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29-105

NPIC/TDS/D-1031-67
21 September 1967

MEMORANDUM FOR: Assistant for Technical Development, NPIC
THROUGH : Chief, Development Staff, TD
 : Chief, Exploitation Systems Branch, DS
SUBJECT : Record of Invention for Advanced Rhomboid Attachment

1. In 1965 the Development Staff, through two members of its technical staff, [redacted] and the undersigned conceived the optical attachment which is described in the subject Record of Invention. The conception was subsequently reduced to practice by the [redacted] 25X1

[redacted] 25X1

2. Although [redacted] has filed a declaration of their intention not to file for a patent, it is the Contracting Officer's opinion [redacted] that the Government should make claim to its patent rights thereby preventing others from making such a claim. 25X1

3. The attachment describes the invention giving the appropriate data requested. As is pointed out in the attachment [redacted] and the undersigned take credit for the concept and characteristics of the invention; however, [redacted] implemented the physical configuration (under the direction of [redacted] Therefore, it is the undersign's opinion that those at [redacted] responsible for this implementation should be considered as joint inventors with [redacted] and it would be mandatory that they be joined in any Government action before the Patent Office. 25X1

[redacted] 25X1
Exploitation Systems Branch, DS

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NPIC/TDS/DS [redacted] (21 Sept 67) 25X1

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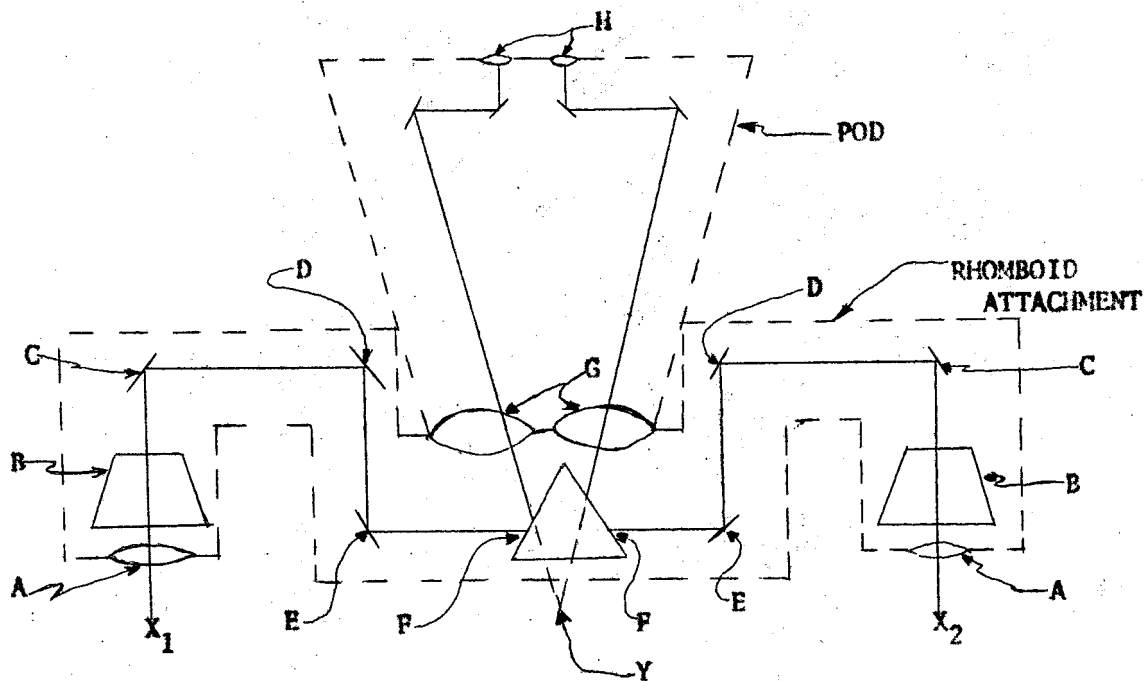
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Attachment to
NPIC/TDS/D-1031-67
21 September 196710. Brief Description of Invention

This invention consists of a system of optical elements combined to create an instrument which converts a stereomicroscope into a microstereoscope. A stereomicroscope is an instrument typically with two convergent optical paths, whereby the operator can view a three-dimensional object in a stereoscopic mode. Because the two optical paths converge to permit viewing a single object, the instrument cannot be employed to view stereoscopic photography (two two-dimensional images recorded from a slightly different viewing angle). To convert the stereomicroscope into a microstereoscope, the convergent optical paths must be redirected to permit each one to separately view one of the stereoscopic images.

Simple devices to perform this task have been in existence for a period of years; however, the subject invention substantially improves the basic concept by (1) increasing the total resolving power of the instrument, (2) providing greater objective separation and (3) incorporating independent optical image rotation in each optical path.

FIGURE 1



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The invention is implemented as shown schematically in Figure 1. The basic stereomicroscope is outlined in red showing the two optical paths potentially converging at point Y. The Rhomboid attachment, shown in green observes two independent objects at points X_1 and X_2 . An optical element (objective lens) A premagnifies the image two times and transmits it through an image rotation element B. This element creates a rotation of the image when the element itself is rotated about its optical axis. The optical path is then reflected by optical surfaces C, D, E and F into the objective system of the stereomicroscope which presents the image to be viewed with eyepieces H. The rhomboid arm can be rotated about an axis through the points D and E, thereby, allowing the operator to position the objective A over different object points without altering the eyepiece position.

The rhomboid attachment increases the performance characteristics of existing stereomicroscopes to the extent that they can be utilized in the future. Success of the concept and implementation is indicated from the initial operational procurement of over two hundred units at a total expenditure of over [redacted]

14. [redacted] are responsible for initiating and monitoring development contracts with private industry. The basic design parameters were established by [redacted] and the physical implementation was performed under their direction by the [redacted]

Task Order 2. For this reason those responsible at [redacted] should be joined in any action before the Patent Office.

15. The inventors assign rights to the Government as stated in CIA Regulation [redacted] and Executive Order 10096 amended by Executive Order 10930. If the Patens Board find the contribution and interest of the Government is insufficient to justify assignment of the rights, the inventors desire to retain the entire rights title and interest. If the Government elects to prosecute this invention it is requested that the inventors be permitted to retain commercial rights.

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