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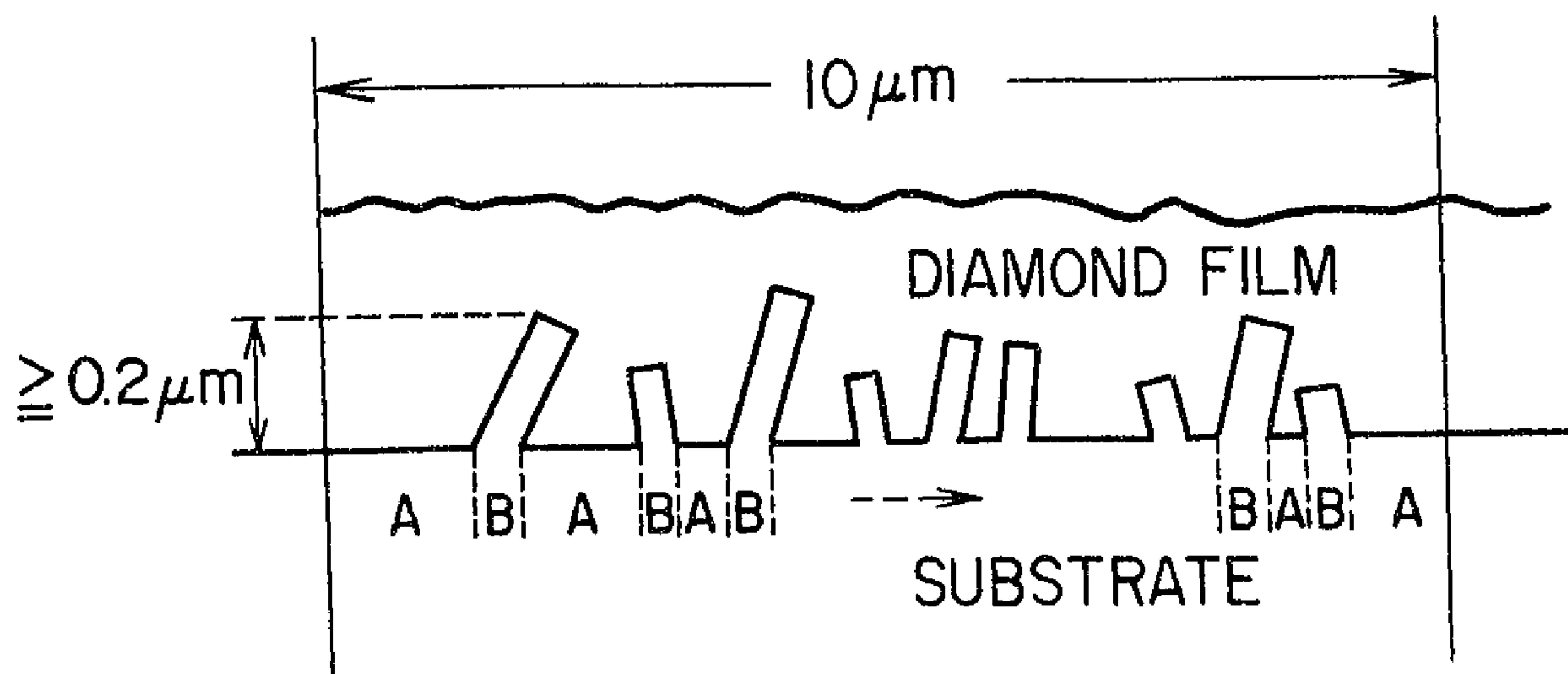
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(54) Titre : MATERIAUX RIGIDES CARBONES ET DIAMANTES OU DE TYPE DIAMANTES

(54) Title: DIAMOND-OR DIAMOND-LIKE CARBON-COATED HARD MATERIALS



(57) Abrégé/Abstract:

A diamond-coated hard material having a diamond- or diamond-like carbon coated layer with a high bonding strength to a substrate is provided. The coated hard material comprising a diamond- and/or diamond-like carbon-coating layer formed on the surface of a hard material, i.e. substrate is characterized in that (I) (1) microscopic roughness is present on the surface of the substrate and (2) protrusive parts thereof are defined by the surface roughness R_{max} within a range of 1.0 to 30 μm in a standard length when the standard length is 50 μm in the interface of the diamond- and/or diamond-like carbon coated layer and the substrate, and (II) (1) microscopic roughness is present on the surface of the substrate, (2) at least one protrusive part is present in a standard length when the standard length is 10 μm in the interface of the diamond- and/or diamond-like carbon coated layer and the substrate, (3) the ratio of sum A of the lengths of dent parts to sum B of the lengths of the protrusions is in the range of $0.05 \leq A/B \leq 20$ in the standard length in the interface and (4) the protrusive parts are intruded into the diamond-coated layer.



TITLE OF THE INVENTION

Diamond- or diamond-like carbon-coated hard materials

ABSTRACT OF THE DISCLOSURE

A diamond-coated hard material having a diamond- or diamond-like carbon coated layer with a high bonding strength to a substrate is provided. The coated hard material comprising a diamond- and/or diamond-like carbon-coating layer formed on the surface of a hard material, i.e. substrate is characterized in that (I) (1) microscopic roughness is present on the surface of the substrate and (2) protrusive parts thereof are defined by the surface roughness R_{max} within a range of 1.0 to 30 μm in a standard length when the standard length is 50 μm in the interface of the diamond- and/or diamond-like carbon coated layer and the substrate, and (II) (1) microscopic roughness is present on the surface of the substrate, (2) at least one protrusive part is present in a standard length when the standard length is 10 μm in the interface of the diamond- and/or diamond-like carbon coated layer and the substrate, (3) the ratio of sum A of the lengths of dent parts to sum B of the lengths of the protrusions is in the range of $0.05 \leq A/B \leq 20$ in the standard length in the interface and (4) the protrusive parts are intruded into the diamond-coated layer.

