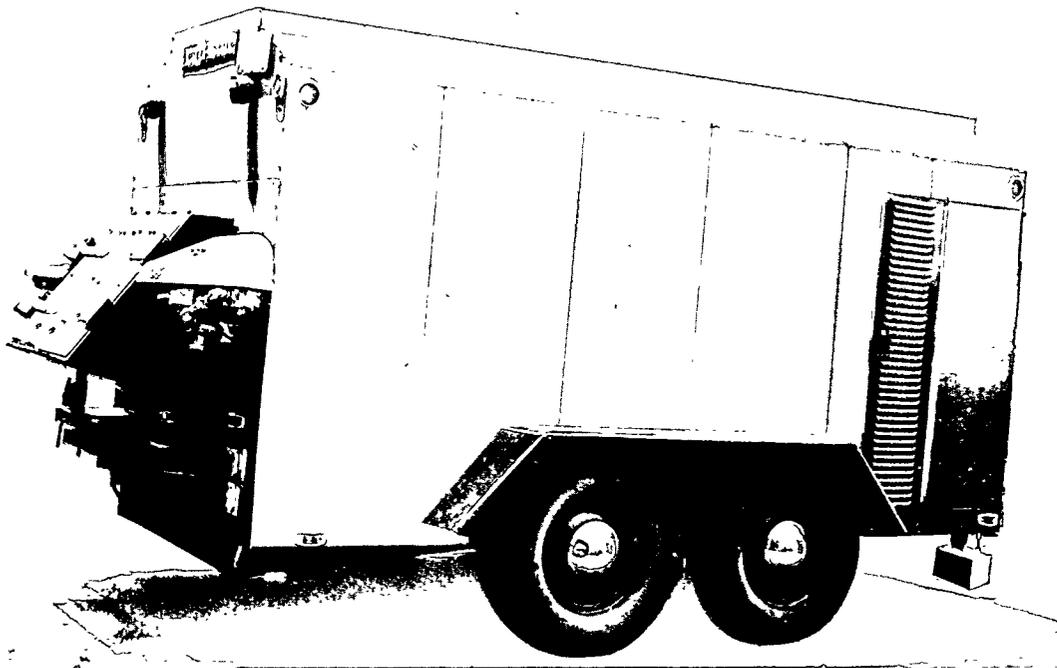


FOREST SERVICE

U. S. DEPARTMENT OF AGRICULTURE

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EQUIPMENT DEVELOPMENT CENTER
701 N. Santa Anita Avenue, Arcadia, California 91006



MOBILE INCINERATOR UNIT

The need has long existed for a mobile incinerator unit for use in large recreation areas to dispose of camping and picnic refuse, and eliminate the costly and time-consuming method of hauling and dumping presently being used. To date, the only self-contained mobile trash and garbage disposal that has come to the attention of the National Park Service or the Forest Service is the Incin-O-Mobile. A comprehensive month-long test was conducted by the Arcadia Center to verify description and to establish performance. The test was financed by both agencies.

DESCRIPTION

The Incin-O-Mobile may best be described as a complete incineration system on wheels, equipped with a primary and secondary burning chamber fired by liquified petroleum gas, a 20 cubic foot ashpit, and a water spray device for trapping smoke and sparks.

The incineration system is mounted on a 4-wheel tandem axle trailer, 17 feet long, 8 feet wide, and 8 feet high, weighing 6500 pounds loaded. It comes equipped with 7.50-16 8 ply tires, electric brakes on each wheel, and a 2-inch ball hitch. It is easily drawn by a 3/4-ton pickup truck or larger, handles well in most any improved campground area, and tracks well at highway speeds. Operation requires very little special training or experience, but a short period of familiarization is necessary for efficient use of the machine. No safety hazards are presented beyond ordinary reasonable caution applied at any standard incinerator door.

OPERATION

The main burning chamber is fired by two burners capable of producing 70,000 to 400,000 BTU/hr. An additional burner of the same type is located in the secondary chamber to reduce fly ash and burn off combustible gases. Draft is supplied by a blower on either side of the exhaust area. Air is drawn into the main burning chamber between the double walls, passes to the secondary chamber, through the water curtain, and is then forced out through the vents. Passage between the double walls of the main burning chamber serves to preheat the air and thus promote more efficient combustion.

