(No Model.) 2 Sheets—Sheet 1.

J. GREEN.

METHOD OF MAKING DRAW BARS.

No. 453,783. Patented June 9, 1891.

Fig. 1.

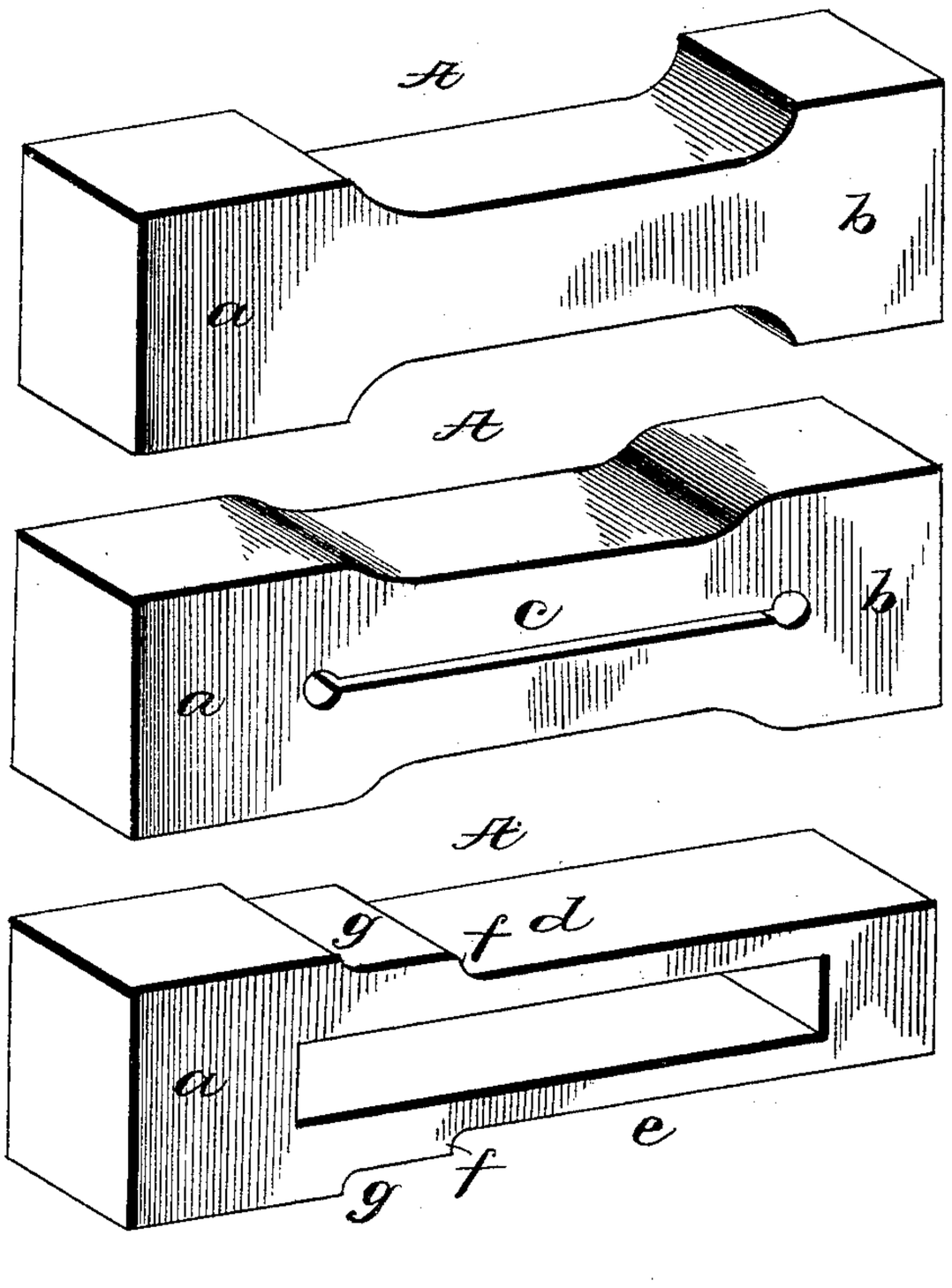
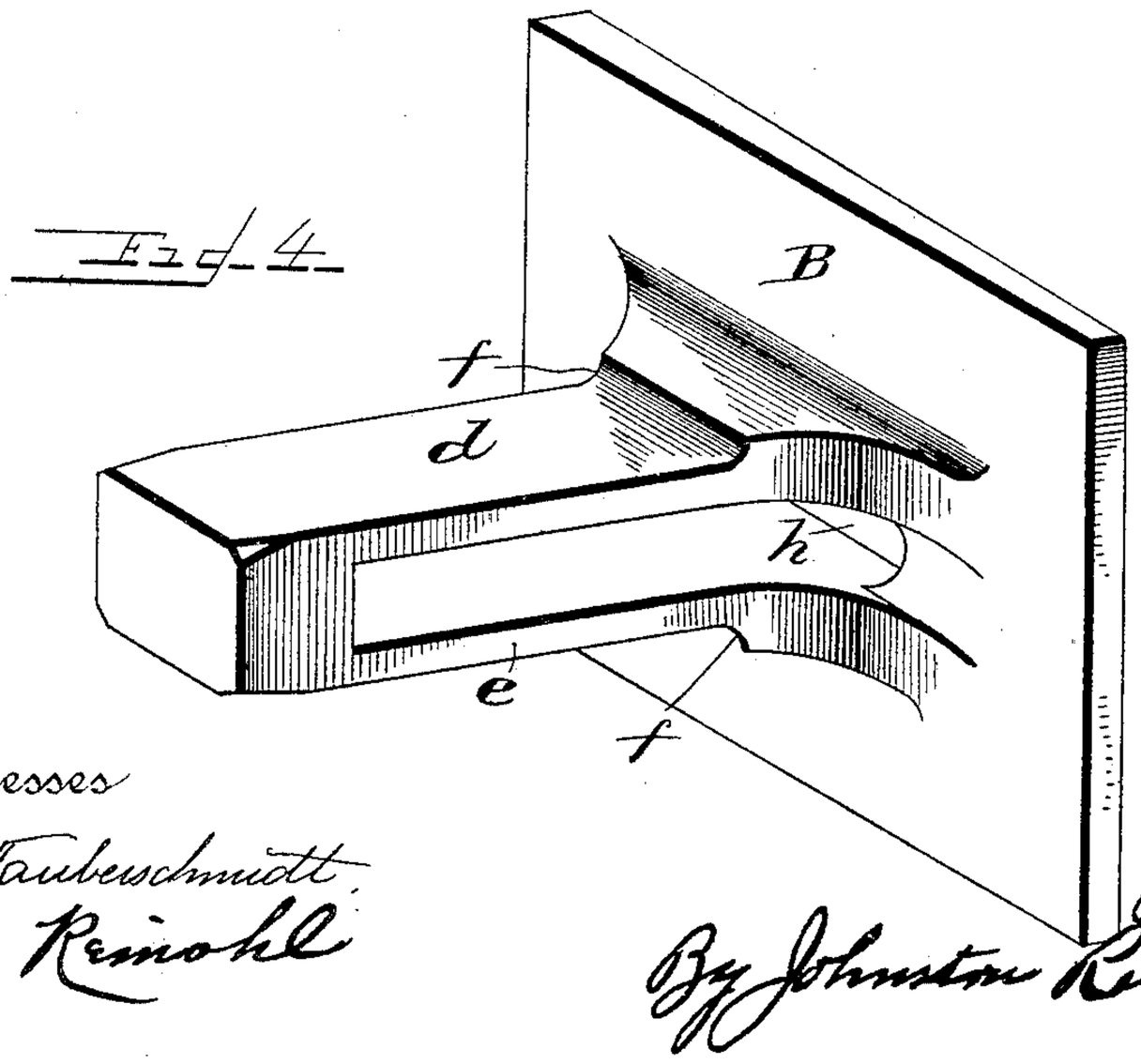


Fig. 2.

Fig. 3.

Fig. 4.



