No. 648,031. Patented Apr. 24, 1900.

E. W. MACKENZIE-HUGHES.

MANUFACTURE OF AXLE BOXES.

(Application filed Dec. 4, 1899.)

(No Model.)

Fig. 1.

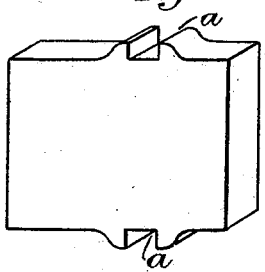


Fig. 2.

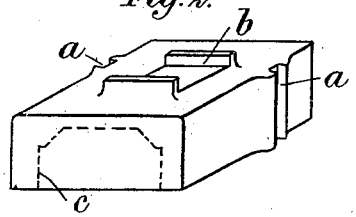


Fig. 3.

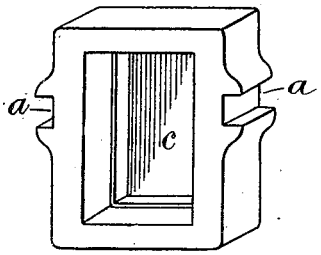


Fig. 4.

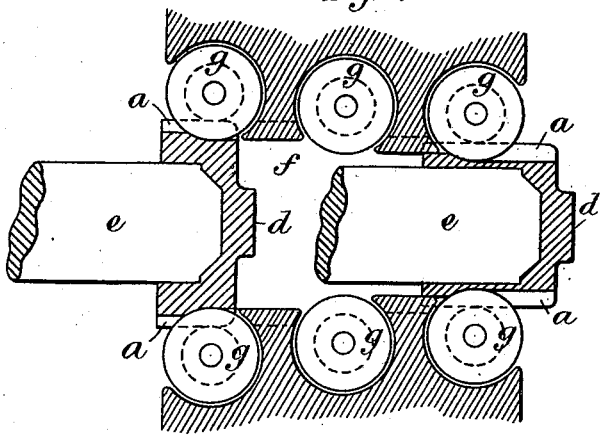


Fig. 5.

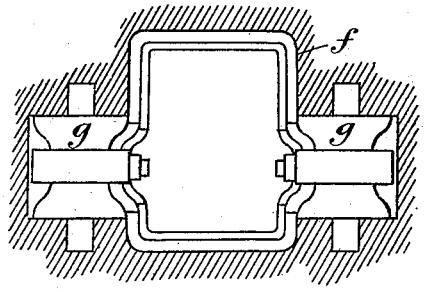


Fig. 6.

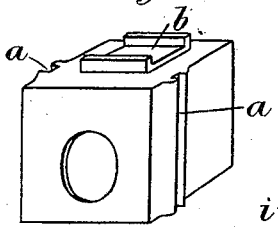


Fig. 7.

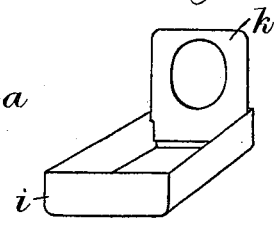
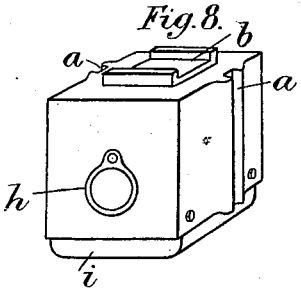


Fig. 8.



Witnesses
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By his Attorneys,
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UNITED STATES PATENT OFFICE.

EDWARD WILLIAM MACKENZIE-HUGHES, OF LONDON, ENGLAND.

MANUFACTURE OF AXLE-BOXES.

SPECIFICATION forming part of Letters Patent No. 648,031, dated April 24, 1900.

Application filed December 4, 1899. Serial No. 739,167. (No model.)

To all whom it may concern:

Be it known that I, EDWARD WILLIAM MACKENZIE-HUGHES, engineer, a subject of the Queen of Great Britain, residing at 53 Victoria street, Westminster, London, in the county of Middlesex, England, have invented certain new and useful Improvements in the Manufacture of Axle-Boxes, of which the following is a specification.

Heretofore the main body of an axle-box has in various ways been made of wrought metal. Either it has been made from one piece of metal which has been first rolled into a plate and then bent and welded up into the form required or it has been made in separate parts which have been secured to one another by screw-bolts. According to my invention I form the main body of an axle-box, including the top, with the spring-seat upon it, the front and rear ends and the two sides, with the axle-guard grooves extending down them, all in one piece of wrought metal without joint, whereby I am enabled to manufacture axle-boxes both stronger and lighter than those heretofore made, while at the same time they can be made at less cost.

To accomplish the manufacture of axle-boxes in the above way, I proceed as follows and as is illustrated in the drawings annexed.

Figure 1 is a perspective view of the block of wrought metal from which the body of an axle-box is to be formed. Figs. 2 and 3 are perspective views of such block after a hollow has been molded on its under side and a spring-seat on the top. Figs. 4 and 5 are sections of the die through which such molded block is subsequently forced. Fig. 6 is a perspective view of the body of the box when finished. Fig. 7 is a perspective view of the tray for closing the bottom of the box. Fig. 8 is a perspective view of the axle-box complete.

I take a block of wrought metal, preferably steel, of the required amount to form the body of the box, and I form with dies, preferably by hydraulic pressure on two opposite sides, the first shaping of the axle-guard grooves, (marked *a*, Fig. 1.) I then squeeze the block between another set of dies, preferably by a hydraulic press, and form the spring-seat (marked *b*) on the top and the indentation (marked *c*) on the under side, as shown in Figs. 2 and 3. The block so shaped is next brought to a proper heat and the top end (marked *d* in Fig. 4) is chilled to enable it to retain its shape. The block is now placed onto the end of a ram *e* and forced through the die, (marked *f*,) the arrangement of which is fully seen in Figs. 4 and 5. As the heated metal passes through the die it is drawn down on all four sides, the final shaping of the grooves being aided by the rolls *g*. The last portion of the die gives the final formation of the body of the box, as shown in Fig. 6. Afterward an oval hole is cut through the back for the end of the axle to pass into the box, and another hole is formed through the front to serve as an inspection-hole and for introducing oil. This hole is closed by a door *h*, as shown in Fig. 8, which is a perspective view of the finished box. The bottom of the box is closed by a tray, (marked *i* and shown separately at Fig. 7.) It is preferably made of wrought steel and carries an upwardly-projecting guard-plate *k* at its back end to hold the ordinary dust-shield between itself and the inner face of the back of the box. The tray serves to contain the oil used for lubrication and also carries the lubricating-pad, by which the oil is applied to the under side of the axle in the usual manner.

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

The hereinbefore-described process of forming an axle-box body consisting in first molding projections for the axle-guard grooves on two opposite sides of a rectangular block of wrought metal, next squeezing such block when heated between dies to form a hollow in the bottom of the block and a spring-seat on the top, then heating such block and chilling the spring-seat after it has been heated and finally forcing the block through a die by which it is drawn down on all four sides and brought to the required shape.

EDWARD WILLIAM MACKENZIE-HUGHES.

Witnesses:
WILFRED CARPMAEL,
JOHN W. WHITEHEAD.