CLAIMS

1. A manual tool comprising:

a bit including a base end portion, a tip end portion capable of engaging with a fastening member, and a shaft part that is solid and extends between the tip end portion and the base end portion, the shaft part having a monitored part on which a magnetostrictive material is plated in whole circumference;

a grip including a bit holding part that detachably holds the base end portion of the bit; and

a torque sensor that is of a magnetostrictive type, and includes a detecting part that is penetrated by the bit held by the bit holding part and surrounds an outer periphery of the monitored part of the bit with a gap, and a mounting part that is to be mounted on the grip, the torque sensor being capable of contactlessly detecting a torque acting on the bit, and detachably provided to the grip,

wherein the monitored part of the bit is formed to have a non-circular cross-section and has an outer periphery having a flat surface in order to form a distribution of a magnitude of stress generated on the outer periphery of the monitored part.

2. The manual tool according to claim 1, wherein the torque sensor does not contact with the bit.

3. The manual tool according to claim 2, wherein

the torque sensor is provided on the grip so as to surround an outer periphery of the bit-holding part, and

the bit mounted on the bit-holding part extends though the torque sensor and the detecting part to the outside of the torque sensor.

4. The manual tool according to claim 1, wherein

the torque sensor is formed so as to be mountable to the grip with the bit mounted to the bit holding part.

5. The manual tool according to claim 1, wherein

the cross section of the monitored part of the bit is formed into a polygonal shape, and the monitored part has an outer periphery having a plurality of flat surfaces.

6. The manual tool according to claim 3 or 4, wherein

the monitored part is formed to have a cross-sectional area greater than or equal to a cross-sectional area of the shaft part other than the monitored part.

7. The manual tool according to claim 1, wherein

the diameter of a circle inscribed in a cross section of the monitored part of the bit is 10 mm or less.

8. The manual tool according to claim 1, wherein

the bit is composed of an extension bar and a replacement bit, the extension bar includes the base end portion and the shaft part, and the replacement bit includes the tip end portion.

9. The manual tool according to claim 1, wherein

a maximum tightening torque capable of tightening the fastening member is 10 N·m or less.

10. The manual tool according to claim 1, wherein

the torque sensor includes a processing circuit that processes a detection signal detected by the detecting part.

11. A bit for use in a manual tool, the manual tool including a grip including a bit holding part and a torque sensor that is of a magnetostrictive type capable of contactlessly detecting a torque acting on the bit, the bit comprising:

a tip end portion capable of engaging with a fastening member;

a base end portion mounted to the bit holding part; and

a shaft part that is solid and extends between the tip end portion and the base end portion;

wherein the shaft part has a monitored part on which a magnetostrictive material is plated, and

the monitored part is formed to have a non-circular cross-section and has an outer periphery having a flat surface in order to form a distribution of a magnitude of stress generated on the outer periphery of the monitored part.