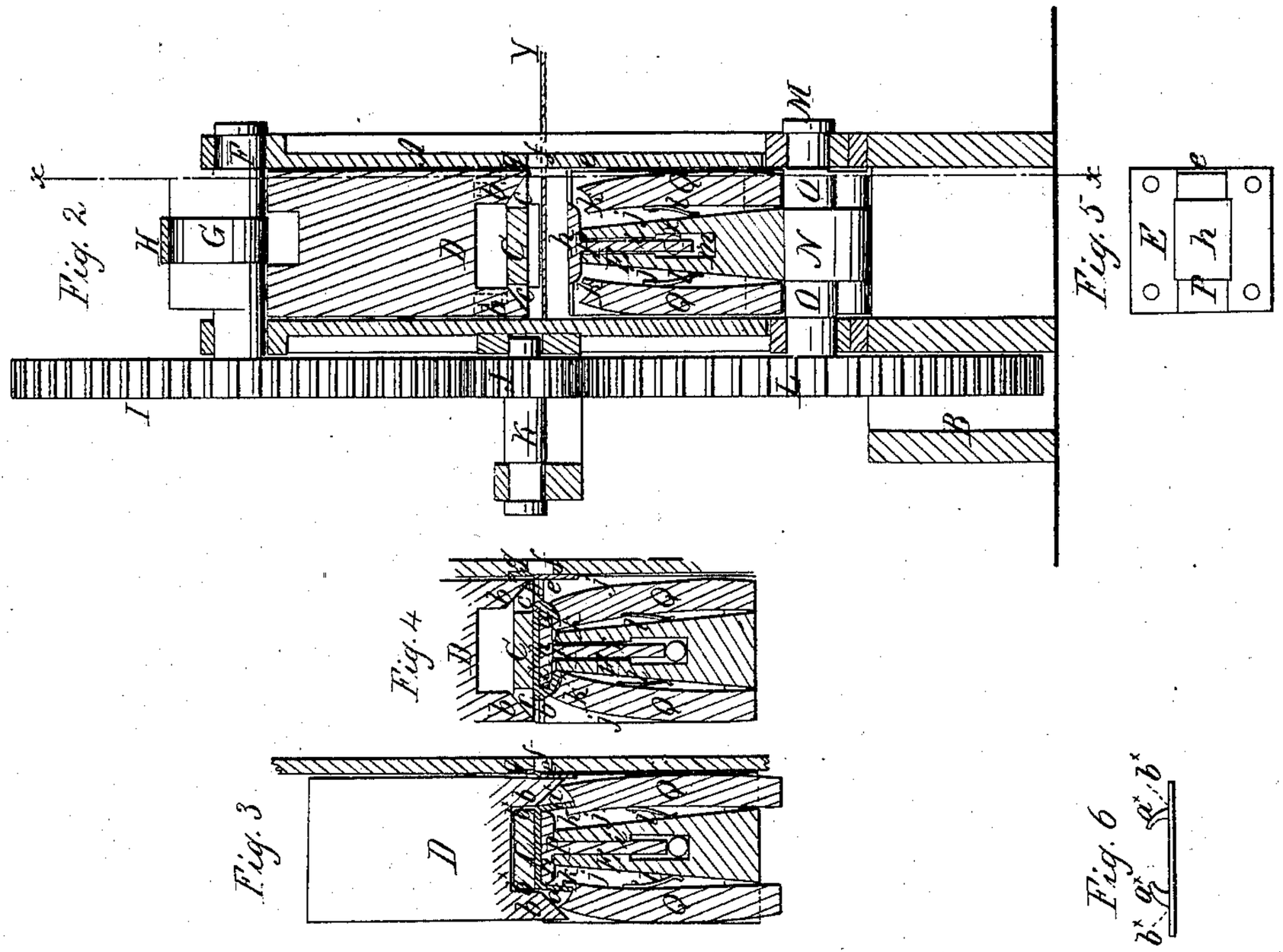
