Facsimile Cover Sheet

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Date: January 14, 1994
Pages including this cover page:

Comments: Dear Tina,

FYI

Sincerely,

Tom

Tom

DIRECT-VENT GAS FIREPLACE *allows for an expansive mantel-top view where you'd expect to see a chimney. This prefabricated unit fits into a wood-framed entertainment center designed by Kaufman Homes of Salem, Oregon. The top-loading pellet stove on opposite page also vents directly through the wall.*

Our changing fireplaces

New worries, new rules, but also many new alternatives

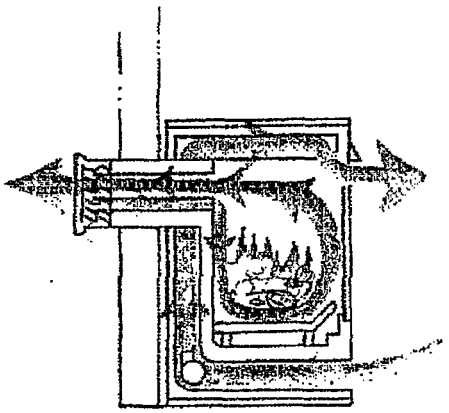
GATHERING AROUND A cozy fire on a cold winter night is the stuff of Christmas carols and Norman Rockwell paintings. So fond are we of our hearths that they have become a symbol of home and family life. Fires warm our homes, brighten our rooms, even cook our meals, as well as delight our senses with their crackling noises, dancing flames, and smoky smells.

Lately, though, home fires have been sending up some dark smoke signals. On cold, windless winter nights, many areas in the West experience weather conditions called inversion layers, which trap pollutant-laden air close to the ground. If too many fires are built under these conditions, the result is a thick, stifling, health-threatening cloud of smoke and gases. As a result, many governmental agencies that monitor regional air quality now request voluntary—or, in some cases, mandatory—participation in limiting or forgoing fires.

The good news is that a new generation of fireplaces and woodstoves burns their fuel so cleanly that they are usually exempt from these

GAS HEATERS

The biggest news in clean-burning units is the rapidly growing number of gas appliances. Even though many models are considered primarily decorative, increasing numbers of manufacturers offer ones that are rated by room heater standards. They rely on heat exchange chambers to warm air circulating to living spaces.



A side-by-side comparison between gas heaters and wood-burners reveals that their shells can look identical and that the appearance of the gas flame and the ceramic logs is close to a real log fire. Improved gas technology now produces a dancing, orange-yellow flame, and both the man-made logs and their artificial "embers" glow believably. If you live in an area where only propane is available, the units can be modified for that fuel.

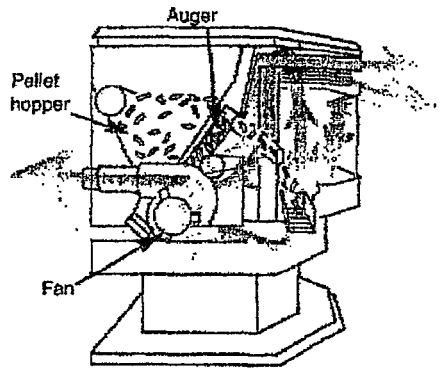
Pros: Gas units are exponentially cleaner burning than solid-fuel appliances and produce virtually no particulate matter. Ideal for additions, the furnace-rated models do away with the need to tie into the furnace. Convenience is a big plus: some models start with the push of a button in their housing, others are linked to thermostats, and a few even have remote controls. There's no fuel to lug around and store, and no ashes to remove.

Cons: Heat output is only about half that of wood-burners, which could be a limitation for heating large areas. Some people may miss the smell of burning wood.

Cost: $1,100 to $2,000.

PELLET STOVES

Pellet stoves are relatively new to the market. Although the pellets look like rabbit food, they are really compressed cylinders made from super-dried wood by-products, sold in 40- to 50-pound bags. They're loaded into a storage hopper in the back of the stove or insert. A motor-driven auger moves the pellets to the firebox at a controlled rate. You can adjust this rate to a desired heat output or let a thermostat control it. Some newer models have automatic starters.



MICHAEL SKOTT

Although they meet and surpass the EPA's Phase II requirements (see page 83), most pellet stoves are exempt because of the high volume of air that passes through the firebox. (One fan pushes air through the firebox, while another propels air through heat exchangers and into the room.)

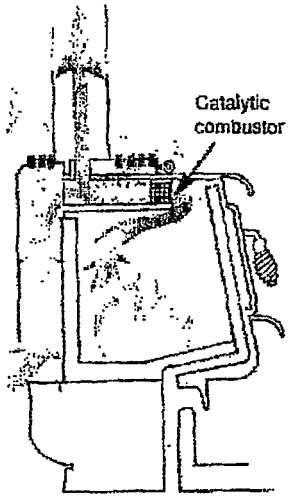
Pros: Easier to use, more efficient, and cleaner burning than other solid-fuel appliances. Some models can be rear-vented and don't require a full chimney.

