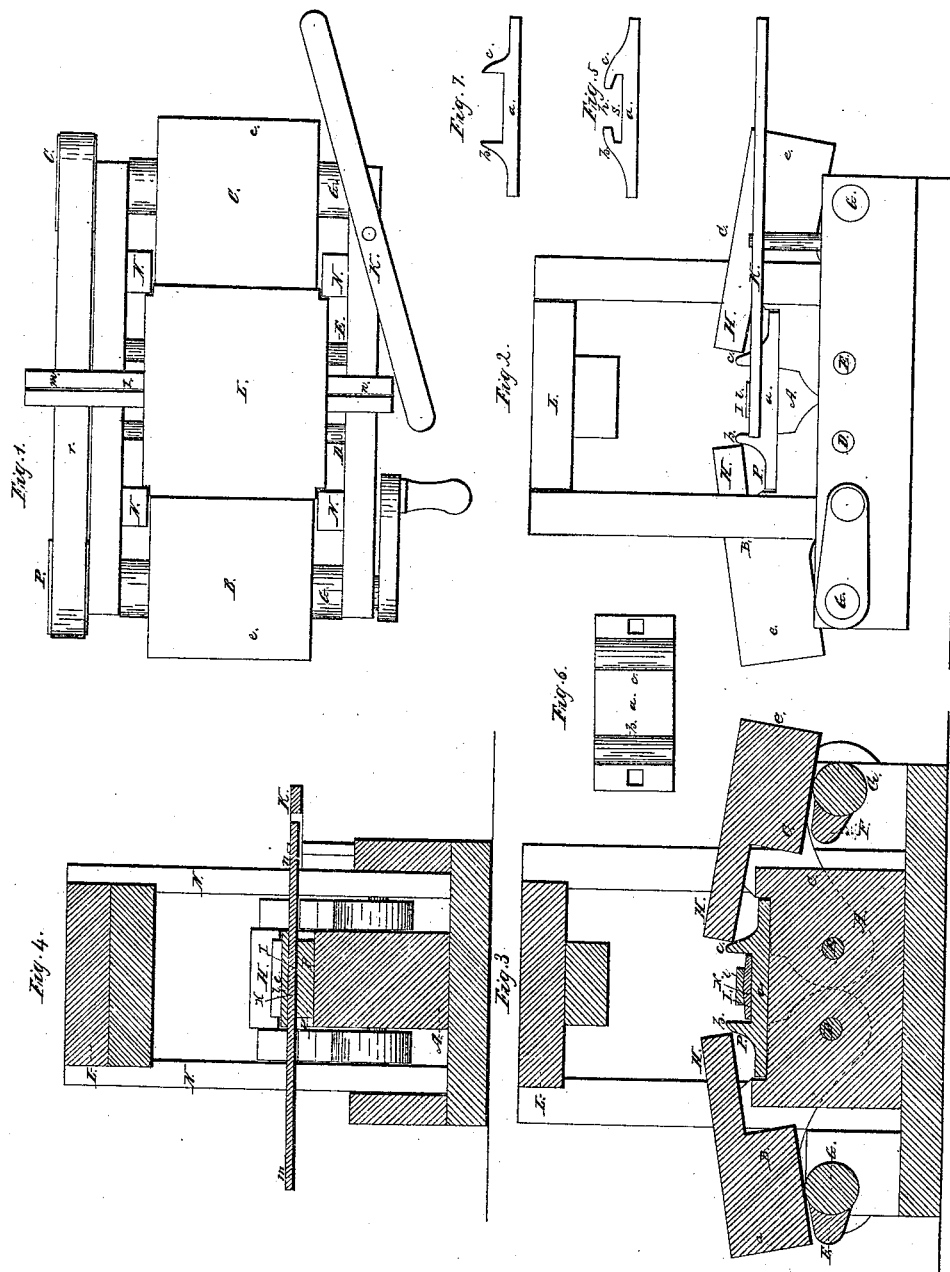


S. A. Cox,

## Making Railroad Chairs,

N<sup>o</sup> 6,683.

*Patented Aug. 28, 1849.*



# UNITED STATES PATENT OFFICE.

SAMUEL A. COX, OF MALDEN, MASSACHUSETTS, ASSIGNOR TO MATHIAS P. SAWYER, OF BOSTON, MASSACHUSETTS, AND JOHN W. HALL.

## MACHINE FOR BENDING THE LIPS OF WROUGHT-IRON RAILWAY-CHAIRS.

Specification forming part of Letters Patent No. 6,683, dated August 28, 1849; Reissued July 14, 1857, No. 479.

