Oct. 29, 1935. G. BODEN 2,019,210

PIN

Filed Oct. 26, 1934

Fig. 1



Fig. 3

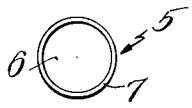


Fig. 6

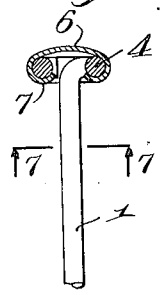


Fig. 2

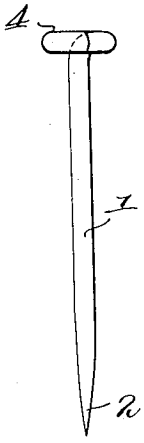


Fig. 4

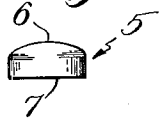


Fig. 5

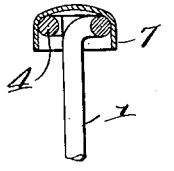


Fig. 7

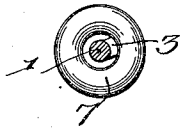
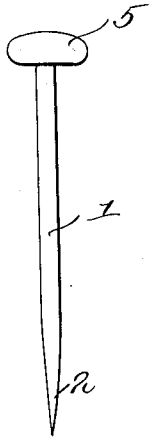


Fig. 8



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UNITED STATES PATENT OFFICE

2,019,210

PIN

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Application October 26, 1934, Serial No. 750,155

4 Claims. (Cl. 24—150)

Many uses of common pins require a pin head larger than can be formed by swaging the end of a pin shank and many attempts have been made to provide such heads by forming them separately from the shanks and then anchoring the heads on the shanks. Prior to the present invention the best method of attaching a separate head to a pin, so far as I am aware, is that disclosed in my prior Patent No. 1,969,688 granted August 7, 1934. According to that method the rearward end of the shank is bent into a ring lying in the plane of the shank and a spherical cap is mounted on and around the ring. However, with that construction the spherical head makes only line contact with the ring and is held against angular displacement transversely of the plane of the ring only by frictional engagement along the line of contact. Consequently, unless the parts are interconnected accurately and tightly the head may shift on the shank. Moreover, it is difficult to shape the head around the ring inasmuch as the only backing inside the sphere for the shaping and clenching process is along the aforesaid single line. Also these spherical heads are easily deformed in use, particularly by compression transversely of the plane of the aforesaid ring, inasmuch as the thin hollow shell is supported or backed on the inside only along said single line of contact. As fully set forth in the aforesaid patent the old construction necessitates slits in the head; and these slits are not only visible in the finished product but of course they weaken the product. The old construction also involves openings in the sides of the head to facilitate drainage in the plating process. Furthermore, it is obviously impossible with the former construction to make a flat-headed pin; and for many purposes a flat head is highly desirable.

Objects of the present invention are to provide an extensive area of contact between the head and shank so that the parts may be tightly and permanently interlocked against relative movement in all directions, to provide such an interfitting relationship of parts that the head may be shaped around the end of the shank with facility, with uniform accuracy and symmetry, and with simple inexpensive tools, to avoid the formation of slits or openings in the outside of the head and at the same time to secure adequate drainage in the plating process, to provide pins having relatively flat heads of any desired diameter, to avoid the disadvantages and weaknesses of prior pins of the type having large heads, to provide large heads which are not easily deformed by abuse, and generally to improve the art of large headed pins.

According to the present invention the rearward end of the shank is bent into the form of a ring but instead of the ring being disposed in the plane of the shank it is disposed in a plane perpendicular to the shank and concentric therewith, the ring and shank being integrally interconnected by a radial portion bridging the space between the two. The head is made in the form of a cup having a relatively flat bottom and a cylindrical side wall. This head or cap is fitted over the aforesaid ring and the side wall is then curled inwardly under the ring, the curling preferably being effected by a swaging tool which compresses the cap tightly against the ring throughout at least approximately half and preferably more than half the cross-sectional periphery of the wire, that is from the top side of the ring wire around the outside of the wire to or beyond the bottom line of the ring. By making the side wall of the cup-shaped cap long enough it may be curled inwardly well beyond said bottom line and thence upwardly inside the ring, so that the edge of the cap is effectively concealed from view and so disposed as not to contact the fingers in inserting or withdrawing the pin. Thus the cap may be produced from a circular disk having no ears, slits or openings and the finished head presents a continuous smooth surface without slits or openings and, if the edge of the disk is curled inside the ring, without visible edge. The finshed cap or head is characterized by an inwardly directed torroidal groove having the same radius of cross-sectional curvature as that of the wire constituting the ring which fits tightly in the groove, whereby the two parts are tightly interlocked both radially and axially.

For the purpose of illustration the preferred embodiment of the invention is shown in the accompanying drawing, in which:

Fig. 1 is a head end view of the shank;

Fig. 2 is a side view of the shank;

Fig. 3 is a bottom plan of the cup-shaped blank for forming the head of the pin;

Fig. 4 is a side view of the head blank;

Fig. 5 is a longitudinal section of the shank and head blank fitted together;

Fig. 6 is a similar section after the side wall of the head blank has been curled under the ring on the end of the shank;

Fig. 7 is a section on line 7—7 of Fig. 6; and

Fig. 8 is a side view of the finished pin.

The particular embodiment of the invention chosen for the purpose of illustration comprises

a shank 1 having a pointed end 2 and having the other end bent outwardly at 3 and thence circumferentially to form the ring 4, which is preferably substantially circular. The blank from which the head is formed comprises a cup-shaped member 5 having a central portion 6 which is substantially flat but slightly crowned and a depending side wall 7.

In the manufacture of the pin the cup-shaped head blank is fitted over the ring 4 as shown in Fig. 5 and the depending side wall 7 is then curled under the ring 4, by suitable tools of well-known type, as shown in Fig. 6. As will be evident from Figs. 6 and 7 the bottom of the head of the finished article is open to facilitate drainage of the cleaning and plating fluids employed in the final finishing of the completed pin.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

I claim:

1. A pin comprising a cup-shaped head having its side walls curled inwardly on a small radius of curvature to form a torroidal groove, and a wire shank extending into the open end of the head substantially concentrically therewith, thence extending outwardly, and thence extending circumferentially of the head in said groove, the external and internal radii of said shank and groove respectively being equal so that the ring and head are tightly interlocked both radially and axially and the diameter of the opening in the head being less than the combined thicknesses of wire measured along a diameter of the head whereby the shank can not be withdrawn from the head by radially compressing said cylindrical portion of the shank.

2. A pin comprising a wire shank having its rearward end bent into a ring substantially concentric with the axis of the shank, and a cup-shaped head seated on the upper side of said ring with its peripheral flange bent under the ring to form tight contact between the head and ring throughout more than half the circumference of the wire and throughout substantially the entire circumference of the ring.

3. A pin comprising a wire shank having its rearward end bent outwardly to a predetermined radius and thence bent circumferentially throughout substantially a full circle into the form of a ring lying in a plane substantially perpendicular to and substantially concentric with the axis of the shank, and an annular member clenched over said ring with its lower edge seated tightly thereagainst throughout substantially its entire periphery, the diameter of the opening in the head being less than the combined thicknesses of wire measured along a diameter of the head whereby the shank can not be withdrawn from the head by radially compressing said cylindrical portion of the shank.

4. A pin comprising a wire shank having its rearward end bent into a ring substantially concentric with the axis of the shank, and a cupped sheet-metal cap fitted over the ring with its peripheral edge crimped under the ring permanently to anchor the shank and cap together.

GEORGE BODEN.