受験番号：12IPE003

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問１

CLAIMS

Claim 1

An image forming system comprising:

a plurality of image forming apparatuses each being capable of forming an image, the plurality of image forming apparatuses being connected together in a daisy chain manner,

each of the plurality of image forming apparatuses including:

storage means for storing apparatus speed information indicating an image forming speed of that image forming apparatus;

downstream speed information obtaining means for obtaining downstream speed information indicating an image forming speed of a subsequent image forming apparatus connected to that image forming apparatus, that image forming apparatus and the subsequent image forming apparatus deconcentrating an image forming amount;

receiving means for receiving image forming data including image data for forming an image;

determination means for determining, on the basis of the speed information and the downstream speed information, an image forming amount of that image forming apparatus in a total image forming amount indicated by the image forming data;

execution means for executing image forming, an amount of which has been determined by the determination means; and

instruction means for causing the subsequent image forming apparatus to execute image forming, an amount of which is equal to an amount obtained by subtracting the image forming amount of that image forming apparatus from the total image forming amount indicated by the image forming data.

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Generally, a nonlinear sound system includes (i) a modulator for modulating an ultrasound carrier wave signal by use of an audio signal that has been subjected to signal processing, (ii) a drive amplifier for amplifying the modulated signal, and (iii) at least one sound transducer for emitting, via the atmosphere, the amplified signal along a specific projection path. The atmosphere has nonlinearity. Therefore, an ultrasound signal is demodulated as it passes in the atmosphere. Along a specific projection path in which the signal passes, an audio signal is reproduced.

One of problems of a general nonlinear sound system is that a reproduced signal is most likely to include high-level distortion. According to a conventional method for reducing a distortion level of such a reproduced audio signal, a distortion level of an audio signal generated in the nonlinear sound system is such that (i) a low-level ultrasound signal is proportional to approximately a square of a modulation envelope and (ii) a high-level ultrasound signal is proportional to approximately the modulation envelope itself. For this reason, according to the conventional method, the distortion is reduced in such a manner that (i) a square root of an audio signal is found and (ii) the square root is multiplied by a constant obtained from experience.

The method can reduce the distortion at a specific ultrasound signal output level, but generally cannot reduce the distortion over an entire range of ultrasound signal output levels.

問3

Fig. 5 is a circuit diagram illustrating a power section of an active filter in accordance with an embodiment in which an electrolytic capacitor is used as a compensating capacitor 6. An electrolytic capacitor has an acceptable range for a ripple current. Therefore, when the electrolytic capacitor is used as the compensating capacitor 6, it is necessary to suppress a current in a charging operation to be within the acceptable range. In the charging operation, a sawtooth current having sharp changes flows. Therefore, the active filter is arranged such that (i) first, a high-ripple capacitor 25 (which is a film capacitor) is charged, and then (ii) the compensating capacitor 6 is charged via a smoothing reactor 26 for suppressing a ripple current.

Note that, in order to further reduce a ripple current as explained with reference to Fig. 5, an additional circuit is provided, which additional circuit (i) first, charges the high-ripple capacitor 25, and then (ii) charges the compensating capacitor 6 via the smoothing reactor 26. With the circuit arrangement, a peak current of the sawtooth current becomes $1/\sqrt{2}$ (1/root 2) of that of the active filter illustrated in Fig. 1. The peak of the ripple current can be thus suppressed. Further, with the circuit arrangement, it is possible to improve a harmonic of a carrier wave and a radiation noise.