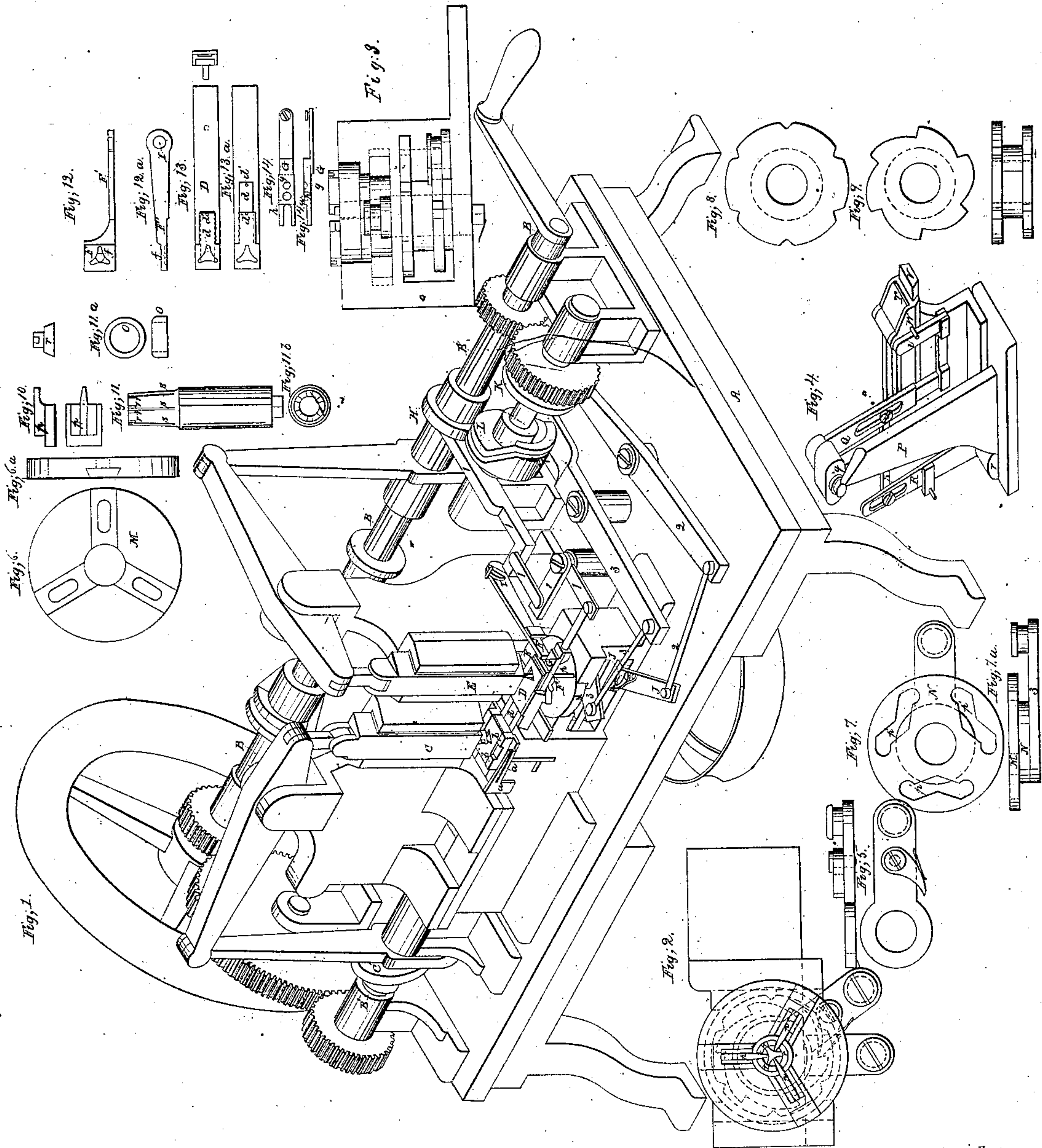


E. H. Perry,

Making Ornamental Chains

N^o 20,955.

Patented July 20, 1858.



Inventor;
Edmund H. Perry.

