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sequenceDiagram
    participant Request
    participant OS as Operating System
    participant Cache
    participant Directory
    participant file

    Note over Request: get directory path and word and search for all the line which contains the word in the txt files in the directory
    Request->>OS: 
    OS->>Directory: search for text files
    Directory-->>OS: returns the path to the text file
    OS->>file: serch the word
    file-->>OS: returns the line
    OS->>Cache: organized the lines in Map
    OS-->>Directory: send notification (observable)
    OS->>Directory: required new file
    Note over OS: [with fork join pool]
    OS->>Directory: serch for word in directory
    Directory->>Directory: fork the tasks for word searching
    par open thred for each directory
        if this is text files search for the word
        get the line's
    and fork new thread
        if this is text files search for the word
        get the line's
    and fork new thread
        if this is text files search for the word
        get the line's
    end
    Directory->>Directory: join the tasks for word searching
    Directory-->>OS: get the result
    OS->>Cache: check if the result of this word is already existing
    Cache-->>OS: already exists
    OS-->>Request: return the Map which is exciting
    alt [cache management: clear the cache]
        OS->>Cache: send notification (observable)
        Cache-->>OS: remove the oldest result LRU
        OS->>Cache: send notification (observable)
        Cache-->>OS: remove the most not trending result LRU
        OS->>Cache: send notification (observable)
        Cache-->>OS: 
    end
    OS->>Cache: Bring the result of the requested word
    Cache-->>OS: the result
    OS-->>Request: response the Map which contain the line with the word
```