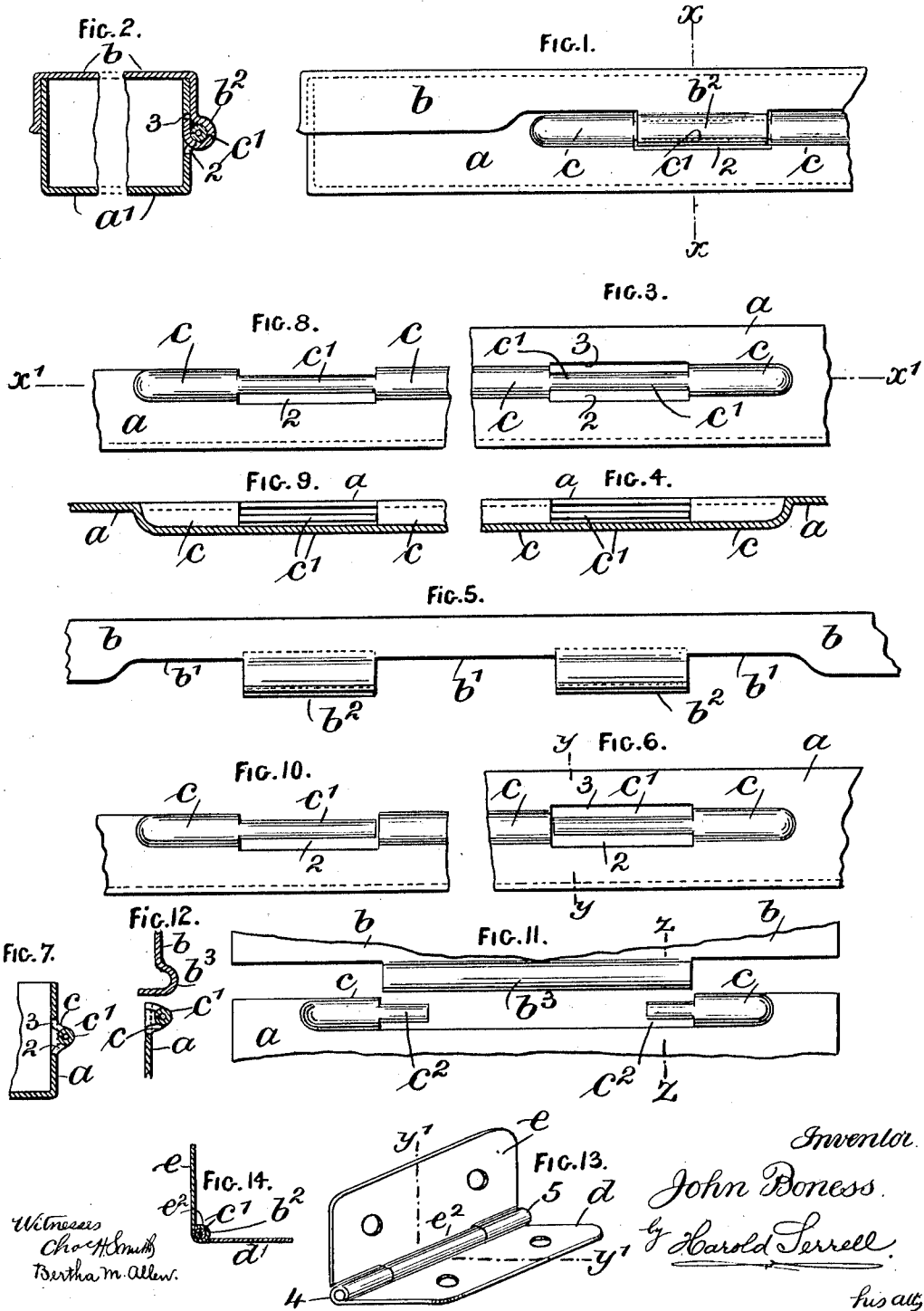


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HINGE.

