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I. SALZ

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PROCESS FOR SECURING BANDS AROUND PENS OR PENCILS

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Fig. 1.

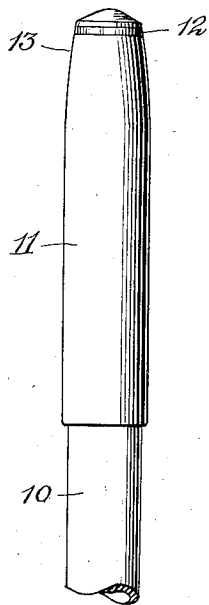


Fig. 2.

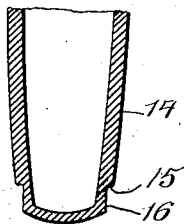


Fig. 3.



Fig. 4.

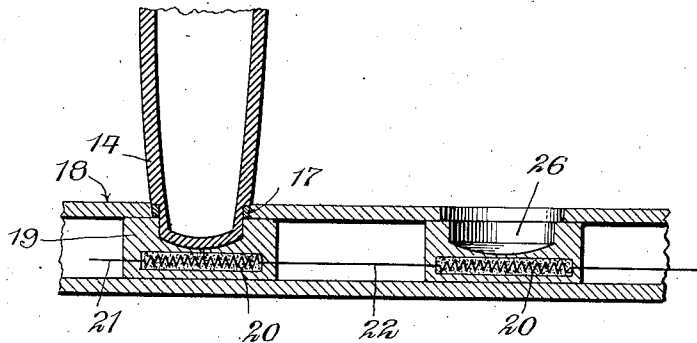


Fig. 5.

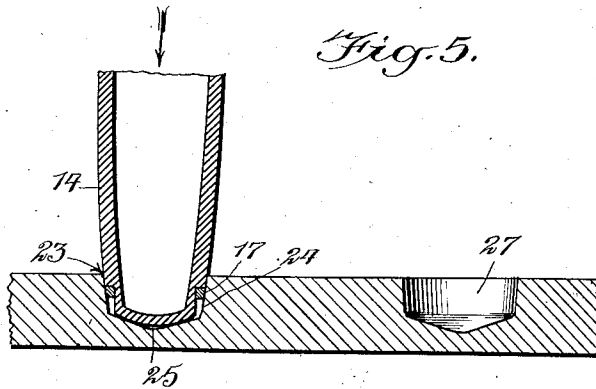
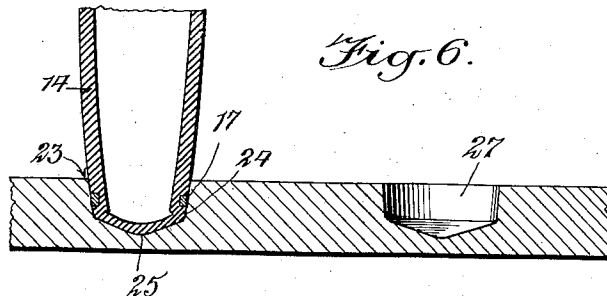


Fig. 6.



WITNESSES

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PROCESS FOR SECURING BANDS AROUND
PENS OR PENCILS

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1 Claim. (Cl. 18—59)

This invention relates to a method for securing decorative or reenforcing bands around the barrel of a pen or pencil formed of materials of the type generally known as plastics.

5 It is the object of the invention to provide an improved method whereby circular metal bands formed in one piece may be secured around the barrel or cap of a fountain pen or mechanical pencil formed of plastic material, so that the band will be countersunk in the barrel or cap, its outer surface flush with the surface of the barrel or cap and so that the plastic material will adhere closely to the band, presenting a smooth, continuous surface free from projecting edges or
15 crevices.

A further object is the provision of an improved method whereby metal bands may be secured around the tapering portions adjacent the ends of a barrel or cap in an economical manner and
20 will be firmly held in position when the method has been completed.

With these and other objects in mind, reference should be had to the accompanying drawing, in which

25 Fig. 1 is a partially fragmentary view of a fountain pen having a band secured around the tapered end portion of the cap in accordance with the present invention;

30 Fig. 2 is a sectional view of the end of a barrel or cap of a fountain pen or pencil formed of plastic material, with a portion of the outer surface of the plastic material removed preparatory to placing the band around the barrel or cap;

35 Fig. 3 is a sectional view of a band of the type which may be placed around the barrel or cap;

Fig. 4 is a sectional view showing the end of a barrel or cap in position in an electric heater;

40 Fig. 5 is a sectional view showing the end of the barrel or cap in a die after being heated and before being re-shaped;

Fig. 6 is a view similar to Fig. 5 showing the end of a barrel or cap in a die after pressure has been applied to the members and the end of the barrel or cap is re-shaped.

45 While in Fig. 1 a band is illustrated as applied to the cap of a fountain pen it is to be understood that it is within the purview of the present invention to apply any number of bands either to the cap or barrel of a fountain pen or pencil.

