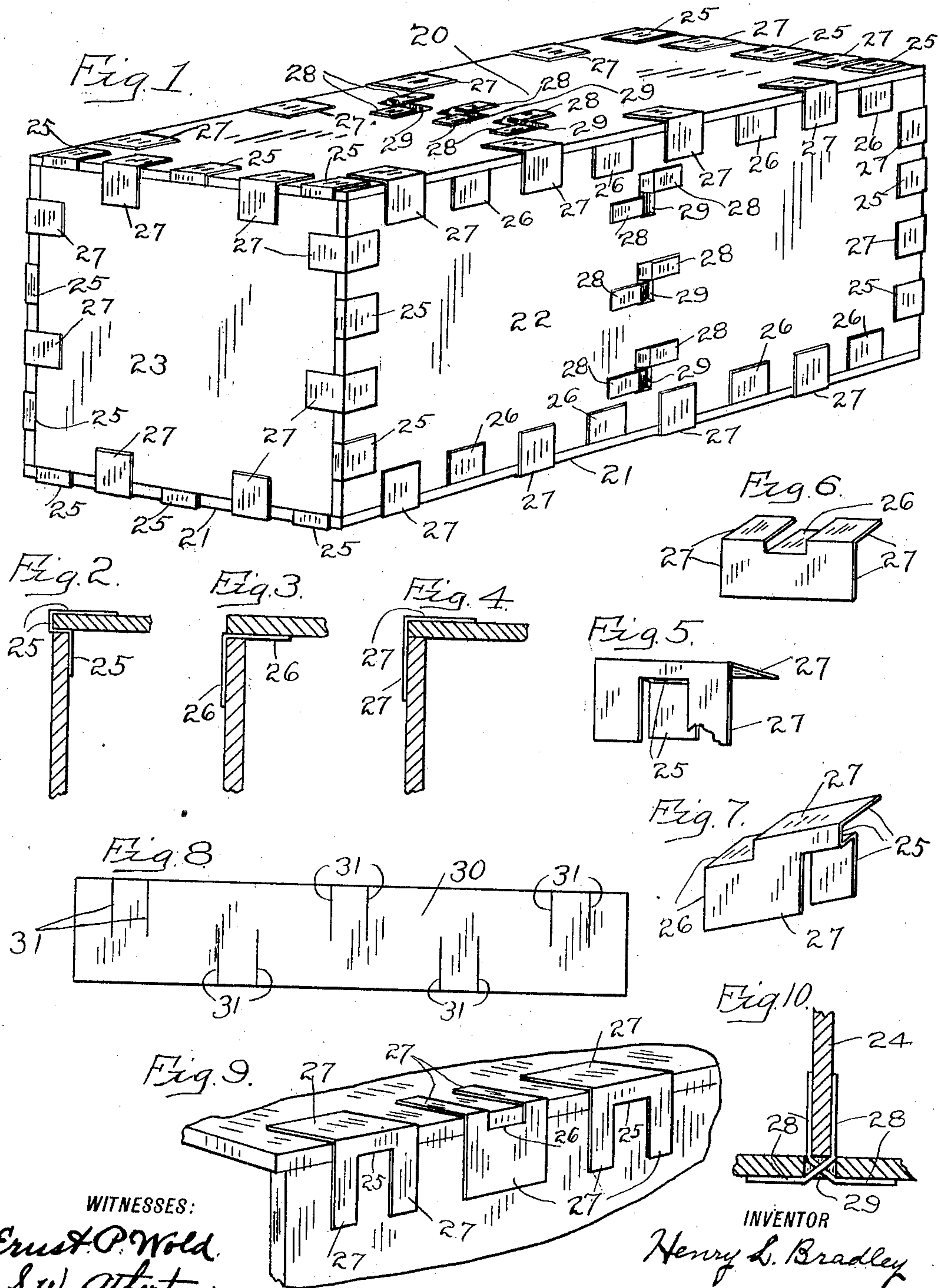


H. L. BRADLEY.
 PACKING CASE.
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Patented July 4, 1911.



WITNESSES:
 Ernst O. Wold.
 S. W. Atherton.

INVENTOR
 Henry L. Bradley
 BY
 A. M. Wooster
 ATTORNEY

UNITED STATES PATENT OFFICE.

HENRY L. BRADLEY, OF NEW HAVEN, CONNECTICUT.

PACKING-CASE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY L. BRADLEY, a citizen of the United States, residing at New Haven, county of New Haven, State of Connecticut, have invented an Improvement in Packing-Cases, of which the following is a specification.

This invention has for its object to produce an inexpensive, strong and durable packing case or box which may be made of light, thin boards, veneers or fiber or compound boards, of any size or shape within reasonable limits and which shall be secured together by flexible stays of paper, textile material or metal and without the use of frames or cleats. In other words, I produce a packing case which while cheaper to make and lighter than any heretofore produced, shall be strong and durable, may be used over and over again, may be set up very quickly, without machinery and at a minimum cost of labor, thus enabling shippers to either buy the cases in knock-down form or to make the members and set them up when required.

