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(56) Documents Cited:
GB 2464172 A **GB 2409070 A**
WO 2008/107676 A1 **JP 2001124544 A**
US 20090153667 A1 **US 20080212064 A1**

(58) Field of Search:
Other: **EPODOC,WPI**

(54) Title of the Invention: **Survey tool**
Abstract Title: **Surveying tool for property maintenance and/or construction**

(57) A surveying tool is provided for use by persons undertaking surveys of construction or maintenance tasks. The tool includes a camera 11, an electronic distance meter 12, a display screen 13, and a processor 14 whereby all of the components are integrated into a single unit 10 and co-operate to display gathered information on the display screen 13. The tool may further comprise voice recorder 18 and a means for accepting manual written input 20.

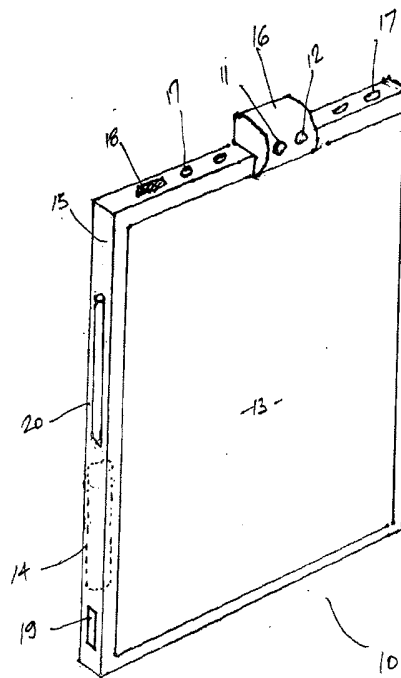


FIG 1

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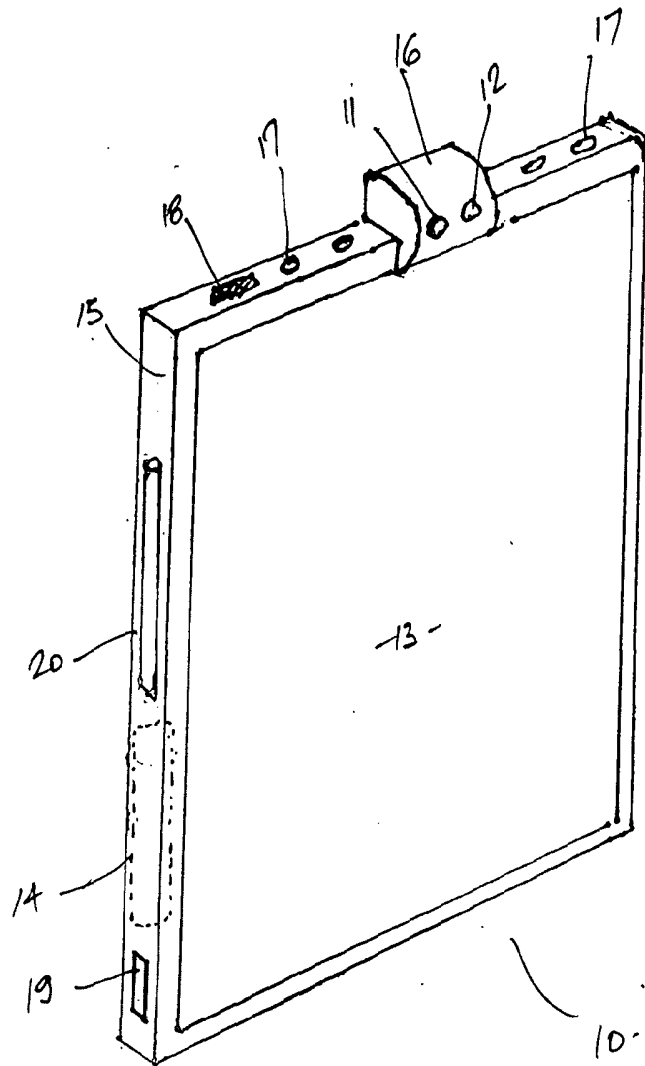


