



NOW YOU SEE'EM —OR NO, YOU DON'T

The quest for **invisibility** leaves a trail in the **U.S. Patent Office**.

There has always been the desire to hide things and, as a number of patents prove, the quest for invisibility is far from over.

Vinegar can be used for invisible writing. There are also numerous patents for invisible ink formulations. An early example includes patent No. 1,423,246 (1922) for a mixture of ferric sulfate and phosphoric acid. A newer example is Hewlett Packard patent No. 6,149,719 (2000) for an invisible ink composition used in printer cartridges.

Camouflage patterns are usually copyrighted (and sometimes the subject of a trademark), not patented. But, there are patents for using camouflage in unique ways. An old example is No. 2,190,691 (1939) where an aircraft is painted in such a way that “the eyes of an observer are drawn to the design covering the wing rather than the actual form of the wing and said observer is confused by the perspective of said designs as to the size of the wing surface and as to the direction in which the wing extends.”

Active camouflaging means sensing the surroundings and adjusting the camouflage to look like the surroundings. A good example is Boeing patent No. 7,199,344 (2007). A diffuser screen is illuminated based on signals received from a sensor aimed at the terrain near the screen. In this way, as the sun angle, weather, or other factors change how the terrain looks, the camouflage on the diffuser screen is adjusted accordingly.

And then there is cloaking. In patent No. 5,220,631 (1993), fiber optic cables and lenses receive light from behind a concealed object and pipe the light to the front of the object. So, if the object is between you and, say a tree, you will see the tree, not the object. In a similar vein,

according to patent No. 5,307,162 (1994), a screen is placed in front of the object to be concealed and images from behind the object are displayed on the screen. These two techniques, however, only work when observers are at specific locations with respect to the object to be concealed.

Patent No. 7,206,131 (2007) purports to correct that problem with a “pixel skin” cloak. Also, a fairly new patent by Lockheed, No. 8,495,946 (2013), discloses the use of carbon nanotubes in a camouflage material to display the background in the foreground and thus cloak anything bearing the camouflage material.

Another type of cloaking involves structuring or routing light around an object and letting the light continue on unchanged as if the object wasn't there. Published patent application No. 2008/0024792 by David Smith of Duke University explains that a special metamaterial can provide “a method of concealing an object or volume of space by means of redirecting the electromagnetic field lines around it.” Others are also working on different ways of routing light around an object, notably Xiang Zhang – a professor of mechanical engineering at the University of California, Berkeley.

Will a true cloaking device ever be realized? The problem is visible light is made up of so many wavelengths which have to be dealt with simultaneously.

By the way, I found no patent for a drug which can make you invisible. And remember, H.G. Wells's Invisible Man might have been invisible, but he wasn't happy. **ME**

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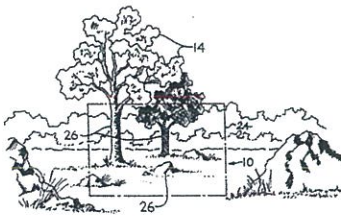


FIG. 1

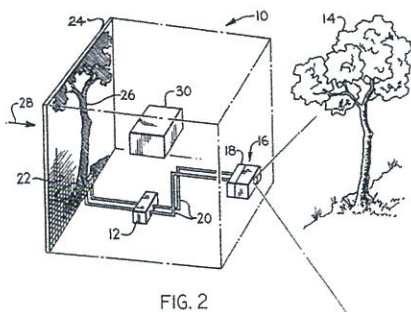


FIG. 2

PRIVACY SCREEN

A cloaking system covered by U.S. Patent 5,307,162 from 1994 uses “optoelectronics and/or photonic components to conceal an object within it.”