(No Model.)

W. PENNOCK.

DIE FOR MAKING CAR AXLE BOX LIDS.

No. 436,187. Patented Sept. 9, 1890.

Fig. 1.

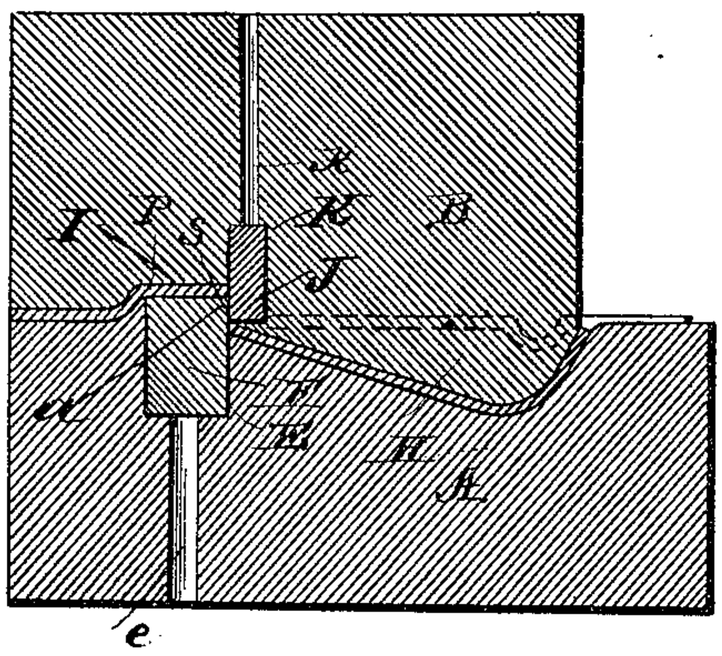


Fig. 4.

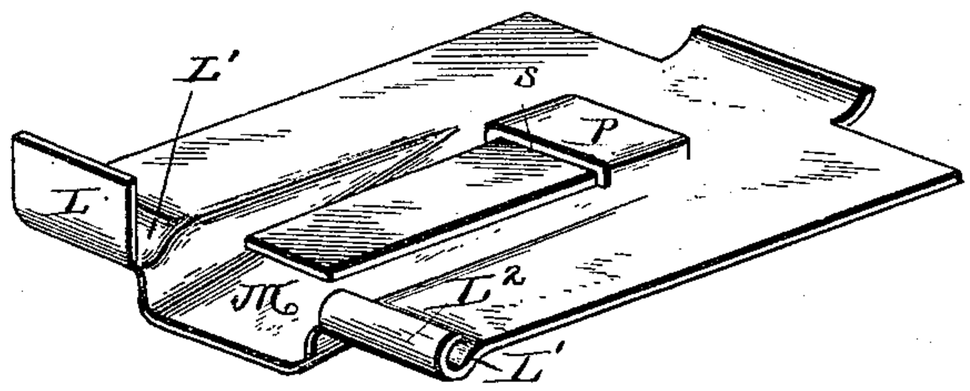


Fig. 5.

