

Title (en)

Improved method of lubricating iron and steel before cold working.

Title (de)

Methode zum Einschmieren von Eisen und Stahl vor der Kaltverarbeitung.

Title (fr)

Méthode pour lubrifier du fer et de l'acier avant le façonnage à froid.

Publication

EP 0380067 A1 19900801 (EN)

Application

EP 90101350 A 19900124

Priority

JP 1512889 A 19890126

Abstract (en)

An improved lubricating layer for heavy cold working of iron and steel objects can be obtained by first phosphating them with a solution comprising, in percentages by weight, 0.3 to 2.5 % of zinc ions, 0.01 to 2.0 % of ferrous ions, 0.5 to 5.0 % of phosphate ions, 0.7 to 12.0 % of nitrate ions, and 0.02 to 0.25 % of water soluble aromatic organic compounds that contain both nitro and sulfonic groups, with the ferrous ion and zinc ion contents additionally being such that the weight ratio of ferrous ions to zinc ions in the phosphating solution is within the range from 0.005 to 3.0. Optionally, the phosphating solution may also contain from 0.2 to 2.0 % of calcium ions, and when it does, the weight ratio of calcium ions to zinc ions in the solution should also be in the range from 0.7 to 4.0. After phosphating, the phosphated surfaces are treated with a conventional lubricant, preferably a weakly alkaline solution of sodium stearate.

IPC 1-7

C23C 22/17

IPC 8 full level

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CPC (source: EP)

C23C 22/17 (2013.01); **C23C 22/83** (2013.01)

Citation (search report)

- US 4622078 A 19861111 - OPITZ REINHARD [DE], et al
- EP 0287133 A1 19881019 - METALLGESELLSCHAFT AG [DE]

Cited by

AU678284B2; US5792283A; WO9507370A1

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EP 0380067 A1 19900801; **EP 0380067 B1 19930526**; AR 244117 A1 19931029; AT E89875 T1 19930615; AU 4873690 A 19900802; AU 621977 B2 19920326; BR 9000328 A 19901127; CA 2008551 A1 19900726; DE 69001680 D1 19930701; DE 69001680 T2 19930930; DK 0380067 T3 19930621; ES 2042082 T3 19931201; JP 2636919 B2 19970806; JP H02197581 A 19900806; ZA 90305 B 19910327

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