2 Sheets—Sheet 1.

# A. P. LINDSAY.

## Manufacture of Draw-Head.

No. 197,872. Patented Dec. 4, 1877.

Fig. 1.

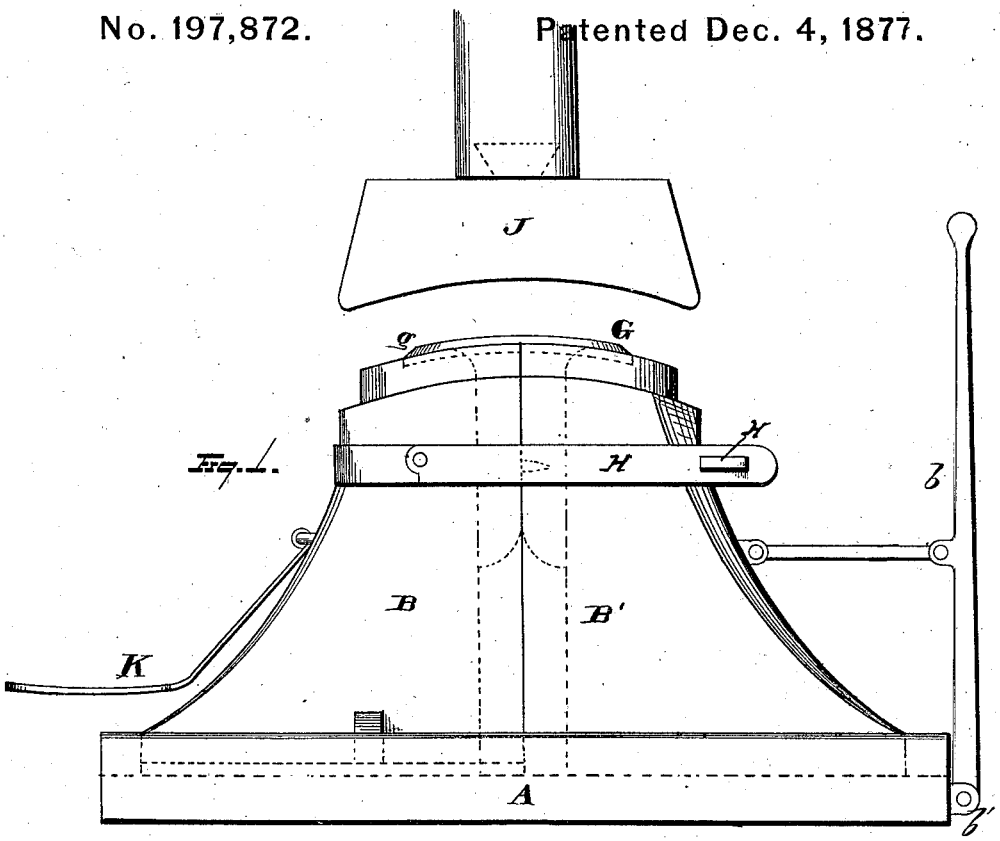
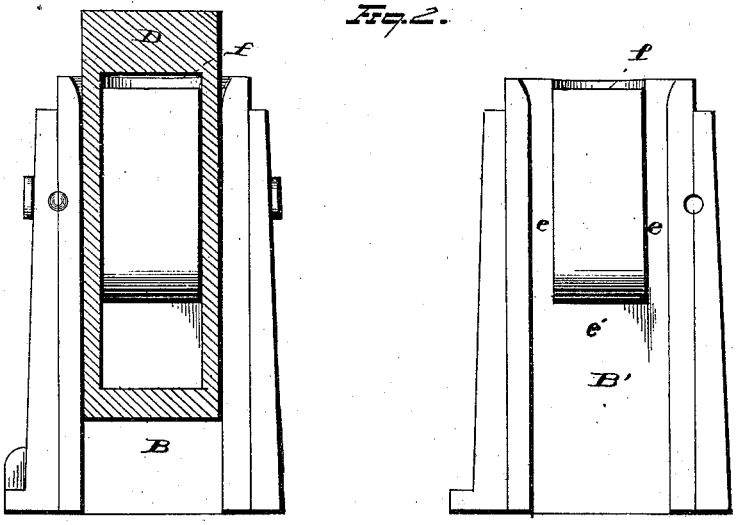



Fig. 2.




WITNESSES
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2 Sheets—Sheet 2.

# A. P. LINDSAY.

## Manufacture of Draw-Head.

**No. 197,872.** **Patented Dec. 4, 1877.**

Fig. 3.

