

COOPERATIVE EXTENSION WORK  
IN  
AGRICULTURE AND HOME ECONOMICS  
STATE OF OKLAHOMA

D. P. TRENT, Director

OKLAHOMA AGRICULTURAL AND  
MECHANICAL COLLEGE AND  
UNITED STATES DEPARTMENT OF  
AGRICULTURE, COOPERATING

EXTENSION SERVICE  
COUNTY AGENT WORK  
STILLWATER, OKLAHOMA

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## Farm Home Sanitation

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## FARM HOME SANITATION

Home sanitation should command the interest of all thinking men and women having at heart the betterment of home life. It is a subject that deals with conditions in and around the home that have a distinct bearing upon the health and happiness of the family.

Certain common diseases such as typhoid fever, tuberculosis, dysentery, hookworm, and others, are spread, in large measure, through insanitary practices in and around the home. In Oklahoma during the three-year period, January 1, 1928 to January 1, 1931, there were 919 deaths from typhoid fever. From our State Department of Public Health we learn that approximately 25% of the cases occurring in Oklahoma are due to the improper disposal of household wastes.

As relating to the question of disease and death, it seems that too much importance cannot be placed upon the subject of home sanitation; however, this should not be the only consideration in dealing with the subject. Healthy bodies are frequently found in homes that are slovenly kept; but self-respect, dignity, poise, culture and refinement, are not found there.

The general appearance presented by thousands of Oklahoma farm homes could be greatly improved if only a little thought, time, and attention were given to such work. The necessary expenses for such improvements, in most cases, would be little or nothing.

Our purpose in this circular is to call attention to certain practices and methods that are important steps in home sanitation.

### PROTECTING THE FARM WATER SUPPLY

Perhaps the greatest assurance of good health for all members of the farm family is to safeguard the water supply against any possible contamination with disease germs—typhoid fever, dysentery, cholera, diarrhea, and other diseases of this class, which are known as intestinal or soil borne, are often carried by polluted water and may be transmitted from person to person.

The common sources of water supply for most farms in Oklahoma are wells, cisterns, and springs. Whatever the source of supply, extreme care should be taken in making it free from any possible contamination through surface or subsurface drainage. For wells and springs this means a location from which livestock, poultry, etc., are fenced out, and where there is no danger of surface drainage coming from outdoor privies, lots, or other sources of filth. Casings, curbing, and platforms protecting wells and springs should be made of impervious material, usually a masonry product or inert metal. Recommended methods of construction for protection of wells and cisterns are shown in Figures 1 and 2.

Cisterns should be constructed of impervious material making the top, sides, and bottom absolutely water-tight. Other vital features of cistern construction and care are: (1) close screening of inlet and waste pipes; (2) provision for excluding from the cistern the first portion of each rainfall until the roof or other collecting area has become rinsed thoroughly; (3) a first-class filter of clean, well selected sand and thoroughly burned charcoal; (4) periodic and thorough cleaning of the cistern and filter.

Further information in regard to the care and protection of farm water supplies may be found in Extension Circular No. 245, Home Water Systems, or in the Oklahoma State Department of Public Health Bulletin, "Regulations and Plans for Construction and Operation of Water Supplies." This may be obtained by writing the Health Department direct.

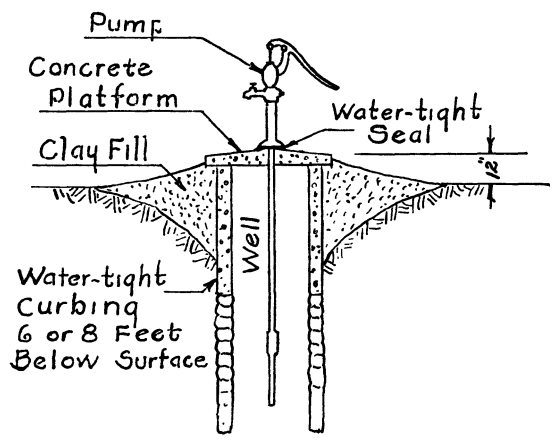


Fig 1

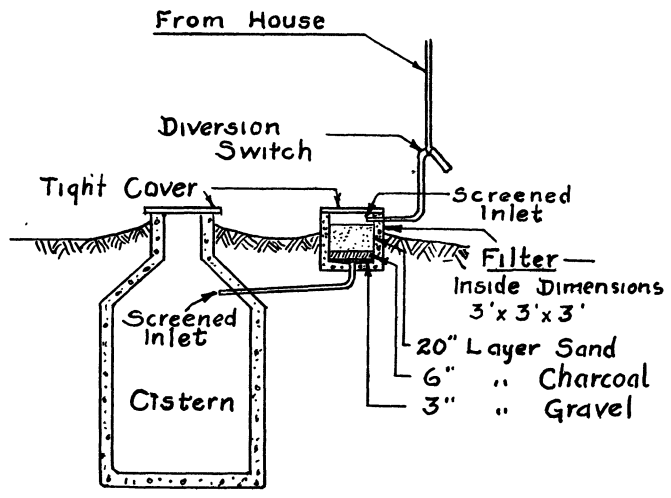


Fig. 2

Methods of Protecting Farm Water Supplies

**HOME YARD SANITATION**

Proper attention to the yards and grounds around the farm home is desirable not only for the sake of attractiveness, but on account of the sanitary benefit derived. Uncut grass, decaying weeds and wood will spoil the appearance and lower the sanitary condition of almost any place.

