

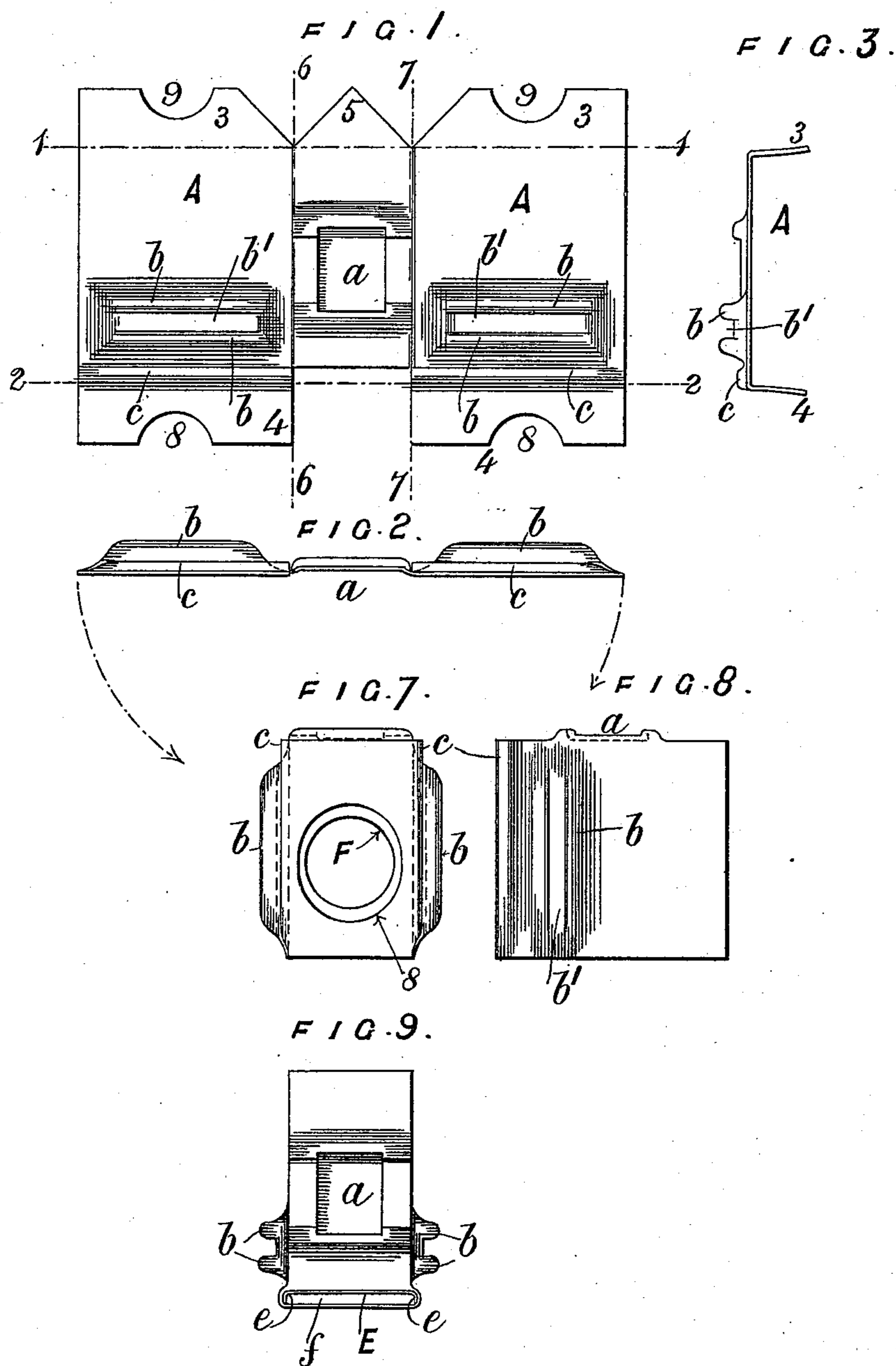
(No Model.)

2 Sheets—Sheet 1.

J. DONNELLY.
CAR AXLE BOX.

No. 488,877.

Patented Dec. 27, 1892.



