(No Model.) 2 Sheets—Sheet 1.

# D. ST. CLAIR WINELAND.

## MANUFACTURE OF DRAW BARS FOR RAILWAY CARS.

No. 304,391. Patented Sept. 2, 1884.

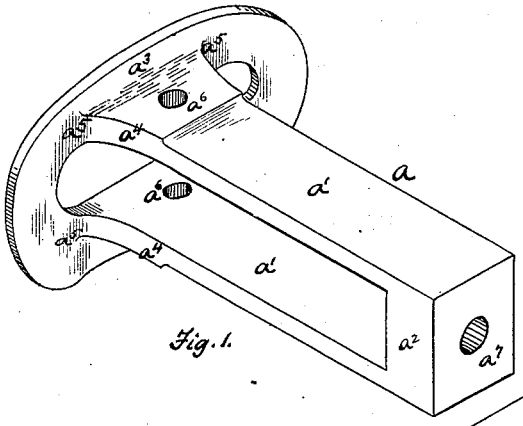


Fig. 1.

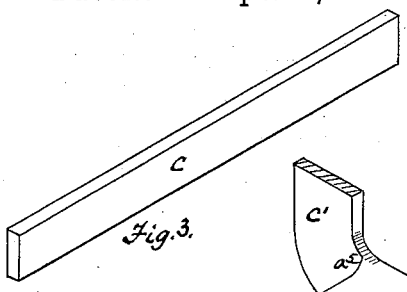


Fig. 3.




Fig. 2.




Fig. 4.




Fig 5.

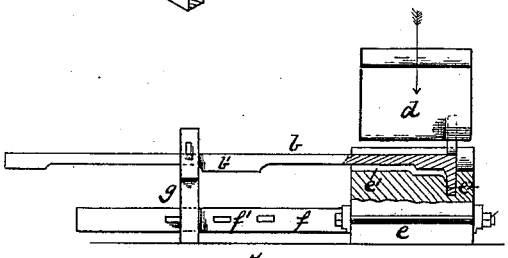


Fig. 7.

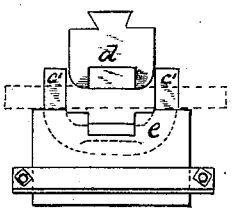


Fig. 6.

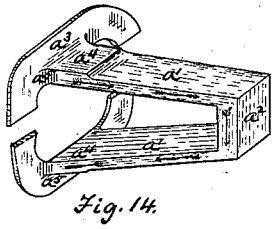


Fig. 14.

WITNESSES.

W. B. Corwin

Jno. K. Smith

INVENTOR.

Dan St. Clair Wineland.

by his atty's

Bakewell & Kerr

(No Model.) 2 Sheets—Sheet 2.

# D. ST. CLAIR WINELAND.

## MANUFACTURE OF DRAW BARS FOR RAILWAY CARS.

No. 304,391. Patented Sept. 2, 1884.

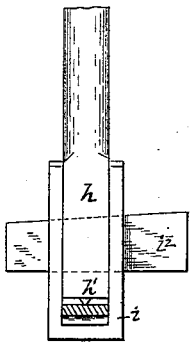

Fig. 8.

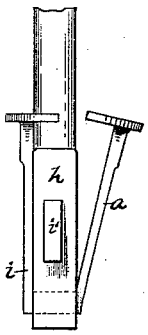

Fig. 9.

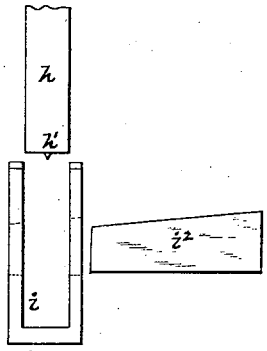

Fig. 10.

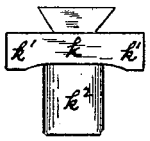

Fig. 11.

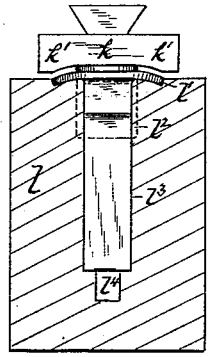

Fig. 12.

