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**Sparks et al.**

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(54) **OPTICAL SWITCH ATTENUATOR**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) Int. Cl.<sup>7</sup> ..... **G02B 6/26; G02B 6/42**

(52) U.S. Cl. .... **385/18; 398/45**

(58) Field of Search ..... **359/117, 128; 385/16-18**

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

6,031,946 A	*	2/2000	Bergmann et al. ....	385/18
6,256,430 B1	*	7/2001	Jin et al. ....	385/18
6,424,757 B1	*	7/2002	Sparks et al. ....	385/16
2002/0168131 A1	*	11/2002	Walter et al. ....	385/16

\* cited by examiner

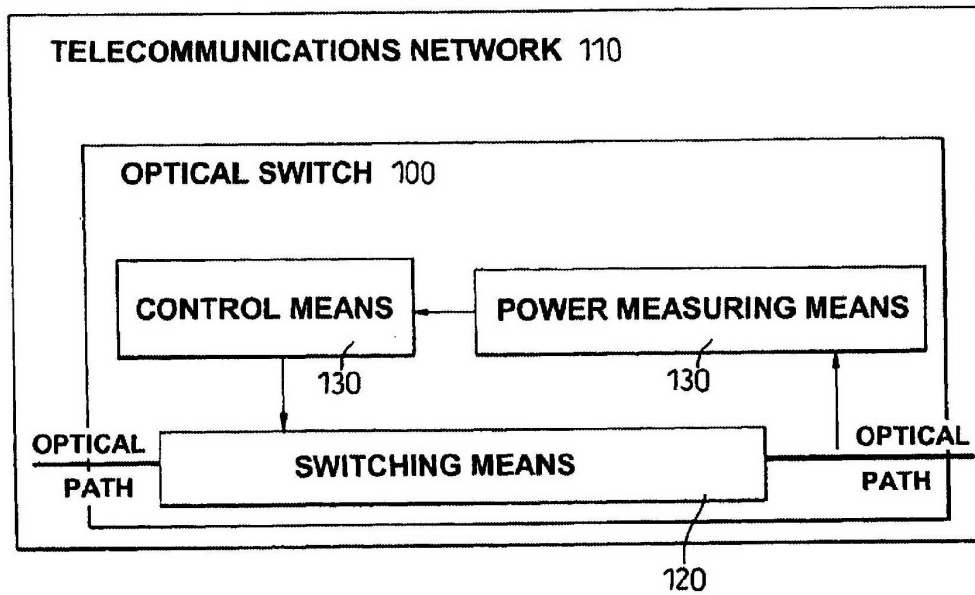
*Primary Examiner*—Kinfe-Michael Negash

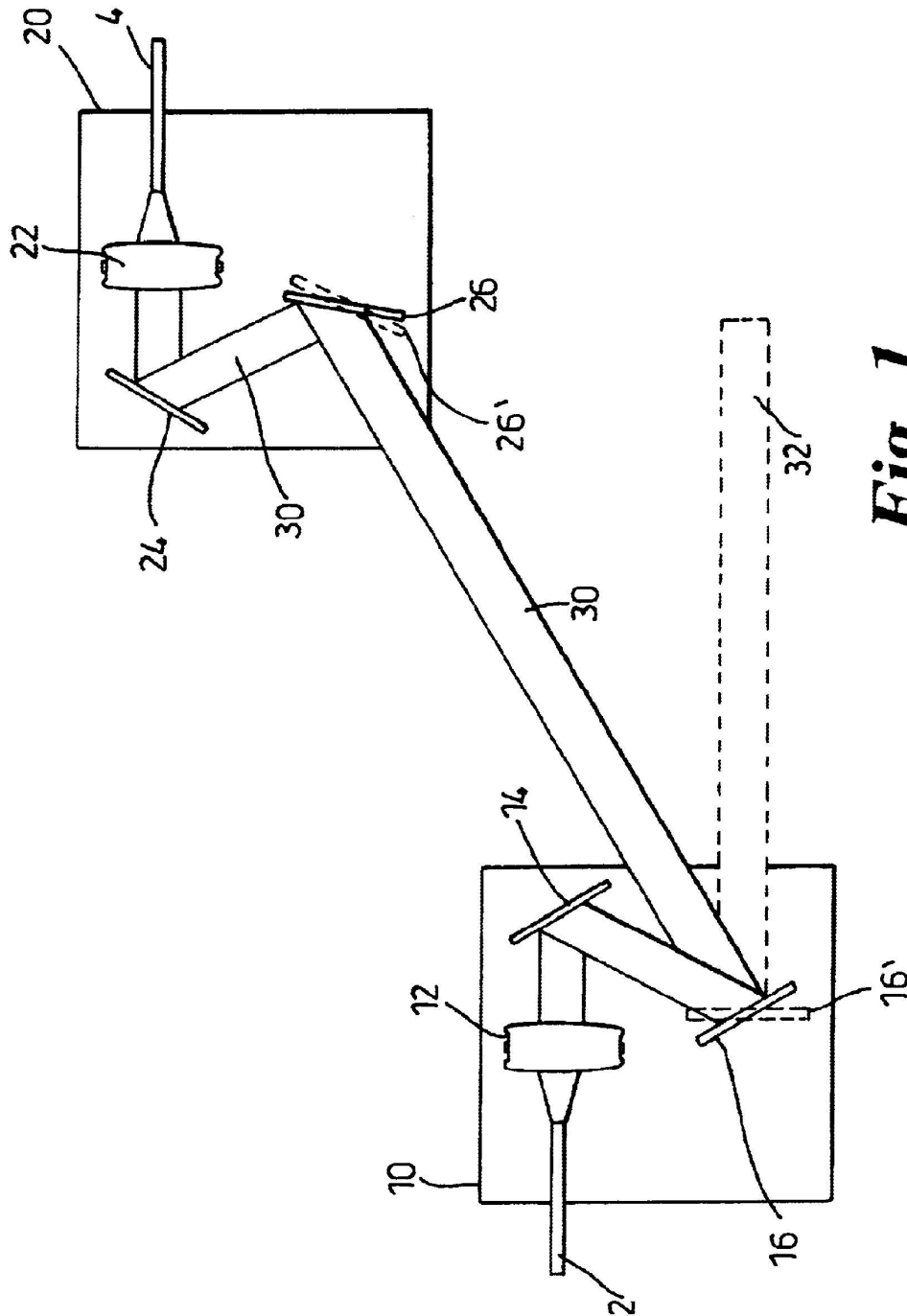
(74) *Attorney, Agent, or Firm*—Barnes & Thornburg

(57) **ABSTRACT**

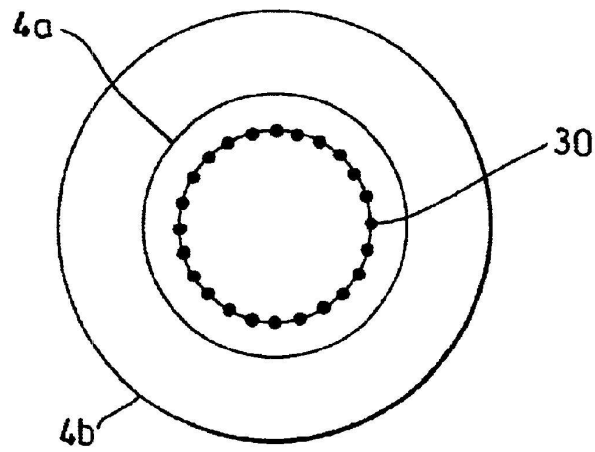
An optical switch comprising switching means arranged to switch an optical signal by redirection of the optical beam path of said signal, wherein said optical switch is arranged to misalign the optical beam path so as to provide a predetermined optical output power. Thus a switch can be directly used to attenuate a signal, instead of utilising separate attenuators.