Witnesses:
C. Sedgwick
E. M. Clarke

Inventor
J. Donnelly
by
Munn & Co.
Attorneys

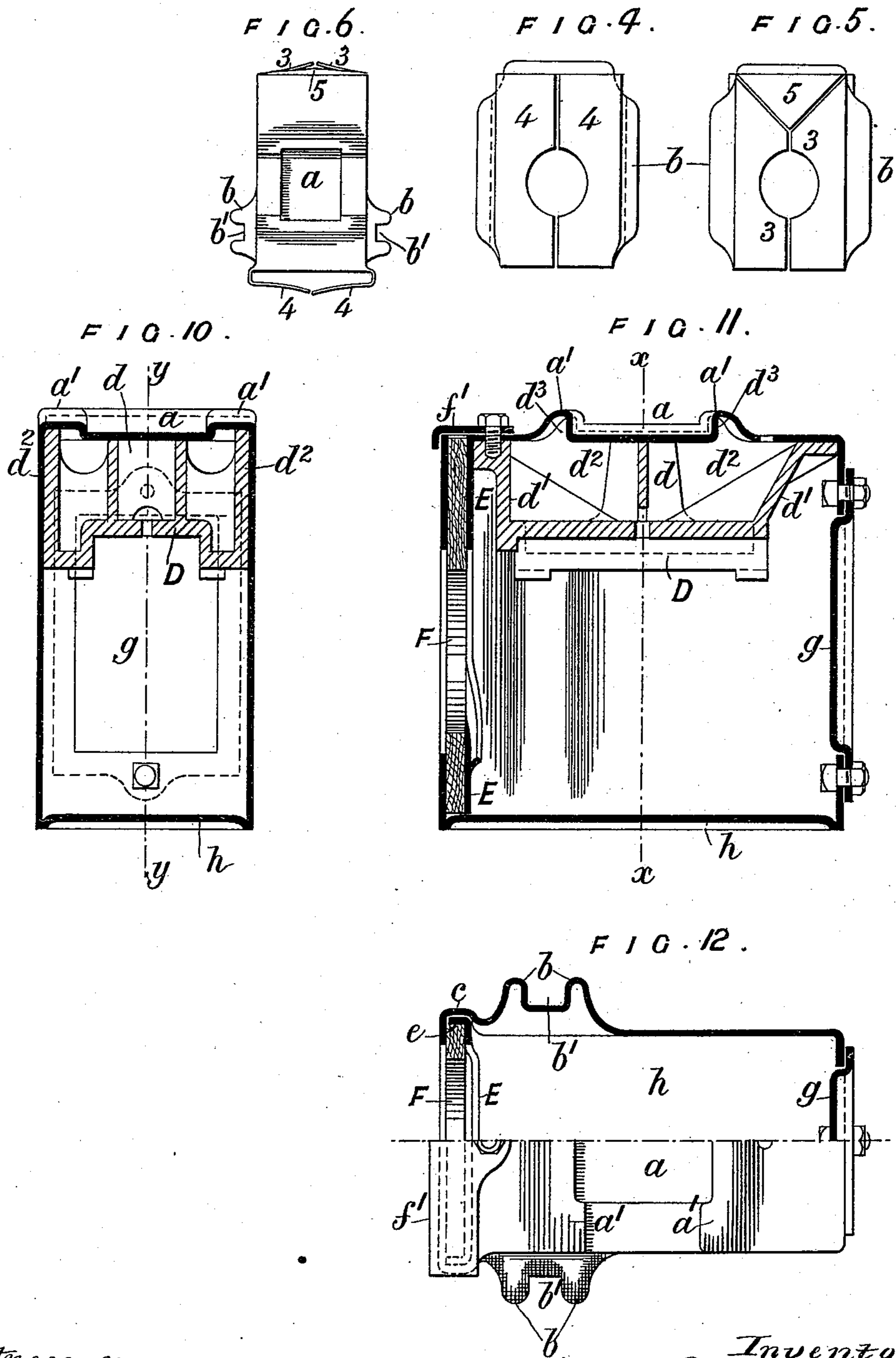
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UNITED STATES PATENT OFFICE

JOHN DONNELLY, OF BROCKLEY, ENGLAND.

CAR-AXLE BOX.

SPECIFICATION forming part of Letters Patent No. 488,877, dated December 27, 1892.

Application filed June 10, 1892. Serial No. 436,194. (No model.)

To all whom it may concern:

Be it known that I, JOHN DONNELLY, engineer, of 45 Brockley Road, Brockley, in the county of Surrey, England, have invented new and useful Improvements in the Manufacture of Axle-Boxes, of which the following is a full, clear, and exact description.

This invention relates, first, to the manufacture of the shell of a railway axle box from a steel plate (which has been embossed and corrugated at the proper places to form the seat for the carrying spring and the horn plate grooves) by bending the said plate at right angles to its original plane on longitudinal and transverse lines so as to bring it to a box-like form and then uniting the juxtaposed edges by welding; and the invention consists in the particular mode of bending the plate and in the combination, with an axle-box shell so made, of a cast-iron liner or distance block constructed as herein described which also forms the seat for the journal brass or bearing and whereby the top of the shell on which the carrying spring bears is so supported under its load that it will not be exposed to any bending strain which would tend to distort the shell, a direct crushing strain only being transmitted directly through the thickness of the metal.