*To all whom it may concern:*

Be it known that I, SAMUEL A. COX, of Malden, in the county of Middlesex and State of Massachusetts, have invented a new and useful Machine to be Used in Manufacturing Malleable Metal or Wrought-Iron Railroad-Chairs; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings Figure 1, denotes a top view of the said machine. Fig. 2, is a front elevation of it. Fig. 3, is a central, vertical and longitudinal section of it. Fig. 4, is a central, vertical, and transverse section of it. Fig. 5, is a side view of a wrought iron chair as made by the said machine. Fig. 6, is a top view, and Fig. 7, is a side view of it, as it appears before being subjected to the action of the machine; it being rolled into such shape by means of fluted or grooved rollers.

In the process of making wrought iron chairs, a bar of metal is first wrought or rolled into the shape of which Fig. 7, would represent a transverse section; that is to say into the form of a flat plate *a*, having two lips *b*, *c*, elevated perpendicularly on it. Afterward it is cut up or divided transversely into pieces of the width of the chairs to be made. The peculiar purpose of the machine is to bend these lips from a vertical position into an inclined one, and so that they shall both be perpendicular in part, and either parallel or nearly so, or inclined in part to the plate *a*, as seen in Fig. 5.

In Figs. 2, 3, 4, A, represents an iron bed block, or anvil for receiving and supporting the chair blank while the lips are being bent down.

B, and C, are two bending arms or levers, each being supported and made to turn on a fulcrum, shaft, or journals, as seen at D, and E. The tail *e*, of each of the said levers or arms rests on and over a cam F, which is fixed to a horizontal shaft G, arranged as seen in Fig. 3. Above the fulcrum of each lever, and situated with respect to the bed or base block A as seen in Figs. 2 and 3 is a projection H, which when the lever is raised up, is brought into contact with the lip *b*, or *c*, and bends it down, over, and upon the former I. The said former I,

consists of a bar of steel made to correspond in its transverse section to that of the base plate and neck of the rail to be supported in the chair, or in other words to have a sectional shape agreeing with that denoted at *g* and *h* in Fig. 5, as constituting the internal space of the chair for the reception of the rail.

The former I, may be said to be composed of two parts, viz, the base part K, and the neck part L, the said neck portion being elevated on the other or base portion. From one end of the said former a handle *m*, extends, while from its opposite end there is a projection *n*, for one arm of a hand lever *l*, to act against, the said hand lever being arranged as seen in Figs. 1 and 4, and made to turn horizontally on a fulcrum *o*.

Between the projections H, H, and directly over the base A, or the former I, when placed on the said base, is a drop hammer L, which is suitably supported by and so as to play up and down between guides or posts N, N, N, N. This drop hammer may be elevated by any suitable means and suffered to drop down upon the lips, so as to ensure their being bent down into close contact with the base of the neck and the sides of the former.

The two cam shafts *g*, *g*, should be connected together by gearing or pulleys *p*, *q*, and an endless belt or band *r*, or other suitable equivalents, and in such manner that their movements may be simultaneous, and so as to elevate both the bending projections at one and the same time.

I do not deem it always essential to use the drop hammer, in connection with the bending levers, but generally prefer to do so on account of easily ensuring a proper formation or bending of the lips of the chair.

In using the said machine, a chair blank, formed as seen in Figs. 6 and 7, is placed on the bed A, as seen at P, in Figs. 2, 3, 4; the former I, being placed on the said blank, so as to be between its lips and on its base; the base of the said former being placed flatly on the base plate of the chair. This being effected motion is next given to the cams F, F, and so as to elevate the tails of the bending levers, and thereby cause the projections H, H, to press or bend the lips of the chair, down upon or over, the top surface of the base of the former and against

the neck of it, so far as the same may be possible so to do. Next the drop hammer is to be suffered or caused to fall down upon the lips with force sufficient to ensure their  
5 being bent into close contact with the neck and base plate of the former. By afterward applying power to the lever K, the former may be forced out of the chair. There is an essential difference between my machine and  
10 a drop and die, as the bending levers of the said machine produce the lateral bending preparatory to the final operation of the drop, and do not contact the metal as a drop and die does, and so as to render it  
15 weak or liable to rupture either before or after the operation. By my machine a much stronger and better chair can be made than by the drop and die alone.

20 A wrought iron chair made in the above described manner is entirely new on railroads so far as I have been able to learn. Besides being far more durable or less liable to breakage, than the cast iron chairs it is

not attended with the same danger of breakage when first laid down; it being well 25 known that about ten per cent of the cast iron chairs are broken during the process of laying the rails.

What I claim as my invention is—

The combination of the former I, the 30 bending levers or bending apparatus, and the base block for supporting the chair blank; the whole being constructed and made to operate together essentially in manner and for the purpose herein before specified; 35 the drop hammer being employed in combination with the former I, the base block and bending apparatus substantially as described.

In testimony whereof I have hereto set 40 my signature this twenty-ninth day of May, A. D. 1849.

SAMUEL A. COX.

Witnesses:

DANL. CUSHING,  
JAS. SELDEN.