It is of course well understood that where the members of packing cases are secured together by nails or prongs, the members must be made of material thick enough to receive and hold the nails and in large-sized cases cleats or frames must be used to strengthen the case, and even when made of relatively heavy material and strengthened with frames and cleats there is danger of the cases bursting if the cases are handled roughly or are thrown upon an edge or corner. My present invention enables me to overcome these objections and to produce a case consisting of members made from material too thin to receive and hold nails, which shall be held together by flexible stays in such a manner as to resist compression, general rough handling and striking upon the edges and corners, which shall be effectually sealed by the mode of securing the members together and which may be used many times, which is not possible where the members of light cases are secured together by nails or prongs.

With these and other objects in view I have devised the novel nailless packing case or box which I will now describe, referring to the accompanying drawing forming a part of this specification and using reference characters to indicate the several parts.

Figure 1 is a perspective of my novel

packing case illustrating the several forms of stays used; Figs. 2, 3, 4 and 10 are sectional views on an enlarged scale, illustrating respectively four forms of stays; Figs. 5, 6 and 7 are perspectives illustrating different forms of stays as in use but detached; Fig. 8 is a plan view of a strip with cuts in pairs from opposite edges to separate into stays; and Fig. 9 is a perspective illustrating the application of stays to the top and end of a packing case.

20 denotes the top, 21 the bottom, 22 the sides, 23 the ends and 24 a partition. All of these members may be made of light thin boards, veneers or fiber or compound boards.

My novel stays are simply strips of paper or textile material secured to the members by any suitable paste, glue or cement. In heavy cases, metallic strips may be used if preferred, but they must be held in place by either tacks, rivets or prongs. I preferably use stays made from tough, strong paper and apply them in such a manner, as will presently be explained, that the tendency to peel or strip off is wholly overcome and the strength of the case or box is only limited by the strength of the stays used which reinforce and strengthen each other and make breakage practically impossible even when the cases are subjected to very rough handling.

My novel stays may be applied singly or in continuous strips extending partly or wholly the length of the members. Although each stay is simply a strip of paper or textile material, owing to the different ways in which they are shaped in application I shall describe them for convenience as four different stays. The forms of stays used are indicated respectively by 25, 26, 27 and 28. One end of stay 25 is secured to the inner side of a member, then passes outward over the edge of said member and between two members being secured to both, then over the edge of the contiguous member and is secured upon the outer side of the contiguous member, as is clearly shown in Fig. 2. Stay 26 has one end secured to the inner side of a member, then passes over the edge of the contiguous member and between the members being secured to both, and is secured to the outer side of the contiguous member, as clearly shown in Fig. 3. Stay 27 is simply an outside or binding stay. It may be placed over either of the other stays or beside them, as preferred. When used in

the form of a continuous strip, the stays 27 will lie between two stays 25 or between two stays 26 or between a stay 25 and a stay 26. This form of stay is clearly shown in Fig. 4. Stay 28 is a partition stay and is used in connection with a partition or cross wall only. These stays pass through slots 29 in the members to which the partition is attached. Two of these stays are used side by side, one end of each stay is attached to the partition, then passes diagonally through the slot and is attached to the outer side of the contiguous member opposite to the side of the partition to which it is attached, the two stays crossing each other side by side, as clearly shown in Fig. 10, which see in connection with Fig. 1.

In assembling a case or box, the ends of stays that are to be upon the inner sides of the members are preferably attached in place before setting up or assembling. In assembling, the free ends of the attached stays are brought around the edges of the members to which they are attached and either passed over the edge of the contiguous member and attached to the outer side thereof, as in Fig. 2, or are turned in the opposite direction and attached to the outer side of the contiguous member as in Fig. 3, the first form being designated as stay 25 and the second form as stay 26. Any mode of assembling may be adopted as most convenient for the use to which the case is to be applied. The sides may be attached to the bottom and top and then the ends put in or the sides, bottom and ends and the partition, if used, may be attached in place and then the top attached to the other members. If preferred, in heavy cases, heavier ends may be used and they may be nailed in place, although this is ordinarily not necessary as cases made up of light, thin bottoms, tops, sides, ends and partitions, if used, and secured together by flexible stays only, which may be made of strong tough paper, are found to admirably meet the requirements of use. Stays 25 and 26 are interspersed in such a manner that wherever there would be a tendency to strip or peel off when the case was exposed to a certain form of strain, that tendency would be overcome by the contiguous stays. Both of these forms of stays are moreover reinforced and supported by stays 27 placed over them or contiguous to them, as preferred. Among the severe strains to which packing cases are subjected are turning them on their corners, turning them end over end and projecting them forward so that they strike on the edges and corners. When subjected to certain of these strains the tendency is for the forward end of the box to be detached from the contiguous members. These strains, however, are all provided for and overcome by the combination of stays 25, 26 and 27

described above, which are so arranged that no matter in what direction the strain may be it will be met and overcome by stays so placed that there will be a direct pull upon the stays without danger of their peeling or stripping off. The only way, therefore, that a member of the box or case can become detached or broken away is by the application of sufficient force to break the stays longitudinally, which is practically impossible if stays of strong, tough paper or textile material or metal are applied in sufficient numbers to correspond with the size of the case and the use to which it is to be subjected.