Reference is to be had to the accompanying drawings, forming part of this specification, wherein

Figure 1 is a plan, and Fig. 2 an edge view, of the embossed and corrugated plate before it is bent to form the box shell. Fig. 3 is an edge view of the plate, after being bent, on lines 1—1, 2—2. Figs. 4 and 5 are respectively rear and front elevations, and Fig. 6 is a plan of the box shell after being bent and before being welded. Figs. 7, 8, and 9, are a rear elevation, side elevation, and plan, of the shell after being welded. Fig. 10 is a vertical cross-section, on line $x-x$ Fig. 11 which latter is a vertical section, on line $y-y$ Fig. 10, of the finished box drawn to a larger scale and Fig. 12 is a half-sectional plan of the same.

The same letters of reference indicate the same parts in all the figures.

The steel plate A of which the shell is to be formed is roughly stamped or cut out of the form shown in Fig. 1 and embossed at the center a to form the seat on the top of the box

for the carrying spring and also embossed or corrugated at $b b$ in the form of ribs between which are the external grooves b' for the horn plates and also at c to form internal grooves for the dust guard hereinafter referred to. The embossing and corrugating are performed by a series of stamping operations between successive pairs of dies corresponding more or less to the intended configuration of the plate, this part of the operation constituting in itself no part of the present invention. The plate having been thus embossed is then bent on parallel longitudinal lines 1—1, 2—2, Fig. 1, so as to cause the wing portions 3—3, 4—4, and the gusset piece 5, which are beyond those lines, to stand at right angles to the plane of the plate, as shown in Fig. 3. The plate is then bent (as indicated by the dotted arrows in Fig. 2) on the parallel transverse lines 6—6, 7—7, Fig. 1, whereby it is brought to the form of a rough box, as shown in Figs. 4, 5, and 6. The meeting edges of the parts 3—3, 4—4, and 5, are then welded together to complete the formation of the shell, as indicated in Figs. 7, 8, and 9. This having been done, the apertures 8 and 9 left in the rear and front ends of the box are punched out to their final shape, the one to give passage to the axle and the other to afford access to the interior of the box for cleaning.

Referring now to Figs. 10, 11, and 12, D is a cast iron liner or distance block which is inserted in the shell after being made as above described. It is made hollow for the sake of lightness and is formed with a central post d affording central support to the spring seat a and so transmitting the pressure on the latter due to the load on the carriage spring directly through the block D to the journal bearing, which is not shown. This block has flanged ends d' and sides d^2 bearing against the top of the box, the sides, ends, and central post being strengthened by webs or gusset pieces and the sides d^2 have lugs d^3 formed on them which enter the hollow bosses a' formed at either side of the spring seat a whereby these bosses are supported laterally against the pressure of the spring and the distance block is prevented from endwise displacement in the box. The under side of the block D is formed of the usual shape, shown in Figs. 10 and 11, to form

the seat in which the axle journal brass or bearing is to be fitted in the usual manner.

5 E is a false back formed by a steel plate having an opening punched in it corresponding to that in the back of the box and having side flanges *e* inserted in the opening *f* left in the top of the box at the front end, as shown in Figs. 6 and 9, by making the line 2—2, on which the plate is folded, cross the
10 separate gap in the rear edge of the plate. This opening is closed by a removable cap-plate *f'*. The dust guard F is a plate of wood, dropped into the space thus reserved and having a circular aperture fitting closely
15 around the axle. *g* is a cover for the hand hole in the front of the box. The bottom *h* of the box is welded to the sides and ends after the casting is fixed in place.

20 Having now particularly described and ascertained the nature of the said invention and in what manner the same is to be performed, I declare that what I claim is—

The combination, with an axle-box shell formed of a corrugated and embossed steel plate bent to box-like form and welded at the 25 abutting edges as described, of a cast-iron distance-block adapted at its under side to form the journal brass bearing, and made hollow to serve as a grease-box if required, and formed with flanged ends and sides fitting against the top of the box and with a 30 central post also bearing against the top of the box directly beneath the carrying spring, substantially as and for the purpose specified.

35 The foregoing specification of my improvements in the manufacture of axle-boxes signed by me this 19th day of November, 1891.

JOHN DONNELLY.

Witnesses:

GEO. J. B. FRANKLIN,

WALTER J. SKERTEN,

Notary's Clerks, both of 17 Gracechurch Street, London, E. C.