CLAIMS

1. A metal powder production apparatus, comprising:

a spray tank; and

a plurality of spray nozzles each including a molten metal nozzle that lets molten metal flow down into the spray tank and a gas injection nozzle that injects gas from a plurality of injection holes to the molten metal flowing down from the molten metal nozzle, wherein

the spray tank has a cylindrical portion having a same diameter at an upper portion and a middle portion of the spray tank,

a sectional area A1 [mm^2] of the spray tank in a transverse section of the cylindrical portion has a value obtained by multiplying the number n of the spray nozzles by a predetermined area value c1, n being an integer equal to or greater than 2,

the predetermined area value c1 satisfies $61,250\pi$ [mm^2] $\leq$ c1 $\leq$ $80,000\pi$ [mm^2].

2. The metal powder production apparatus according to any one of claims 1-2, further comprising:

a gas piping connected to the spray tank on a downstream side of gas flow, wherein

a sectional area A2 [mm^2] of the gas piping in a cross section has a value obtained by multiplying the number n of the spray nozzles by a predetermined area value c2,

the predetermined area value c2 satisfies $1,250\pi$ [mm^2] $\leq$ c2 $\leq$ $2,812.5\pi$ [mm^2].

3. The metal powder production apparatus according to any one of claims 1-2, wherein

a distance D between two spray nozzles that are adjacent to each other from among the plurality of spray nozzles is 20 to 40 [mm].

4. The metal powder production apparatus according to any one of claims 1–3, wherein

a dissolved amount of the molten metal per one molten nozzle is 10 to 20 [kg] expressed in terms of iron.

5. The metal powder production apparatus according to any one of claims 1–4, wherein

a height H of the spray tank is 2 to 4 [m].

6. The metal powder production apparatus according to any one of claims 1–5, further comprising:

a crucible to which the molten metal nozzle is attached and into which molten metal is stored, wherein

size of the crucible is fixed even if the number n of the spray nozzles increases.

7. The metal powder production apparatus according to any one of claims 1–6, wherein

gas pressure of the gas injection nozzles is 3 to 10 [MPa].