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NASA TECH BRIEF

NASA Pasadena Office

Ultrasonic Scanner for Footprint Identification

The problem:

Shoeprints found in crime areas are often used by investigators to identify criminals. This procedure is much less accurate than fingerprinting. It is possible to misidentify an innocent person simply because his shoe soles match those of a criminal.

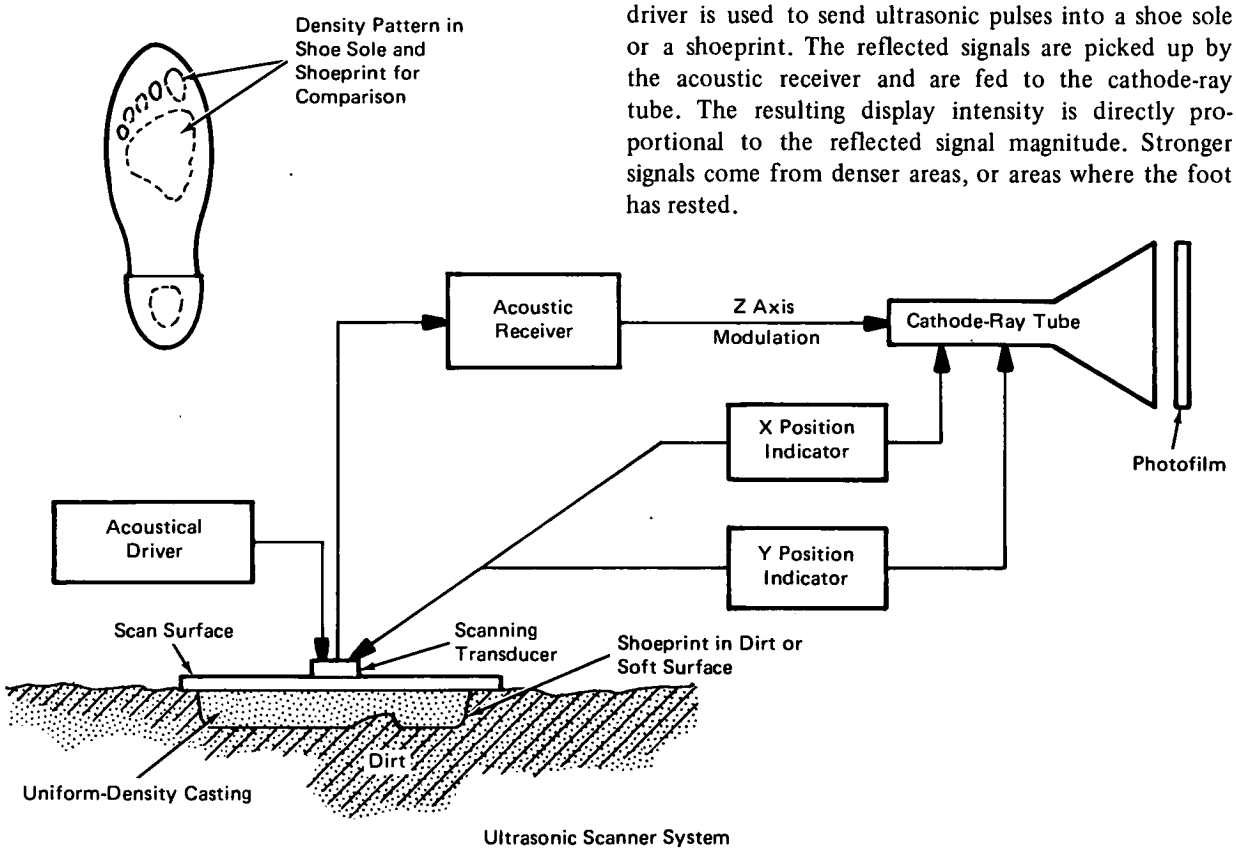
The solution:

An ultrasonic scanner is used for a more accurate matching between shoeprints and shoes.

How it's done:

Every shoe worn on a hard surface develops a density pattern, or a footprint, on the sole. This pattern is also traceable on shoeprints found in dirt. By comparing the foot shape on a shoe sole with one on a shoeprint in dirt, an investigator can identify a criminal with improved accuracy. This comparison is done with the help of an ultrasonic scanner.

The ultrasonic scanner as shown in the illustration includes a transducer, an acoustical driver, an acoustic receiver, X and Y position indicators, and a cathode-ray tube. The transducer which is fed by the acoustical driver is used to send ultrasonic pulses into a shoe sole or a shoeprint. The reflected signals are picked up by the acoustic receiver and are fed to the cathode-ray tube. The resulting display intensity is directly proportional to the reflected signal magnitude. Stronger signals come from denser areas, or areas where the foot has rested.



Ultrasonic Scanner System

(continued overleaf)

Normally, two scans are made, one of the shoeprint and the other of the shoe sole taken from a suspect. The displays are photographed, and the photographs are compared for identity.

Note:

Requests for further information may be directed to:

Technology Utilization Officer
NASA Pasadena Office
4800 Oak Grove Drive
Pasadena, California 91103
Reference: TSP74-10212

Patent status:

NASA has decided not to apply for a patent.

Source: Lloyd J. Derr of
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(NPO-13055)