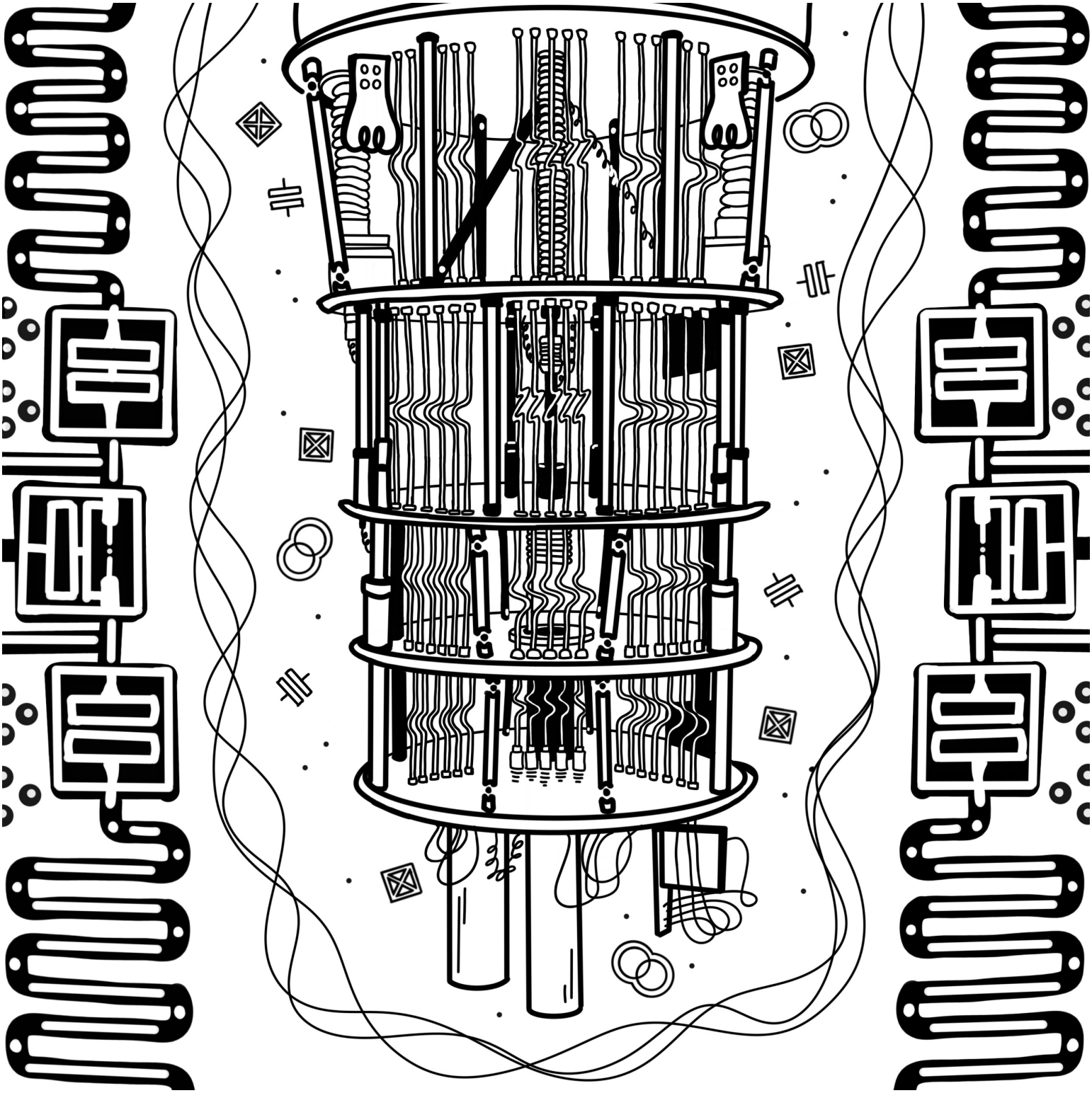

Superconducting Circuits

An electrical current is the flow of electrons within an object. The electrical current powering a 60 Watt lightbulb is made of 3 quintillion electrons per second. Would it be possible to measure the flow of a single electron? Scientists are able to do this, but it needs to be in a **circuit** made of **superconducting** material, in which electrons can flow without any resistance. The qubit of this superconducting circuit is formed by the characteristics of the current, down to a single electron flowing.

Right now, the way we make the best superconducting material is to cool it to an extremely cold temperature (a few millionths of a degree above absolute zero–the coldest temperature possible!) using a very large, yet intricate device called a **dilution refrigerator**. These superconducting qubit circuits, which are made in very similar ways to classical computer chips, are put inside of the dilution refrigerator to stay cool.