Cons: More complex mechanisms. Electricity is required to drive the auger and fans, making them inoperative during power outages (unless outfitted with a battery backup). Pellet stoves cost more than other wood-burners, though their installed cost may be lower since they may not require a full chimney. The pellets are often more expensive than wood in terms of Btu output, and finding a reliable source of top-quality pellets may be a problem in some areas.

Cost: $1,400 to $2,500.

CATALYTIC BURNERS

Wood will burn at temperatures of about 800°, but the volatile gases and particulates that would otherwise escape into the air will not burn until temperatures reach 1,100°. Catalytic combustors, similar to the devices used to control emissions in cars, reduce the ignition temperature for smoke to about 550°. The combustors, generally made of a ceramic material coated with platinum or palladium, are located between the firebox and the flue.



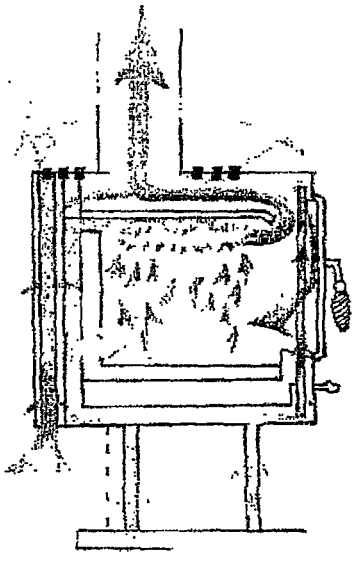
Pros: Units with catalytic combustors offer lower emissions, higher efficiency, larger fireboxes, and longer burn times than their noncatalytic wood-burning counterparts.

Cons: Combustors add a little to the cost. They become gradually less efficient and clean burning, requiring their replacement every three to six years.

Cost: $900 to $2,200.

HIGH-TECH BURNERS

Rather than merely inserting a catalytic combustor, these units rely on more sophisticated design, added insulation, and additional air sources that create a secondary burn to combust particulates and the volatile gases. (You can observe this as a roiling, turbulent gas fire that dances above the burning wood.)



Pros: Slightly lower cost, consistent performance, easy maintenance and operation. Attractive, lively flames make them a popular choice for people who like the look of a fire.

Cons: Slightly higher polluters, they can't be "damped down" as much as catalytic models, which means faster-burning fires, more frequent loading of wood, and a more limited range of performance.

Cost: $775 to $1,900.

limitations or prohibitions. Not only do they pollute less, but they also can significantly contribute to your home's heating needs. The cleanest-burning ones use natural gas or propane, though others that burn solid fuels such as firewood or compressed sawdust pellets are cleaner burning than their predecessors.

TELLTALE SMOKE

One look at the dense plume of smoke coming from the chimneys of traditional fireplaces and older woodstoves shows that they don't burn wood efficiently, since smoke is basically unburned particles of fuel. Manufacturers have responded to this problem in much the same way as the automobile industry did when it installed emission-control devices and improved engine efficiency to reduce auto pollution. Similar improvements in new woodstoves, energy-efficient fireplaces, and pellet stoves have resulted in a significant reduction in both woodsmoke and fuel consumption, as well as an increase in heat output.

Regardless of whether their fuel source is wood logs, pellets, or gas, units come in three basic configurations: freestanding stoves, fireplace inserts (which are virtually woodstoves without legs), and factory-built fireplaces with outer metal shells that allow them to be placed near wood framing (these are often called zero-clearance fireplaces). Sizes and corresponding heat (or Btu) output vary to accommodate different heating needs, ranging from a small room to an entire house. (For wood-burning units, there is an additional special category—the masonry heater.)

One of the most appealing features of the new gas units, as well as of some pellet-burners, is that the temperature and particulate level of the exhaust is low enough to allow direct venting through a wall. Doing away with the need for a chimney not only reduces cost, but also allows these units to be installed almost anywhere there's an outside wall, lending more flexibility to the house's design.

If you already have a traditional masonry or prefabricated metal fireplace, an insert can convert it to an energy-efficient heater. You will also need to modify your chimney with a properly sized liner that will slip inside your

Installing a wood-burning insert

An insert turns a heat-loxing fireplace into a room-warming one. The conversion starts with a liner that fits inside the existing flue (left). It will be mounted to the top of the insert (center), which is then framed with a trim kit (right).

