

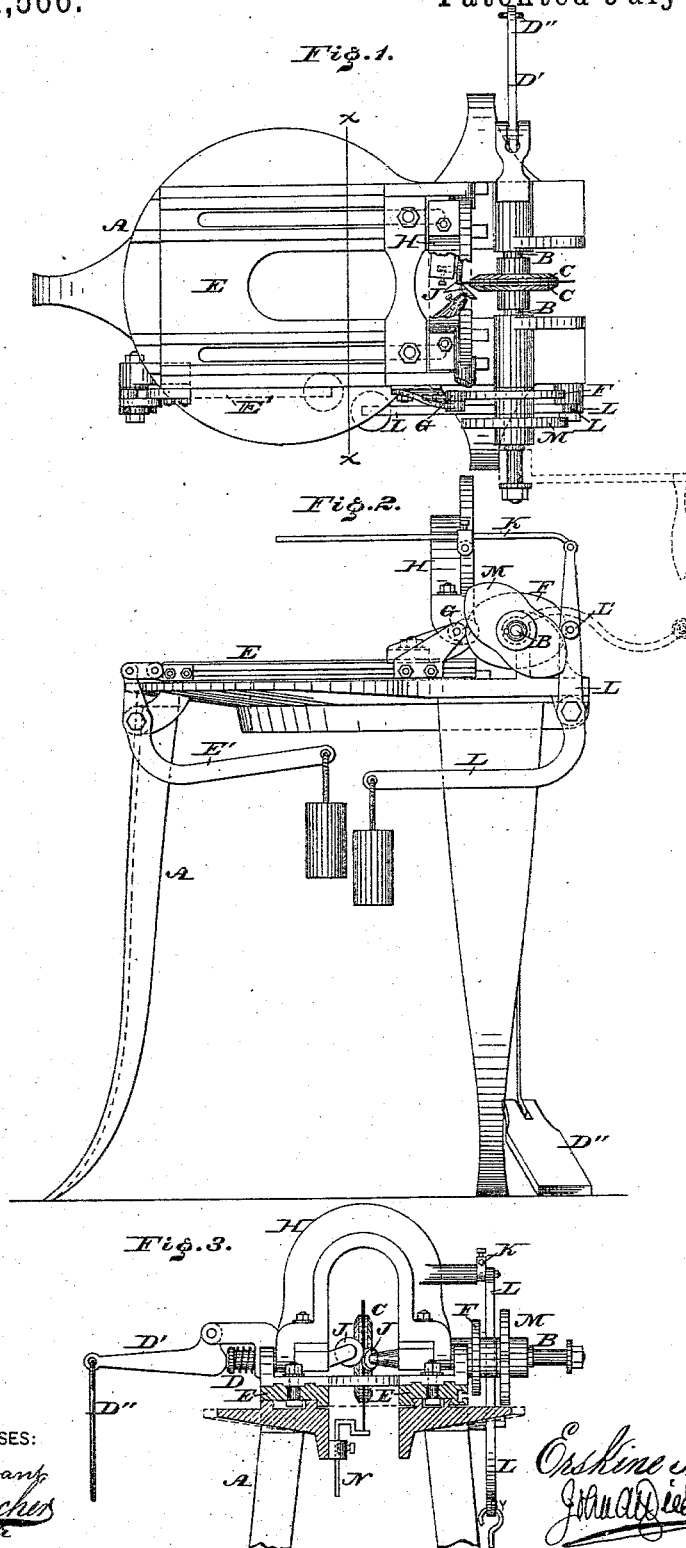
(No Model.)

E. A. COLES.

MACHINE FOR CUTTING SHEET METAL INTO OVAL FORMS.

No. 301,566.

Patented July 8, 1884.



# UNITED STATES PATENT OFFICE.

ERSKINE A. COLES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-FOURTH TO FREDERICK W. TROEMNER, OF SAME PLACE.

## MACHINE FOR CUTTING SHEET METAL INTO OVAL FORMS.

SPECIFICATION forming part of Letters Patent No. 301,566, dated July 8, 1884.

Application filed July 27, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, ERSKINE A. COLES, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Machines for Cutting Sheet Metal, &c., in Oval and other Forms, which improvement is fully set forth in the following specification and accompanying drawings, in which—

Figure 1 is a top or plan view, partly broken away, of the machine for cutting sheet metal embodying my invention. Fig. 2 is a side elevation thereof. Fig. 3 is a vertical section in line *x x*, Fig. 1.

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

My invention consists of a machine for cutting sheet-metal, &c., into oval and other forms, whereby the work is accomplished in a true, uniform, and expeditious manner.

