

No. 808,766.

PATENTED JAN. 2, 1906.

E. P. LEHMANN.
JOINT FOR SHEET METAL AND THE LIKE.

APPLICATION FILED OCT. 5, 1904.

2 SHEETS—SHEET 1.

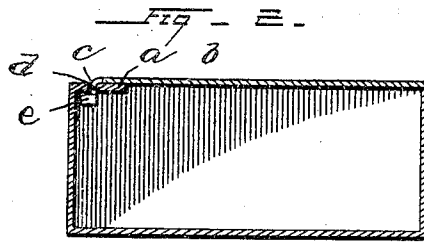
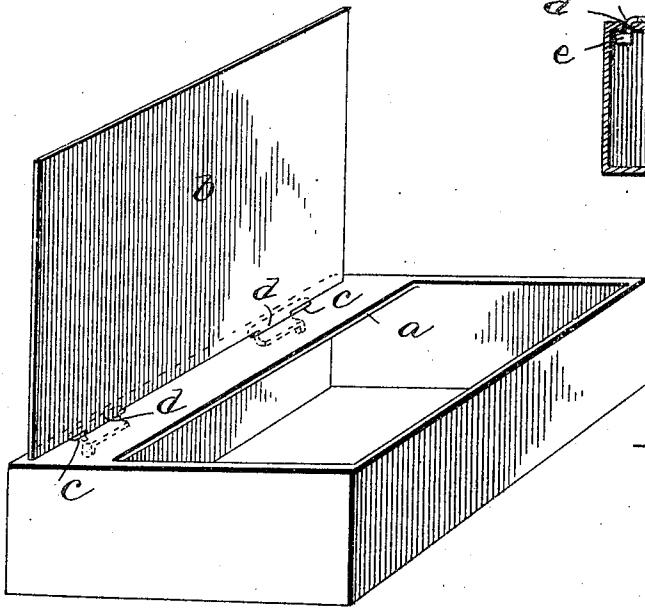
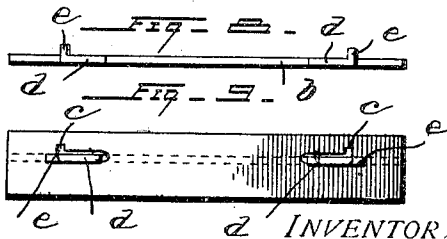
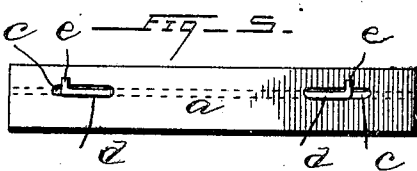
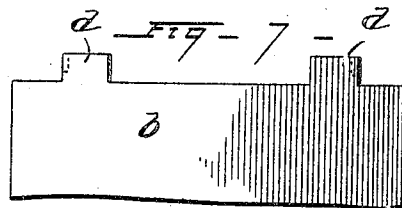
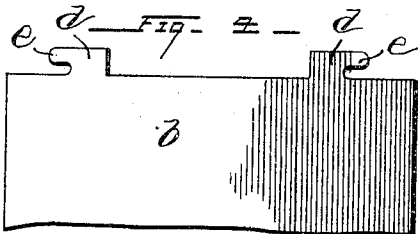
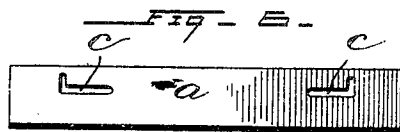
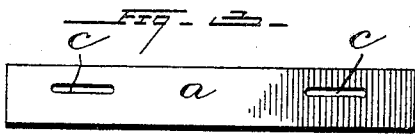


Fig. 1 -



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2 SHEETS—SHEET 2.

Fig. 10.

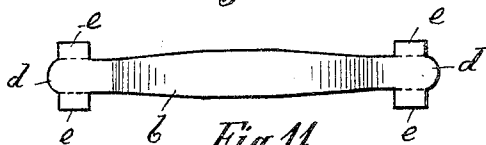


Fig. 11.

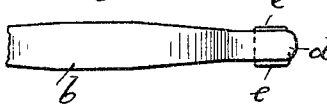


Fig. 12.

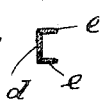
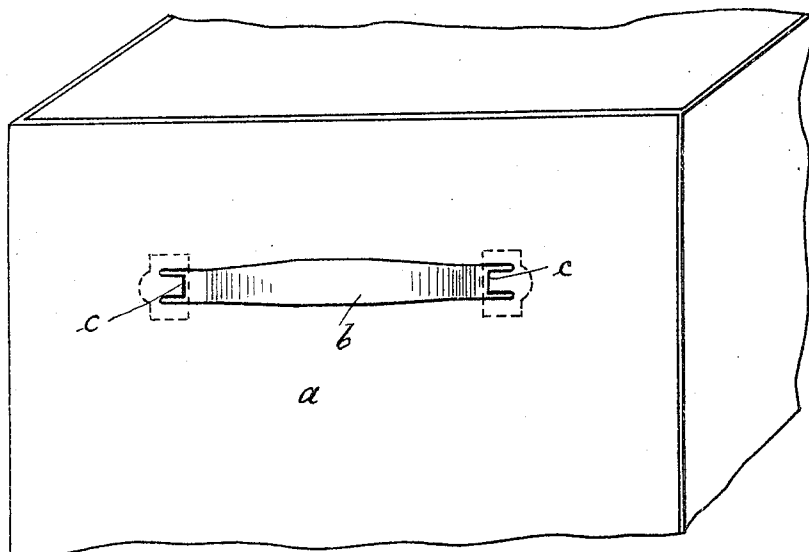


Fig. 13.