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HINGE.

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To all whom it may concern:

Be it known that I, JOHN BONESS, a citizen of the United States, residing at Ozone Park, in the county of Queens and State of New York, have invented an Improvement in Hinges, of which the following is a specification.

My invention relates to hinges generally and particularly to hinges for boxes and various forms of receptacles of sheet metal having a cover. Heretofore these devices have been connected by hinges, the co-acting members or knuckles of which have been in each part and connected by a wire hinge-pin passing through said parts.

My invention also relates to hinges as articles of hardware and in which no separate hinge-pin is employed.

In carrying out my invention, the material along or near one edge of one member is pressed out from the inner surface of semi-circular form and in sections and the intermediate sections are cut in from the opposite direction and opposite edges and the tongues thus formed are rolled together of cylindrical character to form the hinge-pin or pins. In the other member of the hinge the material is cut away to produce one or more tongues, the free ends of which are rolled on themselves to produce one or more knuckles; the cut away parts receiving the knuckle forms of the other member. Before the tongue or tongues of the second member are rolled to form complete knuckles they are bent and brought into preliminary relation with the pins and are then completely rolled to connect the parts as a hinge. Therefore in the device of my improvement no separate wire hinge-pin is employed, consequently the cost of production is very much decreased and the weight of the hinge materially decreased, and a saving in material and time effected.

In the drawing, Figure 1 is an elevation of the back edge of a flat sheet metal box such as a cigarette box and illustrating the device of my invention. Fig. 2 is a cross section at about the dotted line x, x , of Fig. 1. Fig. 3 is an elevation of a portion of the body of the box at the back as if the co-acting portion of the cover had been removed. Fig. 4 is a central section and plan through Fig. 3. Fig. 5 is an elevation of the back portion or plate of the cover alone such as is shown in part in Fig. 1. Fig. 6 is a view similar to Fig. 3 showing a form

of my invention. Fig. 7 is a vertical cross section at about the dotted line y, y , of Fig. 6. Fig. 8 is an elevation similar to Fig. 3, but showing a part of the hinge at the edge of the back of the box instead of appreciably distant from the edge. Fig. 9 is a sectional plan similar to Fig. 4; in fact Figs. 4 and 9 are sectional plans at the dotted line x^1, x^1 , of Figs. 3 and 8. Fig. 10 is an elevation similar to Fig. 6 showing however the hinge member as formed at the edge of the box instead of appreciably distant from the edge as shown in Fig. 6. Fig. 11 shows the upper edge of the body of such a box as is shown in Fig. 1 and the lower edge of the cover adapted for connection therewith; said parts being shown as the one above the other, separated for clearness. Fig. 12 is a cross section at about the dotted line z, z , of Fig. 11. Fig. 13 is a perspective view and Fig. 14 a section thereof at about the dotted line y^1, y^1 , showing a hinge of ordinary character to be employed as an article of hardware and which hinge also embodies the features of my invention.

Similar letters and numerals of reference refer alike to similar parts in all the figures.

a represents the body of the box. This is composed of the sides and bottom of any area and any desired depth.

b represents the cover also of any area and any desired depth and adapted to fit over the upper edge of the body so as to close down and hold from view whatever contents may be placed in the box.

The members of the hinge formed from the metal of the body and at the back comprise the pressed out portions c which simulate the knuckles of the hinge. These are preferably of substantially semi-circular configuration, and c^1 represents the hinge-pins formed integral with the portions c and the body of the box. These hinge-pins are formed by cutting slots in the body and at the back so as to form two similar oppositely disposed tongues, which by means of suitable dies and as shown in Figs. 2, 7, 12 and 14, are rolled together until their free edges touch, when they are of cylindrical form and substantially as round as a wire or pin.