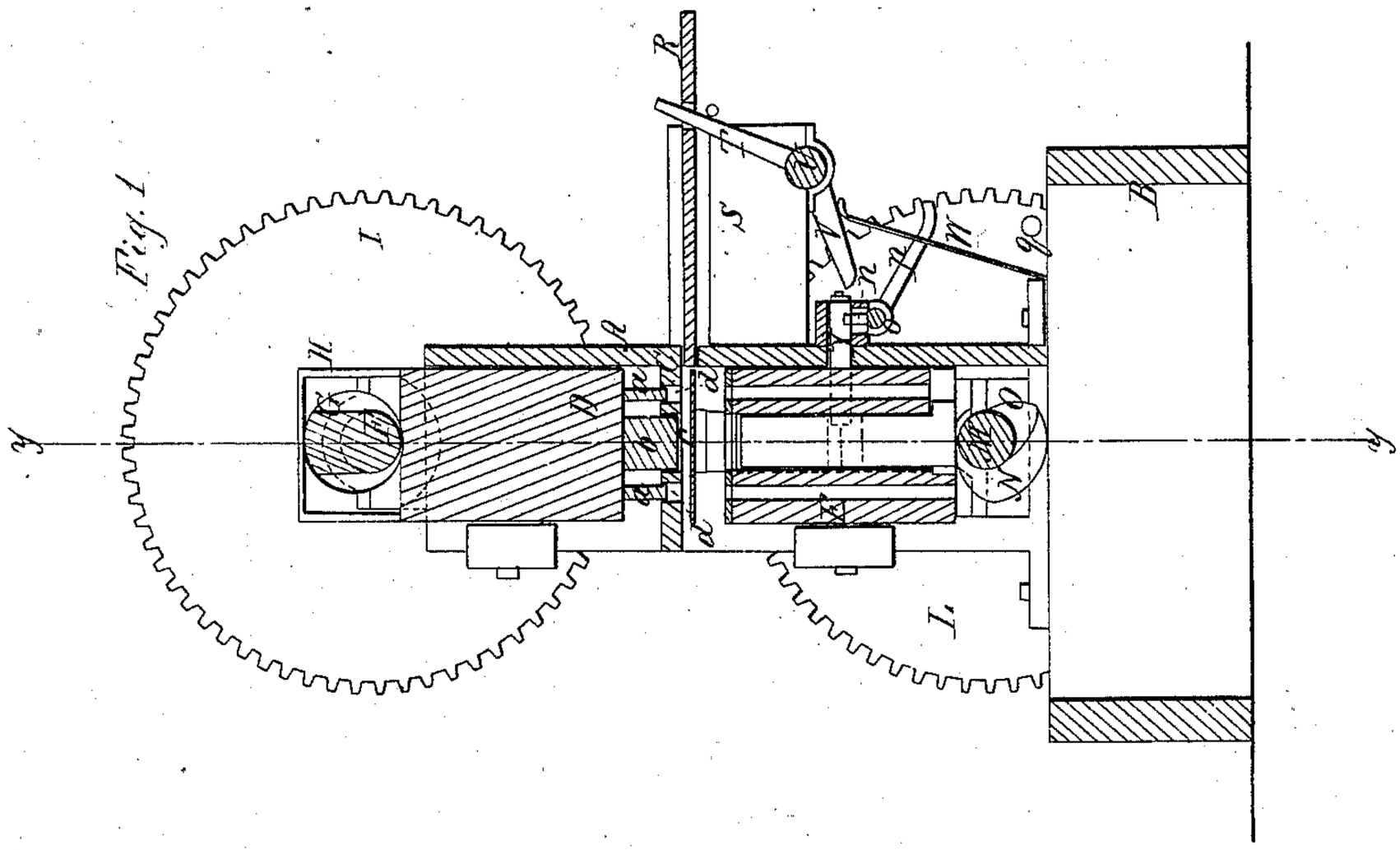
C. WINCH.

