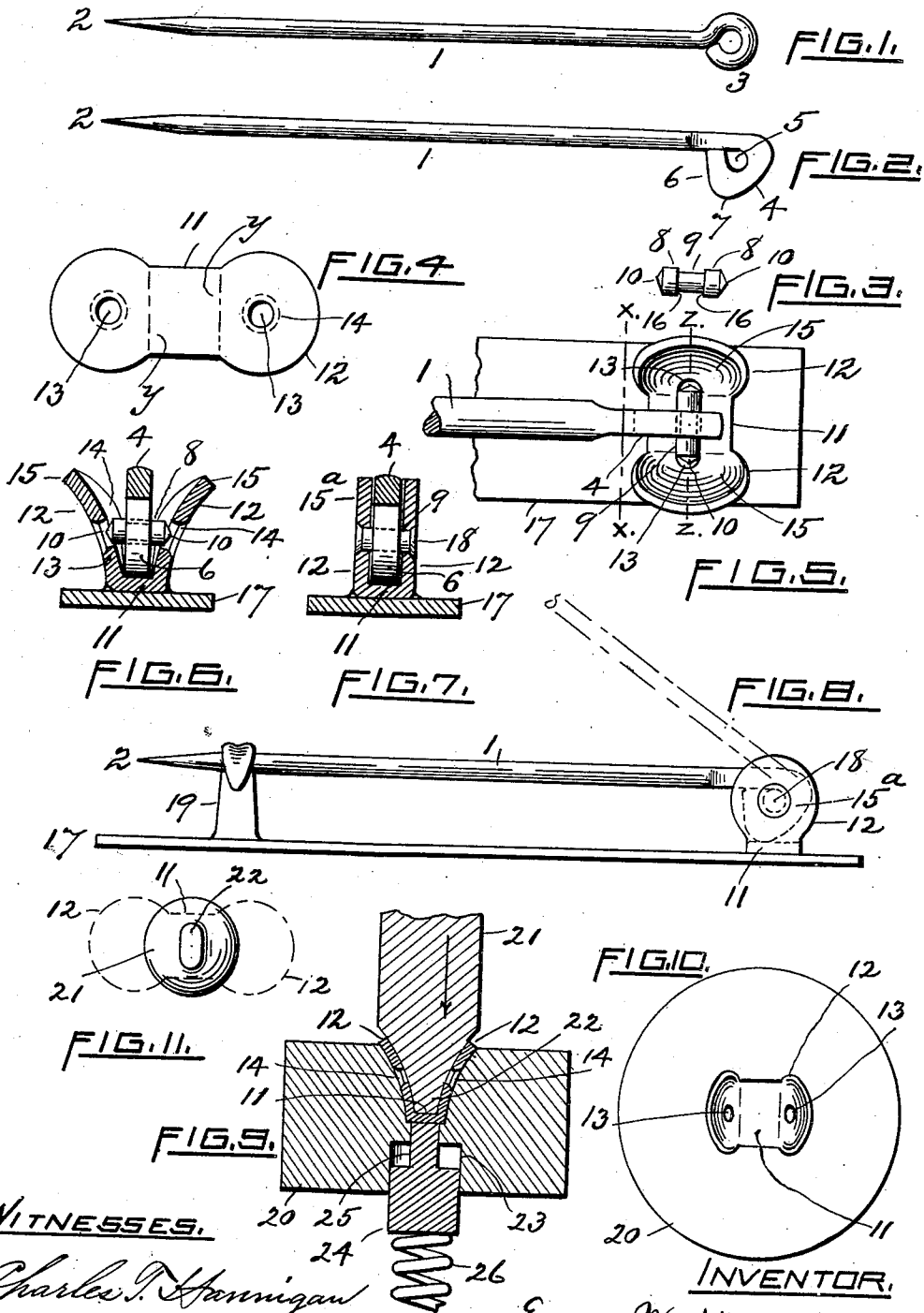


E. W. MOREHOUSE.
PIN AND PIN JOINT.
APPLICATION FILED FEB. 17, 1908.

898,670.

Patented Sept. 15, 1908.



WITNESSES.

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PIN AND PIN-JOINT.

No. 898,670.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed February 17, 1908. Serial No. 416,349.

To all whom it may concern:

Be it known that I, EUGENE W. MOREHOUSE, a citizen of the United States, residing at Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Pins and Pin-Joints, of which the following is a specification, reference being had therein to the accompanying drawings.

Like reference numerals indicate like parts.

