HAROLD R. JOHNSON, OF EDGWOED, RHODE ISLAND, ASSIGNOR TO THE I. R. JOHNSON CO. INC., OF AUBURN, RHODE ISLAND, A CORPORATION OF RHODE
ISLAND.

PIN AND ART OF MAKING THE SAME.


To all whom it may concern:

Be it known that I, HAROLD R. JOHNSON, a citizen of the United States, and resident of Edgewood, in the county of Providence and State of Rhode Island, have invented new and useful Improvements in Pins and Art of Making the Same, of which the following is a specification.

This invention relates to metallic articles for personal wear, such as pins, clasps, buckles and articles of jewelry, hereinafter referred to as pins and to a new method or art of making such articles.

Articles of the kind referred to have a tongue to penetrate or to be fastened behind or through the thing to which they are attached. Common practice makes such tongues of hard, stiff wire, which can be pointed efficiently, but which must be fastened to the body of the article, as distinguished from making them as a part of the body of the article. Such attachment generally involves soldering, or a hinge or spring joint having soldered parts; the assembly of the body and the tongue is expensive in labor, and the soldering heat softens the metal of both the body of the article and of the tongue, when it is desirable that both should be resilient and stiff.

It has been impracticable heretofore, so far as I am aware, to form pin-tongues of filled or rolled-plate construction, having a core of anterior base metal and a precious or "noble" metal surface for the class of article in question, because pointing the pin tongue laid bare the base-metal, and because exposure to heat for the assembly of the joint softened such tongues unduly. This has led to the practice of making rolled-plate, filled or "shell" articles with solid wire tongues, which are either too expensive or of unsatisfactory metal.

I have avoided these difficulties by contriving a pin, clasp or the like having an integral body and tongue, the tongue being round, stiff and strong and capable of being given a proper point metal with the same metal as the body, the article including, if desired, a catch or point-sheath for the pin also integral with the body.

One object of the invention is to provide for making articles of the kind referred to by cold manipulations directly from composite coated, filled or rolled-plate sheet metal stock having one precious metal surface in such a way as to bring the superior metal face, shell or plate of the composite sheet-metal blank to the surface of all exposed parts, and to preserve the finished surface of the plate blank. Another object is to contrive the operations in such a way as to utilize the resilience of the rolled sheet blank to hold the tongue open or against its catch without weakening the tongue proper.

For illustration of one only of the new genus of articles and explanation of the method I have herein shown and described the stages of manufacture of a sheathed clasp pin of a familiar type embodying the new features. In the accompanying drawings:

Figure 1 is a view of the blank;
Figure 2 is a view of the blank after the first operation thereon;
Figure 3 is a view of the blank after the second operation;
Figure 4 is a section on the line 4—4 of Figure 1;
Figure 5 is a section on the line 5—5 of Figure 2;
Figure 6 is a section on the line 6—6 of Figure 3;
Figure 7 is a view in elevation of the completed pin;
Figure 8 is a plan view;
Figure 9 is an enlarged section at line 9—9 of Figure 8; and
Figure 10 is an elevation of a modified design.

As shown in Figures 7 and 8, the particular embodiment chosen for illustration of the pin consists of a body or bar of base metal b having a precious-metal surface g, and having a tongue T and a sheath S. The sheath S is U-shaped in cross section and is formed by two inwardly extending side sections 1 and 2, the sheath being integrally connected with the body by the relatively narrow portion 3, and turned to extend inwardly of the bar. The tongue T is integral with the bar and of the same material, and comprises a tubular roll of the material having everywhere a round cross section, as in the hollow portion 4 and at the solid pointed end 5, as shown in Figures 6 and 9. Throughout these parts the surface g unbrokenly surrounds the material b. The tongue is turned inwardly of the bar so that
its pointed end is positioned for engagement with the sheath. To provide the spring necessary for the tongue, the portion 6 connecting the bar and tongue is given a relatively open curve formation 7, as shown in Figure 7, which extends angularly with relation to the bar. The tongue or the bar, or both, may have a curvature convex toward face 8 of the bar, Figure 10, for a preferred design of the parts having a more effective grip on the cloth in some situations. The portion 8 of the bar near the sheath may also have curved formation both for symmetry and to hold the sheath in proper spaced relation to the bar, to easily release and prevent tearing cloth jammed into the catch end of the pin. These portions 7 and 8 may thus be relied upon to hold the pin in place by preventing slipping.

Lengthwise of the pin of the material clamped by it without danger of tearing the material by jamming it into gripping or wedging places at the end of the pin.

The pin may be made out of any appropriate sheet material of uniform thickness. For instance, rolled-gold stock of so-called \( \frac{1}{10} \) th 10-carat gold, in which a surface layer \( g \) of about one-tenth of the thickness of the stock is ten-carat gold and the remainder \( b \) a suitable base metal, such as a hard brass or other alloy, is a suitable material.

A blank is first die-stamped from the sheet, or otherwise formed, as shown in Figure 1, having a portion \( B \) for the body, a portion \( S \) for the sheath, and a portion \( T \) for the tongue, including the portion \( g \) adjacent the sheath narrowed as shown, to permit curving of the sheath without buckling of the metal. The portion \( T \) for the tongue gradually tapers to a point at the end. In this blanking step, the metal is preferably punched with the face \( g \) toward the female element of the die, so that the gold shell is drawn over or partly over the cut sides, the surface burr on the face \( b \) of the edges if any, being of the base metal. This burr may be removed by tumbling or a coarse polishing brush, if desired.