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UNITED STATES PATENT OFFICE.

ERNST PAUL LEHMANN, OF BRANDENBURG-ON-THE-HAVEL, GERMANY.

JOINT FOR SHEET METAL AND THE LIKE.

No. 808,766.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed October 5, 1904. Serial No. 227,518.

To all whom it may concern:

Be it known that I, ERNST PAUL LEHMANN, a subject of the King of Prussia, German Emperor, residing at No. 6 Plauerstrasse, Brandenburg-on-the-Havel, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Joints for Sheet Metal and the Like, of which the following is a specification.

My invention relates to improvements in jointing sheet metal or pieces of other thin material—such as sheet metal, cardboard, and the like—to other pieces of the same or a similar kind.

The object of my invention is to provide a joint not between the edge of one piece and the edge of the other piece, but between the edge of one piece and the plane portion of the other piece of sheet metal or other thin material. The joint to be obtained is in its preferred form of a yielding kind, somewhat like a hinge, permitting the two pieces jointed to each other to turn or shift with relation to each other up to a certain degree.

The new joint of my invention is particularly intended to do away with the hinge-pin or pins usually employed in jointing or hinging to each other pieces of sheet metal and the like, said hinge-pins being passed through the tubular rolled edges of the two pieces to be jointed. Such rolled edges are greatly liable to unroll in the course of use, particularly if no soldering or riveting be employed.

To make my invention fully understood, I have illustrated the same in the accompanying drawings, in which—

Figure 1 is a perspective view of a box of sheet metal, cardboard, or other thin material having its cover hinged to the box according to this invention, the cover being shown open. Fig. 2 is a cross-section through the said box, the cover being shown closed. Fig. 3 is a plan view of one of the two pieces to be jointed—i. e., that piece containing the slits. Fig. 4 is a plan view of the other piece to be jointed—i. e., that piece carrying the lugs. Fig. 5 is a bottom plan view of the two pieces jointed to each other according to this invention and being shown in a position corresponding to that of Fig. 1. Fig. 6 represents a view similar to Fig. 3, but according to a slight modification. Fig. 7 is a view similar to Fig. 4 modified to accord with Fig. 6. Fig. 8 is an edge view of Fig. 7. Fig. 9

is a bottom view of the two pieces jointed to each other according to this modification of my invention, the two pieces being shown in the same position as in Fig. 5. Fig. 10 is a plan view of a handle to be jointed to the side of a box according to another modification. Fig. 11 is a plan view of the one end of said handle, showing the jointing-tongues bent up at right angles to the plane of the handle. Fig. 12 is a cross-section drawn through the jointing-lug and tongues of said handle in the position shown in Fig. 11, and Fig. 13 is a perspective view of a box to one side of which the handle is jointed according to this invention.

The particular features of the hinge-joint constructed according to this invention are best explained with reference to Figs. 3, 4, and 5 of the drawings, illustrating one modification, and to Figs. 6 to 9, illustrating another modification of this invention.

The joint or hinge by which a piece of sheet metal *a* is desired to be secured to another piece *b* of the same or other thin material is constructed by providing within the piece *a* slits *c*, preferably in line with each other. Upon the other piece *b* lugs *d* are formed, projecting from the edge of the piece in the plane of the same. The said lugs, however, may be bent at an angle to the plane of the piece *b* instead of projecting in the plane of the same. Each lug has a tongue *e* projecting from the side of said lug. The length of the slits *c* is so calculated with relation to the lugs *d* and tongue *e* that each lug *d*, together with the tongue *e* projecting in its plane, may be passed through one of the said slits *c*. The joint is effected by passing said lugs *d* through the corresponding slit *c* of the other piece *a* and by subsequently bending the tongues *e* from the plane of the lugs *d* into an angular position relative to the same, thereby preventing the lugs from being withdrawn from the slits *c*. The lug *d*, nevertheless, has ample play to turn with relation to the plane of the piece *a* upon an axis formed by the line of the slits *c*. The said play is limited by the angle to which the lugs *d* are bent with relation to the plane of the sheet *b*. In Fig. 2 the piece *b* forms the cover of a box, and the said cover is hinged to the piece *a* of the box in the manner before described. The said cover *b* may be laid down in one direction to close the box, while on turning the cover *b* in the other di-

rection the bent lugs *d* will prevent it from being opened beyond the position shown in Fig. 1.