Practically every farm home has its junk pile, or PILES, including scrap iron, wire, pieces of wood, boxes, cans, and what not. Such materials are often scattered about fence corners and out buildings, and give to the entire farmstead a very untidy appearance. The first step then, in home yard sanitation is to collect, and dispose of certain waste materials and rubbish that may be lying about the place.

Drainage is next to be considered in home yard sanitation. Hillside terraces or dykes should be built, if needed, to prevent surface water running into yards from higher areas. The yard should be smoothed and graded so as to prevent surface water standing around the house after rains. Gutters should be used to catch the rain water that falls from the eaves of the house. Unless this provision is made the falling water will gradually undermine the foundation and allow water to run under the house. If gutters cannot be provided on the eaves of the house, a very satisfactory method is to construct a rock gutter along the foundation. This is made 10 or 12 inches wide, with flat rocks for the bottom and more irregular shapes for the sides. No concrete or mortar is necessary.

A well kept lawn immediately around the house is considered highly essential; first, as a protection against washing of the soil out of the yard; and second, as a sanitary earth covering, preventing excess of moisture by evaporation and absorption, and promoting purity of the soil by the action of growing grass.

**DISPOSAL OF KITCHEN WASTES**

The kitchen is the housewife's workshop; here she spends approximately 60% of her time, preparing food, cooking, canning, washing, and cleaning. In the performing of these various duties there are always certain amounts of waste materials or garbage to be disposed of, including dish water, slops, scraps of food, tin cans, etc. What becomes of all of this waste material on the average farm? The manner in which it is disposed of determines in a large measure the sanitary conditions in the home. When waste water, milk, and portions of other foods are thrown out into the back yard, many times but a few feet from the doorstep, what condition may be expected other than unpleasant and very insanitary?

The problem of kitchen waste disposal may be solved by having a separate bucket or container for the different materials. The kitchen sink with drain is, of course, the most satisfactory way of removing waste water from the house; but when this installation cannot be had the waste water should be placed in a three or four gallon bucket and carried from the house (a minimum of 50 feet) at least twice a day, noon and night. The husband and larger boys should cooperate in this laborious task until such time as funds are available for the installation of a sink. Figure 3 shows a satisfactory method of disposing of waste water through a sink and drain pipe to a gravel-filled sump located at least 50 feet from the house. In certain types of soil the accumulation of grease and other insoluble material may eventually prevent the absorption of the waste water into the ground. This condition may be corrected by extending the drain pipe and emptying into a new sump hole.

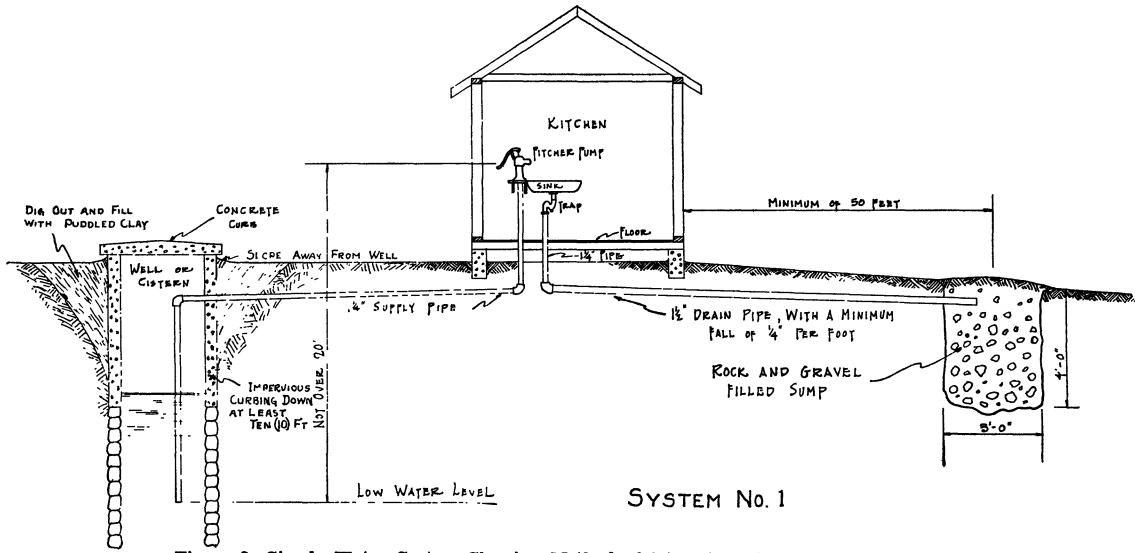


Figure 3—Simple Water System Showing Method of Disposing of Kitchen Waste Water.

