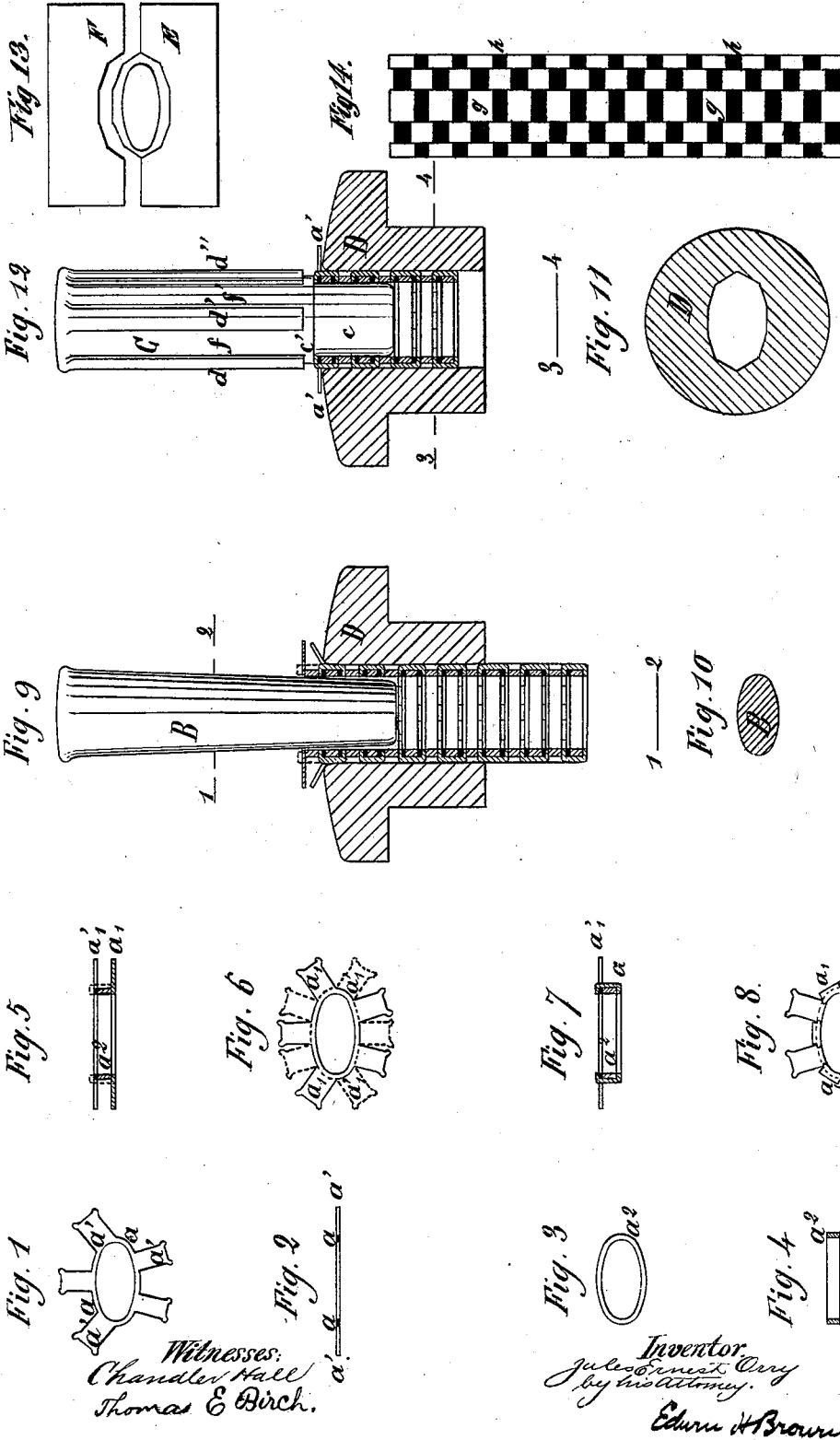


J. E. ORRY.  
 Manufacture of Ornamental Chains.

No. 207,672.

Patented Sept. 3, 1878.



Witnesses:  
 Chandler Hall  
 Thomas E Birch.

Inventor:  
 Jules Ernest Orry  
 by his attorney,  
 Edmund H Brown

# UNITED STATES PATENT OFFICE.

JULES E. ORRY, OF PARIS, FRANCE.

## IMPROVEMENT IN MANUFACTURE OF ORNAMENTAL CHAINS.

Specification forming part of Letters Patent No. 207,672, dated September 3, 1878; application filed April 23, 1878.

### *To all whom it may concern:*

Be it known that I, JULES ERNEST ORRY, of 11 Rue Portefoin, city of Paris, in the Republic of France, have invented an Improvement in the Manufacture of Neck and other Chains, of which the following is a specification:

My invention relates to an improvement in the manufacture of neck and other chains. The said improvement is described below and illustrated by the drawing hereunto annexed.

