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United States Patent [19]

[11] **Patent Number:** 5,508,821

Murata

[45] **Date of Patent:** Apr. 16, 1996

[54] **IMAGE SCANNER AND IMAGE FORMING APPARATUS WITH AN INTERFACE FOR CONNECTION WITH AN EXTERNAL COMPUTER**

4,896,262	1/1990	Wayama et al.	395/500
4,958,315	9/1990	Balch	395/500
4,975,829	12/1990	Clarey et al.	364/500
5,088,033	2/1992	Binkley et al.	395/500
5,131,089	7/1992	Cole	395/500
5,157,384	10/1992	Greanias et al.	345/156

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OTHER PUBLICATIONS

Operating Systems: Design and Implementation, Andrew S. Tanenbaum, 1987, pp. 299-308.

[21] Appl. No.: **36,028**

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Attorney, Agent, or Firm—Ratner & Prestia

[22] Filed: **Mar. 23, 1993**

[30] **Foreign Application Priority Data**

Apr. 9, 1992	[JP]	Japan	4-88541
Aug. 7, 1992	[JP]	Japan	4-211102

[57] ABSTRACT

[51] **Int. Cl.⁶** **H04N 1/00**; H04N 1/21; G06F 3/00; G06F 9/455; G06F 13/00

An image scanner is occasionally used with an external host computer and includes an optical system and a CCD image sensor for reading an image of a document placed on a document platform. The image scanner further includes a small computer system interface (SCSI) for connecting the image scanner to the external host apparatus, and a CPU, a nonvolatile memory, an SCSI controller etc. for emulating a file system contained in the external host computer.

[52] **U.S. Cl.** **358/442**; 358/444; 358/471; 395/500; 395/828; 395/830; 395/882; 395/883; 395/892

[58] **Field of Search** 358/471, 452, 358/474; 395/500, 275, 444, 468, 828, 830, 882, 883, 892

[56] References Cited

U.S. PATENT DOCUMENTS

4,855,905	8/1989	Estrada et al.	364/500
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10 Claims, 7 Drawing Sheets