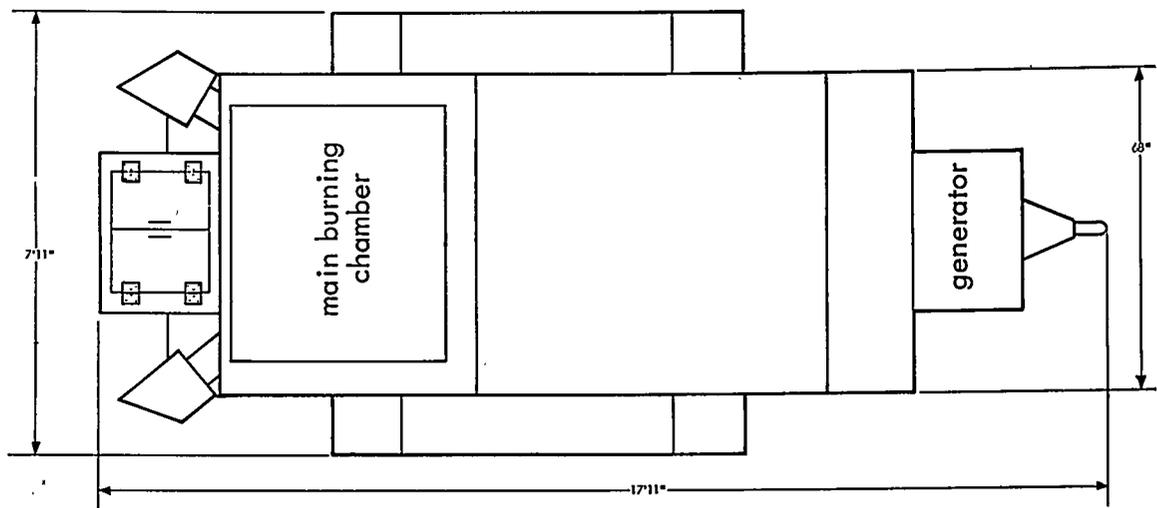


Diagram of Incin-O-Mobile

Subsequent to leaving the secondary combustion chamber, the exhaust is directed through a baffled 100-gallon water tank and spray curtain to arrest any remaining fly ash and sparks. Water from this tank is also used to flood the ashpit before emptying the residue.

FUEL CONSUMPTION

Electricity for the unit is supplied by a 115 volt 2500 watt engine-driven Onan generator which uses the same propane gas as the burners. Maximum fuel consumption, with all three burners and the generator in operation, is 45 pounds per hour. At a rate of \$3.85 per 100 pounds of propane, the fuel cost per hour is about \$1.75. When burning highly combustible trash, one or both of the primary burners can be shut off to conserve fuel.

TRASH AND GARBAGE REDUCTION

The reduction ratio of campground refuse burned in the Incin-O-Mobile can be as high as 30 to 1 by volume depending upon the amount of non-combustibles such as cans, bottles, and certain types of organic material. Since organic matter has a tendency to sift to the bottom of the grate, a certain amount of stoking will promote more thorough combustion of this type of waste. In addition, the raking action of the stoking tools will often break bottles and crush other types of refuse irreducible by heat alone.

A larger volume of cans and bottles will, of course, fill the ashpit more quickly, but the accumulation can be emptied periodically into the towing vehicle.



Types of refuse found in campground areas. The Incin-O-Mobile can reduce to ashes all but glass and metal containers.

MAINTENANCE

Only nominal maintenance is required on the unit. This largely involves checking the oil in the generator engine, replacing the propane tanks as needed, and, most important, maintaining the proper level in the water tank.

The four 100-pound propane tanks enable the Incin-O-Mobile to operate at full capacity--both primary burners, secondary burner, and generator--for a period of 9 hours. Spark control and gas burning equipment meets or exceeds industrial safety requirements. Normal operation requires a crew of only two men.

MODIFICATIONS

The Arcadia Center's test program produced several recommendations for improvement. The manufacturer has agreed to incorporate these in all future units:

1. An expanded metal screen in the rear of the firing area to act as a barrier to minimize danger from exploding bottles or other containers.
2. An automatic switch for shutting off primary burners when firing doors are opened.
3. A water spray system in the exhaust area to further reduce fly ash and prevent sparks from being discharged from exhaust.
4. An improved seal and lock system on the water compartment door.
5. Adjustable chain clamps to accommodate LPG cylinders of varying sizes.
6. Electric ignitors for pilot lights.
7. Water control handle relocated to more convenient location.
8. Rack mounts on the rear of the vehicle for the stoking tools.
9. Improved firing doors which effect better closing and eliminate any binding that might be caused by heat distortion.
10. Riding step for the operator on rear of the vehicle.

This unit is available from INCIN-O-MOBILE, Inc., 41 P Street, SE, Washington, D.C.