UNITED STATES PATENT OFFICE

E. H. PERRY, OF PROVIDENCE, RHODE ISLAND.

MACHINE FOR MAKING CHAIN.

Specification of Letters Patent No. 20,955, dated July 20, 1858.

To all whom it may concern:

Be it known that I, EDWIN H. PERRY, of the city of Providence, in the county of Providence and State of Rhode Island, have
5 invented certain new and useful Improvements in Machines for Making Ornamental Chain from Sheet Metal; and I do hereby declare that the following is a full and exact description thereof, reference being had
10 to the accompanying drawings, making a part of this specification, and to the letters of reference marked thereon.

Figure 1, is an isometrical perspective view of the complete machine and Figs. 2
15 to 14^a inclusive are detail drawings of the parts.

The same letters refer to like parts in all the figures.

In the accompanying drawings, A, (Fig.
20 1) is the table to which the parts are affixed.

B, is the main shaft from which motion is communicated to the several parts.

The sheet metal from which the chain is to be made having been prepared, it is
25 cut into long and narrow strips of a width just sufficient to obtain the full sized link. I take one of these strips and insert one end through the split finger *a*, between the guides, *b*, *b*, into the jaws of the feed nip-
30 pers, Fig. 4, on the back side of the machine. Motion being given to the main shaft the following operations ensue: Punch, C, of the form of which the blank link is to be, operated by cam C' descends through
35 the cutter underneath the strip of metal and cutting out a blank link deposits it in a similarly shaped perforation in a carrier, D (Figs. 1, 13) through which it would fall were it not for the presence of the false
40 bottom plate, *d*. Punch, C, then rises out of the cutter and the carrier bearing the blank upon its false bottom moves from under the cutter toward the plunger E. In the course of the passage of the carrier in
45 that direction the end of the false bottom plate, *d*, comes in contact with a second perforated plate, F, (detail Fig. 12) the top of which is on the same level with the top of the false bottom plate, this arrests
50 its further progress, but carrier D still continues its course and sliding the blank on to plate F drops it into the cavity, *f*, in the same (Fig. 12). The shape of cavity, *f*, corresponds to that of the blank while its
55 center is pierced with a hole, through the

plate, of the same general shape that the chain is to be when formed. The plunger E, now descends and lightly taps the blank to insure its being out of the carrier, then rises and permits the carrier to retreat to
60 its first position. A pin, *d'*, on the false bottom plate (Fig. 13) comes in contact with the carrier in its retreat which with a stop properly located, against which the end of the plate shall strike to prevent its being
65 moved too far by its friction with the carrier insures its safe return to a proper position under the perforation in the carrier.

G (Fig. 1 detail Fig. 14) is a sliding bar having upon its face a die, *g*, of the form
70 into which the body of the link is to be struck and also a hole, *h*, entirely through it (Fig. 14) large enough to permit the passage of the plunger E when the link is on the end of it. This plate G is so op-
75 erated by the bell crank-connecting links 1, 1, and cam H on the main shaft that the hole, *h*, and die, *g*, are alternately placed directly under the plunger E.

The blank link having been deposited in
80 the cavity, *f*, in plate F as above described and the carrier returned to place the die, *g*, in plate G (Fig. 14) is first brought in line underneath, and the plunger, E, descends again and forces the body of the blank only
85 through the cavity, *f*, into the die and strikes it up leaving the arms of the blank in consequence turned up and pressed hard against the plunger they being encircled by the sides of the perforation through which the
90 body of the link has been driven. The perforated plate F is attached to the arm F' which is pivoted at I so that as the plunger E rises after the operation just described plate F may also rise with it and hold the
95 link on to the end of the plunger. In this way I am enabled with certainty to lift the blank after it has been struck up out of the die without which the machine would be inoperative. The plunger E having risen
100 carrying the link on its end held there as described the cam H moves the sliding bar, G, and brings the hole, *h*, Fig. 14 in line underneath the plunger. The plunger E now for the third time descends farther than before
105 and forces the blank entirely through the perforation, *f*, Fig. 12 in plate F and also entirely through the hole, *h*, in the sliding bar G down into the grasp of an upright spring tube (not represented in Fig. 1 but shown 110

in detail in Figs. 11, 11^a) where the link is taken off as the plunger withdraws, and there retained.

