ABSTRACT

MULTIPLE DATA SURFACE OPTICAL MEDIUM AND STORAGE SYSTEM

An optical data storage system uses an optical medium (12) made of a stack of spaced-apart optical disks (50, 60, 70, 80). Each disk in the stack is made of light-transmissive material, such as polycarbonate when the system is a CD-ROM system, and has a partially light-transmissive data layer on at least one of its faces. A focusing lens 210 in the system focuses light to the data layers along optical paths, with each data layer corresponding to a unique optical path length. The light is focused to each data layer by reflection off adjacent data layers such that the total substrate thickness through which the light passes is the same for each optical path. In this manner, the fixed spherical aberration correction provided by the focusing lens is adequate and variable aberration correction is not necessary. By appropriate selection of reflectivities of the multiple data layers in the disk stack, it is possible to design the system so that the effective reflected light intensity from each data layer is the same, and that adjustable signal amplification is not necessary.

Fig. 1