The object of this invention is to manufacture flexible chains of gold, silver, or other metal having an appearance of massiveness, and possessing a strength hitherto unattainable with the use of a similar weight of metal. The links of this chain are composed of plates of thin metal stamped out in the form of a ring with spurs projecting therefrom, such spurs being at equal distances apart, and so proportioned that the spurs of one ring will fit the space of the next adjoining ring. These rings may be made of any desired form—for example, a regular polygon having any number of sides, or an irregular polygon, or a circle, or an ellipse. The spurs of the one ring or link are intended to overlap or inclose the next adjacent link, and thus to unite the several parts of the chain together. The links are, however, spaced out by the interposition of filling or gage rings formed of a metal that may be dissolved out by an acid that will not affect the metal of which the chain is composed. These filling-rings remain in place until the manipulation of the chain is completed, after which they are dissolved out, leaving the tubular chain both light and supple.

In order to explain the manner of carrying out the invention, reference is made to the accompanying drawing, in which—

Figures 1 and 2 represent, in plan and edge views, a plate of metal stamped out to form a link-blank, which plate may consist of gold, silver, or platinum. This link-blank consists of a ring, *a*, from which stand out at equal distances apart spurs *a*<sup>1</sup> *a*<sup>1</sup> *a*<sup>1</sup>—say, five in number, but more or less may be employed. The spurs of two adjacent links are so situated with regard to each other that on placing the two

together the spurs of the one will fill up the spaces of the other, as shown in Fig. 6.

Figs. 3 and 4 show the second element employed—viz., the filling or gage ring—in the construction of the chain. This is a ring of zinc, *a*<sup>2</sup>, and which is of exactly the same shape as the ring *a* of the link.

To construct the chain, a die, D, (see Figs. 9 and 11,) is employed. A link-blank, *a*, is placed on the die D, and upon it is placed a ring of zinc, *a*<sup>2</sup>, and then a second link-blank, *a*<sup>1</sup>. A taper mandrel, B, (of a corresponding shape to that which it is desired to give the chain,) is then introduced, and the spurs of the lower link, *a*, are turned up, by means of a suitable tool, and round the zinc *a*<sup>2</sup> and the link *a*<sup>1</sup>, and the manufacture of the chain is commenced. The mandrel B should then be withdrawn and another mandrel, C, Fig. 12, introduced in its place. This mandrel C is composed of a part, *c*, which fits the interior of the links, and an enlarged part, *c*<sup>1</sup>, which rests upon the turned-up spurs. By striking the mandrel C the links will be forced into the die D and pushed down until the projections *d* *d*<sup>1</sup> *d*<sup>2</sup> of the mandrel C, by coming into contact with the top of the die, prevent any farther downward movement of the mandrel. During this operation the part *c*<sup>1</sup> of the mandrel C will be forced into the hollow part of the die and squeezed against the turned-over spurs, thereby securing the attachment of the first link to the second. The spurs of the second link-blank are then to be turned up into the spaces *f* *f*<sup>1</sup> of the mandrel C, after which the die is to be withdrawn. Another ring of zinc is next to be placed between the spurs of the second link-blank, and above the zinc a third link-blank corresponding in form to the first. The other mandrel, B, is then to be applied to the die, as before, and the spurs of the underlying blank being turned over the uppermost blank, the mandrel is withdrawn and replaced by the mandrel C, by the aid of which a second link is formed similar to the first. This operation has only to be repeated in order to obtain an indefinite length of chain.

In order to complete the chain when the desired length is obtained, it is to be passed on to a long steel mandrel previously covered

with zinc or other suitable metal. The chain is then placed between a pair of dies similar to those shown at Fig. 13, and compressed therein to give to the chain its desired sectional shape.

The chain thus formed will be rigid, as it contains all the base-metal rings firmly held between its several links. In order to remove these gage-rings it is only necessary to immerse the chain in sulphuric or hydrochloric acid, which acid, having no affinity for the metal of which the chain is composed, will act only on the baser metal and dissolve it out, leaving the chain light and supple.

Fig. 14 shows the chain complete, *g* being a facet, and *h* a space.

The only thing that now remains to be done is to solder clasps or other ornaments to the two ends of the chain, according to the use to which the chain is to be put.

From the foregoing it will be understood that the invention is applicable to the manufacture of chains of various sizes and weights, a proportionately massive appearance being always secured, as no portion of the metal is

uselessly employed, the chain being held together by the bent-over spurs, which act as claws and gripe the links together.

Having now described my invention of improvements in the manufacture of neck and other chains, and having explained the manner of carrying the same into effect, I wish it to be understood that I claim—

The process of making chain by first stamping out a series of rings of sheet metal provided with spurs, next arranging a series of rings successively one upon another in a line or row with intervening rings of a material which may be removed by dissolving them after the chain is completed, and bending the spurs of each ring over its adjacent ring to fasten them together, and finally dissolving the said intervening rings.

In testimony that I claim the foregoing I have hereunto set my hand this 2d day of April, 1878.

JULES ERNEST ORRY.

Witnesses:

J. WARD,  
ROBT. M. HOOPER.