Figure 1 shows in front elevation the wire blank from which the pin tongue is made, which is mounted in my improved pin joint. Fig. 2 is a front elevation of said pin tongue. Fig. 3 is a front elevation of the pivot, by which said pin tongue is mounted in my improved pin joint. Fig. 4 is a plan view of the blank, cut from sheet metal and subsequently cupped to form my improved pin joint. Fig. 5 is a plan view of the base plate of a brooch, with my said pin joint secured thereon, and said pin tongue and pivot laid loosely in said pin joint while the latter is in its spread or open position. Fig. 6 is a view of the same parts, as seen partly in elevation and partly in section, the pin tongue being shown in section on line $x x$ of Fig. 5 and the pivot and pin head being shown as seen in elevation from said line; but the pin joint being shown partly in elevation and partly in section on line $z z$ of Fig. 5. Fig. 7 is a view similar to Fig. 6, but with the pin joint closed to the pin tongue, and the pivot riveted at both its ends in position within the pin joint. Figs. 3 to 7, both inclusive, are drawn on the same enlarged scale. Fig. 8 is a front elevation of a brooch provided with a pin catch and also with a pin tongue and pin joint embodying my invention. Fig. 9 is a diametrical sectional view of the die and plunger used in the shaping of said pin joint and illustrates said joint in said formative operation. Fig. 10 is a top plan view of said die. Fig. 11 is a plan view of the operative end of said plunger. In Figs. 9, 10 and 11 the parts there represented are drawn on a much larger scale.

My invention relates to the pin joints used for pivoting the pin tongues of brooches and similar articles; and it consists of the novel construction and combination of the several parts hereinafter described, as specifically set forth in the claims.

My invention is an improvement on the pin joint shown and described in Letters

Patent of the United States No. 834,895, to Frank E. Farnham, dated November 6, 1906, and comprises a modified form of said invention in a new combination.

The pin tongue is made from a cylindrical wire 1 which is suitably tempered, one end of said wire being pointed as shown at 2, and the opposite end being bent into the shape of a circular eye or open loop 3. This cylindrical wire blank is subjected to the action of a die and plunger in a swaging operation, by which said looped end 3 of the wire is flattened and elongated. By the pressure exerted in this operation the metal, constituting the circular loop 3, is caused to flow, and to form a broad, flat head 4, with its two longitudinal sides parallel to each other, the pivot hole 5 being wholly on one side of the pin tongue, instead of being centered on the axial line thereof as in Fig. 1, and a broadened end or portion 6 is made having one edge extending at a right angle with the pin tongue 1 and provided with a fulcrum point 7. The flattened head 4 is perfectly rigid and has no resiliency whatever, but the resiliency of the pin tongue 1 is not impaired to any degree whatever. The pivot used to mount this pin tongue in my improved pin joint is separately shown in Fig. 3. It is preferably made of German silver, or other comparatively soft metal. This pivot has its body portion 8 cylindrical, but has a central, circumferential groove 9. Each end of the pivot is pointed and formed in a conical shape terminating in a sharp apex, as represented at 10.

The sheet metal blank from which my improved pin joint is made is shown in Fig. 4. It has a one central rectangular portion 11 and two ears 12, approximately 270° in extent integral therewith, and extending on the two long sides of said rectangular portion 11, respectively. Each ear 12 has a central, circular aperture or bearing 13, which is tubular in shape and extends half-way through said ear 12. Each opening or bearing 13, on the opposite surface of the ear 6 is reamed out into a concentric conical hole or seat 14, as indicated in Fig. 4 by a dotted circle. These bearings 13 and reamed conical seats 14 are shown most plainly in Figs. 5, 6 and 7. This blank, shown in Fig. 4, is bent and shaped as represented in Figs. 4 and 6, by the die operation illustrated in Fig. 9. Each ear piece 12 is outwardly convexo-concave in planes parallel to the base 11 thereof, as seen in Fig. 5,

and is also outwardly concavo-convex in planes perpendicular to said base, as shown in Figs. 6 and 9. These curvatures of the ear pieces 12 are peculiar, and while they preserve the cupped shape to a sufficient extent to cause the precise preliminary positioning of the pivot therein and to limit the longitudinal movement of the pin tongue 1 and its head 4 within said ear pieces 12, when laid by the workman therein, they also serve to guide the pivot 10 perpendicularly to the base into exact alinement with the pivot holes 13.

The pin tongue and pivot are assembled by sliding one of the cylindrical portions 8 through the pivot hole 5 of the flattened head 4 of the pin tongue 1. The diameter of said portion 8 of the pivot is such as to enable it to be passed slidably, with a close fit, through the pivot hole 5, by means of pliers or other suitable instrument. When this inserted portion 8 of the pivot has wholly passed through the pivot hole, the reduced portion or groove 9 of the pivot comes into the axial line of the pin tongue. Thus the pivot is loosely secured in the pivot hole of the pin head 4, and the pivot then always has some part of its grooved portion 9 in loose contact with some part of the annular shoulder 16 of the pivot, but the pivot cannot accidentally become detached from the pin head 4.

The pin joint is soldered or otherwise secured to the base plate 17 of the brooch. The pin joint is then in its open or spread position, shown in Figs. 5 and 6.