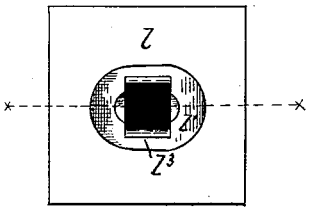

Fig. 13.

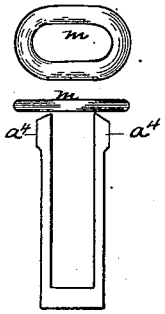

Fig. 15.

Witnesses.
W. B. Conway
Jno. K. Smith

Inventor
Dan St. Clair Wineland
by his attys
Bakewell & Kerr

# UNITED STATES PATENT OFFICE.

DAN ST. CLAIR WINELAND, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND WICKLIFFE C. LYNE, OF SAME PLACE.

## MANUFACTURE OF DRAW-BARS FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 304,391, dated September 2, 1884.

Application filed January 11, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, DAN ST. CLAIR WINELAND, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in the Manufacture of Draw-Bars for Railway-Cars; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view of my improved draw-bar for railroad-cars. Fig. 2 is a view of the blank from which the body of the draw-bar is made. Fig. 3 is a view of the blank from which the face-plates are made. Figs. 4 and 5 are plan views of the bottom and top dies by which the plates are bent and welded to the ends of the top and bottom bars. Fig. 6 is a front elevation of the two dies. Fig. 7 is a side view, partly in section, illustrating the operation of the dies. Figs. 8 and 9 are respectively side and edge elevations of the former for bending the body of the bar. Fig. 10 is a view of the parts detached. Fig. 11 is a side view of the die for shaping and welding the face-plate. Fig. 12 is a sectional view of the bottom die. Fig. 13 is a plan view of the bottom die. Fig. 14 is a view of the bent or unfinished draw-bar, indicating the line of the fiber of the same. Fig. 15 is a view illustrating a modified operation.

Like letters of reference indicate like parts in each.

The head *a* is, in external appearance and form, similar to the usual draw-bar. It consists of top and bottom bars, *a'*, thickened end $a^2$, having a hole, $a^7$, for the passage of the shank of the bolt by which it is attached to the timbers of the car, a face-plate, $a^3$, thickened or re-enforced portions $a^4$, through which the pin-holes $a^6$ are made, and fillets $a^5$ at the point of union between the face-plate $a^3$ and the top and bottom bars.

The body is formed of a suitable bar, *b*, Fig. 2, which is formed either by rolling or forging with a thickened central portion, *b'*, to form the heel $a^2$, and thickened or re-enforced ends $b^2$ to form the parts $a^4$, through which the pin-holes $a^6$ are made. One end, $b^2$, of such a bar is placed in the longitudinal recess *e'* of a bottom die, *e*, with its forward end reaching to the outer edge of a transverse recess or cavity, $e^2$.

The bar *c*, for forming one-half of the face-plate $a^3$, is placed across the top of the die E, directly over the transverse cavity $e^2$, as indicated by dotted lines in Fig. 6. The cavity *e'* merges into the cavity $e^2$ by a flaring intermediate cavity, $e^3$, which is for the purpose of forming fillets $a^5$ around the ends of the top and bottom plates, *a'*, at their union with the face-plate $a^3$. When the bar *b* is in this position, its rear end is supported by a bifurcated head or brace, *g*, mounted on a strap, *f*, extending back from the die *e*. This strap *f* has slots *f'* for the purpose of receiving a suitable key, and the brace is adjustable on the strap *f*, so as to fit it for use in making different lengths or sizes of draw-bars. The brace *g* is provided with slots through the arms of its bifurcations, to receive a suitable key, by which the bar *b* is firmly secured therein. The purpose of the brace *g* is to hold the bar *b* in place in the die *e* when subjected to the swaging action of the top die, *d*, which has a tendency to force it backward, or cause it to shrink away from its proper position. To this end the brace *g* is arranged so that the back end or shoulder of the thickened portion *b'* of the bar *b* shall come against it, as indicated in Fig. 7. The bars *b* and *c*, being in the position stated, are then subjected to the action of the top die, *d*, which is placed in a suitable press or hammer, and is caused to deliver a suitable number of blows upon the upper edge of the bar *c* and the upper face of the bar *b*. The effect is to force the bar *c* down into the transverse cavity $e^2$, bending its ends upward to conform to the side or working-face of the die *d*, and also to produce a firm and perfect weld or union between the bars *c* and *b*. The upsetting and forging action of the die *d* forces the metal into the recess or cavity $e^3$, forming the fillet $a^5$ around the outer side and edges of the end of the bar *b*. The result of this operation, which is performed on both ends of the bar *b*, is shown by Fig. 2, where, at each end of the bar *b*, one-half of the face-plate $a^3$ is welded, and the fillets $a^5$ are formed between the welded parts.

