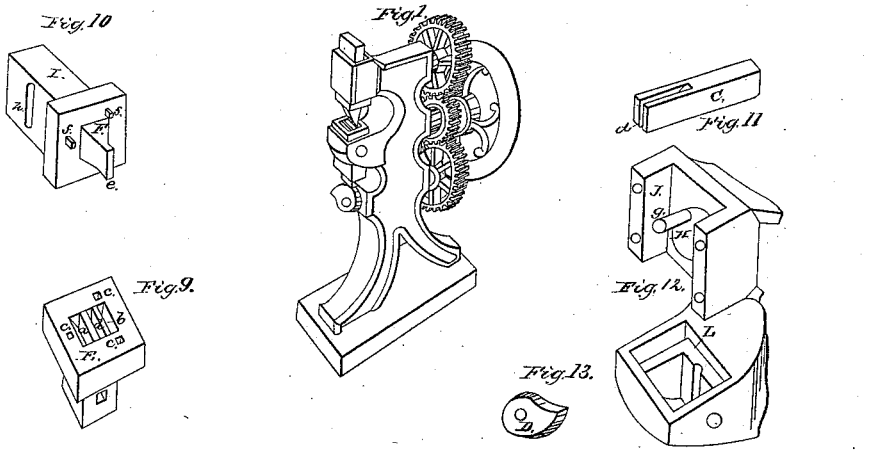
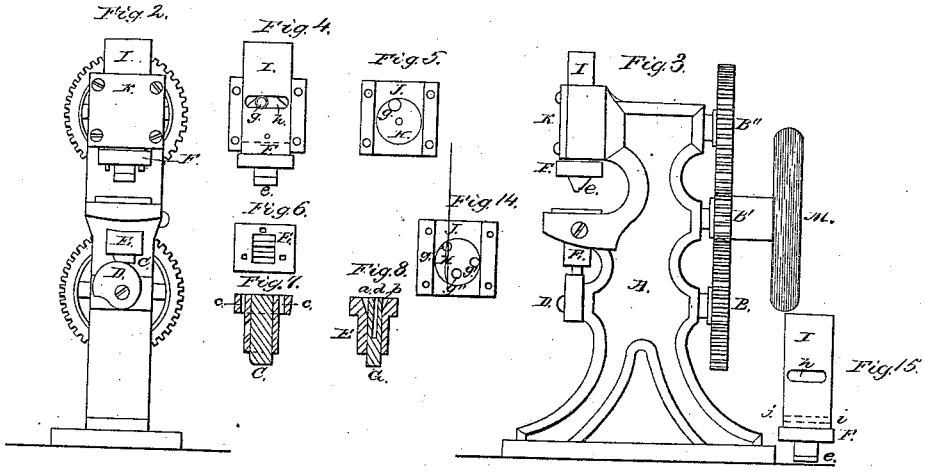
J. H. Mabbitt,

Making Railroad Chairs.

No. 46,370. Patented Feb. 14, 1865.





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UNITED STATES PATENT OFFICE.

JOHN H. MABBETT, OF MECHANICSVILLE, NEW YORK.

MACHINE FOR MAKING WROUGHT-IRON RAILROAD-CHAIRS.

Specification forming part of Letters Patent No. **46,370**, dated February 14, 1865.

To all whom it may concern:

Be it known that I, JOHN H. MABBETT, of Mechanicsville, county of Saratoga, and State of New York, have invented certain new and useful Improvements in Machinery for the Manufacture of Wrought-Iron Railroad-Chairs, upon which chair Letters Patent of the United States were granted and delivered to me on the 2d day of December, A. D. 1862, as by reference thereto will fully appear; and I therefore hereby declare that the following is a full, clear, and exact desciption of the construction and operation of the said invention and machine, reference being hereby had to the accompanying drawings, and to the letters of reference marked thereon, which said drawings make a part of this specification.

Like letters represent and refer to like or corresponding parts.