FIG 1

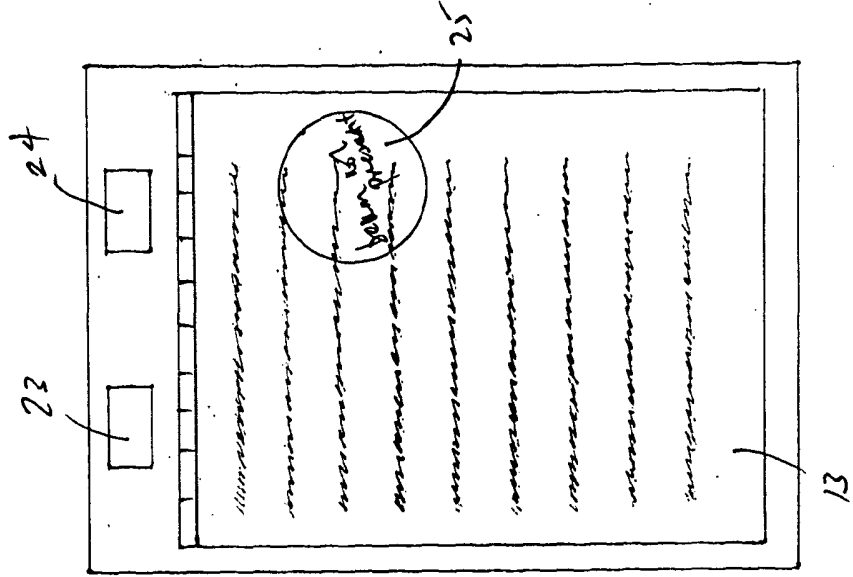


FIG 3

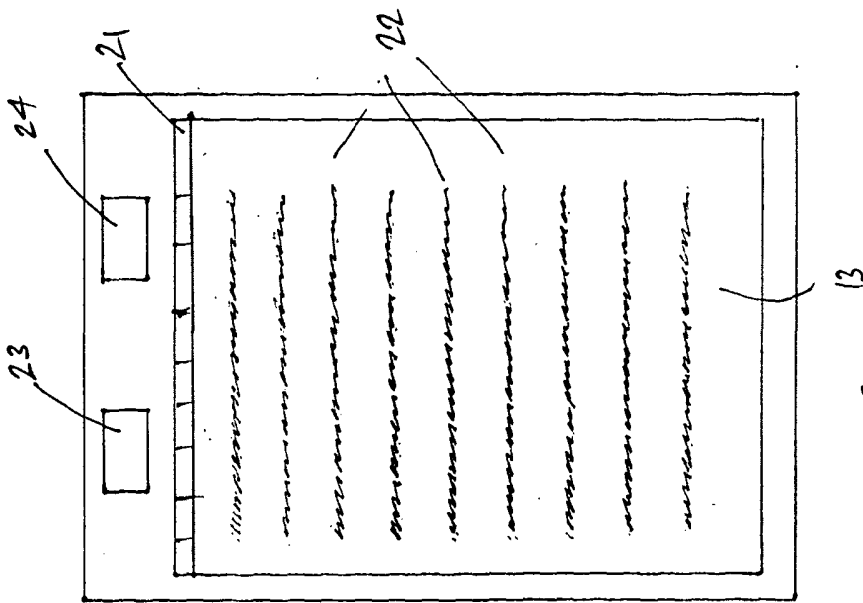


FIG 2

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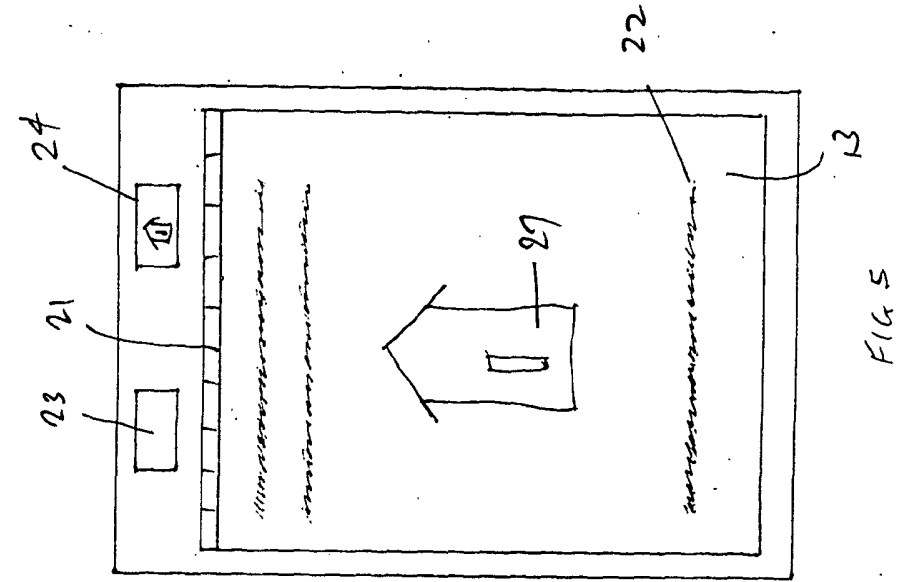