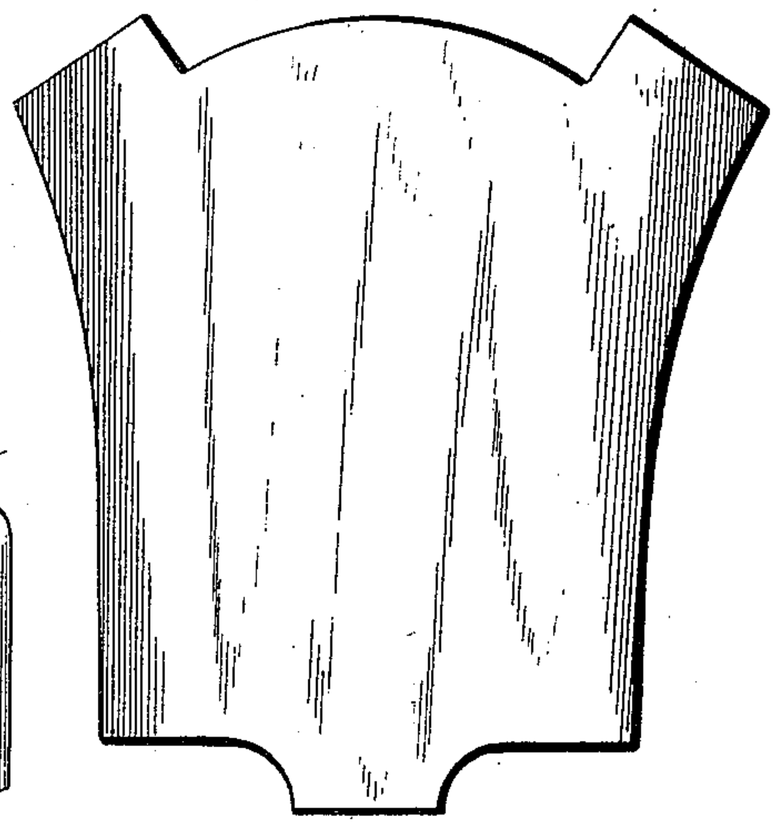


Fig. 2.

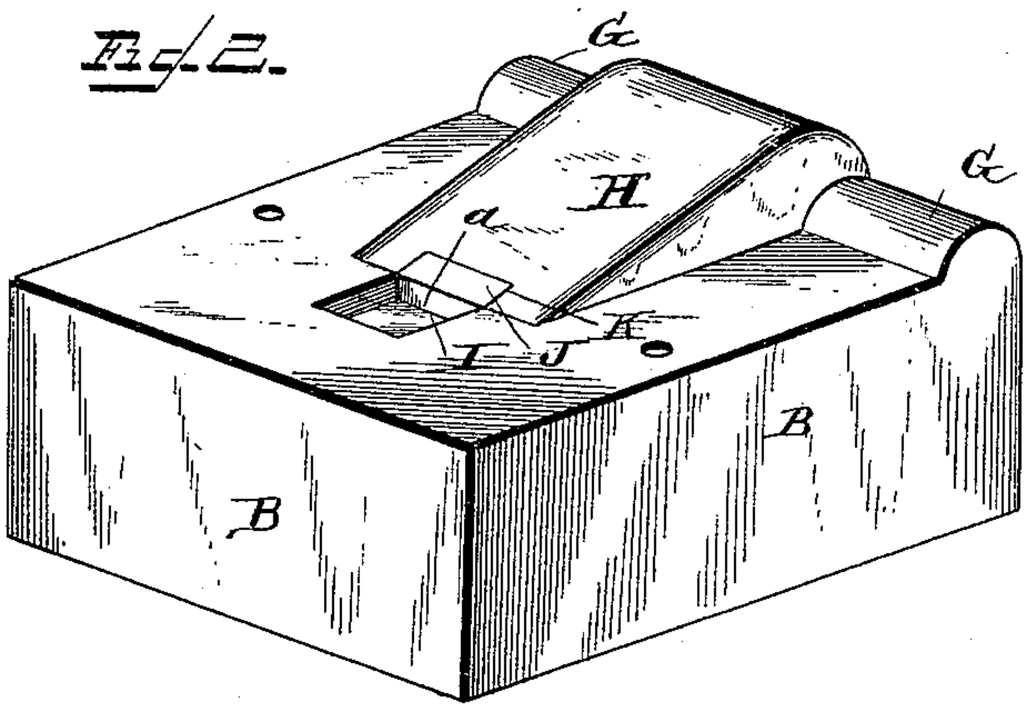
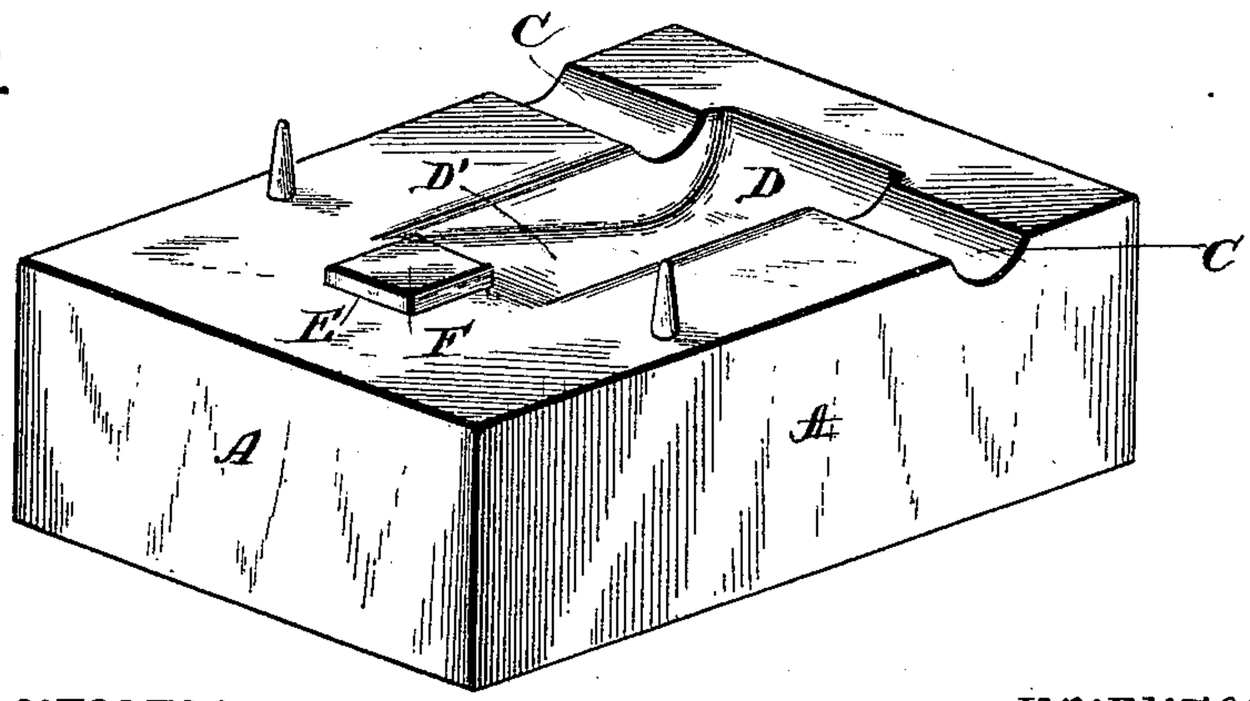