Witnesses

L. A. Taubenschmidt.

H. B. Reinohl

Inventor

J. Green

By Johnston Reinohl & Dyre

Attorneys

(No Model.) 2 Sheets—Sheet 2.

J. GREEN.

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Fig. 5.

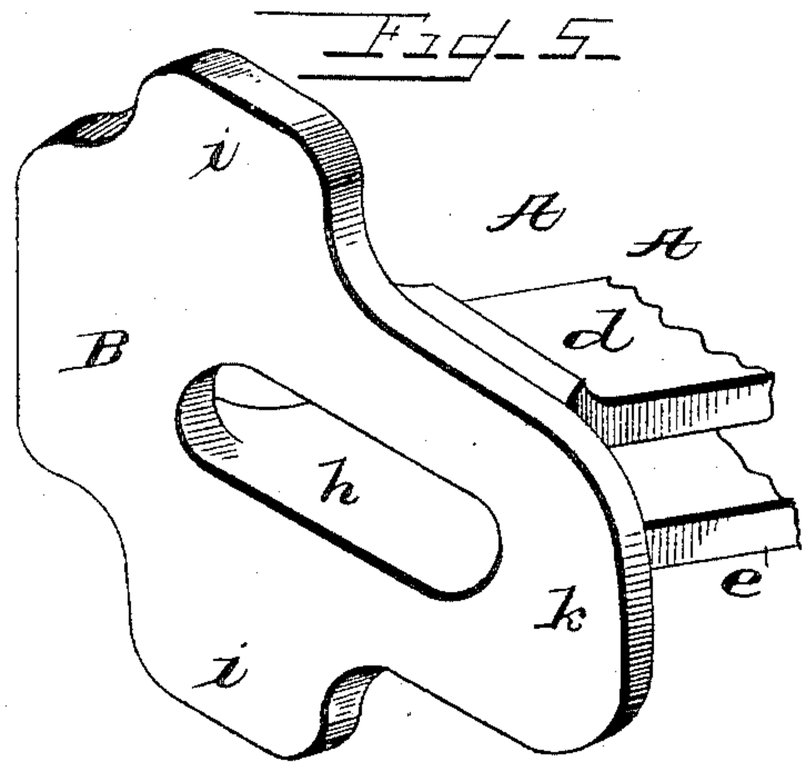


Fig. 6.

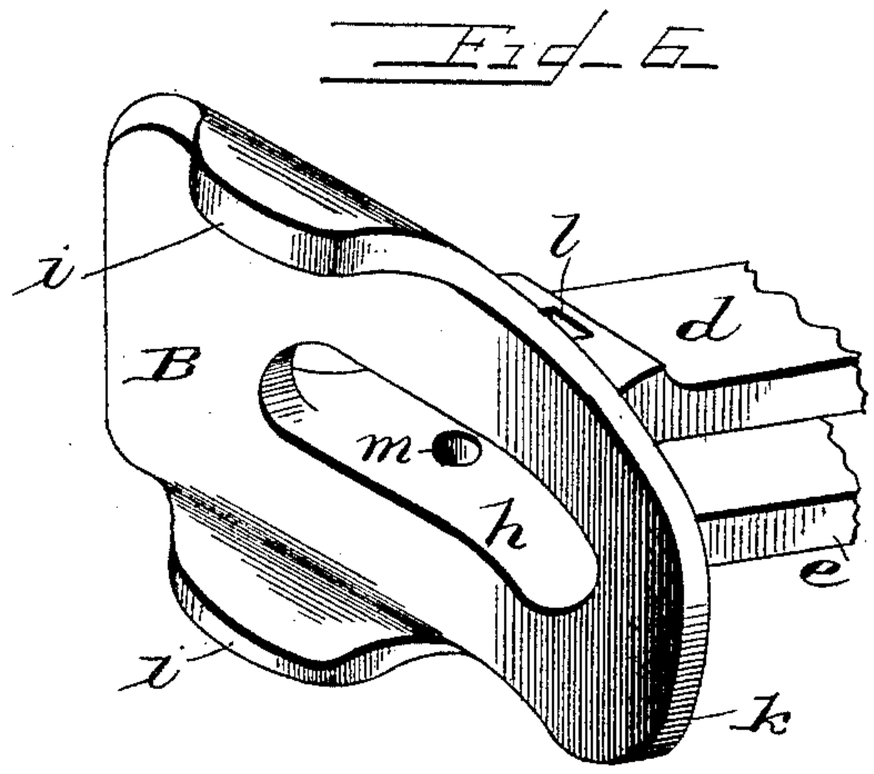


Fig. 7.