The workman takes with one hand the pin tongue 1, in whose head 4 the pivot has been loosely mounted, as just described, and he lays said pivoted head within the spread or open pin joint, as illustrated in Fig. 5. The concave inner surfaces 15, of the two ears 12 serve as stops to prevent the head of the pin tongue from being thrust too far toward the rear, and they thus act as guides for the proper placing and centering of the pin tongue with relation to the pin joint. In this manner, the pivot ends come into alinement with the bearings or holes 13 of the ears 12, as seen in Figs. 5 and 6. By such cupping or concaving of the inner surfaces of said ear pieces, the pin tongue and pivot can be placed in exact assembling position, without any special care or skill, thus enabling the employment of cheaper workmen than heretofore required for such labor. When the pin tongue and the pivot have been so placed in position, the workman puts the jaws of his pliers upon the outer, convex surfaces of both the ears 12, 12, and presses said jaws toward each other. This movement bends the flaring ears 12, 12, inwardly. The conical ends 10 of the pivot then engage the holes or bearings 13 of the pin joint and so center the larger ends 8, 8, in said holes or bearings. As the pressure of the pliers and the consequent closing of the ears 12, 12,

toward each other continue, the apexes of the conical ends 10 of the pivot come into contact with the inner faces of the plier jaws and are upset or crushed thereby, and spread laterally within the reamed holes 14 of the outer surface of said ears 12, 12, and form rivet heads 18 at each end of the pivot, thereby holding the pivot in place tightly in the ears 12, 12, the pin heads 4, however, being loose upon the pivot. This pinching action of the pliers crushes down said ear pieces 12, 12, into close contact with the flat sides of the outer surfaces of the head 4 of the pin tongue, throughout the entire extent of said head 4, and so confines the pin tongue to a fixed line in opening and closing; and it also changes the shape of said ear pieces 12, 12, so that they are no longer concavo-convex, but are straight and flat, and extend from the base, no longer at divergent angles, but parallel with each other and at right angles with said base, as illustrated in Fig. 7.

The blank shown in Fig. 4 is preferably made of German silver, or other suitable, comparatively soft metal, so that the curvatures or cupping 15 of the ears 12, 12, are easily reduced by comparatively slight pressure to the straight, flattened shape marked 15^a in Fig. 7.

In the springing of the pin tongue into engagement with the pin catch 19, as shown in Fig. 8, the part 7 of the broadened end 6 of the pin head 4 acts as a fulcrum against the base 11 of the pin joint, as illustrated in Fig. 8.

In Figs. 9, 10 and 11 are shown the tools for cupping the pin joint as already described. In these figures 20 is a die, having a matrix, in which the cupped blank is shown. The plunger 21 coöperates with said die and has an elongated end 22, which is rounded at its opposite extremities, as seen in Fig. 11. The dotted lines 12 in Fig. 11 indicate the shape of the blank, as in Fig. 4. The die block has on its lower side a round socket 23. A knock-out or clearer 24, cylindrical in shape, is slidably mounted in the socket 23 and has an axially extending projection 25, whose squared-off upper end normally closes an aperture of corresponding dimensions in the bottom of the matrix of the die 20. A spiral spring 26, mounted loosely in a fixed support, enables the projection 25 to yield to the blow of the descending plunger 21, and automatically clears the blank, when so formed in the die, from the matrix thereof, when the plunger ascends.

In said Farnham Patent No. 834,895, are shown the same pin tongue and pivot, which I have hereinbefore described, and also the bearings 13 and reamed conical seats in the ears of the pin joint. My invention differs from that shown in said Farnham patent in this respect, that, whereas in his device there is no stop to prevent the pin head from

extending too far to the rear in the preliminary assembling of the parts, and therefore the workman must accurately place them by hand within the ears in such position that the pivot ends are in alinement with the bearings in the ears of the pin joint, in my device the cupping 15 of the ears 12, 12, furnishes stops, which limit the rearward longitudinal movement of the pin in assembling, and automatically centers the pin head and pivot in alinement with the bearings 13 of the ears 12, of the pin joint.

The pin joint hereinbefore described constitutes a jeweler's finding and is an article of commerce, to be brought in the market in quantities by manufacturing jewelers for the purpose of combining therewith pin tongues, which have flattened heads together with pivots mounted through said heads.

I claim as a novel and useful invention and desire to secure by Letters Patent:

1. As a new article of manufacture, the jeweler's finding herein described, comprising in one piece a base and two ear pieces, the edge of each ear piece being curved in an arc of approximately 270° in extent and is outwardly convex and inwardly concave in a section parallel to said base and also outwardly concave and inwardly convex in a section perpendicular to said base, and each

provided with a pivot hole concentrically located; said article being adapted to locate accurately within itself a pin tongue provided with a pivot the latter in registration with said pivot holes and said ear pieces of said article being adapted to be flattened by pressure first to engage said pivot in said pivot holes thereof, and then to be further flattened to assume the form of straight, parallel ear pieces extending at right angles with said base.

2. The improved pin joint for brooches and similar articles, made of a single piece of soft metal, comprising two centrally perforated ear pieces and an intermediate base, each of which ear pieces is outwardly convex and inwardly concave in a section parallel to said base and also outwardly concave and inwardly convex in a section perpendicular to said base, and adapted, when subjected to pressure, to be flattened into straight parallel ear pieces extending from said base at right angles.

In testimony whereof I affix my signature in presence of two witnesses.

EUGENE W. MOREHOUSE

Witnesses:

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