In disposing of such waste materials as milk, food scraps, etc., a regular garbage pail should be provided and this emptied at least once a day. The contents may be fed to hogs or chickens or else carried some distance from the house and covered with a little dry soil to hasten bacterial decomposition. The type of garbage pail to use is only a matter of preference. The kind with a lid that raises by means of a foot pedal is very good. Another kind that proves very satisfactory and at the same time economical, is the ordinary two or three gallon galvanized iron pail with a circular lid cut from galvanized iron and fastened to the top with one small strap hinge; brads are used in fastening the hinge. The handle to the bucket as well as the ears must be spread out a little so the lid may be raised and closed. As shown in the drawing, Figure 4, the pail is placed on one end of an ordinary apple box, 18 to 20 inches high. This eliminates stooping and by placing a small shelf in the box, a place for storing brushes, cleaning powders, etc., may be had. The pail and box may be painted to harmonize with the color scheme of the kitchen. The garbage pail and also the waste water bucket should be thoroughly cleaned each day, using soap or cleaning powder and a good brush.

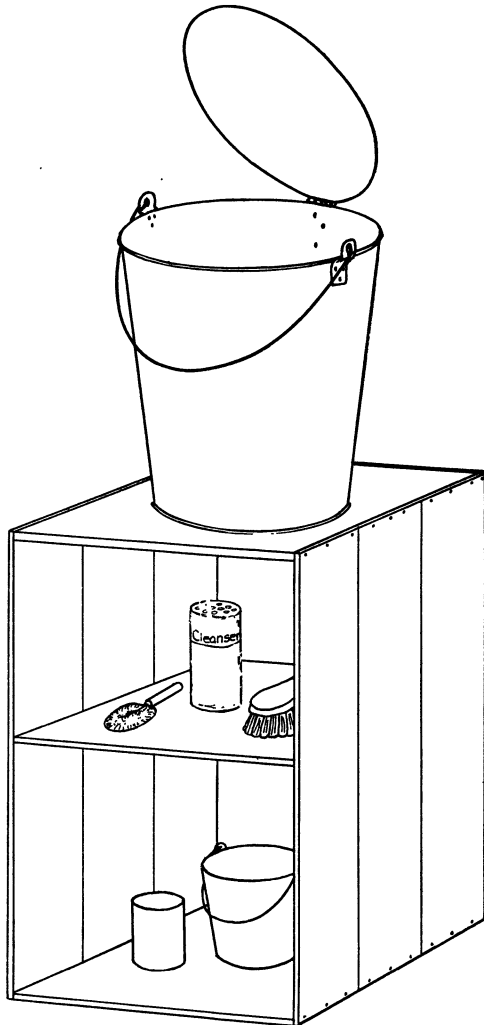


Figure 4—Home-made Garbage Pail

Such waste materials from the kitchen as tin cans, bottles, etc., should be placed in a box or barrel that is kept covered and out from the house some distance. The contents of such a container should be hauled away from time to time and disposed of by dumping into some dry ravine or gulch.

### FLY CONTROL ON THE FARM

Of all insects around the farm house, there is none so annoying, loathsome, and insanitary as the house fly. It is a well known fact that flies are lovers of filth. They breed in horse manure, feed in uncovered garbage, at the spittoon, or the open privy, and then come to our food possibly carrying such dangerous diseases as typhoid fever, dysentery, diarrhea, or consumption.

Flies spread diseases in two ways: first, by their hairy feet, wings, and body, which gather up germs and carry them from place to place; second, by flyspecks. Germs do not lose their power for evil in passing through the intestinal tract of a fly. One fly speck from a fly fed on consumptive's sputum, had in it 5000 germs of tuberculosis.

#### A—Elimination of Breeding Places

So far as known, flies have never been completely eliminated from any farmstead, but with reasonable care and attention in destroying their favorite breeding places, it is surprising just how effective such measures are. The hauling of manure from the stables and scattering it on the fields once or twice a week, or else placing it in a bin or pit under cover, is considered one of the most effective fly control measures. The proper care of outdoor toilets (discussed later) and the keeping of premises free from accumulations of garbage and other decaying vegetable matter are also important measures in fly control.

#### B—Screening of Buildings

Despite the care that may be taken in the proper disposal of all household wastes and in handling manure around lots and stables, there will be flies that are propagated from overlooked sources of filth. The final solution to the problem is found in the use of good screens.

From the standpoint of cleaner living conditions in the home and better health among the members of the family, the importance of having good screens on all doors and windows cannot be overestimated. Yet, there are thousands of farm homes in Oklahoma that do not have this much needed improvement. In a survey covering 17 homes in one community centrally located in the state, it was found that only five of the homes had good screens, four had poor screens, and eight had no screens at all.

