UNITED STATES PATENT OFFICE.

EDWARD HALES, OF LIVERPOOL, ENGLAND, ASSIGNOR OF ONE-HALF TO ALFRED TREAVOR JONES, OF LIVERPOOL, ENGLAND.

BOX OR CASE FOR THE CARRIAGE OF BOTTLES OR JARS.


To all whom it may concern:

Be it known that I, Edward Hales, subject of the King of Great Britain, residing at Liverpool, in the county of Lancaster, in the Kingdom of England, have invented certain new and useful Improvements in and Connected with Boxes or Cases for the Carriage of Bottles or Jars, of which the following is a specification.

In my experience I have found that a very large number of bottles and other goods are broken in transit, occasionally through rough usage, but more often owing to careless and insufficient packing (which packing has usually been effected by means of straw), and that railways pay for breakages, which, with a better system of packing, might be avoided altogether.

Now the present invention is of the type which provides between the body or partition of the box, and the breakable merchandise (or between the box or its partitions and an inner box if desired), resilient packings or buffers, in such manner as to give resilient action, whereby such packings or buffers will receive and absorb shocks, and prevent the same being transmitted to the merchandise. These packings or buffers are applied to the walls of the transport box or case, or to the partitions thereof (if the box be partitioned into a number of nests or compartments one for each bottle, jar, or other receptacle), and these packings retain the receptacle in place in a standing or suspended position.

In the accompanying drawings which show the invention applied to a transport box partitioned to form nests or compartments each holding a bottle or jar:—Figure 1 is a vertical section through one of the compartments of the case or box; Fig. 2, a vertical section (fragmentary) through one of the compartments of the case, on a plane at right angles to Fig. 1; and Fig. 3 is a sectional plan view on line x x of Fig. 1.

In these figures, A are the partition walls which form a number of nests or compartments B, one for each vessel C.

D is a spring at the bottom of each compartment B on which the vessel can rest. This spring D consists of a pair of bent resilient strips, placed crosswise one over the other, so as to bear at their place of crossing on the bottom of the compartment, and be fastened thereto by a screw E, the other parts being bent upward and having an upward spring action, so that the vessel is seated elastically in the standing position. At the ends F they are flanged upward, to clasp or steady the vessel placed in these upstanding ends, and assist in preventing any lateral displacement at the bottom.

G are the springs attached to two sides of the compartments. These consist of resilient bent strips fastened at one end only, by a screw H to the walls of the compartments, and curved inward so as to bear on the top or shoulder of the vessel when in situ, and then outward again against the partition walls, said latter ends being left free. These springs press downwardly and elastically upon the upper part of the vessel below the neck with a wedge action, i.e. in a direction opposite to that of the upward spring action of the springs D. Hence the vessel practically floats or is buoyed up, within each compartment by these springs. When the vessel is pushed in, it presses against the curved part of these springs, which thereupon give outward, but snap or spring inward again, immediately the vessel is pushed home, and their lateral deflections press over on the top of the vessel below the neck. The springs however enable the vessel to be displaced vertically, if a strong pull be given to the vessel by hand.

I are springs also formed of resilient strips attached by a screw J at one end to the other two sides of the compartment, so as to press against the belly or sides of the vessel. These springs are also provided with lateral in-turned deflections, so as to hold the vessel at its upper part and prevent lateral displacement. All these springs form cushions which hold a vessel clear of the partitions, and absorb any shock or concussion on the case or box being communicated to the vessel. The lower spring D supports the vessel only at its bottom, and the adjacent part of the sides, and the springs G and I hold the vessel at its upper part, the springs G keeping the vessel down in the inserted position, with the springs G somewhat depressed. By means of these springs therefore each vessel is supported in a resilient manner in its standing position in its compartment, and they remove the possibility...
of breakage of the vessel even in the case of very violent shocks. The vessels furthermore are kept entirely separated so as not to be broken by rattling against each other, and they are elastically supported so that any solid thump on the case, is to some extent, absorbed by the springs. A vessel however can be easily lifted out, provided sufficient force is exerted to overcome the force of the springs.

K are auxiliary springs which may also be provided if desired at the respective corners of the compartments. These are secured at both their ends to the two filling pieces L, by screws. They are bellied outward, and help to further steady a vessel placed in the compartments. Their use however is optional.

I declare that what I claim is:

1. A box or case to resiliently carry a jar or the like consisting in a casing, a set of leaf springs secured at one end on the base of the casing adapted with their other ends to resiliently support the base of the jar against a downward thrust and freely movable in a direction at right-angles to the direction of supporting thrust, a second set of leaf springs adapted to engage and support the neck of the jar against an upward thrust each independent of one another and of the first mentioned set of leaf springs, the supporting ends thereof being movable in a plane at right-angles to the direction of thrust support, and a third set of leaf springs on the sides of the casing adapted to engage and support the sides of the jar against a lateral thrust only and independent of each other and of the said first and second set of leaf springs, the ends thereof being freely movable in a direction at right-angles to the direction of their supporting thrust.

