For the first time, the crystal structure of a bis(tpy) copper(II) complex, [Cu(terpy)2](PF6)2, where terpy = 2,2′:6′,2″-terpyridine was reported. The green crystals of the complex were grown by ether diffusion into an acetonitrile solution of the complex. The geometry around Cu(II) was tetragonal (space group: *P 4/ 21c*) with *a* = 8.8916(3), *c* = 20.0214(13) Å, and *z* = 2. The structure was refined by using 1828 independent reflections with *I* > 2*σ*(I) to a *R* factor of 0.0809. Two terpy ligands were tridentate and linked to the Cu(II) cation via three N atoms. The CuN6 entities have compressed octahedral geometry with the shortest Cu-N bonds that form the axial positions. The complex represents z-in distortion at 293K and has a *D2d* point group. The effective magnetic moment (μeff) of the complex was measured to be 1.95 BM by the Evans method. Cyclic voltammetry experiment of the complex showed that the Cu(II/I) couple was quasi-reversible.