It is important that dairy barns, milk houses, etc., be protected with good screens. In towns or cities having milk ordinances all dairies supplying market milk are required by law to have such protection. The cream separator, and milk vessels, all of which are sometimes placed on the back porch, should also be screened in. After the morning washing of all separator vessels and parts, they should be placed on a shelf or hung in a position to receive fresh air and sunlight. The separator proper, when not in use, should be kept covered with a sack made of heavy duck material. Such covering keeps out dust and other foreign material and makes cleaning much easier.

#### C—The Use of Poisons

**Formaldehyde**—One of the most satisfactory fly poison baits can be made by diluting one-half cup of milk with one-half cup of water and adding a little syrup or sugar. To this mixture add one tablespoon of formalin and mix thoroughly. Place in shallow containers where flies congregate. Take care to keep away from children.

**Pyrethum**—This is a powder sold for the purpose of killing all kinds of household insects. At night all the windows and doors of the room to be treated should be closed and fresh powder should be sprinkled liberally over the floors and furniture. In the morning the flies will be found lying around dead or stupified and they may then be swept up and burned.



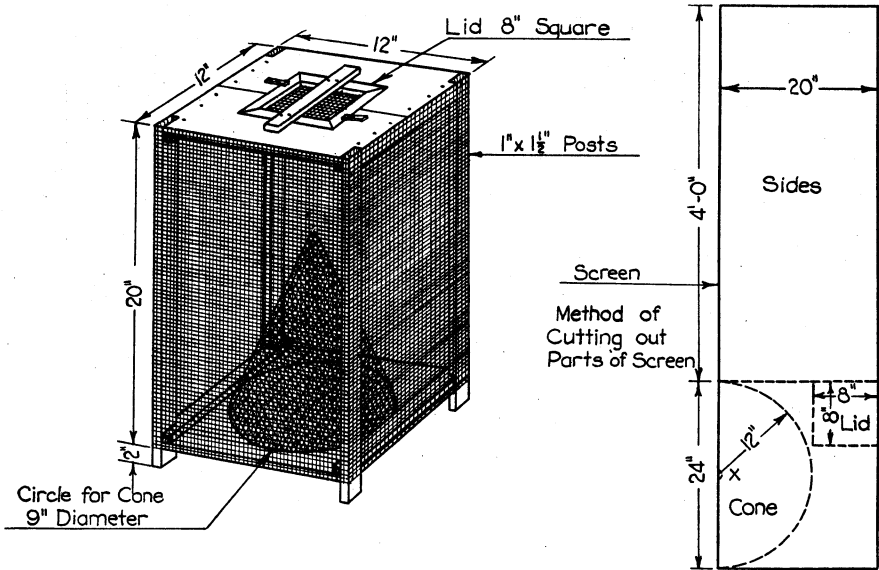


Figure 5—Conical Flytrap.

**D—The Use of Flytraps**

Flytraps have a distinct place in the control of flies about the farm home. It should be borne in mind, however, that trapping is only supplementary to the other measures of control as described above.

Flytrapping should begin early in the spring if it is to be of greatest value. Although comparatively few flies may be caught at this time, their destruction means the prevention of myriads of flies by midsummer.

(1) **Types of Traps**—There are many different types of flytraps in use, but the general principle of construction is the same with all, i. e., the flies are attracted into a cage by going through a passage, the entrance of which is large and the exit small, so that there is little chance of the flies, once in, finding their way out again.

The conical trap, as shown in Figure 5, is perhaps one of the most satisfactory types to use. It is comparatively simple to construct, inexpensive, and effective in operation. The lumber for the top, bottom, and legs may be obtained from ordinary goods boxes. The necessary galvanized screen for sides and cone is one piece 20 inches wide and 6 feet long. This, with the necessary nails, will cost about 35 cents. The dimensions for the trap are shown in the drawing. Both the top and bottom are usually made of two pieces of material so that openings for lid and cone can be more easily cut. These pieces are held together by nailing strips as shown. The lid is made of screen tacked to a small frame eight inches square. It is held in place by means of the top lid support and the two small buttons. Placing screen in the lid allows more light to enter the trap which is considered essential for the most effective catch.

Four feet of 20-inch screen is used in making the sides of the trap. As shown in the drawing the other two feet are used in making the cone and lid; a semi-circle 24 inches in diameter is cut out from the two-foot piece. At X a small  $\frac{1}{4}$ -inch V is cut which forms the small top opening of the cone when it is tacked in place in the circular opening at the bottom of the trap.