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLARD PENNOCK, OF MINERVA, OHIO.

DIE FOR MAKING CAR-AXLE-BOX LIDS.

SPECIFICATION forming part of Letters Patent No. 436,187, dated September 9, 1890.

Application filed February 25, 1889. Serial No. 301,008. (No model.)

To all whom it may concern:

Be it known that I, WILLARD PENNOCK, a citizen of the United States, residing at Minerva, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Dies for Making Car-Axle-Box Lids; and I do hereby declare the following to be a full, clear, and exact description of my invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the drawings hereto annexed, which form a part of this specification, and in which—

Figure 1 is a longitudinal sectional view, on a vertical plane, of my improved die for making car-axle-box lids, showing the same complete and in operative position and having a pressed box-lid between the upper and lower die-sections. Fig. 2 is a perspective inverted view of the upper die-section or "relief" die. Fig. 3 is perspective view of the lower die-section or "intaglio" die. Fig. 4 is a perspective view of the inner side of a pressed or stamped axle-box lid, showing one of its corners (which is to form one of the hinges) in the shape and position in which it comes from the die, and the other or opposite corner bent to form the hinge of the complete lid; and Fig. 5 is a plan of the steel blank used by me in pressing or stamping the lid in my improved die.

Like letters of reference denote corresponding parts in all the figures.

My invention relates to dies for pressing or stamping lids for the journal-boxes or axle-boxes of railway-cars from a flat blank of steel or other suitable metal, and is more particularly adapted to press lids of the character described and claimed by me in my application for Letters Patent, Serial No. 275,110, filed on or about May 25, 1888, having for its object to produce such lids in a simple, expeditious, and inexpensive manner, while at the same time the lids pressed or stamped in my improved die shall present a neat, finished, and symmetrical appearance.

With these objects in view my present invention consists in the improved construction and combination of parts of the die, which will be hereinafter more fully described and claimed.

Reference being had to the accompanying drawings, the letter A designates the bottom section of the die, or so-called "intaglio" die, while B denotes the upper section or so-called "relief" die, both sections being made, preferably, of cast-iron.

