

Title (en)  
LANCE FOR BLOWING OXYGEN

Publication  
**EP 0235621 A3 19890315 (FR)**

Application  
**EP 87101777 A 19870209**

Priority  
LU 86322 A 19860225

Abstract (en)  
[origin: US4730784A] A nozzle for the refining of metals by oxygen blasting from above the melt is presented. The nozzle includes a nozzle head having a blast pipe therethrough upstream of the mouth of the nozzle. The blast pipe directs a jet of gas comprised, at least in part, of oxygen, having a supersonic speed onto the melt. The blast pipe includes an inner tube. The lower portion of the inner tube has a throat positioned between a convergent and divergent sections, this lower portion defining a laval nozzle. The blast pipe also includes an outer tube coaxial with the inner tube and having a greater cross section than the inner tube. The mouth of the inner tube is spaced back (downstream) from the mouth of the blast pipe. The inner and outer tubes are each provided with flow control valves, and are connected to sources of pressurized gas. Devices are provided to vary the cross sectional area of the mouth of the inner tube. This device may consist of a needle shaped member, displaceable along the longitudinal axis of the inner tube, with the pointed portion of the needle movable between different positions within the convergent section of the inner tube.

IPC 1-7  
**C21C 5/46**

IPC 8 full level  
**C21C 5/46** (2006.01)

CPC (source: EP US)  
**C21C 5/4606** (2013.01 - EP US)

Citation (search report)

- [A] AT 174388 B 19530325 - VOEST AG
- [A] AT 216032 B 19610710 - ARBED
- [A] GB 1198112 A 19700708 - NIPPON KOKAN KK [JP]
- [A] US 3130252 A 19640421 - PAUL METZ

Cited by  
EP0364722A1; EP0490101A1; CN102884207A; US6709630B2; WO2011120937A3; WO2010136029A3

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