EXPEDIENT FALLOUT SHELTER
AIR VENTILATION PUMP—EMERGENCY LAMP—BUCKET STOVE

ALL EXPEDIENT SHELTERS ARE DESIGNED TO PROVIDE FOR SOME
NATURAL VENTILATION. IN VERY HOT WEATHER, ADDITIONAL
VENTILATION MAY BE REQUIRED TO PROVIDE A LIVABLE TEM-
PERATURE. CONSTRUCTION OF AN AIR PUMP THAT CAN PROVIDE
ADDITIONAL VENTILATION IS ILLUSTRATED BELOW.

STUDY ALL INSTRUCTIONS BEFORE STARTING CONSTRUCTION.

STEP 1 AIR PUMP

THE AIR PUMP OPERATES BY BEING SWUNG LIKE A PENDULUM.
IT IS HINGED AT THE TOP OF ITS SWINGING FRAME. IT IS SWUNG
BY PULLING AN ATTACHED CORD. THE FLAPS ARE FREE TO ALSO
SWING AND WHEN THEY ARE IN THE CLOSED POSITION, AIR IS
PUSHED THROUGH THE OPENING THAT THE PUMP IS ATTACHED TO.

STEP 2 MATERIALS AND TOOLS NEEDED
TO CONSTRUCT AN AIR PUMP

(MATERIALS SIZED FOR A 36-INCH BY 29-INCH PUMP)
LUMBER SIZES CAN BE ALTERED, DEPENDING ON AVAILABILITY.

A. LUMBER

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B. ONE PAIR ORDINARY DOOR OR CABINET BUT HINGES, OR
METAL STRAP HINGES, OR IMPROVISED HINGES MADE OF
LEATHER, WOVEN STRAPS, CORDS OR FOUR HOOK & EYE
SCREWS WHICH CAN BE JOINED TO FORM TWO HINGES.

C. 24 NAILS ABOUT 2" LONG, PLUS SCREWS FOR HINGES.

D. POLYETHYLENE FILM, 3 TO 4 MILS THICK, OR PLASTIC DROP-
CLOTH, OR RAINCOAT TYPE FABRIC, OR STRONG HEAVY
PAPER — 10 RECTANGULAR-SHAPED PIECES, 30" X 32".

E. 30' OF SMOOTH, STRAIGHT WIRE FOR USE AS FLAP PIVOT
WIRES — (ABOUT AS THICK AS COAT HANGER/WIRE) OR CUT
FROM 10 WIRE COAT HANGERS, OR 35' OF NVI 18 STRING
(COAT-HANGER WIRE THICKNESS).

F. 30 SMALL STAPLES, OR SMALL NAILS, OR 50 TACKS TO
ATTACH FLAP PIVOT WIRES TO WOOD FRAME.

G. 10' OF WIDE PRESSURE-SENSITIVE WATERPROOF
TAPE THAT DOES NOT STRETCH, OR USE NEEDLE AND THREAD
TO SEW HEM TUNNELS TO THE FLAPS.

H. FOR FLAP STOPS, 150 FT. OF LIGHT STRING, STRONG THREAD,
OR THIN SMOOTH WIRE. 50 TACKS OR SMALL NAILS TO ATTACH
FLAP STOPS TO THE WOOD FRAME, OR FLAP STOPS CAN BE
TIED TO THE FRAME.

I. 10 FEET OF CORD FOR THE PULL CORD.

J. DESIRABLE TOOLS: HAMMER, SAW, WIRECUTTER-PLIERS,
SCREWDRIVER, SMALL DRILL, SCISSORS, KNIFE, YARDSTICK,
AND PENCIL.

* Items must be sized or adjusted to fit opening into which airpump is to be
  placed.

STEP 3 HOW TO CONSTRUCT THE AIR PUMP

A. CUT LUMBER AND ASSEMBLE FRAME AS SHOWN.

B. COMPLETE FRAME AND ATTACH HINGES. IF DRILL IS NOT
AVAILABLE TO DRILL SCREW HOLES TO ATTACH HINGES,
USE A NAIL TO MAKE THE HOLES.

NOTE: DIMENSIONS SHOWN FOR FRAME MAY HAVE TO BE ADJUSTED
TO FIT OPENINGS IN A SHELTER.