**12 Claims, 4 Drawing Sheets**

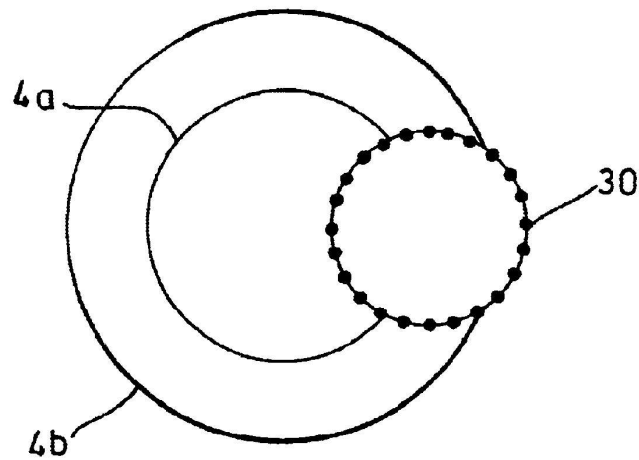




**Fig. 1**

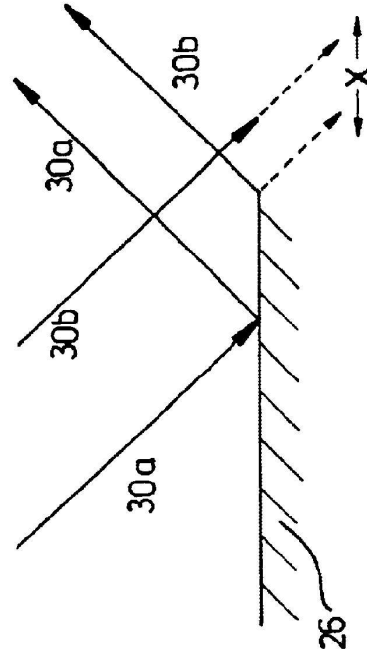


*Fig. 2a*



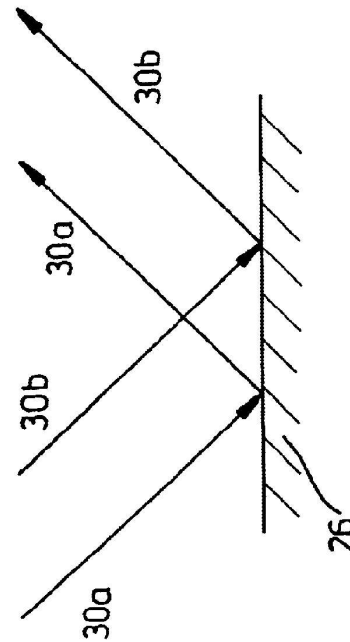
*Fig 2b*

Only part of Beam Profile reflected



*Fig. 3b*

Full Beam Profile reflected



*Fig. 3a*

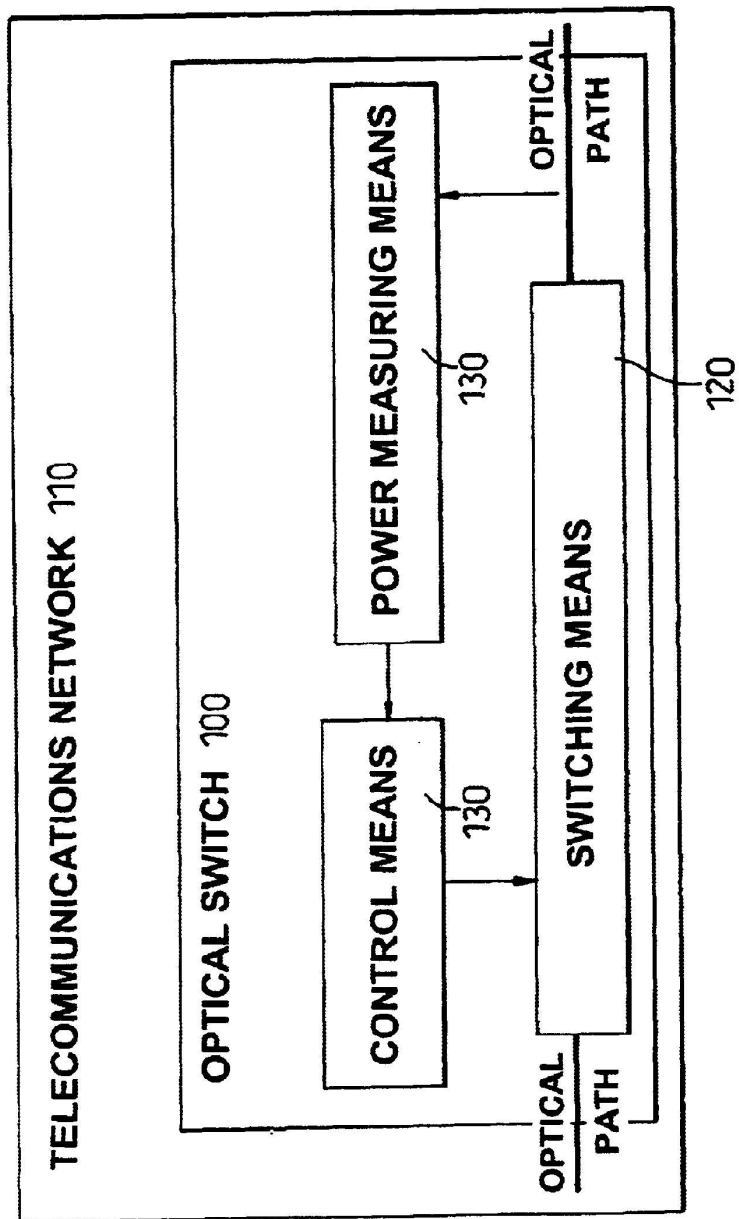


Fig. 4

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