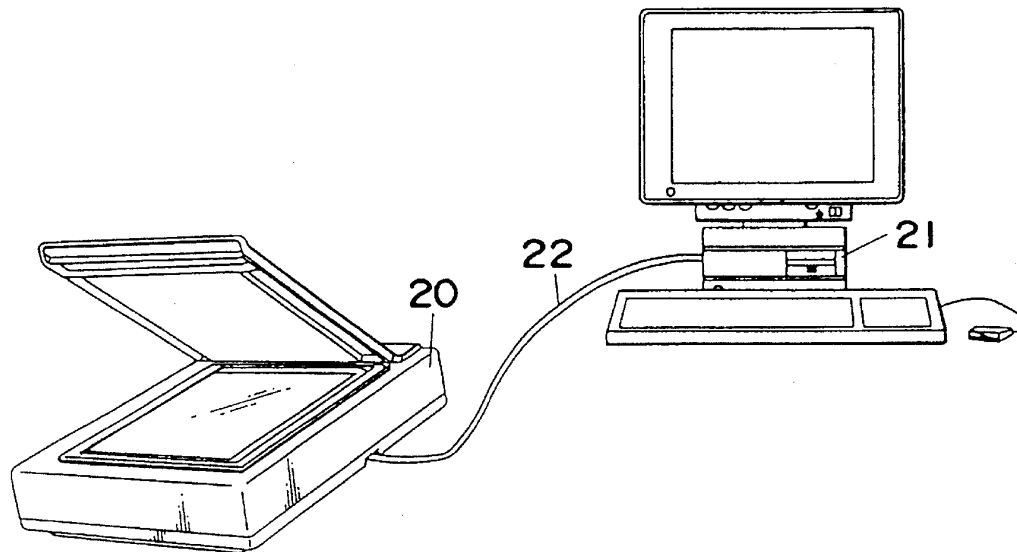


Fig. 1

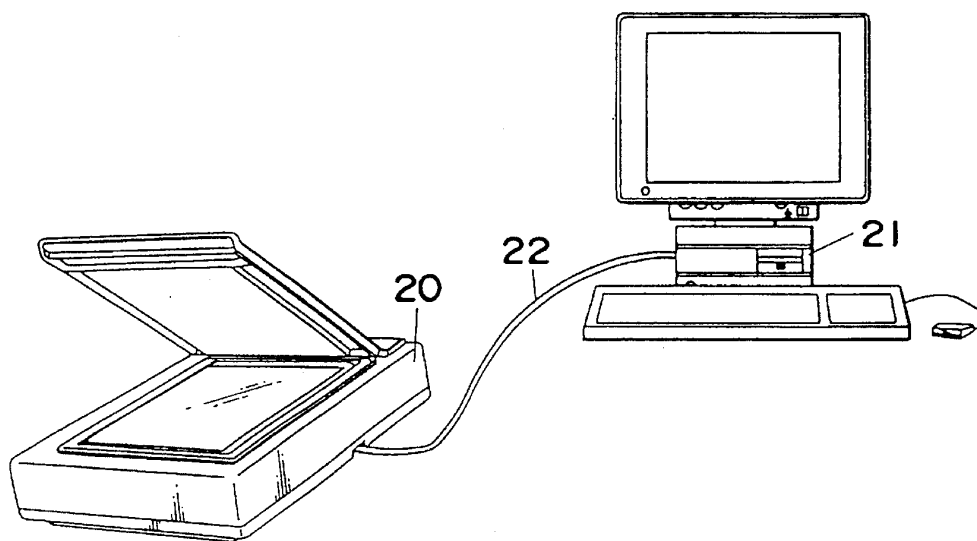
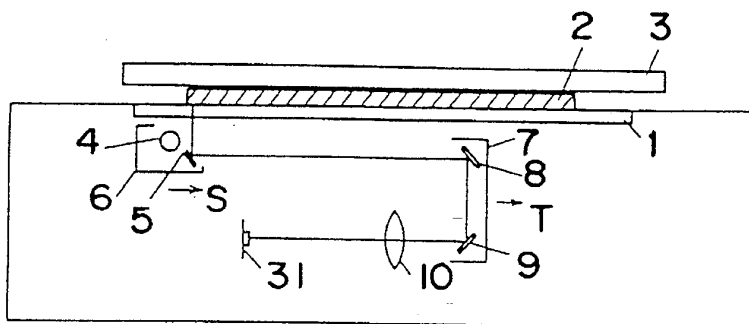


