coaxial and in that the powder particles (60) reach each of the pools at a temperature that is cold relative to the temperature of said pool.

2. A method of fabricating a part according to claim 1, characterized in that the focal point F_L of the high energy beam (95) is situated above the working plane P or in said plane, and the focal point F_P of the powder beam (94) is situated beneath the working plane P, such that powder particles do not at any time cross the high energy beam (95) between the outlet from a nozzle (190) and the working plane P, the working plane P being defined as the plane containing the surface on which said layers are being formed.

3. A method of fabricating a part according to claim 2, characterized in that in order to obtain the focal point F_L of the high energy beam (95) and the focal point F_P of the powder beam (94) in accordance with claim 2, the defocus distance $Defoc_P$ of the powder beam (94) is increased, and/or the divergence half-angle β of the laser beam (95) relative to the perpendicular to said working plane P is decreased, or the defocus distance $Defoc_L$ of the high energy laser beam (95) is decreased.

4. A method of fabricating a part according to any one of claims 1 to 3, characterized in that the size distribution of the powder particles (60) is narrow.

5. A method of fabricating a part according to any one of claims 1 to 4, characterized in that each of said pools has a shape defined by $\theta<90°$, $H_{app}/e_{app}<1$, and $H_{ZR}/H_{app}\geq 0.6$, where θ designates the angle between the top surface of said pool and said working plane P, H_{app} designates the apparent height of the fillet, e_{app} designates its width, and H_{ZR} designates the height of the remelted zone.