MACHINE FOR MAKING RAILROAD CHAIRS.

No. 17,178. Patented Apr. 28, 1857.





UNITED STATES PATENT OFFICE.

CORYDON WINCH, OF JERSEY CITY, NEW JERSEY.

RAILROAD-CHAIR MACHINE.

Specification of Letters Patent No. 17,178, dated April 28, 1857.

To all whom it may concern:

Be it known that I, CORYDON WINCH, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Machine for Making Wrought-Iron Railroad-Chairs; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a vertical section of my improvement; (*x*) (*x*) in Fig. 2, showing the plane of section. Fig. 2 is also a vertical section of the same; (*y*) (*y*) in Fig. 1, showing the plane of section. Figs. 3 and 4, are detached vertical sections of the two dies; the bending and upsetting arms being attached to the lower die, and also bisected. The parts in both figures are bisected as shown by the line (*y*) (*y*); but the two figures show the parts in different positions. Fig. 5 is a top or face view of the lower die. Fig. 6 is a side view of a railroad chair.

Similar letters of reference indicate corresponding parts in each of the several figures.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A, Figs. 1 and 2, represents an oblong rectangular box, secured vertically upon a proper base B.

C, is a horizontal plate secured in the box A; and D, E, are two dies, placed one above and the other below the plate C. The dies fit snugly within the box A, but are allowed to work freely up and down within it.

On the upper part of the box A, a shaft F is placed; and this shaft has a cam G upon it; said cam working within a yoke H on the upper end of the die D. On one end of the shaft F, a toothed wheel I is placed; and this wheel I gears into a pinion J, on a shaft K, which is the power or driving shaft of the machine. The pinion J gears into a toothed wheel L, which is placed at one end of a shaft M; said shaft passing through the lower part of the box A, and having a cam N secured upon it at its center, and a cam O at each side of the cam N. The two cams O, O, are of the same form or shape; the central cam N being of a different form from the cams, O, O.

The lower end of the lower die E rests or bears upon the cam N. The upper die D has four punches (*a*) attached to its face; one near each corner or angle; and a cutter (*b*) is attached to each side of the face. The cutters (*b*) are rounded or beveled at their lower ends, which form their cutting parts; and said cutters project downward a short distance below the punches (*a*), as shown clearly in Fig. 1.

At each side of the plate C, an aperture (*c*) is made; and four apertures (*d*) are also made in the plate; the apertures (*c*) (*d*) are for the purpose of allowing the punches and cutters to work through the plate C.

At one side of the upper part of the lower die E, a knife or cutter (*e*) is attached; said cutter extending the whole width of the die, and having its cutting edge a trifle above the face of the die, as shown in Fig. 2. An opening or slot (*f*) is made through one side of the box A, just below the plate C; and a knife or cutter (*g*) is attached to the inner side of the box, the cutting edge of which knife is placed a trifle below the upper edge of the opening or slot (*f*).

In the center of the lower die E, a drop or mandrel P is fitted. This mandrel is of T-form; its head (*h*), when the mandrel is depressed, fitting in a recess in the face of the die, so that the upper surface of the head will be flush with the surface of the die. The tang or shank (*i*) of the mandrel is fitted loosely in a vertical slot or opening in the body of the die. The head (*h*) of the mandrel P, is of nearly square form, as clearly shown in Fig. 5.

In each side of the body of the die E, a vertical groove or recess (*j*) is made; and the inner sides of these grooves are beveled or inclined; the top parts being farther from the sides of the die than the lower parts. In each of the grooves or recesses (*j*) a bar Q is placed; and the lower ends of these bars rest upon the cams O, O; the die E (as before stated) resting upon the central cam N.

The upper surfaces of the bars Q are inclined or beveled downward from their outer to their inner edges; and an upright ledge or flanch (*k*) is formed at the inner edge of each bar, as shown clearly in Figs. 2, 3, and 4. A small spring (*l*) is attached to the inner side of each bar Q; the ends of said springs bearing against the inner sides of the grooves, and having a tendency to keep the upper ends of the bars Q pressed out toward the outer sides of the face of the die E.

R, represents a sliding bar, which is fitted

in a guide box S, attached to the box A. This bar R passes through an opening in the side of the box A; and an arm T passes through the outer end or part of said sliding bar; the lower end of the arm T being attached to a shaft U, which is fitted transversely in the lower part of the box S. The shaft U has also an arm V attached to one end; and directly underneath this arm V, a spring W is placed; the lower end of the said spring being secured to the base B.