Referring to the drawings, A represents a table, which is properly supported, and on which is mounted a two-part shaft, B, the inner ends whereof carry heads C, between which the sheet of metal to be cut is clamped. One part of the shaft B rotates in fixed bearings, and has connected with it a crank-handle for operating purposes, and the other part is adapted to slide and rotate in its bearings, and has in contact with it a spring, D, and lever D', which operate in reverse order for opening and closing the heads C for the application and removal of the sheet, said lever being attached to a treadle, D".

Fitted to the table A is a horizontally-arranged carriage, E, and secured to the shaft B is a former or shaping-piece, F, which bears against a roller, G, on said carriage E, the contour of the piece F coinciding with that which it is desired to impart to the sheet. To the table is pivoted a weighted lever, E', which is connected with the carriage E, the object whereof is to hold the roller G constantly in contact with the former or shaping-piece F.

To the carriage E, at the end adjacent to the shaft B, is pivoted a yoke, H, to whose lower end are secured the cutters J of the machine,

which are so disposed that when the sheet is clamped to the heads C they occupy positions on opposite sides of said sheet.

Connected with the yoke H is an arm, K, to which is pivoted a weighted lever, L, the bearings whereof are on the table A, said lever carrying a stud or roller, L', which rests against a cam, M, the latter being secured to the shaft B, and imparting its motion to the yoke H, said weighted lever L being held constantly engaged with the cam M.

The operation is as follows: The head on the sliding part of the shaft B is held separated from the other head by the action of the spring D, and the sheet or plate of metal to be cut is placed between the two heads and rested on the gage and support N, which latter is secured to the table A below said heads. The treadle D' is then depressed, whereby the heads firmly clamp the metal between them. The crank-handle on the shaft B is now rotated, whereby the metal is carried around with the shaft, and, owing to the former or shaping-piece F, the carriage E is moved in accordance with the contour of said former or shaper. As said former is in the present case of oval shape, the cutters J, which are connected with the carriage E, are moved nearer to and farther from the center of said cutter, due to the oval contour of the former, and thus the rotary cutters or shears are presented to and act upon the rotating piece of metal in such manner that it is cut in oval form. As the curvature of the shaped or cut metal changes, due to the oval form imparted to the same, it is important to present the cutters thereto at different angles relatively to the greater and less curves of the same, as is practiced in cutting with hand-shears, it being noticed that while said angles may increase or decrease they are nevertheless tangential to the metal; hence the yoke to which the cutters are directly attached, and which is pivoted to the carriage, receives motion from the cam M in such manner that the cutting-edges of the cutter assume angles more or less obtuse or acute as they act upon the metal while cutting the greater or less curves, so that the cut is made smooth and without buck-

ling. When the crank-shaft has completed its rotation, the treadle is let go, and as the heads C are relieved the shaped metal may be readily removed, after which a fresh sheet or piece of metal is applied to the heads, and the subsequent operations are similar to those previously stated.

It will be seen that the sheets are shaped or cut true and uniform and with smooth edges, and the work is rapidly and expeditiously accomplished. In order to cut larger sheets or plates into oval form, the yoke H is set back from the heads the required extent, so as to adjust the position of the cutters relatively to the required dimensions of the shaped metal, it being seen that the carriage E is longitudinally slotted to receive bolts which are passed through the slots into the base of the yoke and tightened by nuts, whereby the yoke and connected parts are securely held in adjusted position, the bar or arm K being also adjustably connected to the yoke.

The former or shaping-piece F may be of other rounded forms than oval, as is evident, without departing from my invention.

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

1. A machine for cutting metal into oval form, having cutters which are attached to a yoke or support, which has pivotal motions on a sustaining-carriage, substantially as and for the purpose set forth.

2. A carriage supporting a pivotal yoke and cutters connected with said yoke, in combination with a shaft carrying a holder for the metal, a former or shaper controlling the action of the cutters, and a cam imparting motions to the pivotal yoke, substantially as and for the purpose set forth.

3. The holder, former or shaper, cutters, and carriage, in combination with the yoke H, arm K, lever L, with stud or roller L', and cam M, substantially as and for the purpose set forth.

4. A longitudinally-slotted sliding carriage having cutters attached thereto, and bolts which are passed through said slots, in combination with a former which engages with said carriage, a yoke, a rotary holder for the metal located adjacent to the cutters, and the adjustable bar or arm K, operating substantially as set forth.

E. A. COLES.

Witnesses:

JOHN A. WIEDERSHEIM,  
A. P. GRANT.