50 In Fig. 1 the numeral 10 indicates the penholder portion of a fountain pen, 11 indicates the cap, and 12 a continuous metal band secured around the tapered end portion 13 of the cap in accordance with the present invention. In practicing the invention I prefer to use a fountain
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pen or pencil formed of thermo-plastic material or material which is rendered workable upon the application of heat, such as pyroxylin or other cellulose nitrate, cellulose acetate, or vinyl, styrol or glyptal compounds. Other plastic materials
5 which can be rendered workable by the application of a suitable solvent may be used however. The invention has particular application to the securing of a metal band around the tapered end portion of a barrel or cap of a pen or pencil, and in Figs. 2 through 6 the numeral 14 represents the tapered end portion of a cap or barrel.
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In the present process the first step is to remove a portion of the outer surface of plastic material from a point where the band is to be secured
15 around the barrel shown at 15 in Fig. 2, to the end of the barrel, thus causing a portion of the barrel as at 16, to have a reduced external diameter. The outer surface may be thus removed by rotating the barrel in a lathe and shaving off a thin
20 layer of material by means of a sharp instrument. The layer of material thus removed should be substantially of the same thickness as the band to be placed around the pen.

A band 17, similar to the band 12 shown in
25 Fig. 1, preferably having a tapered external surface conforming generally with the taper of the barrel, is then placed around the reduced portion of the barrel and urged into engagement with the shoulder formed at 15. The internal
30 circumference of the band should be substantially the same as the circumference of the reduced portion of the barrel, and the internal surface is preferably untapered, while the external circumference of the band at the end
35 contacting the shoulder at 15 is substantially the same as the circumference of that portion of the barrel.

The plastic material in the reduced portion of the barrel is then made workable by the appli-
40 cation of heat if the material is thermo-plastic, or by the application of a solvent if the material is rendered workable by a solvent. As in the illustrated embodiment the barrel is formed of a thermo-plastic material such as pyroxylin, heat
45 is applied to the reduced portion of the barrel as by means of inserting the end of the barrel into an electric heater 18. This heater is preferably formed of a metal block 19 having a
50 well formed therein of approximately the size and shape of the reduced portion of the pen into which the end of the pen is inserted, and an electric heater element 20 which is connected by the wires 21 and 22 to a suitable source of
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current supply and which is located adjacent the well. The heat may be controlled as by means of a thermostat (not shown), so as to keep the temperature in the well formed in the block 19 at a level which will render the plastic material workable but which is safely below the combustion point of the material. The reduced end portion is placed in the well in the heater until the plastic material becomes workable and it is then re-shaped so as to closely conform to and engage the band 17 and so as to produce a finished barrel having a smooth, uninterrupted surface. This may be accomplished as illustrated in Figs. 5 and 6 of the drawing by placing the reduced end portion in a die 23 shaped so as to produce a barrel of the desired conformation.

As the present invention has special application to securing a band around the tapered end portion of a barrel the die is illustrated as having tapered walls 24 and a concave base 25. The taper of the walls 24 is such as to produce a continuous taper on the surface of the barrel without any ridges or ledges where the band and the plastic material of the barrel meet. When the end of the barrel has been placed in the die as illustrated in Fig. 5, downward pressure in the direction of the arrow is applied to the top of the barrel, producing the finished tapered barrel illustrated in Fig. 6, or similar to the cap shown in Fig. 1, with the plastic material effecting close contact with the band and conforming to the irregularities therein. The outer surface of the band will thus be flush with the surface of the barrel. When barrels of different size or shape have bands secured therearound in accordance with the present invention the well in the heater element may be of different size or shape as shown at 26 in Fig. 4, and likewise, the die will be of different size or shape, as shown at 27 in Figs. 5 and 6.

By means of the present invention it will be seen that a band can be secured around a barrel

or cap of a pen or pencil formed of plastic material, in an inexpensive and simple manner, forming a pen or pencil in which the plastic material effects close contact with the band, conforming to any irregularities therein, forming a continuous and uninterrupted surface, and in which the band is firmly held against accidental displacement.

It is, of course, to be understood that changes may be made in the process as described and illustrated herein without departing from the spirit of the invention; thus, instead of rendering the plastic material in the reduced end portion of the barrel workable by introducing it into an electric heater a suitable solvent, such as acetone, may be employed when the barrel is made of a plastic material, such as pyroxylin, or the die which is employed to re-form and re-shape the barrel may be heated as by means of an electric heating element.

I claim:

The method of securing a ring around a pre-formed hollow barrel made of thermoplastic material comprising first, while the barrel is in hard unworkable condition, removing an annular portion of the outer surface of the barrel from the end of the barrel to the place where the ring is to be located so as to provide an annular seating shoulder for the ring, sliding the ring over the reduced end portion of the barrel into contact with said shoulder, applying heat to the reduced end portion from the exterior thereof so as to render the material workable with the material adjacent the outer surface more plastic than the material in the inside of the barrel, then applying pressure against the reduced end of the barrel to cause the exterior portion of the wall of the barrel to be deformed outwardly to a point even with the periphery of the ring, leaving the interior of the wall substantially undisturbed.

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