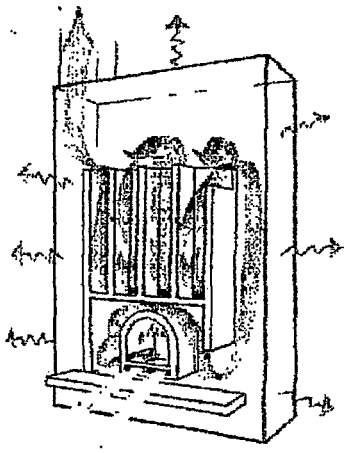
MASONRY HEATERS

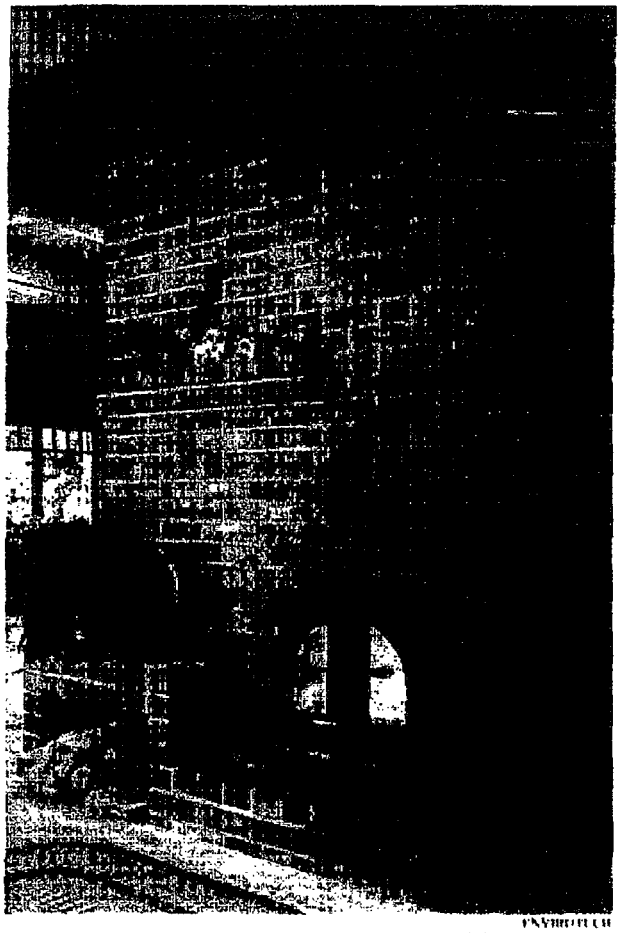
Contemporary masonry heaters modify a European design that's been used for centuries. Although they rely on wood as a heat source, they extract heat differently from other wood-burners. They have three main components: a massive masonry shell, a firebox, and a circuitous channel that eventually routes smoke to a chimney. Short but intense fires are started once or twice a day, and as the smoke and heat wind their way through the channel, the masonry mass stores the heat. Over the following day or night, the heat is slowly radiated out into the room.

Pros: Because of the intensity, short duration, and small size of the required fire, these heaters emit very little pollution, ranking with the best of the pellet and catalytic stoves. The radiant heat they emit is gentler than that of other types.

Cons: For peak performance, they must sit in the center of a house. Since they weigh several tons, you must plan construction around them. Their cost is also sizable.

Cost: $3,500 to $8,000.





ENVIRO-TECH

MASONRY HEATER *has a small firebox from which heat circulates and transfers to the mass of surrounding brick.*

di- existing flue and join directly to the insert. This assures the unit will have the proper draw and burn rate.

The best way to see, compare, and understand the variety of choices is to visit a fireplace and stove store. This will allow side-by-side comparison of styles and fire appearance. If you are planning to add a unit to heat one room or the whole house, providing room dimensions and ceiling heights will help the salesperson determine the right size unit for your needs. Another source of information on fireplace and stove manufacturers is the Hearth Products Association, 2150 River Plaza Dr., Suite 315, Sacramento, Calif. 95833; (916) 567-1181.

While shopping for a fireplace or stove, you're likely to hear the term "Phase II" applied to many of the new appliances. This refers to limits set by the Environmental Protection Agency on the amount of particulate matter emitted by wood-burning appliances that meet certain criteria (dealing with air-to-fuel ratio, firebox volume, burn rate, and weight). Increasing numbers of state and local governments are requiring that new installations of wood-burning fireplaces or stoves comply with these standards.

NORMAN A. PLATE

BURNING TIPS

Bringing the new technologies of Phase II wood-burning appliances, pellet stoves, and gas stoves into a home may not be for everybody. To those whose fireplace serves primarily as a decorative feature that's used only a few times a year, it may seem too expensive to add a new unit and all the accompanying chimney pipe for such limited use.

If you use your fireplace infrequently, you can do a number of things to make it burn more efficiently and pollute less. Instead of burning wood, consider substituting a cleaner-burning, sawdust-wax fire log. If you must burn firewood, use only dry, seasoned wood. Start fires with newspaper and softwood kindling, then switch to hardwood after the fire is going. Avoid burning colored or glossy paper, and painted or chemically treated wood. Above all, be a good neighbor and observe requests to refrain from burning when they are issued. ■

By Peter O. Whiteley