Large blocks
1 or more

free spare
list

ms

large blocks

Small
Blocks

large
block

free small
block list

Small
block

Small
Blocks

large block
list

or

and the small block
involved is part of
a big block in the
list; last one ment-
ioned in the block
itself.

free

Main
Directory (small blocks)
chaining probabl
not used)

entry
chain

never
empty!

contain
entries
for basic
objecfs

directory page
for more
small
blocks

large blocks
pointers
to large blocks

file

Form of Storage

    A)   3 dimensional, requires 3 numbers to specify a word

        1. Large block (halftrack)
        2. Small blokc (sector)
        3. word position

    B)   In what follows, a single number will designate a large
        block, 2 numbers for a small block, 3 numbers for a
        word.

    C)   There will be a main object table.
        Each entry will obtain 3 items.
            1. a check number
            2. a free, or in use bit
            3. if free, a pointer (3 numbers) to next free entry
               if in use, a pointer (2 numbers) to beginning of
               object

        Each capability will point to the object via the main object
        table with
            1. a check number
            2. 3 numbers to point to entry in main object table

        The in use bit must be on and the check numbers must agree.
        If they don't, some thing may be wrong, or simply someone re-
        ferring to an object since destroyed and replaced with
        another.

Representation of a Permanent File

    Assume a storage system divided into addressable blocks. Then
    a file can be defined by giving a sequence of location
    addresses. Assume a two part addressing structure. All files
    will start with 2nd part of address 0. Assume a scheme that
    allocates space in large blocks, with a program for allocating
    small blocks.

To Make a File Permanent

    1. Copy from non permanent area to permanent area
    2. Get a small block and copy addresses of big blocks onto it,
       if over Slow, chain to another small block, etc.
    3. Now in mainfile table, put an entry for one small block
       starting chain of block addresses.
Form of main file table
    chain number
    pointer to start of address chain
Form of a capability pointer to object
    check number
    small block address
     position in block of object entry

Implementation

I. Designate a certain physical portion of disk as permanent
    file area
    A) Fix stack processor so that it will do no writes
        in that region except by special (and now) type of
        request.
    B) Fix ce programs so that they do not write in that
        area.

II. Represent capabilities by FNT entries.
    A) Invent a new equipment type for capabilities, thus all
        ordinary requests will fail.

III. Write ppu subroutines to perform the e-operations.