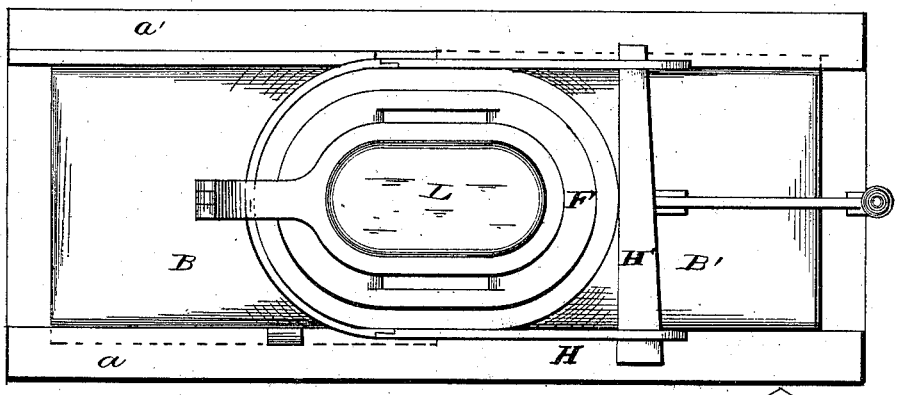



Fig. 4.

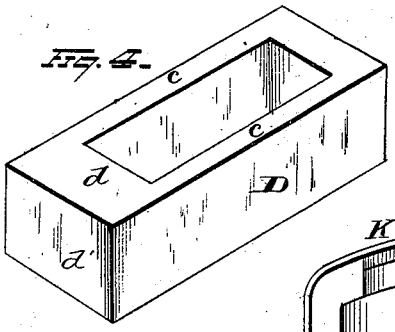
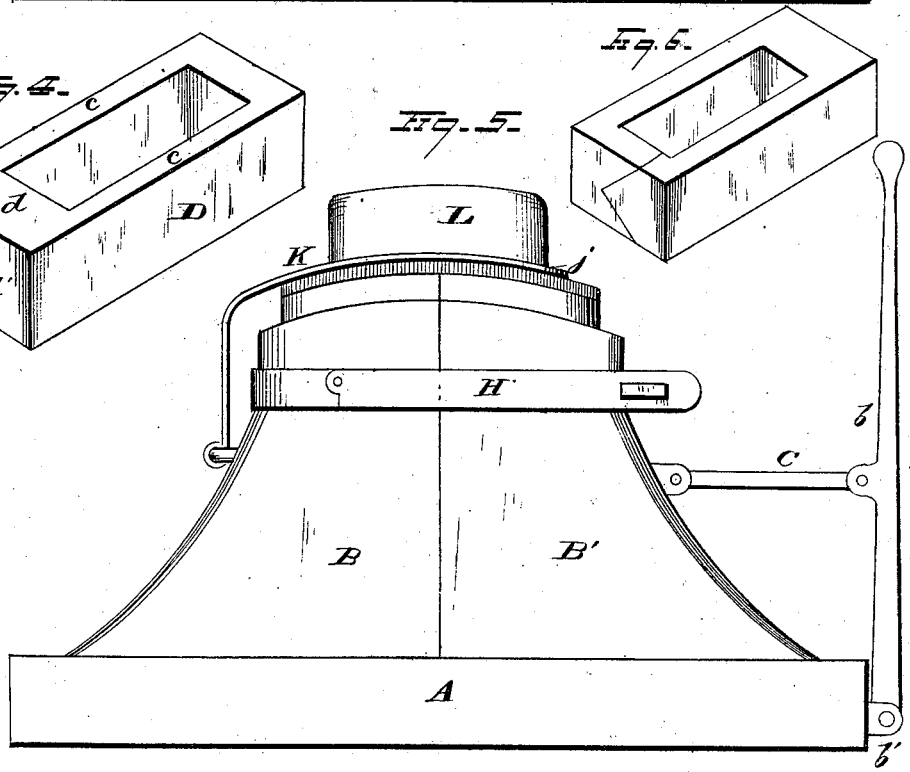



Fig. 5.

Fig. 6.

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# UNITED STATES PATENT OFFICE.

ALEXANDER P. LINDSAY, OF NORTHUMBERLAND, PENNSYLVANIA.

## IMPROVEMENT IN THE MANUFACTURE OF DRAW-HEADS.

Specification forming part of Letters Patent No. **197,872**, dated December 4, 1877; application filed May 8, 1877.

*To all whom it may concern:*

Be it known that I, ALEXANDER P. LINDSAY, of Northumberland, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Process and Apparatus for Making Draw-Heads; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improved method and apparatus for the manufacture of draw-heads for railroad-cars.

Heretofore draw-heads have ordinarily been made with the plate of the draw-head riveted to the shoulder formed on the shank of same, and when so constructed have been found to be defective, owing to the fact that the several rivets of a draw-head soon become weakened by the uneven strain exerted on the same, and, also, the concussion produced on the draw-heads as the cars come in contact with each other has the effect of weakening and breaking the rivets which secure the cap to the shank. Again, draw-heads have been made with the cap made in halves, which parts are welded to the opposite ends of the plates composing the shank of the draw-head, and then the sections of the cap are welded to each other.

Draw-heads constructed in the manner last described have been found defective in use, as they often break at the point of welding, it being well known that it is impossible to form a weld of equal strength with the solid and uncut portion of the iron.

The object of my invention is to manufacture draw-heads with the cap and shank formed of a single piece of iron, whereby all danger of breaking the cap or severing the cap from the shank of the draw-head is avoided; and to that end my invention consists, first, in the method of manufacturing draw-heads, which consists essentially in forming a blank of a single piece of material to constitute the shank of the draw-head, with one end of the same thickened or re-enforced, and then upsetting said re-enforced end to form the draw-head cap, and finally cutting or punching out the interior portion of the cap to form the mouth of the draw-head; second, in the several details of construction, as will more fully appear from the following description and claims.