Fig. 2



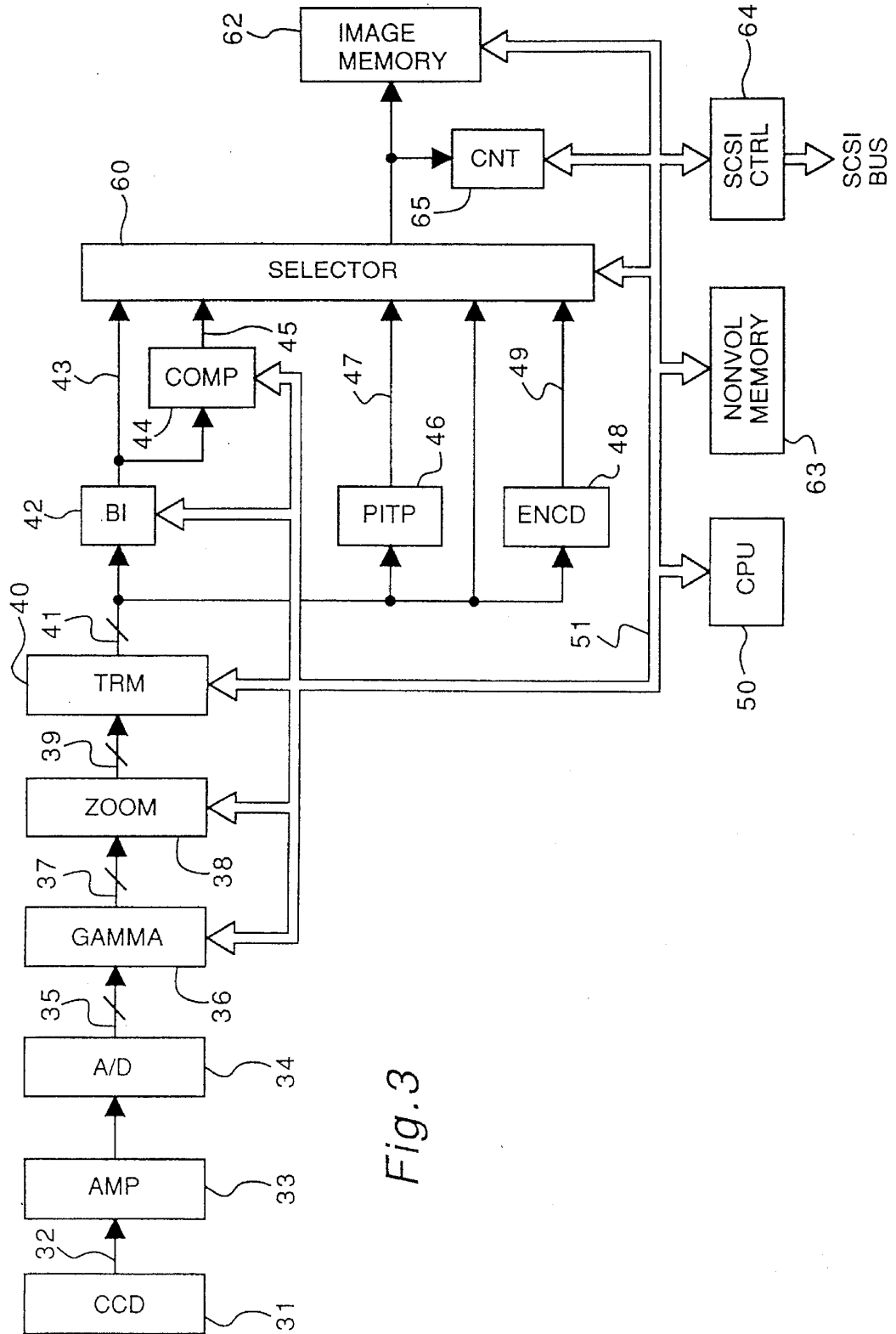


Fig.4

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#SCANNER PARAMETER FILE EXAMPLE
# AREA PARAMETER(inch)
# X,Y,XL,YL
1.2
2.4
5.5
6.3