Another important function of my novel stays is to line up the members of the box or case in assembling. These members being made of this material are liable to warp especially if light boards or veneers are used. Suppose the members to be seriously warped. In attaching stays 25 (see Fig. 2) it will be seen that the members will be brought into perfect alinement if the stays are properly applied and will be securely held there by the stays. The members when secured in place by the application of stays 25 and 26 will be additionally secured by stays 27 which enable the case to withstand all ordinary strains of compression. It will be noted that when a case is assembled and the members secured in place by stays it will be effectually sealed as it cannot be opened without breaking the stays.

In Fig. 8 I have shown a continuous strip of material for stays which is indicated by 30 and is provided with cuts 31 extending inward in pairs from the opposite edges alternately, from which stays of either forms 25, 26 or 27 may be formed in use as required upon either sides, ends, tops or bottoms of cases to meet the requirements of use.

Having thus described my invention I claim:

1. An improvement in packing cases comprising a plurality of box members arranged at right angles, the edge of one member being flush with the outer face of the other member to form a square corner, and a continuous flexible strip for uniting said box member at said corner, said strip being slit transversely to form stay members having strips attached to the inner face of the first box member and passing thence over the edge of the second box member and finally attached to the outer face of the second member, said flexible strip being also slit transversely to form stay members having strips attached to the outer face of the first box member and parallel with the strips on the inner face of said first box member, the last mentioned strips being extended over the edge of the first box member and finally secured to the outer face of the second box

member adjacent the first strip, the strips of said stay members being placed along the meeting edges of said box members, said flexible strip being also provided with means for resisting stresses tending to decrease the angle of said box members with relation to each other, whereby said flexible strip forms the sole support for both faces of each box member along said corner.

2. An improvement in packing cases comprising a plurality of box members arranged at right angles, the edge of one member being flush with the outer face of the other member to form a square corner, and a continuous flexible strip for uniting said box member at said corner, said strip being slit transversely to form stay members having strips attached to the inner face of the second box member and passing from thence over the edge of said member, from thence over the adjacent edge of the first box member and finally attached to the outer face of said first member, said flexible strip being also slit transversely to form stay members having strips secured to the outer face of the second box member and parallel with the strips on the inner face of said second member, the last mentioned strip being passed over the edge of the first box member and finally secured to the outer face thereof adjacent the first strip, the strips of said stay members being placed along the meeting edges of said box members, said flexible strip being also provided with means for resisting stresses tending to increase the angle of said box members with relation to each other, whereby said flexible strip forms the sole support for both faces of each box member along said corner.

3. An improvement in packing cases comprising a plurality of box members arranged at right angles, the edge of one member being flush with the outer face of the other member to form a square corner, and a continuous flexible strip for uniting said box member at said corner, said strip being slit transversely to form stay members having strips attached to the inner face of the first box member and passing thence over the edge of the second box member and finally attached to the outer face of the second member, said flexible strip being also slit transversely to form stay members having

strips attached to the outer face of the first box member and parallel with the strips on the inner face of said first box member, the last mentioned strips being extended over the edge of the first box member and thence inward over the edge of the second box member and finally secured to the inner face of said second box member, the strips of said stay members being placed along the meeting edges of said box members, said flexible strip being also provided with means for resisting stresses tending to increase the angle of said box members with relation to each other, whereby said flexible strip forms the sole support for both faces of the second box member along said corner.

4. An improvement in packing cases comprising a plurality of box members arranged at right angles, the edge of one member being flush with the outer face of the other member to form a square corner, and a continuous flexible strip for uniting said box member at said corner, said flexible strip being slit transversely to form stay members having strips attached to the inner face of the first box member and passing thence over the edge of the second box member and finally attached to the outer face of the second member, said flexible strip being also slit transversely to form stay members having strips attached to the outer face of the first box member and parallel with the strips on the inner face of said first box member, the last mentioned strips being extended over the edge of the first box member and thence inward over the edge of the second box member and finally secured to the inner face of said second box member, said flexible strip being also slit transversely to form stay members having strips secured to the outer faces of both box members parallel with the other strips, the strips of said stay members being placed along the meeting edges of said box members and cooperating to form the sole support for both faces of each box member along the said corner.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY L. BRADLEY.

Witnesses:

A. M. WOOSTER,
S. W. ATHERTON.