According to the modification represented in Figs. 6 to 9 the slits *c* in the piece *a* instead of being straight have an angular shape, as shown in Fig. 6, and the lugs *d* of the piece *b*, Fig. 7, have their tongues *e* bent up to the same angle as the angular portion of the slits *c*, thus allowing the lugs *d* and tongues *e* to be introduced into the angular slits *c*. When the said lugs *d* and tongues *e* have been passed through the slits *c*, the tongues *e* are bent into the plane of the lugs *d* or they return into said plane by their own resiliency, and the lugs are thereby prevented from being withdrawn from the slits *c*. The play of the lugs *d* within the slits *c* is the same as described before with reference to Figs. 3 to 5. Sidewise motion of the lugs *d* within the slits *c* is prevented by making the length of the slits *c* equal to the width of the lugs *d* at their base, as shown.

Instead of forming the slit or slits *c* with one angular portion only, as shown in Fig. 6, and instead of providing the lugs *d* with a single tongue *e*, as shown in Fig. 7, the slit or slits *c* may be formed with an angular portion at both ends and the lug or lugs *d* may be provided with a tongue *e* on both sides. A construction of this kind is represented in Figs. 10 to 13 of the drawings. In this example the piece or sheet *a* forms one side of a box, and the piece *b* to be jointed to the piece *a* constitutes a handle for the said box. The ends of said handle *b* present the lugs *d*, having projecting tongues *e* on both sides. A slit *c* is cut into the side of the box, the said slit being angular at both ends. The tongues *e* and lug *d* of the handle *b* may be readily inserted into the angular slit *c* of the piece *a* when bent as shown in Figs. 11 and 12, and when the said lug *d* and tongues *e* are inside the box the tongues *e* are bent back into the plane of the handle *b* or they return into said plane by their own resiliency, whereby the end or the handle *b* is prevented from being withdrawn from the side of the box. The other end of said handle *b* of course will be secured to the side *a* of the box exactly in the same manner, and by this means the handle is anchored to the box, with both its ends having sufficient play, however, for bending and buckling when the said handle is used for carrying the box. No sewing, riveting, or clamping need be employed for jointing the handle to the box in a yielding yet durable manner.

I am aware that it is old to secure a piece of sheet metal, cardboard, or the like to another piece of the same or similar material by forming a lug or lugs to one sheet and passing said lug or lugs through corresponding slits of the other sheet; but in a jointing of this kind the lug or lugs when bent back to the plane of the sheet from which they have been formed

may be readily withdrawn from the slit or slits through which they have been passed. The joint or hinge of my invention not only consists of a lug or lugs formed on one piece and a corresponding slit or slits formed in the other piece, but in addition to such lugs it consists of tongues projecting therefrom, the said tongues furnishing the means for retaining the lugs within the slits while still allowing of an ample play of the lugs in the corresponding slits.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a joint for sheet-metal bodies and the like, the combination, with a piece provided with lugs projecting from its edges, and a tongue projecting from each lug, of a second piece provided with slots of an extent at least equal to that of the lugs and tongues, the lugs extending through the slots and each tongue occupying a position out of alinement with its respective portion of the slot.

2. In a joint for sheet-metal bodies and the like, the combination, with a piece provided with lugs projecting from its edge, in the same plane, and tongues projecting laterally from the lugs, of a second piece provided with slots of an extent at least equal to that of the lugs and tongues, the lugs extending through the slots and the tongues occupying positions out of alinement with their respective portions of the slots.

3. In a joint for sheet-metal bodies and the like, the combination, with a piece provided with lugs projecting from its edge, and tongues projecting laterally from the lugs, of a second piece provided with slots of an extent at least equal to that of the lugs and tongues, the lugs extending through the slots and the tongues occupying positions out of alinement with their respective portions of the slots and substantially perpendicular to the plane of the second piece.

4. In a joint for sheet-metal bodies and the like, the combination, with a piece provided with lugs projecting from its edge, and tongues projecting laterally from the lugs and in the same plane, of a second piece provided with angular slots of a total extent at least equal to that of the lugs and tongues, the lugs extending through the slots and the tongues occupying positions out of alinement with their respective portions of the slots.

5. In a joint for sheet-metal bodies and the like, the combination, with a piece provided with lugs projecting from its edge, and resilient tongues projecting laterally from the lugs, of a second piece provided with angular slots of a total extent at least equal to that of the lugs and tongues, the lugs extending through the slots and the tongues occupying positions out of alinement with their respective portions of the slots.

6. In a joint for sheet-metal bodies and the

like, the combination, with a piece provided
with lugs projecting from its edge in the same
plane, and resilient tongues projecting later-
ally from the lugs and in the same plane, of a
5 second piece provided with angular slots of a
total extent at least equal to that of the lugs
and tongues, the lugs extending through the
slots and the tongues occupying positions out
of alinement with their respective portions of

the slots and substantially perpendicular to the
plane of the second piece.

In witness whereof I have hereunto set my
hand in presence of two witnesses.

ERNST PAUL LEHMANN.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.