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ABSTRACT OF THE DISCLOSURE
PERPENDICULAR MAGNETIC RECORDING APPARATUS

5 A perpendicular magnetic recording apparatus
includes a perpendicular double-layered media having
a substrate, a soft underlayer including a soft
magnetic layer, an intermediate layer, and another
soft magnetic layer in which the two soft magnetic
layers are antiferromagnetically coupled with each
10 other, and a perpendicular recording layer, and a
magnetic head including a main pole, a return yoke,
and an exciting coil. A relationship between an
antiferromagnetic coupling force Hex_{afc} of the two
soft magnetic layers included in the soft underlayer
15 and a full width at half maximum MWW in a cross track
direction when a low-frequency signal is recorded
on the perpendicular recording layer by the magnetic
head satisfies the following formula:

$$Hex_{afc} > 1.6 * \ln((0.23 - MWW)^2 * 100)) + 25.6.$$

FIG. 1