TO OBTAIN MAXIMUM EFFICIENCY AND MOVE THE LARGEST
AMOUNT OF AIR, THE UNUSED PORTIONS OF THE ENTRYWAY
SHOULD BE COVERED WITH WOOD, PLASTIC, CLOTH, STIFF
PAPER OR SIMILAR MATERIALS.

COMPLETING THE FRAME.
HOW TO CONSTRUCT THE AIR PUMP (CONT'D)

C. CUT 10 RECTANGULAR STRIPS 30" LONG BY 3/4" WIDE FOR USE AS FLAPS. HEM FLAPS AS SHOWN. USE PRESSURE SENSITIVE TAPE OR SEW HEM SHUT TO FORM HEM TUNNEL.

INSERT 10 PIECES OF STRAIGHT WIRE (PIVOT WIRES) INTO FLAP HEM AS SHOWN. FLAPS SHOULD SWING FREELY. STRING CAN BE USED IF WIRE NOT AVAILABLE (WIRE COAT-HANGER THICKNESS).

NOTE: WIDTH OF FRAME PLUS 1 INCH

E. ATTACH FLAP STOPS (STRING OR WIRES) TO THE PUMP FRAME AT THE MARKED LOCATIONS. 4 FLAP STOPS ARE NEEDED BETWEEN ADJACENT PIVOT WIRES.

ATTACHING FLAP STOPS. ALTERNATE METHOD - WIREMESH AS FLAP STOPS.

AFTER HEM IS MADE, CUT NOTCHES IN FLAPS AS SHOWN. AVOID CUTTING TAPE THAT HOLDS HEM.

SIZE OF NOTCHES IN FLAPS

D. MARK PUMP FRAME FOR PIVOT WIRE AND FLAP STOP LOCATIONS.

MARKS FOR FLAP PIVOT WIRES, ALL 3/8" WIDE, 32" APART. HOOK & EYE SCREWS MAY BE USED IN PLACE OF HINGES

MARKING FOR PIVOT WIRES MARKING FOR FLAP STOP

NOTE: FRAME DIMENSIONS MAY HAVE TO BE ADJUSTED TO FIT OPENING IN SHELTER

STEP 4. TYPICAL INSTALLATION OF AIR PUMP
BUCKET STOVE

This combination cook-stove/space heater is made using a 10 to 16 qt. metal pail, some coat-hanger wire, and metal cut from a large juice or vegetable can. When assembled as shown, the stove will bring 3 qts. of water to a boil using as fuel about 1/2 lb. of dry, twisted paper or dry wood. Pieces of wood about 1/2 x 3/4 x 6 inches are best.

Note:
Locate cook-stove only where either natural or forced ventilation is causing air to leave the shelter—do not operate in a sealed shelter.

Cut the damper from a juice can. Bend the sides with pliers around coat-hanger wire used to attach damper to pail. This allows it to move up and down.

Using a cold chisel and tin snips, cut a 5 x 5 square hole in the pail. When using cold chisel, place pail over the end of a log to avoid crushing the pail.

EMERGENCY LAMP

This type of lamp will provide light for use in expedient shelters. The lamp will burn slowly consuming about 3 ounces of cooking oil in 24 hours.

Warning:
Do not use kerosene, diesel fuel, or gasoline—use only oils of the kind found in the kitchen.

Attach aluminum foil 2/3 around jar and under its bottom and to wires to act as a reflector.

Fill jar no more than half full with cooking oil.

Clean glass jar free of labels.

Bent nail, tied over top of another bent nail, so the base will not rock.

Use nails about 5/8 in. shorter than the diameter of jar.

Aluminum foil placed in bottom of pail and wrapped halfway around. It reflects heat both toward cook-pot and toward shelter area when device is used as a space heater.

Loop to hang lamp to light lamp, first make match longer by taping or tying it to a stick.

Clean glass jar free of labels.

Flame from end of wick is just above oil surface.

A fine wire tied in its center around the nails, with the ends of the wire wound in opposite directions around the cotton-string-wick. Use cotton that is slightly less than 1/8 in. in diameter. Use window screen wire or other equally fine wire.

Wire-stiffened-wick lamp

Keep extra wire and wick-string in shelter.