CLAIMS

1. A lightning interception device, comprising: a plurality of lightning rods, an interceptor sphere, a sphere connector, a primary waveguide resonance cavity, a secondary waveguide resonance cavity, and a tuner, wherein

the lightning rods, the interceptor sphere, the sphere connector, the primary waveguide resonance cavity, the secondary waveguide resonance cavity, and the tuner are made of metal;

the lightning rods are connected to a surface of the interceptor sphere in a vertical direction and in a horizontal direction, and the interceptor sphere, the sphere connector, the primary waveguide resonance cavity, the secondary waveguide resonance cavity and the tuner are sequentially connected;

the lightning rods are configured to receive a lightning current from the vertical direction and the horizontal direction;

the sphere connector is configured to maintain an electrical path between the interceptor sphere and the primary waveguide resonance cavity;

the interceptor sphere is configured to uniformly distribute charges transferred from the primary waveguide resonance cavity to the lightning rods;

in a case that an intensity of a ground surface electric field reaches a predetermined starting threshold, a variable capacitor arranged in the secondary waveguide resonance cavity is turned on, a charge polarity of the lightning interception device is converted to be same as a charge polarity of the ground surface electric field, and a starting voltage of a resonance circuit of the primary waveguide resonance cavity is adjusted to trigger the resonance circuit of the primary waveguide resonance cavity to perform resonance operation;

the resonance circuit is arranged in the primary waveguide resonance cavity, a resonance frequency of the resonance circuit reaches a predetermined frequency under adjustment of the secondary waveguide resonance cavity, a voltage Q times higher than the intensity of the ground surface electric field is generated and transmitted to tips of the lightning rods to generate a target upward leader with a predetermined length, and a lightning current discharge channel is formed when a downward leader of the lightning current is connected to the target upward leader to discharge the lightning current to a ground, wherein the Q corresponds to a

value of a quality factor of the resonance circuit; and

the tuner is configured to adjust distribution parameters of the primary waveguide resonance cavity and the secondary waveguide resonance cavity.

2. The lightning interception device according to claim 1, wherein in discharging the lightning current, the variable capacitor in the secondary waveguide resonance cavity is configured to isolate a continuous current generated in discharging the lightning current to attenuate the lightning current.

3. The lightning interception device according to claim 2, wherein in discharging the lightning current, the variable capacitor in the secondary waveguide resonance cavity is configured to isolate the continuous current generated in discharging the lightning current to attenuate the lightning current by:

in discharging the lightning current, isolating, by the variable capacitor in the secondary waveguide resonance cavity, the continuous current generated in discharging the lightning current; and

fully reflecting an electromagnetic wave of the continuous current and converting an electric energy of the continuous current to a heat energy to attenuate the lightning current.

4. The lightning interception device according to claim 1, wherein

the primary waveguide resonance cavity further comprises an amplitude spectrum selector; and

the amplitude spectrum selector of the primary waveguide resonance cavity is configured to identify and determine an amplitude spectrum and an energy spectrum of the lightning current based on a double exponential wave feature of the lightning current, wherein the primary waveguide resonance cavity attenuates the lightning current based on the amplitude spectrum and the energy spectrum of the lightning current.

5. The lightning interception device according to claim 1, wherein

the resonance circuit arranged in the primary waveguide resonance cavity comprises a circular single conductor;

the circular single conductor comprises a transverse electric mode or a transverse magnetic mode; and

the circular single conductor is configured to increase a voltage multiplication value of the lightning interception device and guide a directional propagation of an electromagnetic wave energy.

6. The lightning interception device according to claim 1, wherein the distribution parameters of the primary waveguide resonance cavity and the secondary waveguide resonance cavity comprise: an inductance and a capacitance.

7. The lightning interception device according to claim 1, further comprising a cavity lock, wherein

an end of the cavity lock is connected to the secondary waveguide resonance cavity, and another end of the cavity lock is connected to the tuner; and

the cavity lock is configured to lock the secondary waveguide resonance cavity to isolate the secondary waveguide resonance cavity and the primary waveguide resonance cavity from external air.

8. The lightning interception device according to any one of claims 1 to 7, further comprising a fastening apparatus, wherein

an end of the fastening apparatus is connected to the tuner; and

the fastening apparatus is configured to fix the lightning interception device to a building to be protected.

9. The lightning interception device according to any one of claims 1 to 7, wherein the tuner is a circular metal tube or a circular metal rod having a predetermined length and a predetermined diameter.