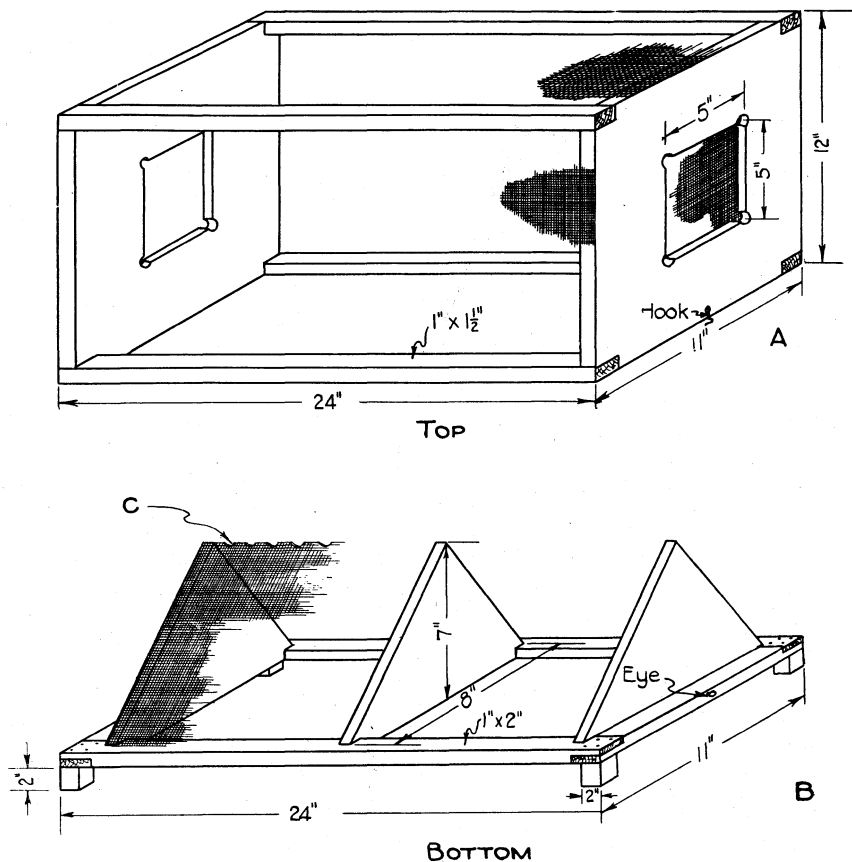


Figure 6—Tent Flytrap.

The tent trap as shown in figure 6 is another type that has been widely advocated; however, recent experiments indicate that it is less effective than the cone trap. By making use of goods box material, this trap may be constructed at slightly less cost than the conical trap. When set up the screen box (A) fits on the base (B) and is held in place with a hook and eye fastener on each end. Openings five inches square are cut out of the ends of the box and screened to allow more light to enter the trap. The small holes (c) along the apex of the tent should be one-half to three-fourths of an inch in diameter and one inch apart.

(2) **Baits for Flytraps**—The selection of bait is an important problem. It should be remembered that the fermentation of bait material renders it most attractive to flies. A mixture of cheap cane molasses and water is one of the most economical and effective baits for the house fly. One part molasses is mixed with three parts of water. The attractiveness becomes marked on the second or third day which is the period of most active fermentation.

Syrup made by dissolving one part brown sugar in four parts of water and allowing the mixture to stand a day or two to induce fermentation is almost equal to molasses and water as a fly bait. If it is desired to use the syrup immediately after making it, a small amount of vinegar should be added. Honeybees are sometimes caught in large numbers with this bait. When this happens some of the other baits recommended should be used. The curd from milk, with about one-half pound of brown sugar added to each pound, and water to make it thoroughly moist, is a very good bait and continues to be attractive for 10 days or longer if kept moist. A mash of bran made quite thin with a mixture of equal parts of water and milk and with a few tablespoonsfull of brown sugar and cornstarch and a yeast cake added makes an attractive and lasting bait. The foregoing baits are rendered more attractive by stirring occasionally.

(3) **Bait Containers**—It has been found that a small pan or a deep pan of bait set in the center under a trap will catch only a small fraction of the number of flies secured by using larger, shallow containers. The best and most convenient pan for baits is a shallow circular tin, such as the cover of a lard bucket.

Generally speaking, the diameter of bait pans should be about four inches less than that of the base of the trap thus bringing the edge within two inches of the outside edge of the trap. For liquid baits the catch can be increased slightly by placing a piece of sponge or a few chips in the center of the bait pan to provide additional surface upon which the flies may alight. The same kind of pans for bait may be used under tent traps. Two pans should be used under the tent trap shown in Figure 6.

(4) **Care and Location of Traps**—In many cases flytrapping has been rendered ineffectual by the fact that the traps were not properly cared for. In setting traps a location should be chosen where flies naturally congregate. It is exceedingly important that the bait containers be kept well filled. This usually requires attention at least every other day. The bait pans should be washed out at rather frequent intervals. This gives a larger catch and avoids the danger of flies breeding in the material used for bait. Where flies are abundant and the bait pans are properly attended to the traps should be emptied every two or three days. To destroy the flies the trap is held over a blaze of fire until the flies' wings are singed, then empty them into a fire or bury them.

#### SANITATION OF OUTDOOR TOILETS

Rural home sanitation does not end with adequate protection of water supplies and sanitary measures of the immediate household and dooryard, but includes also the general appearance and cleanliness of all out buildings, barns and lots. The cleaning of premises of trash and rubbish, the hauling of manure from the lots and barns and grading around buildings to facilitate good drainage are not only to be recommended as sanitary practices, but are definite improvements which add to the appearance and value of the farmstead.

