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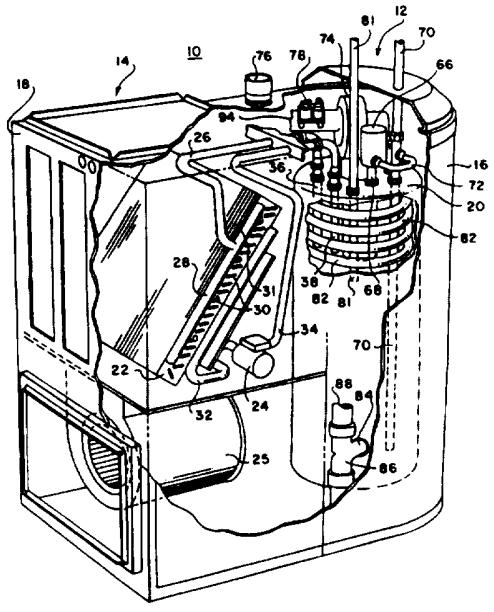
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**(54) Title:** COMBINATION WATER HEATING AND SPACE HEATING APPARATUS

**(57) Abstract**

A combination water heater and space heating apparatus includes a water heating unit (12) and a space heating unit (14) releasably coupled with the water heating unit. The water heating unit (12) has a water storage tank (20) and a helically wound tubular heat exchanger (82) inside the tank for exhausting products of combustion from a combustion chamber (42) located in a top part of the tank and for transferring heat from the products of combustion to the surrounding water. The space heating unit is an air handler with a hydronic heat exchanger coil (22) and a blower (25) for blowing air over the coil. Hot water is supplied from the tank (20) to the coil and is returned to the tank by means of a water circulation pump (24) located in the space heating unit. The water heating unit and the space heating unit are coordinately controlled such that priority is given to the potable hot water supply over space heating in the event that sufficient hot water is not available to satisfy both demands. Further, the water heating unit anticipates the additional demand for hot water in response to a demand for space heating by raising the tank temperature setpoint.



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# INTERNATIONAL SEARCH REPORT

International application No.
PCT/US95/09348

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(6) :F24D 9/00
US CL :126/101
According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 126/101,116A,361,362,364;431/40;237/8B,8C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | US,A,2,787,318 (WOLFERSPERGER) 02 APRIL 1957, see entire document | 1-20 |
| A | US,A,3,741,710 (NELSON) 26 JUNE 1973, see entire document | 1-20 |
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[X] Further documents are listed in the continuation of Box C. [ ] See patent family annex.

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International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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| A | US,A,4,398,502 (PARK) 16 AUGUST 1983, see entire document | 1-20 |
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