



CRANE

Tilt Lock Mechanism for Movable Optical Display Devices

Track Code: CRANE-98841

Categories:

- Mechanical Engineering
- NSWC Crane

Keywords:

- Crane
- Mechanical Engineering
- Military

Many pilots use head- or helmet- mounted display devices, such as binoculars or night vision goggles, which provide improved vision or heads-up display information. These pilots can experience strong flight vibrations and occasional jolts from hitting large air pockets, or from fierce maneuvering while in battle, which can cause the helmet goggles to be misaligned.

Technology Summary

Naval Surface Warfare Center, Crane Division (NSWC Crane) has developed, patented, and deployed the "Tilt Lock Mechanism for Movable Optical or Display Devices." This technology enables users to incrementally rotate the binoculars to allow them to tilt so that the user's line of sight points more downward or more upward. Hence, the helmet-mounted binoculars can tilt over a range of angular degrees to optimize the line of sight. Therefore, once a desired position is chosen, a locking mechanism can keep the optical device in that specific orientation, until the user needs to adjust it to a new angle or alignment. This technology is critical because failure to have devices such as night vision goggles locked in a selected position may cause the system to fail to operate or interact with other systems that require a specific alignment, steadiness of the head mounted device, or a certain spatial relationship with exterior objects.

Advantages:

- Positions optical devices to optimize the user's line of sight
- Enables optical devices to snap into stable adjustable positions
- Control knobs adjust devices for individual's interpupillary distance
- Device remains locked into selected position in spite of jolts, jerks, and vibrations

Potential Applications:

- Helicopter pilot HMDs
- Fixed wing aircraft HMDs

- Naval ship board optical monitor devices
- Land based vehicles e.g., mine resistant ambush protected (MRAP), all-terrain vehicles (M-ATV)

People:

- Greer, Charles (Project leader)
- Davis, Travis

Intellectual Property:

Application Date: (None)

Type: Utility Patent

Country of Filing: United States

Patent Number: 7,885,001

Issue Date: February 8, 2011

Contact OTC:

Purdue Office of Technology Commercialization
The Convergence Center
101 Foundry Drive, Suite 2500
West Lafayette, IN 47906

Phone: (765) 588-3475

Fax: (765) 463-3486

Email: otcip@prf.org