The bottom die A is provided at or near one end with a transverse groove or channel C, running across the die from one side to the other and merging with its middle portion into a recess or depression D in the deepest part of said recess, which gradually decreases in depth toward the opposite end of the die, forming a gradual slope or incline D′. At the point where the shallow part of this depression or recess D D′ terminates is a square or rectangular pocket E for the insertion of a removable block F, also square or rectangular in cross-section, the upper part of which, when placed in the pocket, projects above the plane surface of the die, as clearly shown in Figs. 1 and 3 of the drawings. In order to facilitate the removal of this block F when desired, the body of the die A may be bored through from the bottom of the pocket E to the under side of the die, as shown at *e* in Fig. 1, so that by inserting a rod through this bore or aperture from the under side the block F may readily be pushed or punched out of the pocket.

The upper die-section or relief-die B is provided at or near one end with a raised transverse rib or scroll G, of such dimensions and configuration that it will fit into the registering-groove C of the lower die when the two are placed together in their operative position. This rib or scroll G intersects a raised bulge or boss H on the face of the die at the highest part of said bulge or boss, as clearly illustrated in Fig. 2, the boss H gradually decreasing in height as it merges into the face of the die at a pitch or angle corresponding to the pitch or angle of the recess D D′ in the bottom die.

At the lowermost point of the boss H, where it merges into the face of the die, is a shallow recess or depression I, one side *a* of which is cut away and impinges upon the adjacent side or cutting-edge of a removable knife or cutter J, which is inserted removably into a pocket K in the body of die B, said pocket

being located between the cut-away edge *a* of the recess I and the lower part of the sloping boss H. This recess I should be of sufficient size to receive the metal of the blank as it is being pressed up into it by the registering-block F of the lower die without cutting the blank, except along the edge *a*, where it impinges upon the registering-edge of the knife or cutter J, by which a slot *s* is cut through the blank simultaneously with the process of stamping or pressing the blank into shape and forming the pocket P.

In order to facilitate the removal of the knife or cutter J, when desired, for sharpening or renewal, the pocket K, into which it is inserted, may be bored through to the top of the die in like manner as the pocket E of the bottom die, so as to form a bore or aperture *k* for the insertion of a rod or bar, by means of which the cutter may be pushed out. In this manner it will be seen that the shaping-block F, which forms the pocket P of the finished box-lid and also operates in conjunction with the cutter J to cut the slot *s* through the blank as well as the cutter J itself, both of which parts are subjected to the greatest amount of wear and strain in operating the die, can easily be removed for sharpening and reshaping or for the substitution of new ones whenever required, which said renewal or substitution can be effected in a moment of time and without disturbing or altering the other parts of the die in the least.

From the foregoing description, taken in connection with the drawings, the operation of my improved die will readily be understood without further explanation. After the blank of steel or other suitable metal has been cut to the proper shape, approximately as shown in Fig. 5, it is placed between the two die-sections, the blank having first been properly heated, after which the upper or relief die is pressed down upon the lower or intaglio die and the superimposed blank in a suitable press adapted for the purpose or by other means, by which operation the portions in relief on the upper die will force the blank into the registering recesses or depressions in the lower die, so that the blank will assume the shape shown in Fig. 4—*i. e.*, having the ears or turned-up corners L, the raised swell or bulge M, the slot *s*, and the spring-pocket P. A groove or bead L′ is formed just back of the turned-up corners L by the transverse scroll G, operating in conjunction with the registering-groove C, and by turning over or folding the raised edges L along the outside of the bead or corrugation L′, as shown at L^2 in Fig. 4, complete hinge-eyes are formed for hinging the lid to the axle-box.

It will be seen that when the two parts or sections of the die are placed in their proper relative positions to each other, ready for work, the block F forms a projection on the face of the bottom die A, while similarly the knife or cutter J forms a projection from the pocket I in the upper die B.

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

A pair of dies for stamping or pressing car-axle-box lids, comprising an intaglio die formed with a recess D D′ at its middle, having a bottom inclined downwardly toward said top edge, a vertical rectangular pocket E, the inner edge of which intersects the inner edge of recess D D′, a vertical bore or aperture *e*, intersecting pocket E, a rectangular block F, fitting in pocket E, a relief-die B, formed with an inclined bulge or boss H, a rectangular recess I, a pocket K, between the lowermost point of boss H and recess I, a vertical pocket *k*, intersecting pocket K, and a knife or cutter J, located in pocket K, substantially as described.

In testimony whereof I sign this specification, in the presence of two witnesses, this 1st day of February, A. D. 1889.

WILLARD PENNOCK.

Witnesses:
WM. K. GRAY,
LOUIS BAGGER.