

OPTICAL COMMUNICATIONS

ABSTRACT

An optical beam having a high radio-frequency modulation is generated at output (10) by generating in
5 source (4a) a lower frequency modulation, using it to control
the optical output (3) of a laser (1) and further modulating
the optical output (3) in an optical modulator (6) by a
control signal having another lower frequency modulation
generated by source 4b. Either or both of the lower
10 frequency modulations also carries an information -
containing modulation. The effect of the optical modulator
(6) is to up-convert the modulation carried by the optical
beam by the modulation frequency of the control signal. The
optical modulator (6) may be a Mach-Zehnder interferometer.
15 The non-linearity of such a modulator with respect to its
control input may be exploited by selecting the amplitude of
the control signal such that the optical output (3) is
upconverted by a integer multiple of the modulation frequency
generated by source 4b.
20 These methods avoid the need to apply the high
frequency modulation to either the laser input (2) or the
control input directly (7).

Fig. 1

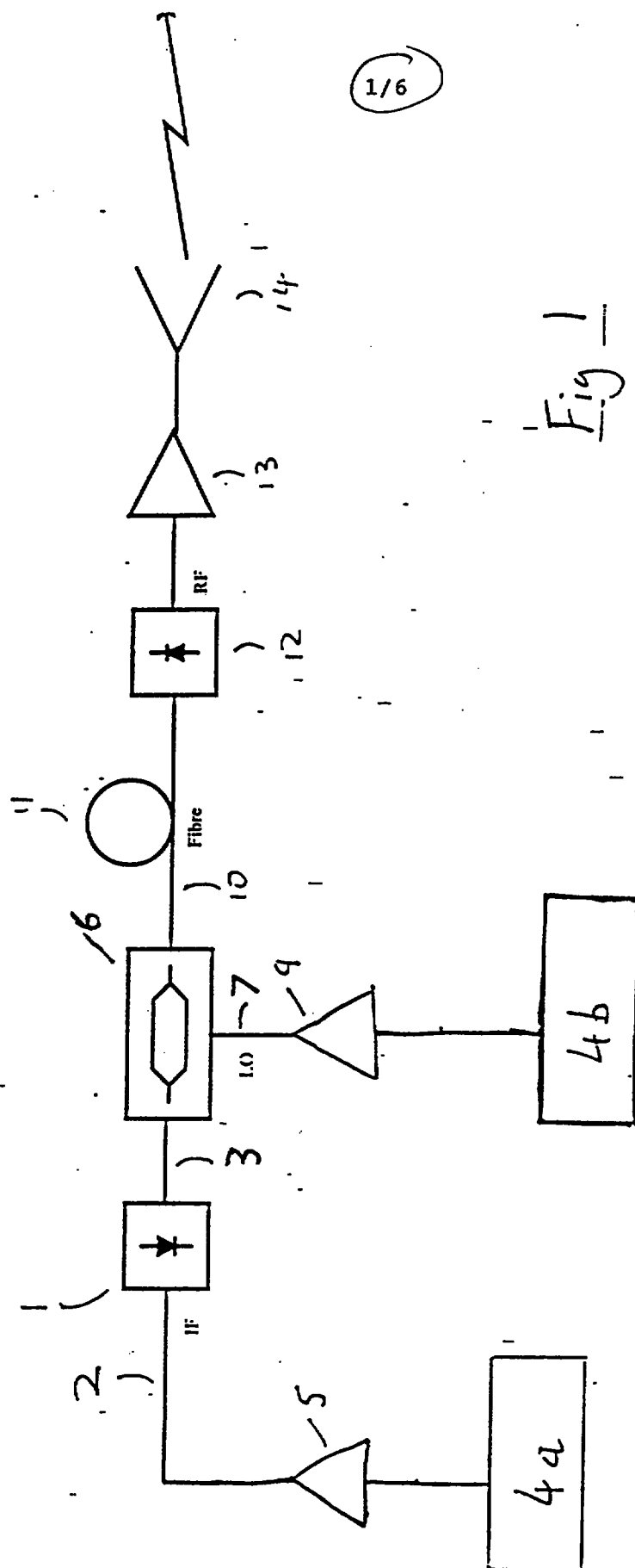


Fig 1

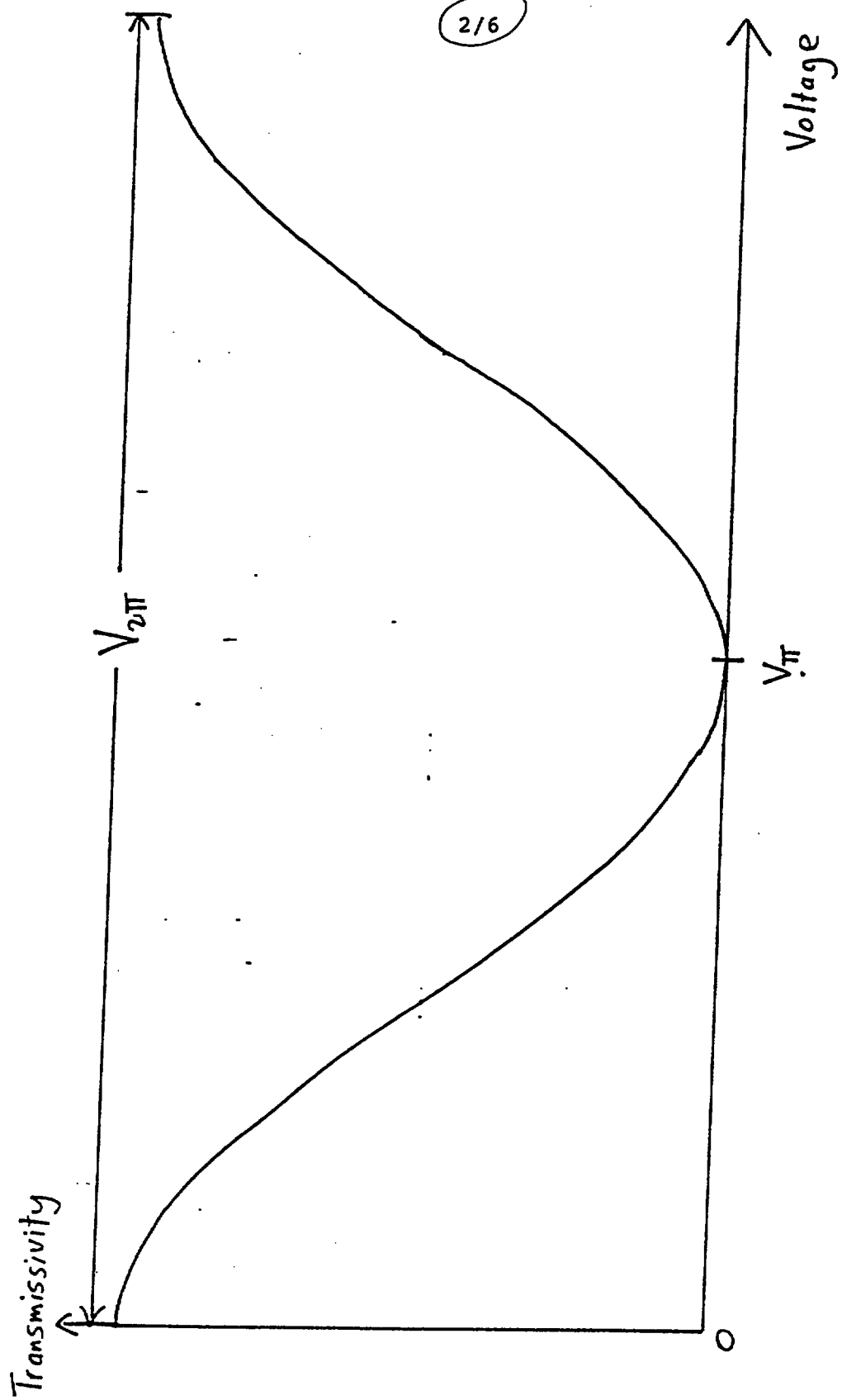


Fig 2

Fig 3

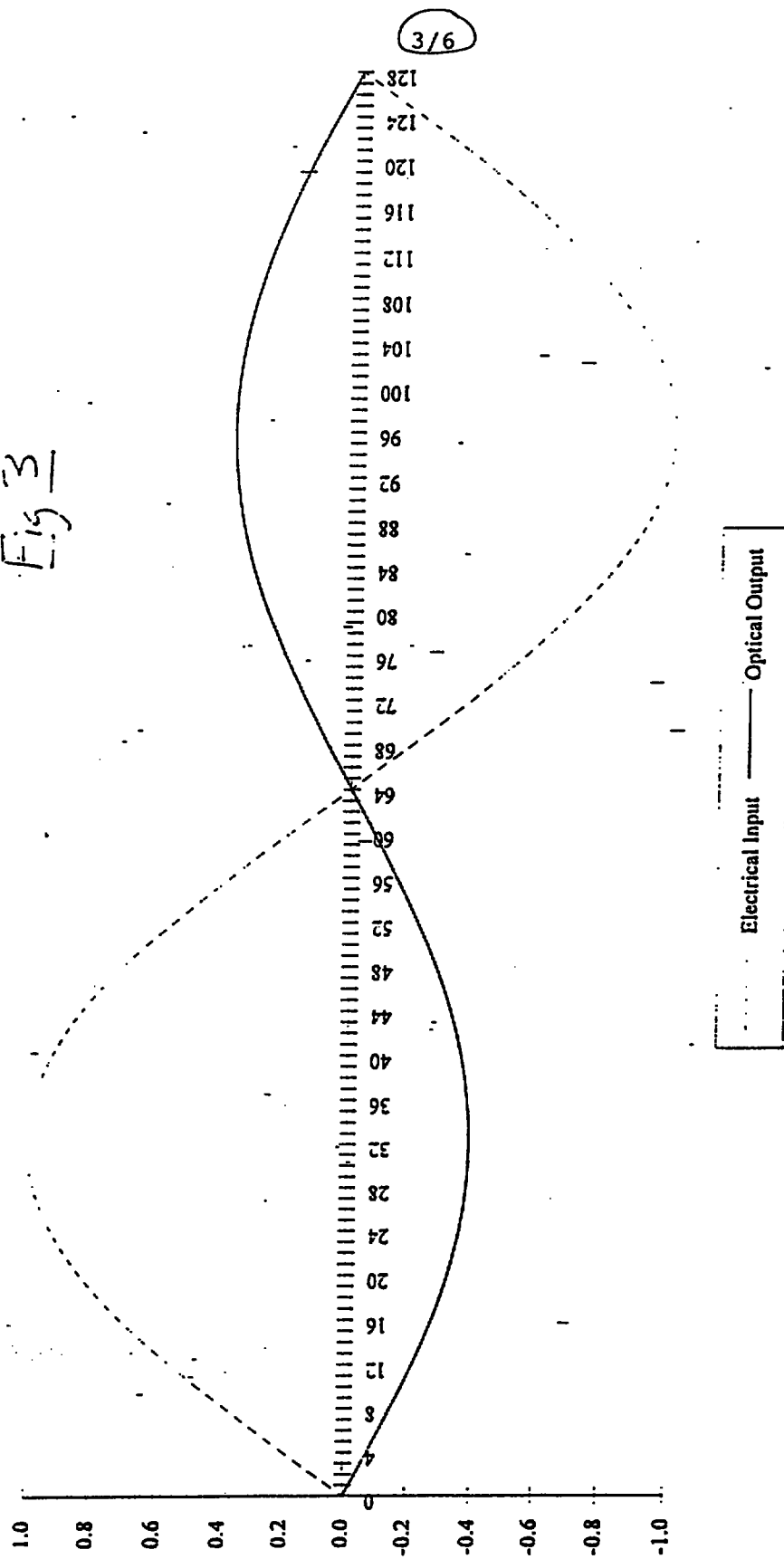


Fig 4

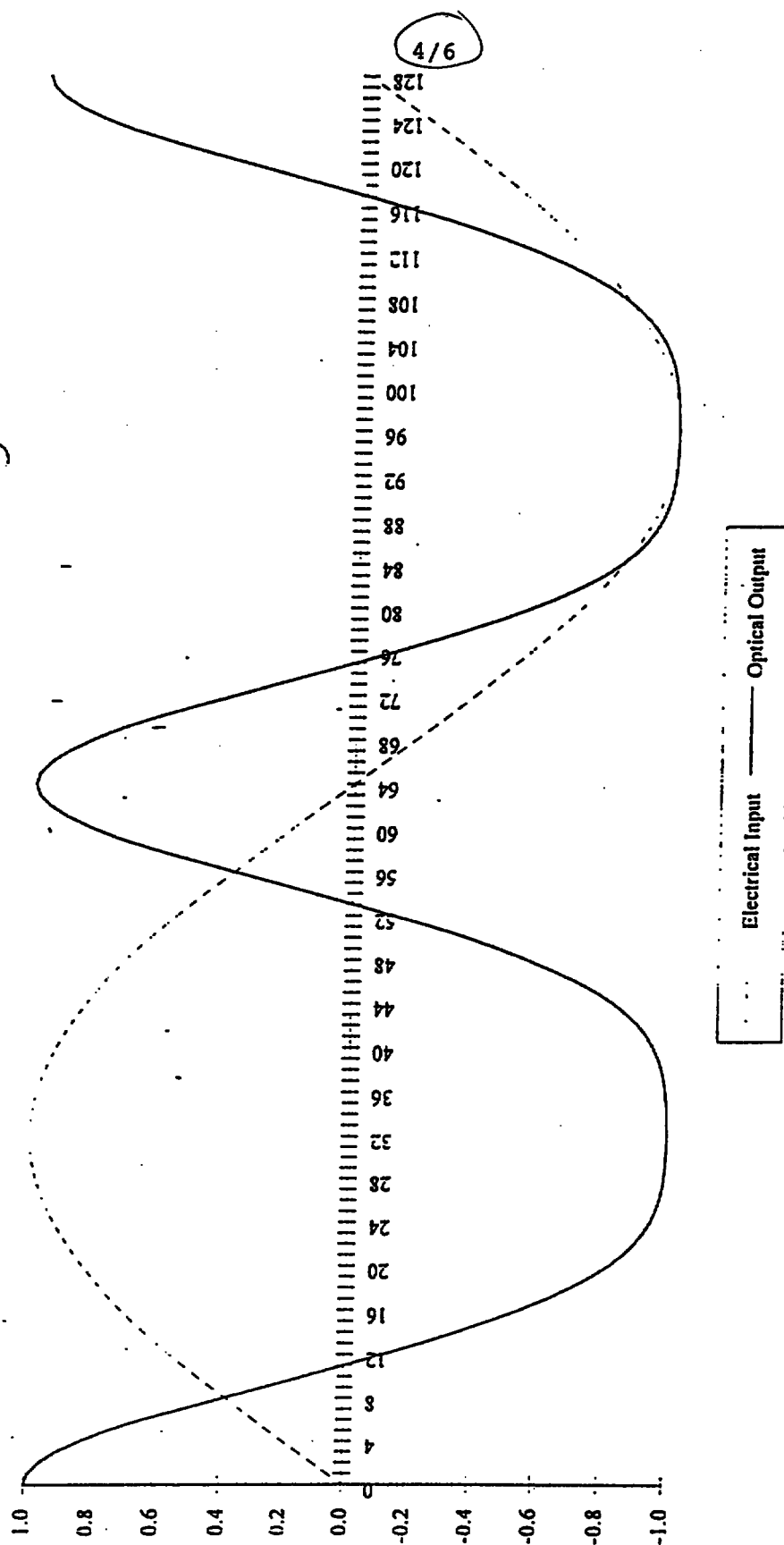
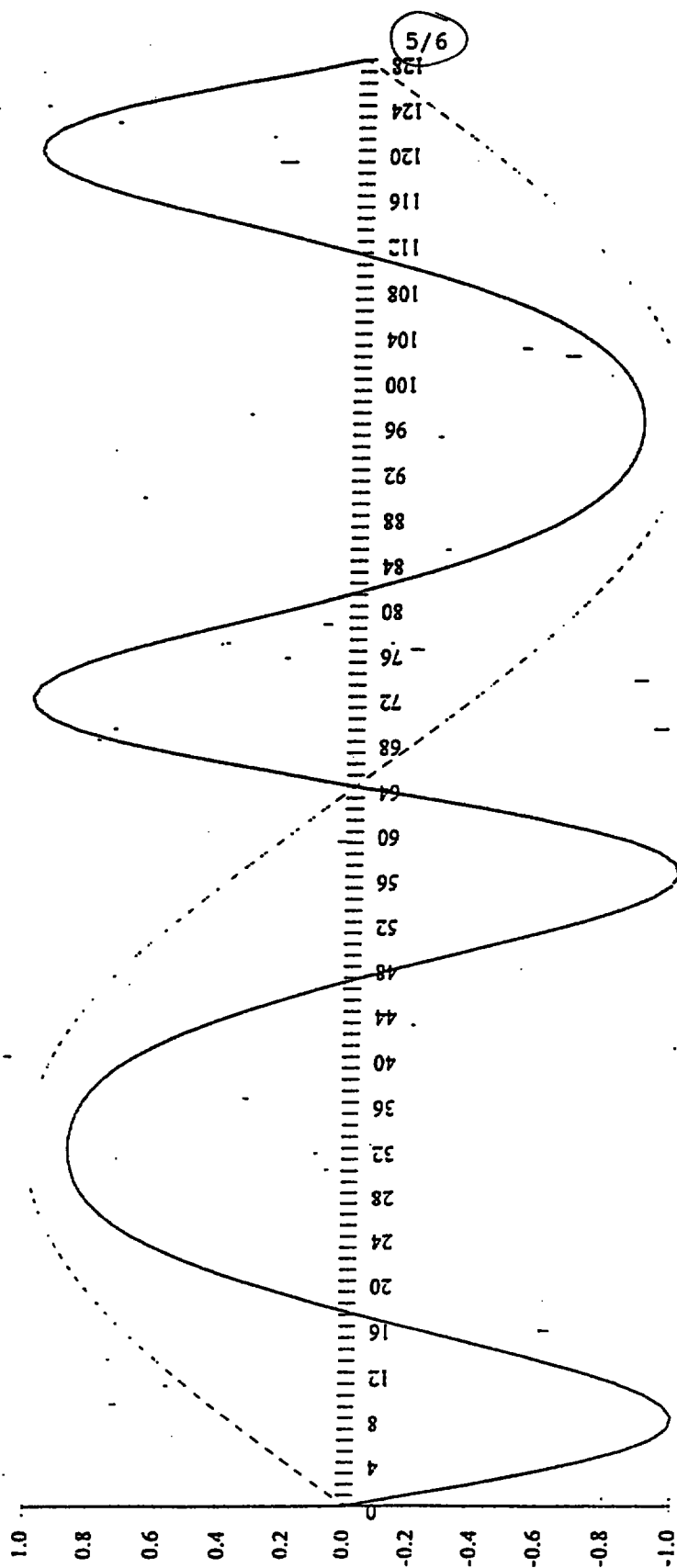


Fig 5



Electrical Input — Optical Output

Fig 6