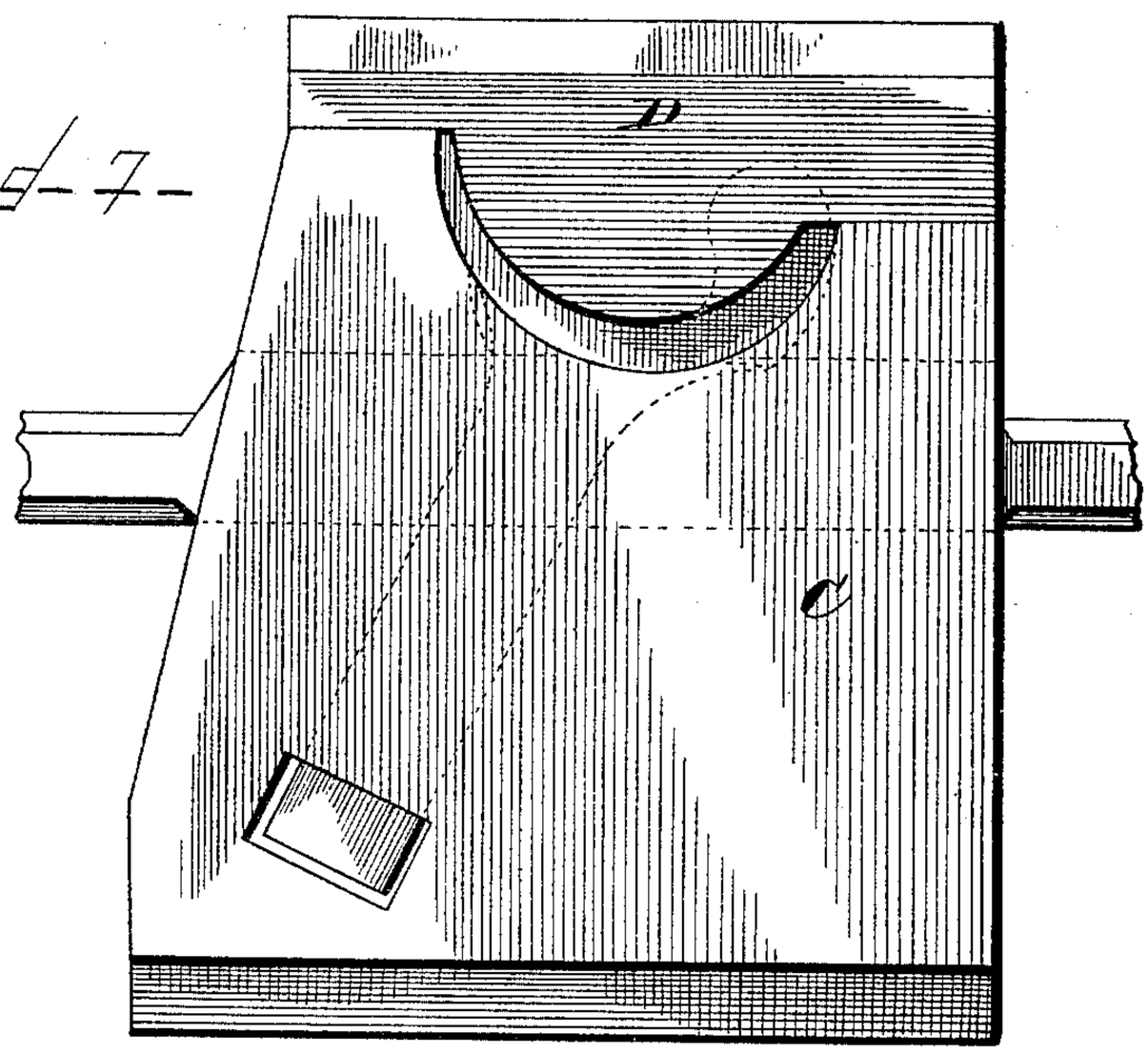