In Figs. 8, 9, and 10 I show the bending de-

vice, which consists of a form, *h*, having a centering-point, *h'*, at its outer end and a clamp or strap, *i*, inclosing two opposite sides and the end. Through the clamp *i* and form *h* are slots *i'*, adapted to receive a key, $i^2$, to secure the parts together after the bar *b* has been placed therein. The bar *b* is inserted, as shown in Fig. 8. Then the form *h* is brought down upon it, the point *h'* entering the countersink $b^2$. Then the sides of the bar *b* are bent up away from the projection *b'* by hammering or forging until they conform to the shape of the form *h*, as indicated in Fig. 9. This article is then removed from the form, and, being properly heated, is placed in a bed-die, *l*, having a cavity, *l'*, for giving the final shape to the face-plate $a^3$, a cavity, $l^2$, for receiving the core of the shaping and welding die *k*, and a cavity, $l^3$, for receiving the unfinished draw-bar as it comes from the form *h*. When in the die *l*, the face-plate, which is now in two parts, *c' c'*, is subjected to the action of the welding and shaping die *k*, said die being provided with jaws *k'* and a central core, $k^2$. The die *k* is mounted in the reciprocating head of a suitable drop or press, and is caused to deliver a suitable number of blows upon the surface of the face-plate lying in the cavity *l'* of the body *l*. The core $k^2$ enters the front opening of the face-plate, and the jaws *k'* act upon the ends of the face-plate, forcing them down into the cavity *l'*, to give them their convex shape and to weld them together, as shown in Fig. 1. The draw-bar is then removed from the die *l*, and is in a finished condition, so far as this invention is concerned. The transverse opening $l^4$ is to permit the insertion of a lever under the end of the draw-bar in the die *l*, to facilitate its discharge therefrom.

In Fig. 15 I show a modified way of forming the face-plate. Here the bar *b* is shown as bent in the manner described without the sections of face-plate welded thereto. A ring or link, *m*, of metal of suitable size and shape, is placed over the ends $a^4$ in the cavity *l'* of the die *l*, and is there subjected to a forging action of the die *k*, which upsets it on the ends $a^4$ and into the cavity *l'*, welding it to the former and giving it the shape of the latter.

I have spoken of bending the bar *b* on the form *h* by forging or hammering. This may, if desired, be accomplished by a bending-machine or other suitable means.

I do not limit myself to the use of the head or brace *g* for holding the bar *b* up to its place in dies, as it is apparent to the skilled mechanic that other devices may be adopted for this purpose.

The draw-bar thus made has a continuous fiber throughout, and is not weakened by welds in the parts exposed to tensile strength.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The die *e*, having a longitudinal cavity to maintain the body-bar, and a transverse cavity communicating therewith, for shaping the bar which forms one-half of the face-plate and welding it to the body of the draw-bar, substantially as and for the purposes described.

2. The die *e*, having cavities *e'*, $e^2$, and $e^3$, substantially as and for the purposes described.

3. The combination of the dies *d* and *e*, substantially as and for the purposes described.

4. The combination of dies *d e*, for welding the face-plate to the body-bar, with a brace for holding the latter up to its place in the bed-die against the action of the forging-die, substantially as and for the purposes described.

5. The face-plate shaping and welding die *l*, having a cavity for containing the body of the bent draw-bar, and a convex-shaped recess for shaping and welding the face-plate, substantially as and for the purposes described.

6. The combination of the face-plate shaping and welding die *l*, with the drop-die *k*, having a core, which enters the opening in the face-plate when acting thereon in the die *l*, substantially as and for the purposes described.

In testimony whereof I have hereunto set my hand this 8th day of January, A. D. 1884.

DAN ST. CLAIR WINELAND.

Witnesses:

W. B. CORWIN,

THOMAS B. KERR.