07-03-2000

101393842

JC14 U.S. PTO 09/593944 06/15/00

B/O FORM PTO 1595 (1/31/92)

MRD 6·15·00

U.S. Department of Commerce
Patent and Trademark Office

HITA.0013

To the Honorable Commissioner of Patents and Trademarks. Please record the attached original documents or copy thereof.

1. *Name of Conveying Party(ies):*
(1) Kanuyuki MATSUNAGA
(2) Kazuya NAKAMURA
(3) Hikaru ITOU
(4) Masataka NATORI
(5) Kimitoshi OOGIICHI
(6) Takanori NAKAYAMA
(7) Hitoshi KOMENO
(8) Hiroshi OOKAWARA
☐ Additional names of conveying parties attached

2. *Name and Address of Receiving Party(ies):*
Name: HITACHI, LTD.
Internal Address:
Street Address: 6, Kanda Surugadai 4-chome
City, State, Zip: Chiyoda-ku, Tokyo, Japan

3. *Nature of Conveyance:*
☒ Assignment ☐ Merger
☐ Security Agreement ☐ Change of Name
☐ Other:
Execution Dates: (1) April 18, 2000
(2) May 8, 2000
(3) (4)(5)(6)(7) May 9, 2000
(8) June 1, 2000

4. *(a) Patent Application Number(s):*
09593944
If this document is being filed together with a new application, the execution date of the application is:
(1) April 18, 2000
(2) May 8, 2000
(3)(4)(5)(6)(7) May 9, 2000
(8) June 1, 2000

4. *(b) Patent Numbers:*

☐ Additional Numbers Attached.

5. *Name and Address of Party to whom Correspondence Concerning this Document Should be Mailed:*
Name: **Stanley P. Fisher**
Address: **Reed Smith Hazel Thomas LLP**
3110 Fairview Park Dr.
Suite 1400
Falls Church, Va. 22042

6. *Total Number of Applications and Patents Involved:* 1

7. *Total Fee:* (37 C.F.R. § 3.41) **$40.00**
☒ Enclosed.
☐ Authorized to be charged to deposit account.

8. *Deposit Account Number:*
ATTACH DUPLICATE COPY OF THIS PAGE IF PAYING BY DEPOSIT ACCOUNT

DO NOT USE THIS SPACE

9. **Statement and Signature:**

To the best of my knowledge and belief, the foregoing is true and correct and any attached copy is a true copy of the original document.

June 15, 2000

Stanley P. Fisher, Registration No. 24,344

Total number of pages comprising cover sheet: 1

06/26/2000 NGURDON 00000001 09593944
01 FC:581 40.00 OP

ASSIGNMENT
（ 譲 渡 証 ）

As a below named inventor, I hereby declare that:

IN CONSIDERATION of the sum of One Dollar ($1.00) or the equivalent thereof, and other good and valuable consideration paid to me citizen of Japan by HITACHI, LTD., a corporation organized under the laws of Japan, located at 6, Kanda Surugadai 4-chome, Chiyoda-ku, Tokyo, Japan, receipt of which is hereby acknowledged I do hereby sell and assign to said HITACHI, LTD., its successors and assigns, all my right, title and interest, in and for the United States of America, in and to

LIQUID CRYSTAL DISPLAY DEVICE

invented by me (if only one is named below) or us (if plural inventors are named below) and described in the application for United States Letters Patent therefor, executed on even date herewith, and all United States Letters Patent which may be granted therefor, and all divisions, continuations and extensions thereof, the said interest being the entire ownership of the said Letters Patent when granted, to be held and enjoyed by said HITACHI, LTD., its successors, assigns or other legal representatives, to the full end of term for which said Letters Patent may be granted, as fully and entirely as the same would have been held and enjoyed by me or us if this assignment and sale had not been made;

And I hereby agree to sign and execute any further documents or instruments which may be necessary, lawful, and proper in the prosecution of the above-named application or in the preparation and prosecution of any continuing, continuation-in-part, substitute, divisional, renewal, reviewed or reissue applications or in any amendment, extension, or interference proceedings, or otherwise to secure the title thereto in said assignee;

And I do hereby authorize and request the Commissioner of Patents to issue said Letters Patent to said HITACHI, LTD.

Signed on the date(s) indicated aside signatures:

	INVENTOR(S) （発明者フルネームサイン）	Date Signed （署名日）
1)	Kuniyuki Matsunaga	April, 18, 2000
2)	Kazuya Nakamura	May. 8. 2000
3)	Hikaru Ito	May. 9. 2000
4)	Masataka Matsui	May. 9. 2000
5)	Kimitoshi Ohgiichi	May 9. 2000
6)	Takanori Nakagawa	May 9 2000
7)	Hitoshi Komeno	May 9 2000
8)	Hiroshi Ohawara	Jun. 1 2000
9)		
10)		

Application for
UNITED STATES LETTERS PATENT

of

KUNIYUKI MATSUNAGA

KAZUYA NAKAMURA

HIKARU ITOU

MASATAKA NATORI

KIMITOSHI OOGIICHI

TAKANORI NAKAYAMA

HITOSHI KOMENO

and

HIROSHI OOKAWARA

for

LIQUID CRYSTAL DISPLAY DEVICE

LIQUID CRYSTAL DISPLAY DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to a liquid crystal display device and, more particularly, to a so-called active matrix type of liquid crystal display device.

The active matrix type of liquid crystal display device includes a pair of transparent substrates disposed in opposition to each other with a liquid crystal interposed therebetween, gate signal lines formed to be extended in an x-direction and to be juxtaposed in an y-direction on a liquid-crystal-side surface of either one of the pair of transparent substrates, drain signal lines insulated from the gate signal lines and formed to be extended in the y-direction and to be juxtaposed in the x-direction on the liquid-crystal-side surface, thin film transistors which are respectively formed in areas each surrounded by these gate and drain signal lines and are driven by supply of scanning signals from the gate signal lines, and pixel electrodes to which video signals from the drain signal lines are to be supplied via the respective thin film transistors.

These gate signal lines and drain signal lines are formed by micromachining using so-called photolithographic techniques. Accordingly, in the process of manufacturing the liquid crystal display device, it is common practice to inspect whether these gate and drain signal lines are formed without disconnection or whether there is a short circuit between each of these signal lines.

In this case, in order to enable such an inspection to be performed efficiently, a short-circuit line to which each of the gate signal lines is connected at one end in common and a short-circuit line to which each of the drain signal lines is connected at one end in common are formed, although these short-circuit lines are separated from the gate and drain signal lines by cutting in a later process.