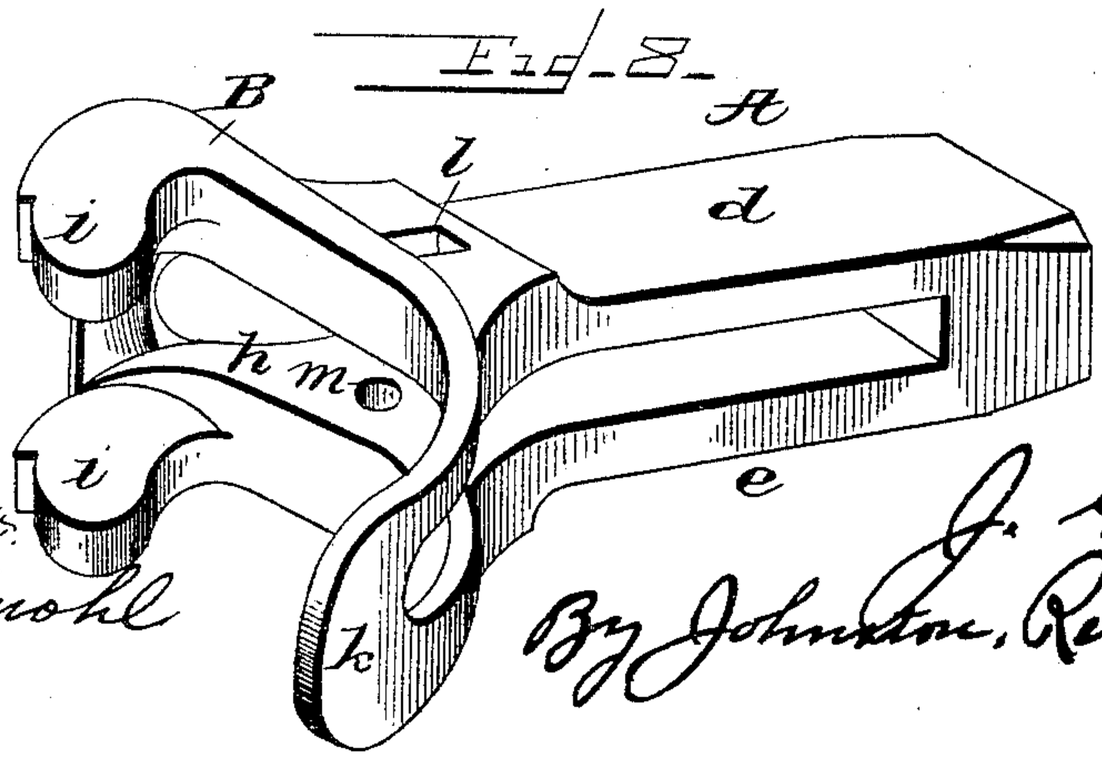