In the accompanying drawings, Figure 1 represents a side elevation of my improved apparatus for manufacturing draw-heads. Fig. 2 shows the inner surface of the two-part die. Fig. 3 is a plan view of the same with the impression-block located thereon. Fig. 4 represents the blank. Fig. 5 shows the blank after it has been upset, and the cutting-block and templet in position to remove a portion of the cap to form the mouth of the draw-head. Fig. 6 is a modification of blank.

A represents the bed-piece of a steam-hammer, formed with guides *a a'*, within which are placed the parts B B′ of the die, part B being rigidly secured to the bed-piece, while part B′ is adapted to have a lateral movement therein, which is imparted by a hand-lever, *b*, the lower end of which is fulcrumed to the bed-piece at *b'*, and is connected to the sliding or moving portion B′ of the die by a link, C, the ends of which are hinged, respectively, to the die and operating-lever. When lever *b* is depressed, it serves to draw the movable part B′ of the die away from the stationary half B, and allow the blank to be placed between the same. Parts B B′ of the die are each provided with grooves *e*, extending from their upper faces downwardly the length of the side plates of the shank, at which point the parts are recessed at *e'*. The upper portion or face of the die is made convex in form, and the openings leading to grooves *e* are beveled, in order to give sufficient strength to that portion of the draw-head when the cap is united to the shank. The inner portion *f* of the face of the die is cut away to form an oblong recess of the size of the mouth of the draw-head, thus forming an annular raised surface, F, of the desired size and form of the draw-head cap.

G is an impression-block, the edge of which is beveled, as shown at *g*. This block is made to fit snugly within the oblong recess *f* of the die.

D represents the blank, which is formed out of a single piece of wrought-iron, the sides *c* of which are of the desired width and thick-

ness of the shank-plates of the draw-head, while one end, *d*, is thickened or re-enforced, as shown at *d'*, for a purpose hereinafter described.

The blank, after it has been raised to a red heat, is placed between the dies, the plates or sides *c* being situated in the grooves *e* of the die, while the re-enforced or thickened end *d'* is placed on top of the impression-block G. The movable part B' of the die is then forced snugly against the stationary portion B, and securely held against displacement by means of a strap or clamp, H, and wedge H', or in any other desired manner. The steam-hammer is then set in motion, and the hammer-head J, the face of which is of concave form, operates to upset the re-enforced end *d'* of the blank, and spread the metal upon the surface of the die, and the upsetting of the metal is continued until the entire upper portion of the die is covered by the same.

It will be observed that the upper surface of the impression-block G is slightly raised above the surface of the die, and hence the metal will be forced from the center to the outer edges of the die, thus forming that portion of the cap corresponding to the annular-raised portion F of the die of the desired thickness of metal, while the central portion of the cap will be considerably thinner, and the metal nearly severed therefrom on the line which corresponds with the outer edge of the impression-block G. After the metal has been upset to form the cap of the required thickness, the templet K, one end of which is hinged to the stationary part B of the die at *i*, is turned over onto the surface of the cap, and a cutting-block or punch, L, is placed within the templet, the latter serving as a gage, to cause the cutting-edge *j* of the block L to register with the line or groove formed in the cap by the outer edge of the impression-block. When the block L has been secured in place the hammer is caused to descend and strike the same, and thus cut out an oblong piece from the interior portion of the cap, to form the mouth or opening of the draw-head. The ragged outer edge of the cap, caused by upsetting and spreading the metal on the face of the die, is cut therefrom by a punch or shears, thus forming a complete and perfect draw-bar out of a single piece of material, without welding or riveting any portion of the same.

It is evident that the blank, instead of being formed solid, as shown in Fig. 4, may be made of a fagot, and bent into the form illustrated in Fig. 6, when the ends are welded together at *j*. The draw-head made from the blank last described will be much superior to those in ordinary use, as all that portion of the same on which there is an uneven strain, and which is subjected to hard usage, will be made without seam or joint, and hence of equal strength and tenacity throughout.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The method of manufacturing draw-heads, substantially as set forth, consisting in, first, making a blank of the desired shape, and substantially as shown, with a re-enforced end; second, in upsetting the re-enforced end by compression to form the cap; and, third, in punching or cutting out the interior portion of the cap to form the mouth of the draw-head, substantially as set forth.

2. The combination, with a two-part die for manufacturing draw-heads, of an oblong impression-block, adapted to snugly fit within a correspondingly-shaped recess formed in the face of the die, substantially as set forth.

3. The combination, with the two-part die and impression-block, of a cutting-block and templet, substantially as set forth.

4. The combination, with the bed-piece of a steam-hammer, of a two-part die, said parts grooved to receive the shank of a draw-head, an impression-block to force the metal toward the outer edge of the die, and a cutting-block and templet, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 5th day of May, 1877.

ALEXANDER P. LINDSAY.

Witnesses:

H. A. SEYMOUR,

F. O. MCCLEARY.