In the forms of my invention shown in Figs. 3 and 8, Fig. 3 shows the slots 2 and 3 made in cutting away the metal so as to produce a substantially U-shaped embryo hinge-pin, for the reason that the hinge members

are formed at an appreciable distance from the edge of the metal, whereas in the form Fig. 8, which is made directly at the edge of the sheet metal, only the slot 2 is formed because on the opposite side of the pin the metal is cut away to form the equivalent portion of the hinge-pin.

The sections Figs. 4 and 9 which are exactly alike and are on the same line show that in both these forms of my invention the structure sectionally is the same.

The top of the box or cover at the back is made with cut-away portions b^1 and with tongues b^2 which are given a preliminary bending as shown in Fig. 12, and a final bend, as shown in Fig. 2. The preliminary bend makes it possible to pass the free end of the tongue b^2 through the slot 2, and with the cover in a backwardly swung position pass the free end of this tongue into a vertical position, in which position it is operated upon by suitable dies to give it a further bend into the completed form shown in the section Fig. 2, which inseparably connects the hinge member or members of the cover to the hinge member or members of the body forming the necessary knuckles for engaging the hinge-pins c^1 .

In the form of my invention shown in Figs. 6, 10 and 11, I have shown only one end of each hinge-pin as integral with the bottom of the box, or in other words, with one member of the box, as it would not involve invention to reverse the position of the parts herein shown and described. The other end of the hinge-pin is free. As shown in Fig. 11, the cover b may be provided with one long knuckle member b^3 , which at its respective ends engages the two hinge-pins c^2 in the same manner as described with reference to the multiple metal construction shown in Figs. 1 to 5 inclusive.

In Figs. 11 and 12 I have separated the parts to be connected so as to illustrate more clearly their formation and describe their manner of connection, because as hereinbefore stated, the free end of the tongue forming the knuckle is passed through the slot 2, or in other words, beneath the hinge-pins c^2 and between the same and the body of the box and then with the cover swung back into a horizontal position the free end of the tongue occupies a vertical position, and in this position may be acted upon by suitable dies to complete the bending thereof into the position shown in Fig. 2, where the free end is in contact with the metal of the cover.

In Figs. 13 and 14 I have shown a hinge

of ordinary character formed according to my invention, wherein the member d is formed with two knuckles 4 and 5 and an intermediate member c^1 and wherein the member e is formed with a knuckle e^2 constructed as hereinbefore described with reference to Figs. 2, 5, 11 and 12, so that my invention in its broad application not only covers a hinge formed integral with the top and bottom of a metal box, but formed integral with two plates having screw-holes, as an article of hardware, which as a hinge, *per se*, may be employed for a box or any kind of a door or for hinging any member hinged with reference to another; it only being a question of the relative thickness of the parts of the hinge between the sheet metal of a box like a cigarette box and metal that is thick enough to form a hinge adapted to support any appreciable weight; my invention being equally applicable as described.

I claim as my invention:

1. A hinge comprising a metal member having knuckle forms and an intermediate hinge pin formed integral therewith and with the metal member, and a co-acting metal member having a knuckle form made as an integral tongue which is turned around a pin of the other member.

2. A hinge comprising alternate semi-circular sections stamped up from a sheet metal member with integral intermediate parts, also stamped from the metal thereof and rolled together so as to form one or more hinge pins and one or more tongues formed integral from another sheet metal member, engaging and rolled around the said hinge pin or hinge pins to connect the parts in a permanent and hinged relation.

3. A hinge comprising the parts c , pressed out from a sheet metal member, and hinge pins formed by cut away portions which leave slots, and rolling the same together into cylindrical form to constitute integral hinge-pins between the parts c and one or more tongues formed integral with another sheet metal member, and to which a preliminary semi-circular bend is imparted for connection with said cylindrical hinge-pins and thereafter rolled around the said hinge-pins to form knuckles connecting the parts together.

Signed by me this 8th day of June 1911.
JOHN BONESS.

Witnesses:

GEO. T. PINCKNEY,
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