FIG 5

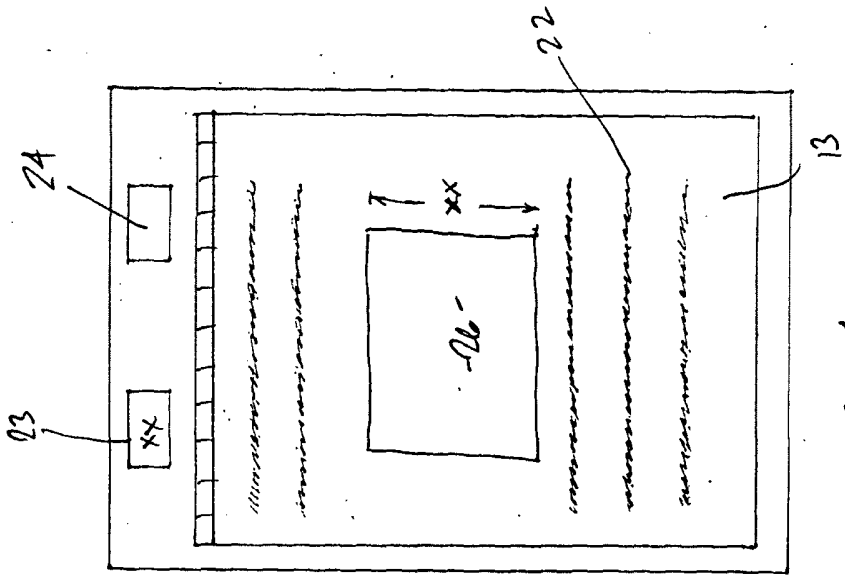


FIG 4

SURVEY TOOL

Field of the Invention

This invention relates to a survey tool and has been devised in particular, though not necessarily solely, for use by persons employed in property maintenance and/or construction.

Background to the Invention

Surveying or assessing construction or maintenance jobs typically involves the use of a number of different items. The person undertaking the work will invariably need access to a camera, a tape measure or other distance measuring device, a pen and paper and, often, to a voice recorder. Additionally, reference will usually be made, on site, to a written document such as a specification outlining the works to be undertaken. These individual items can each be bulky, difficult to coordinate, and can become misplaced. Further, information from each must subsequently be manually collated into some form of common repository.

It is an object of the invention to provide a survey tool which will go at least some way in addressing the aforementioned drawbacks; or which will at least provide a novel and useful choice.

Summary of the Invention

Accordingly the invention provides a survey tool including an electronic camera; an electronic distance meter; an electronic screen; and an electronic processor, said tool being characterised in that said camera, said distance meter, said screen and said processor are integrated into a single unit.

Preferably said processor is programmed to display on said screen, information captured by said camera and/or by said distance meter.

Preferably said tool is configured to receive and to display on said screen, documents in WORD and/or EXCEL format.

Preferably said screen and said processor are configured to receive and display manual written inputs.

Preferably said screen and said processor are configured to allow data captured by said camera and/or by said distance meter to be repositioned on said screen. The repositioning is preferably effected by a click and drag action.

Preferably said screen has a plan area of at least 210mm x 296mm.

Preferably said tool further includes a voice recording facility.

Said camera and said distance recorder may share a common input/output aperture.

Said tool may be configured with internet connectivity.

Many variations in the way the invention may be performed will present themselves to those skilled in the art, upon reading the following description. The description should not be regarded as limiting but rather as an illustration, only, of one manner of performing the invention. Where appropriate any element or component should be taken as including any or all equivalents thereof whether or not specifically mentioned.

Brief Description of the Drawings

One embodiment of the invention will now be described with reference to the accompanying drawings in which:

Fig 1: shows an isometric view of a survey tool according to the invention;
and

Figs 2 to 5: show alternative views of a screen embodied in the tool of Fig 1 which
different data shown thereon.

Detailed Description of Working Embodiment

Referring firstly to Fig 1, the invention provides a survey tool which includes an electronic camera 11, an electronic distance meter 12, an electronic screen 13 and an electronic processor 14 shown schematically in dotted outline. One characterising feature is that the camera, the distance meter, the screen and the processor are all integrated into a single unit 10.

As shown, the basis for the unit 10 is a relatively shallow rectangular housing, having two large opposed faces. One of the faces carries the screen 13, whilst the other face defines the rear surface of the tool. This rear surface, together with the peripheral edge 15 of the housing, is preferably covered with a rubber or other shock absorbent material to minimize damage to the operating parts of the survey tool in the event the same is subjected to shock or impact loads.

The tool is preferably sized so that a page of A4 size (210mm x 296mm) can be displayed.

The camera 11 is preferably an opto electronic or digital camera. Similarly the

distance meter is preferably of the non-contact opto electronic type, such as a laser measure, examples of which are described in European Patent Nos. 0738899 and 1 195 617. As shown the lens systems for each are mounted side-by-side in a common housing 16 attached to the upper edge of the tool. Alternatively separate housings could be provided. In yet a further alternative the camera and distance recorder might share a common lens.

The camera 11 and distance meter 12 may have their own separate processing electronics, share processing electronics, or the necessary electronic processing for both may be included in the main system processor 14.