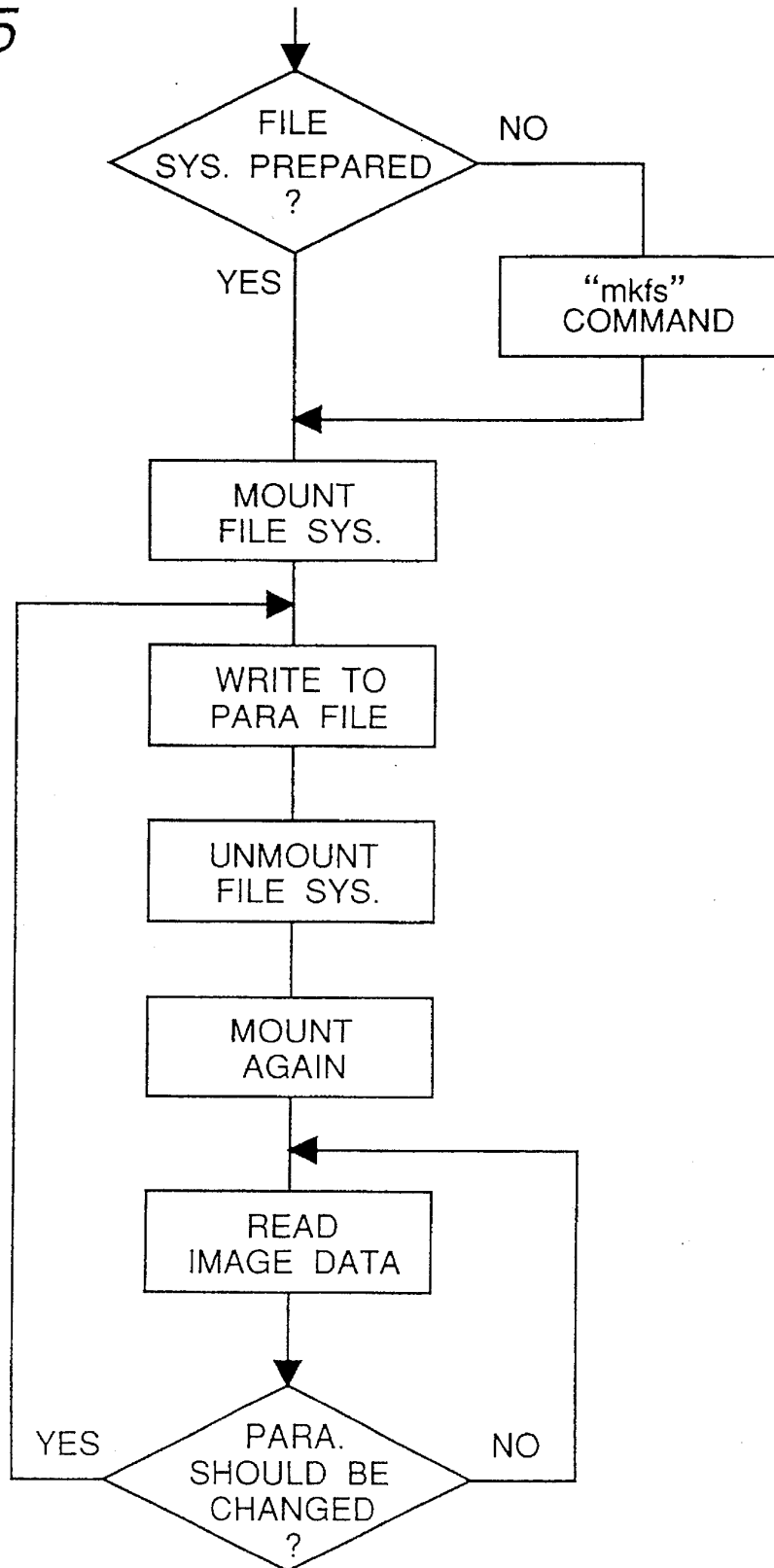
#ZOOMING PARAMETER(%) XZ,YZ
100
150

#IMAGE PROCESSING PARAMETER
#     SIMPLE BI-LEVEL IMAGE           ->0
#     BI-LEVEL COMPRESSION IMAGE(MH)   ->1
#     BI-LEVEL COMPRESSION IMAGE(MR)   ->2
#     BI-LEVEL COMPRESSION IMAGE(MMR)  ->3
#     ERROR DIFFUSION BI-LEVEL IMAGE   ->4
#     88ITS GRAY SCALE IMAGE           ->5
#     88ITS GRAY SCALE COMPRESSION IMAGE ->6
1

#GAMMA TRANSFER PARAMETER
#     LINEAR           ->0
#     DENSITY         ->1
#     DATE SETTABLE   ->2
2

#GAMMA TRANSFER DATA TABLE
#DATA MUST BE 0 (<=.255) =
00 10 17 1C 20 24 27 2A 20 30 32 35 37 3A 3C 3E
40 42 44 46 47 49 4B 4D 4E 50 51 53 54 56 57 59
5A 5C 5D 5E 60 61 62 64 65 66 67 69 6A 6B 6C 6D
6F 70 71 72 73 74 75 76 77 79 7A 7B 7C 7D 7E 7F
80 81 82 83 84 85 86 87 87 88 89 8A 8B 8C 8D 8E
8F 90 91 91 92 93 94 95 96 97 97 98 99 9A 9B 9C
9C 9D 9E 9F A0 A0 A1 A2 A3 A4 A4 A5 A6 A7 A7 A8
A9 AA AA AB AC AD AD AE AF B0 B0 B1 B2 B3 B3 B4
B5 B5 B6 B7 B7 B8 B9 BA BA BB BC BC BD BE BE BF
C0 C0 C1 C2 C2 C3 C4 C4 C5 C6 C6 C7 C7 C8 C9 C9
CA CB CB CC CC CD CE CE CF D0 D0 D1 D1 D2 D3 D3
D4 D4 D5 D6 D6 D7 D7 D8 D9 D9 DA DA DB DC DC DD
DD DE DE DF E0 E0 E1 E1 E2 E2 E3 E4 E4 E5 E5 E6
E6 E7 E7 E8 E9 E9 EA EA EB EB EC EC ED ED EE EE
EF F0 F0 F1 F1 F2 F2 F3 F3 F4 F4 F5 F5 F6 F6 F7
F7 F8 F8 F9 F9 FA FA FB FB FC FC FD FD FE FE FF
    
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Fig.5



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