Figure 1 is a perspective view of said machine, showing the respective parts thereof in their combinations, and each hereinafter fully described and set forth. Fig. 2 is a front view or elevation of said machine. Fig. 3 is a side view or elevation of said machine. Fig. 4 shows the upper movable punching, cutting, and swedging die, with vertical connecting-stem, and with the front plate removed. Fig. 5 shows the upper die frame and recess for such die, with the die removed. Fig. 6 shows the plan of the lower fixed die. Fig. 7 shows a vertical front section of the lower fixed or stationary die. Fig. 8 shows a cross-section of the said lower die. Fig. 9 shows the said lower die complete and in a perspective view. Fig. 10 shows the said upper die complete and in a perspective view. Fig. 11 shows the lower adjustable die moving vertically within the said lower fixed die, as hereinafter described. Fig. 12 is a perspective view of the respective upper and lower die frames, with dies removed therefrom. Fig. 13 shows the cam for operating the said vertical-moving die shown at Fig. 11. Fig. 14 shows that the cylinder H of Figs. 5 and 12 may and can be so constructed as to give any required or desired length of vertical motion to the upper die stem I, for the purpose of working wrought-iron chairs of various thickness in the same machine, in the manner substantially as hereinafter described and set forth. Fig. 15 shows that the said upper die stem I may and can be so contracted as to correspond to the distance required to move up and down the upper die F, in order to manufacture such chairs of various thickness, which said stem is so contracted for such purposes by the making of the same of less length between the horizontal mortise or slot *h* and the upper surface of the die F, as represented by the dotted lines *i* and *j*, same figure.

The nature of my invention and improvements in machinery for the manufacture of wrought-iron railroad-chairs, patented to me as aforesaid, consists in the employment, construction, and combination of the said upper and lower dies, die-frames, and cams, in the manner and for the purposes substantially as herein described and set forth.

Having thus described the nature of my said improvements, I will here proceed to describe the construction and operation thereof, so as to enable others skilled in the art to which my said invention relates to make and use the same, which is as follows, to wit:

A is the frame to receive the machinery herein described for the manufacture of my said chair, and may be of any material which will answer the required purpose, and of any size or shape desired.

B B′ B″, Fig. 3, is the gearing by means of which the said dies are operated. B′ is a small gear operating in and between the said gears B and B″. These gear-wheels are constructed in diameter to correspond to the required movements of the upper and lower die hereinafter described, and of sufficient strength to perform the work required to make the said chair from the plate previously rolled and prepared in thickness and width by the ordinary rollers for rolling iron, and sawed the required length for a chair by the ordinary saws used for the purpose of cutting or separating iron. The gear-wheel B is firmly fastened to a shaft extending across the machine-frame A until it reaches the cam D which said cam is securely fastened to the opposite end of the said shaft, and there adjusted to its required place and position, relative to the said lower movable center die, (shown at *d*, Fig. 11, also at Figs. 2, 3, 7, and 8.) This die, moving in a vertical direction, for the purpose hereinafter described, operates within the lower and fixed die E, Figs. 2, 3, 6, 7, and 8, in conjunction with and by means of the cam D. The said fixed and lower die, E, is constructed in form,