There is one building especially, on the farmstead—the outdoor toilet—that is often neglected and improperly cared for. Such neglect in most cases results in very unpleasant and insanitary conditions and may cause the spread of disease germs. No doubt the ultimate desire in every farm home is to have a modern system of sewage disposal with a tub and stool in the bath room. Such installations are to be encouraged whenever possible, but where funds are not available particular attention should be given the outdoor toilet to make it absolutely sanitary.

It is estimated that less than one per cent of the farm homes in Oklahoma are equipped with modern systems of sewage disposal. This leaves more than 99 per cent of the homes dependant on the outdoor toilet. In the

survey of the 17 homes mentioned above, it was found that 11 of the homes had no toilets at all. Such conditions are of course very insanitary and exert an unwholesome influence over the children brought up in these homes.

#### **A—Location of Outdoor Toilet**

On a great number of farms in Oklahoma we find the outdoor toilet placed in one corner of the backyard or out by the woodpile, with apparently no thought of its relation to the house or to the well. The toilet should be located as far from the well as practicable, usually not closer than 150 to 200 feet, and always on ground where there is no danger of surface water draining from toilet to well. In locating the toilet one should also keep in mind the direction of prevailing breezes which might bring unpleasant odors to the house.

#### **B—Constructing the Outdoor Toilet**

There is little need for explaining the insanitary conditions that exist around thousands of the common outdoor toilets. In most cases they are open to flies, chickens, and stock that might be grazing about the place. Such conditions are dangerous and filthy. The probability that flies may carry disease germs direct to the dinner table, kitchen or pantry is a hazard well understood. Vermin, household pets, poultry and livestock may also spread such germs.

**The Portable Pit Privy**—Conditions described above can oftentimes be corrected entirely with little or no expense at all, by simply making use of materials already on hand. In Figure 7 is shown a common type of portable pit privy, which is considered a very satisfactory construction when handled and cared for according to instructions contained herein. It provides a fixed place for depositing excretions where the filth cannot be tracked by man, spread by animals, reached by flies nor washed by rain.

The pit in the ground should be dug to a depth of four to five feet with its lateral dimensions about 18" by 24". When the pit becomes about two-thirds full the privy is drawn or carried to a new location. The pit should never be located in wet ground and to insure dryness at all times, the ground should be raised slightly and 8 or 10 inches of earth banked and compacted against all sides of the privy to shed rain water. As shown in the drawing at the rear of the building, boards are placed on the ground surface to prevent caving and washing by rain water falling off the roof. The banking of earth against the sides of the toilet also serves to exclude flies. The top of the pit should be lined with boards to prevent caving, and if the soil is sandy or gravelly, the lining of boards should extend to the bottom of the pit.

Flies are never attracted to dark places. For this reason darkness in the privy pit is highly essential. This is accomplished by nailing battens over all cracks that permit light to enter the pit. Air slaked lime or loose absorbent soil should be sprinkled in the pit every day or so to aid in keeping conditions more sanitary. When a pit is abandoned it should be filled immediately with dry earth mounded to shed water. The four-inch vent through the seat cover and roof allows proper ventilation of the pit, with less accumulation of odors in the toilet. The placing of screened openings in the side of the toilet is entirely a matter of preference.

The general construction and dimensions of the privy can be determined by referring to the drawings in Figure 7. Since the 2"x6" runners are in contact with the ground it is advisable to treat them with some preservative to prevent decay. Spent crank case oil mixed with equal parts of coal tar creosote makes a very economical and effective preservative to use. The whole under side and bottom edges of the privy should be given a similar treatment. Paint may be used in absence of the creosote mixture. A coat of paint should be applied to the entire outside of the privy.

