

Title (en)

MULTILAYERED AND HIGHLY WEAR-RESISTANT PROTECTIVE COATING OF HARD MATERIAL FOR METALLIC SURFACES OR SUBSTRATES SUBJECTED TO A HIGH LOAD

Publication

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Application

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Priority

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Abstract (en)

[origin: US4835062A] A protective coating for metallic substrates consists of a plurality of layers having a total thickness ranging from 0.1 to 10  $\mu$ , an individual thickness for each layer ranging from 0.5 to 40 nm, and a total number of layers which does not exceed 20,000, each layer being comprised of one kind of at least two kinds of crystalline hard substances and being arranged in a sequentially alternating order with respect to the others, the crystalline hard substances having phase interfaces with respect to one another which are at least crystallographically partially coherent. In an alternate embodiment, the protective coating is a single layer which is a superfinely dispersed mixture of the crystalline hard substances. The multi-layered embodiment is provided by a method which includes positioning the metallic substrate in a physical vapor deposition apparatus; providing at least two cathodes in the apparatus, each cathode being comprised of a different kind of crystalline hard substance; continuously moving the metallic substrate sequentially past each cathode; and causing the vapor deposition of the crystalline hard substances on the metallic substrate as a protective coating having a plurality of layers. The single-layered embodiment is provided by an alternate method in which one cathode is provided and is comprised of at least two kinds of crystalline hard substances. These protective coatings have a resistance to wear which exceeds that for a coating comprised of any one of the crystalline hard substances alone.

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