size, and shape to correspond to and with the railroad-track rail to be made and used, which rails vary somewhat upon different roads in size and shape. This form of said die may be as seen at *a* and *b*, Figs. 8 and 9. The said fixed lower die contains recesses *c c c*, Figs. 7 and 9, for the purpose of allowing the spike-holes to be made in the said chair at the same time that the inner and outer lips are made, as described and set forth in my said Letters Patent. The said lower and vertical center moving die, C, contains at its upper end a slot or recess, *d*, Figs. 8, 9, and 11, for the purpose of allowing a slot to be cut or punched in the plate of which the chair is to be formed just before the inner and outer lips of the said chair are cut out, punched, and swaged or formed, both of which operations are performed by means of the upper movable die, F, Figs. 3, 4, and 10, corresponding in size and shape to the said lower fixed die, E. Upon the lower end of the said upper die, F, there is a downward projection, *e*, in size and shape to correspond to the said slot or recess *d*, Figs. 8, 9, and 11, by means of which any sufficient and desired quantity or piece of iron is first removed by being cut and punched from the said prepared plate for the said chair, before the said dies for cutting, punching, and swaging, and forming the said inner and outer lips of the said chair. This piece is so removed by the means and in the manner aforesaid as to allow the said inner and outer lips of said chair to be formed as aforesaid in size and shape to suit the rail to be used, in the manner and for the purposes substantially as described, set forth, and claimed in my Letters Patent, to which reference is hereby made for the construction, object, and purposes of the said chair, which my said machine herein described is designed to make. When the said downward projection *e* of the said upper movable die, F, comes in contact with the upper portion of the said prepared plate or bar from which the said chair is to be made, the said lower vertical and center moving-die, C, is brought in contact with the lower part of the said prepared plate or bar by means of the said lower cam, D, Figs. 2, 3, and 13, and is there firmly held during the operation of the cutting and punching of the said slot through said plate or bar by means of the said cam. When the said slot is so cut and punched and when the said upper die commences to make the said inner and outer lips, then the said movable center die, C, begins to recede downward by means of the same cam, and when the said lips are cut, punched and swaged and formed by means of the said lower die, E, and upper die, F, constructed in the manner aforesaid, and the respective spike-holes are made by means of the punches *f f f*, Fig. 10, then the said movable center die, C, again moves upward by means of the said cam D and forces out from the said fixed lower die, E, the railroad-chair thus completed with the desired inner and outer lips and with proper holes to receive the spike, by means of which said chair is to be fastened to the railroad cross-tie, and when such chair is so forced upward from said die E it may be removed from the machine by the operator with some suitable device for that purpose, or it may be removed by some suitable device connected with the said machine for that purpose, and at the proper time in the operation of the machine. When such chair is so removed, then the operator will place into the said machine upon the said lower die E another blank or prepared plate or bar for such chair when the same is sized by the said projecting die *e* of the said upper die F, when the cutting, punching, and swaging operation takes place, and by means of which dies that kind of chair upon which I obtained my aforesaid Letters Patent is made. The said upper die F is operated in the frame or box shown at Fig. 12 by means of the pin *g*, same figure, which is firmly secured in the cylinder H, Figs. 5 and 12. This pin *g* operates in a slot-mortise in the stem or upper portion of the said upper die, F, in the manner substantially as shown at *h*, Fig. 4. This pin being thus arranged will operate somewhat upon the principle of an eccentric, and will of course force up and down the said upper die F for the purposes aforesaid. The stem I, Figs. 2, 3, 4, and 10, to which the said die F is connected by some suitable means, is made to correspond with the recess J, Figs. 5 and 12, over which I then put the plate K, Figs. 2 and 3, by means of screws, and in this recess or mortise thus made the said stem I operates by means of the pin *g* or cam H, firmly connected to and with the upper shaft, extending to the upper gear-wheel, B^2. The gear-wheels B and B^2 are operated by means of the small intervening gear-wheel, B′, as shown at Figs. 1 and 3, and by means of which the said dies are brought into their proper adjusted position and made to operate for the purposes aforesaid. The said lower die, E, is placed in its required position in the frame L, Fig. 12. Any size or shaped dies may be used for the purpose of making such kind of chair as aforesaid. The iron punched out so as to form the said spike-holes, as well as the iron cut and punched out by means of the said punch *e*, Figs. 3, 4, and 10, will pass out from said dies and from the under side thereof, so as to leave the machine free to act without any obstructions. The said upper and movable die, F, and the said lower fixed die, E, may be so made as to cut, swage, and punch or form any shape or size of inner and outer lips aforesaid as may be desired. M is a balance or fly wheel, or a wheel to which the power may be applied to drive the said machine. The said frame A must be made of sufficient strength and material to answer the purposes required by the said dies. The lower end of the said movable center die, C, rests upon and is operated by the said cam D, for the purpose above described. The said slot or mortise *d* in its upper end is so made as to free itself from the iron cut and

punched from the prepared chair blank or plate by means of the said downward projecting punch or die *e*, as aforesaid.

This machine is adapted to the manufacture of such railroad wrought-iron chairs as were patented to me as aforesaid. Such chairs can be made by this machine in a cheap, quick, easy, permanent, and most durable manner, and for the purposes described, set forth, and claimed in and by the Letters Patent aforesaid.

Having thus described the nature, construction, and operation of my said railroad wrought-iron-chair machine, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The employment of the said upper and movable die, F, and the said lower and fixed die, E, and the said vertical-moving center die, C, operating within said fixed die E, each constructed and combined in the manner and for the purposes substantially as herein described and set forth.

2. The said vertical-moving center die, C, in combination with the said lower and fixed die E, and with cam D, in the manner and for the purposes substantially as herein described and set forth.

3. The cutting and punching in the said prepared chair plate or bar, the said slot or recess by means of the said die or punch *e*, or its equivalent, so as to allow the said inner and outer lips to be cut, punched, swaged, and formed from said chair-plate or prepared bar in a more quick, easy, and substantial manner, substantially as herein described and set forth.

4. The combination of the cam or eccentric D with the moving vertical center punch or die, C, substantially in the manner and for the purposes herein described and set forth.

In testimony whereof I have, on this 13th day of December, A. D. 1864, hereto set my hand.

J. H. MABBETT.

Witnesses:

MARCUS P. NORTON.

CHARLES D. KELLUM.