What is claimed is:

1. An interlayer pre-cooling apparatus for a sand mold freezing printing comprising: a sand paving apparatus, wherein

the sand paving apparatus is located above a negative-pressure low-temperature forming chamber, and

the sand paving apparatus comprises:

a plurality of independent sand paving grooves,

a hollow sand paving roller,

a cooling chamber,

a sand scraping plate, and

an openable and closable baffle;

the openable and closable baffle is rotationally arranged at a discharge port of each of the plurality of independent sand paving grooves, and

the openable and closable baffle is used for paving low temperature premixed molding sand on demand.

2. The interlayer pre-cooling apparatus for the sand mold freezing printing according to claim 1, wherein:

the openable and closable baffle is located below the plurality of independent sand paving grooves, and

a sand paving is performed on demand by opening and closing the openable and closable baffle under a control of a control system;

the sand scraping plate is arranged beside the openable and closable baffle, and is used for once scraping molding sand discharged from the plurality of independent sand paving grooves;

an inner cavity of the hollow sand paving roller is hollow, and

the sand scraping plate is connected and fixed to the cooling chamber,

wherein the hollow sand paving roller is located in the cooling chamber and

an end of the hollow sand paving roller is connected and fixed to the sand scraping plate through a connecting rod, and

the hollow sand paving roller is used for a secondary scraping and a pressure compaction of the molding sand.

3. The interlayer pre-cooling apparatus for the sand mold freezing printing according to claim 1, wherein an end of the openable and closable baffle is connected and fixed to the plurality of independent sand paving grooves through a return spring.

4. The interlayer pre-cooling apparatus for the sand mold freezing printing according to claim 1, wherein dry ice and liquid nitrogen are passed into the hollow sand paving roller to control a surface temperature of the hollow sand paving roller at -40℃ to -10℃.

5. The interlayer pre-cooling apparatus for the sand mold freezing printing according to claim 1, wherein the dry ice and liquid nitrogen are may be passed into an inner cavity of the cooling chamber.

6. The interlayer pre-cooling apparatus for the sand mold freezing printing according to claim 1, wherein

the openable and closable baffle satisfies the low temperature premixed molding sand flows out of a sand outlet smoothly,

an inclination angle of the openable and closable baffle is 60°, and

a width of the sand outlet is 6 mm.

7.The interlayer pre-cooling apparatus for the sand mold freezing printing according to claim 1, wherein the openable and closable baffle is connected to a spiral drive motor through a rotary pin shaft; or the openable and closable baffle controls an opening and closing angle with a rotary cylinder to perform the sand paving on demand though the rotary pin shaft.

8. The interlayer pre-cooling apparatus for the sand mold freezing printing according

to claim 1, wherein a vibration motor is installed in the sand paving apparatus to prevent a deformation and a bonding of the low temperature premixed molding sand.