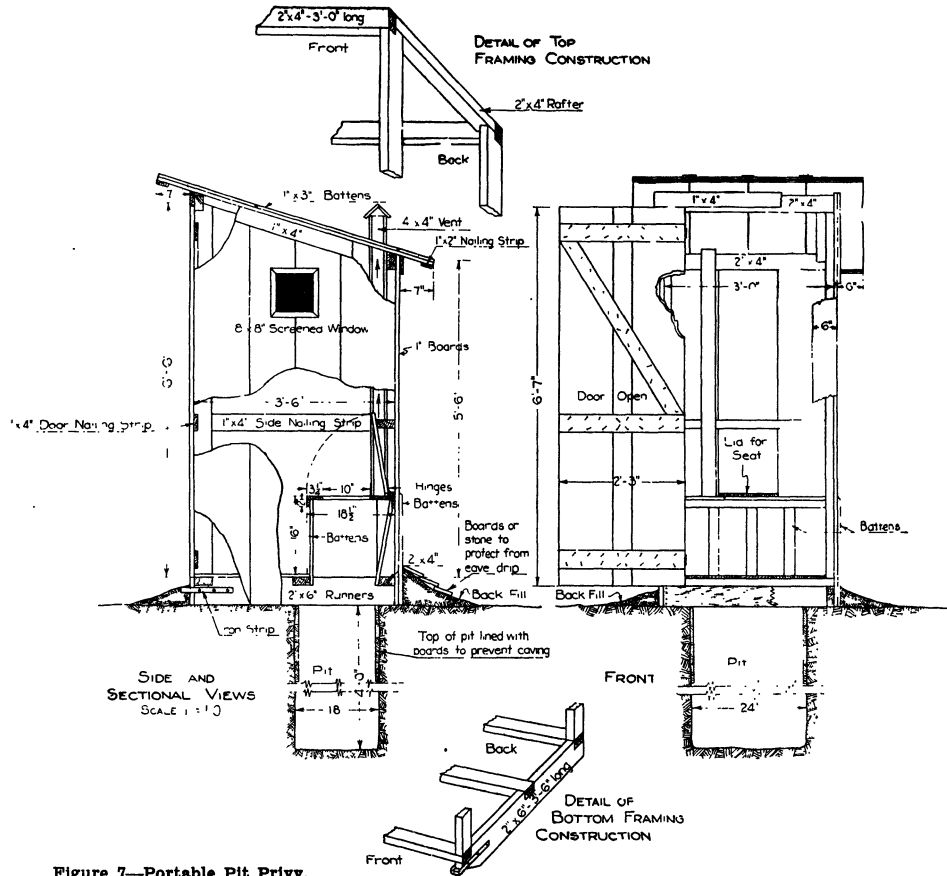


Figure 7—Portable Pit Privy.

## Bill of Materials Necessary for Making the Privy

NUMBER OF PIECES	DIMENSIONS	NAME
1	2'x 6'x 7'-0"	Runners
1	2'x 4'x12'-0"	Bottom, back and top crosspieces
2	2'x 4'x12'-0"	Front and back studs
1	2'x 4'x 7'-0"	Rafters
2	1'x 4'x12'-0"	Door braces and vent flue
1	1'x 4'x14'-0"	Door strip and side nailing strips
1	1'x 4'x16'-0"	Outside top border strip
1	1'x 6'x14'-0"	Front strips
3	1'x12'x 6'-0"	Back
1	1'x12'x 6'-0"	Front of seat
1	1'x12'x12'-0"	Floor and top for seat
1	1'x12'x12'-0"	Door
4	1'x12'x14'-0"	Sides
2	1'x12'x10'-0"	Top
2	1'x 2'x12'-0"	Nailing strips for front and back of roof boards, nail- ing screen, vents, short battens
1	1'x 3'x16'-0"	Top battens and incidental pieces
1 foot 16'	screen wire	Vents
Nails—3 lbs. 10d common; 5 lbs. 8d common;		
½ gallon paint—desired color		
2 pieces strap iron—2 feet long—attached to front of runners		
2—6" strap hinges for door		
2—2" butt hinges for lid		
Screws		

The cost of the above materials at prevailing prices (1931) will be around nine or 10 dollars. Oftentimes much of the materials may be found about the farm making the necessary cost much less.

This type of privy is well suited for the tenant farmer, since it may be moved from farm to farm if desired.

## THE CONCRETE VAULT PRIVY

If it is desired to have the outdoor toilet permanently located, the concrete vault, as shown in Figure 8, has certain advantages over the earth pit as described above. In the first place it is more stable in construction, and with the vault made of waterproof concrete there is no danger of seepage either into or out of the vault. In constructing the concrete vault the hole is first dug to the dimensions shown on the outside of the vault. The walls of the hole serve as the outside form for the concrete when poured. The additional outside form height of eight inches above the natural ground surface is obtained by using a 1"x8" plank placed around the outer edge of the hole and held in place with braces from stakes set back of the hole. The inside form is without a bottom and is 16 inches wide, 3 feet 10 inches long, and 24 inches deep. With supports and braces it is held four inches from the bottom of the hole, which is the required thickness of the concrete bottom.

The sloping part of the hole which leads to the back opening must also have an inside form for the sides, but does not require a form for the bottom since it has sufficient slope to support the green concrete when properly pushed into place.

In order to secure good anchorage of the toilet to the foundation it is held in place by four  $\frac{3}{8}$ "x8" carriage bolts which are set in the concrete, two being in the back edge of the vault and one in each of the front piers.

Detailed information in regard to the proper mixing, placing, and curing of concrete may be found in Farmers' Bulletin No. 1279—"Plain Concrete for Farm Use."

The opening is placed in the back of the vault to permit easy cleaning from time to time. The opening is kept covered with a concrete slab which is 32 inches long, 16 inches wide, and 4 inches thick. Three  $\frac{1}{4}$ -inch reinforcement rods are placed in the bottom of the slab to give required strength.