At some time previous to the final descent of the plunger the forming tube is rotated by means of a pawl (Fig. 5) acting upon a ratchet wheel, Fig. 9, attached to the tube arranged as shown in Fig. 1, such a fractional part of a circle as is necessary in order to make the arms of the succeeding link when deposited in the end of the tube interlock with the arms of the first, which extent of rotation is determined by the number of teeth in the wheel and must bear a relation to the number of arms which the link employed may have. As the plunger E is withdrawn after its third descent as above described a second blank is presented by the carrier and the preceding operations are repeated.

The second blank having been deposited in the forming tube with its arms interlocked with the arms of the first, the bending slides, *p, p, p*, Fig. 7. A reciprocating motion being given by a cam L (Fig. 1) through the connections 3, 3, 3, to the disk plate Fig. 7, located directly under the plate M (Fig. 1) upon which the bending slides are mounted as shown in Fig. 7^a, dart forward toward a common point and entering slit openings, *r, r, r*, (Figs. 2 and 11) in the end of the forming tube, strike against the arms of the under link and bend them over toward each other.

The "forming tube" (Fig. 11) consists of a simple piece of steel similar in appearance only to those long since used in making chain from sheet metal by hand, it has a hole through its axis for the chain as made to pass into the receptacle for it underneath the machine its upper extremity is slit down to the extent of $\frac{1}{2}$ an inch, more or less, the slits being of sufficient width to permit the points of the bendings slides to enter freely. The tube is also split down *s, s, s* (Fig. 11) to the extent of an inch and one half more or less between the slits and the end so formed is brought to a spring temper. A simple contracting collar or ring, O, (Fig. 11^a) is placed over the end of the tube by pressing which down (the shape of the upper end of the tube being conical or by adjusting its position by a screw) the flexible spring ends of the tube can be brought together and the link be taken from the end of the plunger E as by a pair of spring pincers and held there with as firm a grip as is desired. No contrivances whatever for bending the arms are necessary to be placed within the tube, and all devices for holding the upper link in place during the operation of bending the arms of the next preceding link are dispensed with—the functions of my improved tube being to take each link off the end of

the plunger and hold it firmly as it would be held by the human fingers while the arms of the next preceding link are being bent over it—while the firmness of the grasp of the spring fingers can be adjusted at will and the chain in consequence be woven more or less compactly.

I do not wish to limit myself to the particular form of the perforated plate F (Fig. 12) whose sole office is to hold the link after it is struck up upon the end of the plunger to enable the blank to be withdrawn from the die and be deposited elsewhere, as the same result can be accomplished without changing the principles of this part of my invention, by the use of a pair of spring nippers acting independently of the plunger, or with it, which can be made to pick up the link out of the die and drop it in position to be thrust into the tube. The method however, which, I have described I consider the best and simplest to effect the purpose necessary.

I do not claim the combination of a carrier on which the blank link is transported, a die or perforated plate by which the arms of the links are bent inward and a forming guide or tube in which the chain is held and transmitted as such combination is covered by the patent granted heretofore to Lauriston Towne Oct. 20 1857. But

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

1. The perforated plate F Fig. 12, or its equivalent, in combination with a former for striking up the body of the link, the two so combined performing the function of enabling the link after it is struck up in the die to be lifted out of the same for the purpose of being deposited in the next position necessary in the formation of the chain—substantially as described.

2. I claim the arrangement of the slides *p, p, p* for bending over the arms of each link after it has been struck up in the die.

3. I claim constructing the end of the tube wherein the chain is formed, in the manner substantially as described, so that it shall be enabled to perform the function of grasping the link when deposited in it, and retaining it, at the same time holding it firmly in place while the arms of the under link are being bent over it, as set forth.

4. In combination with said tube I claim the adjustable contracting collar Fig. 11^a for the purpose of regulating the degree of resistance which must be overcome in forming the chain by means of which the chain can be at pleasure woven more or less compactly as set forth.

Providence June 10, 1858.

EDWIN H. PERRY.

Witnesses:

JOHN GARTLAND,
HENRY W. GARDNER.