

actuation device **14**. The objective of the actuation device **14** now lies in transforming electronic information **15** and actuating the actuator elements **11** such that an "image" which is interpretable for the user is generated by the actuator elements **11** of the display device. Since perceptive capacity is individually variable, processing options of the actuator device **14** should be adjustable.

In an advantageous application of the display device of the invention, the information **15** contains data on the environment of the user of the display device. For example, an image recognition unit with optical cameras is connected in series in front of the display device **14**. The cameras receive objects in the environment, an image recognition unit recognizes the objects and transmits the information to the display device **14**. This transforms the information such that the actuator elements **11** are suitably actuated.

Through the combination of actuator elements which emit vibrations with those which generate heat or electrical impulses, the resolution can be basically increased or additional information can be transmitted. Further parameters for generating display information are the frequency and amplitude of the vibrations or the heat or the electrical impulses. Thus, in addition to contours of objects in the environment, their color can also be communicated to the user. In addition to the presence of objects, their distance from the user is representable. The brain can subsequently generate a three dimensional image on the basis of the information given.

How the suction cup-like configuration of the casings **22** can be constructed is represented in FIG. **3**. The actuator elements are arranged matrix-like, whereby the distance between the matrix elements **11** is adapted to the density of nerve endings of the skin. The size of the casings **22** can be selected depending upon the distance between the actuator elements **11**. The casings **22** in the embodiment depicted widen conically upwardly the typical suction cup shape arises. The casings **22** are advantageously manufactured of silicon, just like the flexible support **13**.

Numerous modifications and variations of the present invention are possible in light of the above teachings. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described herein.

We claim:

1. A display device comprising:

a plurality of elements arranged on a surface area of a support, said elements being individually actuatable to generate on said surface area a representation of an image defined by input electronic image information, said representation of said image being adapted to be detected from said elements by touch, and said elements also being individually operable to generate an output in response to mechanical touching of said elements;

an actuation device configured to receive the input electronic image information and to actuate said elements to generate the representation of the image defined by the input electronic image information that is detectable by touch; and

an evaluation device for evaluating the output generated by said elements in response to mechanical touching of said elements, said evaluation device converting said output into output electronic image information defining an image generated by said mechanical touching.

2. The display device according to claim **1**, wherein said elements are arranged in a matrix.

3. The display device according to claim **1**, wherein said actuation device is configured to actuate selected ones of

said elements in correspondence with the input electronic image information, the image defined by the input electronic image information having signs and graphics.

4. The display device according to claim **1**, wherein said actuation device is configured to actuate said elements with vibrations, electrical impulses or heat.

5. The display device according to claim **4**, wherein said actuation device controls at least one parameter selected from the group consisting of (a) frequency and amplitude of the vibrations, (b) frequency and amplitude of heat, and (c) frequency and amplitude of the electric impulses.

6. The display device according to claim **1**, wherein said elements are separated from each other by an insulation frame.

7. The display device according to claim **1, 2, 3, 4, 5** or **6**, wherein said display device is connected with at least one of a Braille input device and a function keypad.

8. The display device according to claim **1**, wherein said support is made of silicon.

9. A display device comprising:

a plurality of actuator elements, arranged in a surface area on a flexible substrate, said actuator elements being individually actuatable to generate at least one of vibrations, heat, and electrical impulses upon actuation, said actuator elements being further operable to generate an output in response to mechanical touching of said actuator elements,

an actuation device configured to receive input electronic image information defining an image and to actuate said actuator elements such that said actuator elements generate a representation of the image defined by the input electronic image information that is adapted to be sensed from said actuator elements by touch, and

an evaluation device for evaluating the output generated by said actuator elements in response to mechanical touching of said actuator elements, said evaluation device converting said output into output electronic image information defining an image generated by the mechanical touching.

10. The display device according to claim **9**, wherein the image defined by said input electronic image information describes a user's surroundings.

11. The display device according to claim **9**, wherein said actuation device controls at least one set of parameters selected from a group consisting of (a) frequency and amplitude of the vibrations, (b) frequency and amplitude of heat, and (c) frequency and amplitude of the electrical impulses.

12. The display device according to claim **9**, wherein said actuator elements are separated from each other by a casing.

13. The display device according to claim **9**, wherein each of said actuator elements has a suction cup casing for creating suction on a skin.

14. A display device for displaying information, comprising:

actuatable means for representing an image defined by an input electronic image information, said actuatable means being arranged in a surface area of a support and individually actuatable, said actuatable means further comprising sensorial means for sensing mechanical touching and generating an output in response to the mechanical touching;

actuation means for receiving the input electronic image information and for actuating the said actuatable means such that said actuatable means generates a representation of the image defined by the input electronic