Claims

1. Method for producing a screw (10), having the following steps:
   a. rolling a screw wire made of low-alloy carbon steel to produce a screw (10) having a thread;
   b. heating the entire screw (10) to an austenitizing temperature under a carbon atmosphere and/or nitrogen atmosphere and maintaining the temperature;
   c. quenching the entire screw (10) to a bainitizing temperature and maintaining the bainitizing temperature until the screw has a bainitic structure over its cross-section,

   characterized in

   d. that the screw (10) is subsequently hardened locally at its tip (22), by the tip (22) being heated to an austenitizing temperature and the screw (10) being subsequently quenched to a temperature below the martensite starting temperature (M_S).

2. Method according to claim 1, **characterized in** that the carbon atmosphere has a higher carbon content than the screw and/or that the nitrogen atmosphere has a higher nitrogen content than the screw.

3. Method according to one of claims 1 or 2 above, **characterized in** that the screw is kept at an austenitizing temperature in the carbon atmosphere until the edge zone (12, 18) of the screw has a carbon content which is at least 0.2 % higher than the carbon content of the core.

4. Method according to any one of the preceding claims, **characterized in** that the screw (10) is tempered.

5. Screw (10) comprising a thread-bearing shaft (20) and a tip (22), the shaft (20) having a substantially bainitic structure in its core and over its entire cross-section, **characterized in** that the tip (22) substantially consists of a hardened martensitic structure, at least in its edge zone (18).

6. Screw according to claim 5, **characterized in** that in its edge zone (12, 18), the screw (10) has a structure with a higher carbon content than that of its core.

7. Screw according to one of claims 5 or 6 above, **characterized in** that in its core, the shaft has a substantially tempered bainitic structure, and in its edge zone (12), the shaft has a tempered structure with a higher carbon content than that of the core, with the tip (22) having a tempered hardened martensitic structure, at least in its edge zone (18).

8. Screw according to one of claims 5 to 7 above, **characterized in** that the screw (10) is produced using the method according to any one of claims 1 to 4.