X, represents a rod, which passes through the box A, and into a slot (*m*) in the body of the die E; and a pin (*n*) passes into the outer end of the rod X. This pin (*n*) is attached to a shaft (*o*) which has an arm (*p*) projecting from it, as shown clearly in Fig. 1.

To the inner side of the wheel L, a pin (*q*) is attached, as seen in Fig. 1.

The operation of the machine is as follows: The bar Y (see Fig. 2) being properly heated, is passed through the opening (*f*); its end bearing against the inner surface of the opposite side of the box A. Motion is given to the driving shaft K in any proper manner; and the lower die E rises first by means of the cam N; and the knives (*e*) (*g*) cut the "blank" from the bar Y; and said blank is grasped firmly between the plate C, and the face of the die E; at this moment the upper die D descends by means of the cam G; and the cutters (*b*), (*b*), slit or cut and bend down a lip (a^x) at each side of the blank; and the punches (*a*) punch the necessary spike holes in the blank. The cutters (*b*) bend the lips (a^x) down in a vertical or nearly vertical position, as shown in Fig. 3; and the two bars Q, Q, are then raised by the cams O, O; and the upper ends of the bars, in consequence of bearing or being forced against the beveled or rounded lower surfaces of the cutters (*b*) (*b*), are deflected inward or toward each other as they are moved upward, and the lips (a^x) are bent inward and underneath the head (*h*) of the mandrel P, as shown in Fig. 4. The ends of the lips (a^x) bear against the ledges or flanches (*k*), and consequently the lips are prevented from being pressed out longitudinally; but the metal is in consequence "upset," or compressed so as to cause the angles (b^x), formed by the junction of the lips with the plate or base of the blank, to be made quite thick,—considerably thicker than any other portion of the chair; see Fig. 6.

When the lips (a^x) are bent in proper form, the upper die D rises, and the lower die E drops; but the mandrel P and chair are retained by the rod X, which is forced underneath the tang (*i*) by a spring (c^x), when the tang passes above the rod, the mandrel being retained till the pin (*q*) strikes the arm V, on the shaft U, and thereby throws forward the bar R, and causes it to discharge the finished chair from the mandrel P. When the pin (*q*) has passed the arm V, the spring W throws the bar R back to its original position. The pin (*q*) then strikes the arm (*p*) on the shaft (*o*), and said shaft is consequently so actuated that the pin (*n*) will draw back the rod X, allowing the mandrel to descend or drop in the die E, so that the outer surface of the head (*h*) will be again flush with the face of the die E, and the parts ready to repeat the operation described.

The above machine is extremely simple, and the parts work automatically as they are all driven or operated from one and the same driving shaft. An essential feature in the invention is the upsetting of the lips (a^x), as well as the bending of them. The lips (a^x) require to be much thicker at their junction with the plate or base of the chair; for they are subjected to the greatest strain at this point. This upsetting of the lips is done in a perfect manner in consequence of having the ledges or flanches (*k*) at the inner ends of the upper surfaces of the bars Q, Q, and giving the lateral and upward movement to said bars as described.

I am aware that a number of machines have been devised for making railroad chairs from wrought iron; and dies operated by cams, or their equivalents, have been used and arranged in various ways, in connection with cutters, benders, &c. I therefore do not claim, separately or in itself considered, either of the parts herein described, irrespective of the peculiar construction and arrangement of the same. But

What I claim as new, and desire to secure by Letters Patent, is:

The two bending and upsetting arms or bars Q, Q, having their upper surfaces made inclined and provided with ledges or flanches (*k*) (*k*) at their inner edges; the bars being operated or moved as herein shown and described, so as to both bend and upset the lips (a^x), and thereby increase the thickness and consequently the strength of the lips where most required, viz., at the junction of the lips with the plate or base of the chair.

CORYDON WINCH.

Witnesses:
W. TUSCH,
SELIM FRAS. COHEN.