Fig. 8.



Witnesses
G. A. Tauberschmidt.
H. B. Reinohl

Inventor
J. Green
By Johnston, Reinohl & Dyre
Attorneys

UNITED STATES PATENT OFFICE.

JOHN GREEN, OF RENOVO, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO WILLIAM L. HOLMAN AND JOHN McCORD, OF SAME PLACE.

METHOD OF MAKING DRAW-BARS.

SPECIFICATION forming part of Letters Patent No. 453,783, dated June 9, 1891.

Application filed April 8, 1891. Serial No. 388,091. (No model.)

To all whom it may concern:

Be it known that I, JOHN GREEN, a citizen of the United States, residing at Renovo, in the county of Clinton and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Manufacturing Draw-Bars; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to draw-bars for railway-cars, and has for its object certain improvements in the manufacture thereof, which will be hereinafter described, and particularly pointed out in the claims.

Draw-bars used in connection with the master car-builders' type of vertical-plane couplers as heretofore manufactured have usually been made of cast or malleable iron and have become crystallized in use in those parts subject to jar, and as a consequence have frequently broken and caused serious damage.

It is my purpose to utilize Bessemer and mild cast steel in the manufacture of draw-bars, and so manipulate the metal in the act of forging as not to impair the metal by displacing the fiber, and so solidify the metal by forging that no honey-combs or cracks, common to cast metal poured into a mold, shall exist.

In the accompanying drawings, which form part of this specification, Figure 1 is a perspective of a billet of metal from which a draw-bar is forged; Fig. 2, a perspective of a billet split intermediate its ends; Fig. 3, a perspective of a billet with the split portion separated and the side bars of a draw-bar formed; Fig. 4, a perspective of a blank for a draw-bar with a head forged and link-slot cut; Fig. 5, a perspective of a blank with lugs blocked out and one end of the head rounded: Fig. 6, a perspective of a blank with the lugs partly bent and an initial bend given the head; Fig. 7, a side elevation of dies for shaping the head of a draw-bar, and Fig. 8 a perspective of a forged draw-bar.

Reference being had to the drawings and the letters thereon, A indicates a billet, preferably of Bessemer or mild cast steel, but may be of any other suitable metal. The billet is thickened at *a* to provide metal to form the head of a draw-bar, and at *b* to provide metal for the opposite end of the draw-bar. The billet thus formed is heated in a suitable furnace and severed longitudinally through its center and intermediate its ends, as shown at *c* in Fig. 2. The severing may be effected under a drop-hammer by the use of a suitable splitting-tool, or it may be effected by the use of a hydraulic press. In splitting the billet it has been found preferable to split it about half through from one side and then turn the billet and complete the splitting from the opposite side, by which the metal is prevented from being unevenly displaced on one side of the billet. After the billet has been split, as described, it is separated and a suitable mandrel inserted in the billet, and the side bars *d e* of a draw-bar forged by placing the billet upon an anvil under a drop-hammer and using a flattener between the face of the hammer and the billet. In this operation the fillets *f f* and the flat surfaces *g g* are formed. The billet is then heated at its end *a* and inserted in a die such as shown and described in my patent numbered 448,612 and bearing date of March 17, 1891, and forged into a head or flange B by the use of a drop-hammer or a hydraulic press and a flattener inserted between the hammer and the face of the head. After the head has been forged the blank is raised, a punch inserted, and the link-slot *h* cut by again applying the drop-hammer. The blank is then removed from the die and the lugs *i i* blocked out and the end *k* rounded by suitable metal-cutting tools The blank is then placed upon a suitable former, with the outer surface of the head down, and the lugs *i i* bent toward the face of the head and an initial bend given to the end *k* of the head to facilitate its further manipulation in dies for shaping the head and the lugs thereon, and completing the forging of the draw-bar. The blank is then removed from the former and the slot *l* and aperture *m* in the bars punched, if desired, or they may be subsequently drilled and slotted. The blank is now reheated and placed in die C and the upper die D applied thereto to complete the forging of the draw-bar and

the forming of the lugs *i i*, in the manner described in patent referred to.

It is obvious that instead of thickening the end *a* it may be made of the same cross-sectional area as the remaining portion of the billet and increased in length to provide metal to form the head of the draw-bar.

Having thus fully described my invention, what I claim is—

1. The method of manufacturing draw-bars, which consists in forming a billet, severing the billet longitudinally intermediate its ends, separating the severed portion and forging the sides of the bar, then upsetting one end of the billet and forming a head thereon, and finally shaping the head in suitable dies.

2. The method of manufacturing draw-bars, which consists in forming a billet thickened at one end, severing the billet longitudinally intermediate its ends, separating the billet and forging the side bars, then upsetting said end of the billet and forming a head thereon, shaping the head and blocking out lugs on both sides thereof, bending the lugs toward the face of the head and giving an initial bend to the head, and then shaping the head and its lugs into form, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN GREEN.

Witnesses:
D. C. REINOHL,
WM. E. DYRE.