The blank may now be formed as shown in Figure 2 by striking up or die forming usually referred to as "dapping up," the sides \( L \) and 2 of the sheath and sides 9 and 10 of the tongue by hammering or pressing in a die or otherwise, so that both sheath and tongue are U-shaped in cross section, Figures 2 and 5. In so shaping the sheath and tongue, the surface \( g \) is kept on the exterior with the base metal on the interior. The depression in the tongue is central between the edges 9 and 10. The edges 9 and 10 of the tongue are now brought toward each other and inrolled by swaging [which may be by pressure, by rolling, or by hammering with successive light blows] until the tongue everywhere has a circular cross section, as shown in Figures 6 and 9, and a relatively sharp point. This operation when carried out on a blank tapered to a point, results in a pointed end having a gradual taper. In the preferred practice the swaging comprises rolling the blank transversely to turn in the edges 9 and 10, then further rolling in the sides and point of the tongue. A result of this is to elongate the blank very slightly and solidify and sharpen the point of the tongue, which is practically solid metal without any exposure of the base metal, or undue attenuation of the surface layer \( g \). There is no line of juncture of the edges 9 and 10 apparent in the completed tongue.

The bar \( B \) is now bent on transverse lines to the form shown in Figure 7 or Figure 10. The projecting curvature given the spring portion 6 allows a sufficient curved extent for a relatively strong and permanent spring action of the body of the bar \( B \), which is more flexibly resilient than the cold-rolled tongue \( T \), which has been hardened by the swaging and bending of its material. The spring so formed may be compressed almost indefinitely without fatiguing the metal and breaking off the pin, as would be the case if the pin were bent, or if the bending of the bar of the pin was sharply localized.

The operations described may be carried out on polished or figured stock without damaging the original surface of the stock for the greater part of the pin, and without necessitating coloring or polishing.

I claim:

1. A pin having a body and an integral extension swaged into a tubular tongue having a substantially solid tapering point.

2. A pin having a body of composite sheet metal and an integral extension swaged into a tubular tongue having a substantially solid tapering point, the surface layer of the metal being in unbroken surrounding relation to the tongue throughout its extent.

3. A pin having a body and a tongue integrally formed from one piece of sheet metal, the tongue being a tube having a substantially solid point swaged from a tapered extension of the body.

4. A pin having a body, tongue and point-sheath integrally formed from one piece of sheet metal, the tongue being a tube having a substantially solid point swaged from a tapered extension of the body.

5. A pin consisting of an integral piece of resilient sheet metal having a resilient body and a resilient pin-tongue having a round body and a tapered point formed by cold swaging operations and thereby being of less flexibility than the adjacent part of the body.

6. A pin having a resilient sheet metal body, an integral point-sheath, and an integral pin-tongue of round cross-section,
the pin-tongue being stiffer than the body, and being adapted to be held in engagement with the point-sheath by the resilience of the body.

7. A pin comprising a bar having incurved portions at each end respectively terminating in a point-sheath and an integral pin-tongue, the tongue being a pointed, relatively stiff swaged tube of round cross section, the curved portion of the bar near its juncture with the tube being resiliently yielding and adapted to hold the pin-point outwardly against the sheath.

8. A pin of composite sheet metal having a surface layer of precious metal and comprising a bar having incurved portions at each end respectively terminating in a point-sheath and an integral pin-tongue, the tongue being a pointed, relatively stiff swaged tube of round cross section, unbrokenly surrounded by said surface layer, the curved portion of the bar near its juncture with the tube being resiliently yielding and adapted to hold the pin-point outwardly against the sheath.

9. A blank for a pin comprising a section of composite sheet metal having a surface layer of a precious metal on one face and an integral extension tapered at its end.

10. A blank for a pin comprising a section of composite sheet metal having a surface layer of a precious metal on one face and an integral extension tapered at its end, the edges of the blank having the surface layer drawn partly thereover.

11. The art of making pins comprising cutting a blank from sheet metal having one surface of material suitable for the exterior shell of the pin, said blank having an integral tapered extension; forming the extension by bending it longitudinally, and then swaging the edges and body of the extension inward to form a pointed tubular tongue everywhere enclosed by said material.

12. The art of making pins comprising cutting a blank from sheet metal having one surface of material suitable for the exterior shell of the pin, said blank having an integral tapered extension; forming the extension by bending it longitudinally, and then swaging the edges and body of the extension inward by a cold rolling operation to form a pointed tubular tongue everywhere enclosed by said material.

13. The art of making pins comprising shearing or punching a blank having a tongue extension from composite sheet metal, having a thin layer of precious metal on one face, the direction of cutting being such as to draw said layer over the edge of the remaining material of the blank, forming the tongue extension by bending on its central line, said layer being on the convex side, and finishing the tongue by cold rolling the edges of said extension into apposition.

Signed by me at Providence, Rhode Island, this ninth day of December, 1920.

HAROLD R. JOHNSON.