Fig 1 also shows a number of operating buttons 17 which may be activated to operate the camera 11 and the distance meter 12, as well as to store or delete information.

Alternatively the buttons 17 may be replaced by touch sensitive sections on the screen 13. In addition, Fig 1 shows a microphone 18 for a voice recorder which may be incorporated in the tool; a communications port 19 by means of which data may be loaded to and from the tool, and an electronic pencil and eraser 20 which may be used to enable manual inputs to be made and deleted in a manner described below.

The apparatus shown in Fig 1 may be used to collect data on site and to use that data in connection with data already loaded on to the tool in, for example, WORD and/or EXCEL format and, to that end, the processor 14 is preferably configured to receive data in these formats and to display such data on the screen 13. The WORD and/or EXCEL files can be loaded from a remote computer or network via the communications port 19. Alternatively, or in addition, the tool may be provided with wireless internet connectivity and thus data may be e-mailed to the tool.

Referring now to Figs 2 to 5, data is shown on the screen 13 as lines 22 of text. These lines of text may, for example, be part of a specification or schedule of works which are subject to survey. A toolbar 21 relating to the application in use may

appear along the top of the section or window on screen 13 that includes the text. Above the text area are two windows 23 and 24 for the display of data received from the distance meter 12 and camera 11 respectively. The screen and processor may be configured to allow pages to be scrolled by manual vertical finger swipes applied to the screen.

Turning specifically to Fig 3, if a user wishes to make a note concerning an aspect of the scripted matter then, using the electronic pencil and eraser 20, a note may be inserted in the script as shown in circle 25 in Fig 3.

Turning to Fig 4 a drawing 26, such as a rough sketch of a floor plan, may be created between lines of text using the pencil/eraser 20. Measurements of that floor plan, gathered using the distance meter 12 and displayed in window 23, may then be dragged from the window 23 and placed alongside the appropriate line in the drawing 26. Similarly, as shown in Fig 5, a photograph 27 created using camera 11 can be dragged from window 24 into an appropriate space created between lines of text.

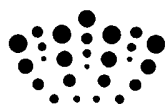
In use a person undertaking a survey need only take the survey tool above described albeit preferably pre-loaded with a job specification, schedule of works or the like. When on site photos, distance measurements and notes can be made and stored in the manner described. Upon returning from the site visit the modified data can be downloaded for future reference and/or processing.

It will be appreciated that a survey tool, at least in the case of the embodiment herein described, has the advantage that it replaces a number of bulky individual items and provides a single tool which incorporates all the facilities necessary to undertake an effective survey.

Claims

1. A survey tool including an electronic camera; an electronic distance meter; an electronic screen; and an electronic processor, said tool being characterised in that said camera, said distance meter, said screen and said processor are integrated into a single unit.
2. A survey tool as claimed in claim 1 wherein said processor is programmed to display on said screen, information captured by said camera and/or by said distance meter.
3. A survey tool as claimed in claim 1 or claim 2 when configured to receive and to display on said screen, documents in WORD and/or EXCEL format.
4. A survey tool as claimed in any one of the preceding claims wherein said screen and said processor are configured to receive and display manual written inputs.
5. A survey tool as claimed in any one of the preceding claims wherein said screen and said processor are configured to allow data captured by said camera and/or by said distance meter to be repositioned on said screen.
6. A survey tool as claimed in claim 5 wherein the repositioning is effected by a click and drag action.
7. A survey tool as claimed in any one of the preceding claims wherein said screen has a plan area of at least 210mm x 296mm.
8. A survey tool as claimed in any one of the preceding claims further including a voice recording facility.

9. A survey tool as claimed in any one of the preceding claims wherein said camera and said distance recorder share a common input/output aperture.
10. A survey tool as claimed in any one of the preceding claims when configured with internet connectivity.



Application No: GB1014786.6

Examiner: Richard Kerlake

Claims searched: 1-10

Date of search: 17 December 2010

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	1-7,9 & 10 at least	GB2464172 A (WOGAN) See whole document
X	1-8 & 10 at least	GB2409070 A (WRIGHT) See whole document
X	1,2,7 & 8 at least	WO2008/107676 A1 (DONOVAN et al.) See whole document
X	1,2,8 & 10 at least	US2008/0212064 A1 (SKULTETY-BETZ et al.) See whole document
X	1,2 & 4 at least	JP2001124544 A (ASAHI OPTICAL) See EPO abstract
X	1 & 2 at least	US2009/0153667 A1 (KUMAGAI et al.) See whole document

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

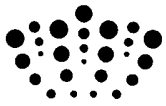
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Worldwide search of patent documents classified in the following areas of the IPC

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The following online and other databases have been used in the preparation of this search report

EPODOC,WPI



International Classification:

Subclass	Subgroup	Valid From
G01C	0015/00	01/01/2006