2. A box or case to resiliently carry a jar or the like, consisting in the combination of a set of crossed leaf springs secured at their central points to the base of the jar, upwardly turned free outer ends on said leaf springs bearing on the base of the jar, and freely movable in a direction at right-angles to the direction of supporting thrust, a second set of leaf springs convex to the jar and adapted to engage with and support the neck of the jar against an upward thrust and freely movable in a direction at right-angles to the direction of supporting thrust, each independent of one another and of the first mentioned set of leaf springs, and a third set of leaf springs convex to the jar on the sides of the casing adapted to support the sides of the jar against a lateral thrust only and freely movable at the supporting points in a direction at right-angles to the direction of supporting thrust independent of each other and of the said first and second set of leaf springs.

3. A box or case adapted to resiliently carry a jar or the like, consisting in the combination of a casing, a pair of crossed leaf springs secured at their center points to the base of the jar against a downward thrust, upwardly turned free ends on said leaf springs bearing on the base of the jar and freely movable in a direction at right-angles to the direction of the supporting thrust, a second set of leaf springs convex to the jar and secured at one end only, adapted to support the neck of the jar against an upward thrust, the supporting ends being movable at right-angles to the direction of supporting thrust each independent of one another and of the first set of leaf springs, and a third set of leaf springs convex to the jar each secured at one end only to the sides of the casing adapted to engage and support the sides of the jar against a lateral thrust only, the supporting ends being freely movable in a direction at right-angles to the direction of supporting thrust independent of each other and of the said first and second set of springs.

4. A rectangular compartment adapted to carry a jar resiliently, including in combination therewith three groups of independent leaf springs having one end only attached to the walls of the compartment in such a manner that the springs of the first group bear against the bottom of the jar to resist an upward thrust, the springs of the second group bearing against the sides of the jar to resist a lateral thrust and only exert frictional resistance against a vertical thrust, and a third set are adapted to resist a downward thrust, so that the jar is supported elastically and symmetrically against the thrusts in all directions, the supporting ends of the springs being freely movable in a direction at right-angles to the direction of the supporting thrust.

5. A compartment adapted to carry a jar resiliently comprising three groups of independent leaf springs having one end only attached to the walls of the compartment in such manner that the springs of the first group bear against the neck of the jar to resist an upward thrust, the springs of the second group bear against the sides of the jar to resist a lateral thrust and only exert frictional resistance against a vertical thrust, and the third set are adapted to resist a downward thrust, so that the jar is supported elastically and symmetrically against the thrusts in all directions, the free supporting ends of the springs being freely movable in a direction at right-angles to the direction of the supporting thrust.

6. A compartment adapted to carry a jar resiliently comprising three groups of independent leaf springs having one end only attached to the walls of the compartment and each adapted to engage the jar at one
point only in such manner that the springs of the first group bear against the neck of the jar to resist an upward thrust, the springs of the second group bear against the sides of the jar to resist a lateral thrust and only exert frictional resistance against a vertical thrust, and the third set are adapted to resist a downward thrust, so that the jar is supported elastically and symmetrically against thrusts in all directions, the free supporting ends of the springs being freely movable in a direction at right-angles to the direction of the supporting thrust.

7. In a resilient casing for jars, a group of more than two springs adapted to engage the neck of the jar and to resist upward thrusts, a group of more than two springs adapted to engage the sides of the jar and to oppose lateral thrusts but not to oppose vertical thrusts except by friction, and a group of more than two springs adapted to engage the bottom of the jar to resist downward thrust, all of said springs being independent of one another, arranged so that the support is symmetrically resilient in all directions of space, the free supporting ends of the springs being freely mounted in a direction at right-angles to the direction of the supporting thrust.

8. In a resilient casing for jars, a group of more than two leaf springs convex to the jar adapted to engage the neck of the jar and to resist upward thrusts, a group of more than two leaf springs convex to the jar adapted to engage the sides of the jar and to oppose lateral thrusts but not to oppose vertical thrusts except by friction, and a group of more than two springs adapted to engage the bottom of the jar to resist downward thrust, all of said springs being independent of one another, arranged so that the support is symmetrically resilient in all directions of space, the free supporting ends of the springs being freely mounted in a direction at right-angles to the direction of the supporting thrust.

In witness whereof, I have hereunto signed my name this 5 day of February 1912, in the presence of two subscribing witnesses.

EDWARD HALES.

Witnesses:
G. C. Dymond,
C. Bartlett.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D.C."