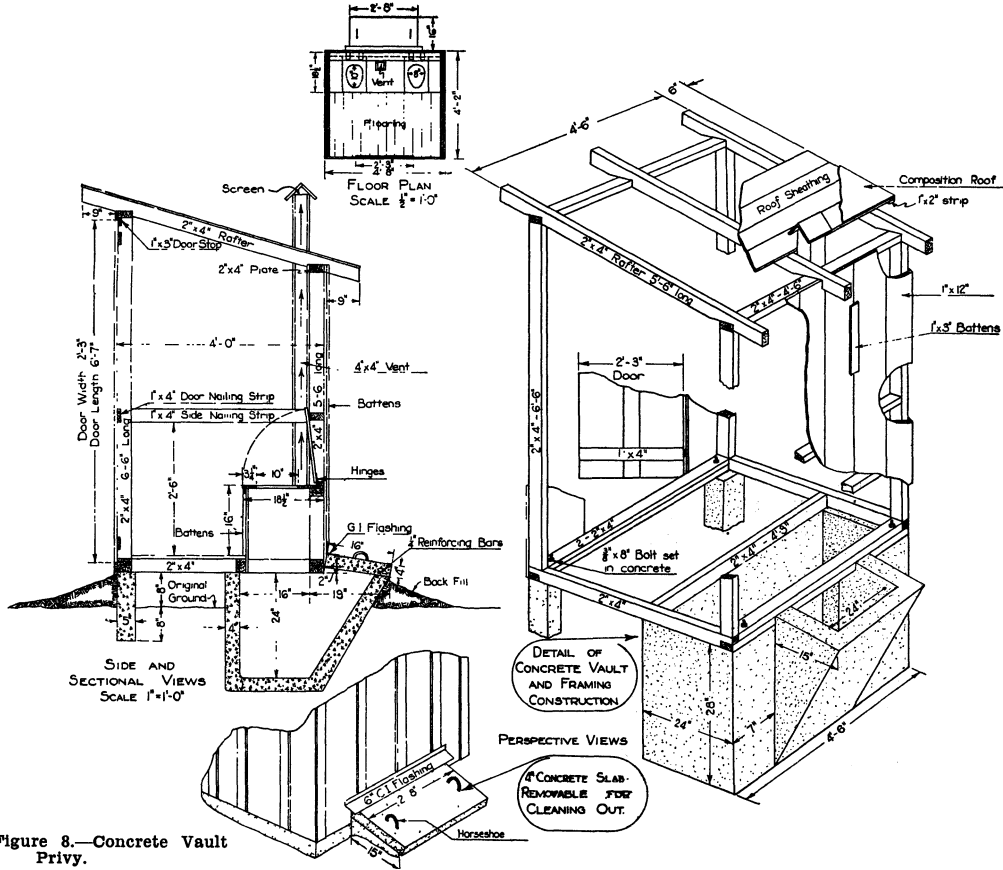


Figure 8.—Concrete Vault Privy.

Old horseshoes may be placed in the top to serve as hand holds. In order to prevent rainwater from entering the vault a 6-inch strip of galvanized flashing is nailed to the back of the toilet and bent out just above the top of the slab. Air slaked lime or absorbent soil should be sprinkled in the vault every day or so to aid in keeping conditions more sanitary. The four-inch vent through the roof allows ventilation of the vault, and consequently less accumulation of odors in the toilet.

#### Bill of Materials Necessary for Making the Concrete Vault Privy

NUMBER OF PIECES	SIZE	NAME
2	2"x 4"x12'-0"	Front and back studs
3	2"x 4"x10'-0"	Three rafters, two plates, and center back nailing strip
2	2"x 4"x18'-0"	Bottom framing
2	1"x12"x14'-0"	}Front, including door with nailing strips and braces
2	1"x 4"x14'-0"	
2	1"x12"x12'-0"	}Back {5 feet of 1"x8" used on seat)
1	1"x 8"x12'-0"	
3	1"x12"x14'-0"	}Sides
1	1"x12"x12'-0"	
4	1"x 8"x12'-0"	Roof sheathing (waste used for framing vent screens, nailing strips, etc.)
1	1"x12"x14'-0"	Floor
1	1"x12"x16'-0"	Front and top of seat and lids
1	1"x12"x16'-0"	Sides of inside form for vault; ends made from floor planks
1	1"x 4"x12'-0"	Vent
1	1"x 4"x 8'-0"	Side nailing strips
3	1"x 3"x14'-0"	}Battens and incidental pieces
5	1"x 3"x12'-0"	

11 feet of 36" composition roofing  
 Nails—4 lbs. 10d common; 6 lbs. 8d common; 6 lbs. 6d common; 1 lb. roofing nails  
 2—6" strap hinges—door  
 4—2" butt hinges—lids  
 Screws  
 1—6"x36" G. I. Flashing  
 ½ gallon of paint—desired color  
 5 sacks cement  
 7 cu. feet sand  
 11 cu. feet crushed stone or coarse aggregate  
 4—¾"x8" carriage bolts  
 3—¼"x2'-8" Reinforcement rods—placed in slab

The cost of the above materials at prevailing prices (1931) will be around \$18 to \$20. This cost may be reduced considerably by making use of any available materials already on hand.

There are other designs and methods of constructing sanitary outdoor toilets, but in most cases they are simply modifications of one of the two types described above. Each of these types is approved by the Oklahoma State Department of Public Health.

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