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DOMESTIC WATER SUPPLY

Department of Home Economics

CO-OPERATIVE EXTENSION SERVICE IN AGRICULTURE AND HOME ECONOMICS—COLORADO AGRICULTURAL COLLEGE AND U. S. DEPARTMENT OF AGRICULTURE CO-OPERATING

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DOMESTIC WATER SUPPLY

One of the most valuable assets for a farm is an ample supply of good water readily accessible. Such a water supply is a necessity for domestic purposes, and the location of the water with respect to the home is an important factor. Admittedly, one of the first demands of health is a good, clean, pure water supply; but, however pure the water may be, it is not essential to woman's health that she be obliged to carry it from the well to the house.

The farmer has found that he can no longer afford to plow with a single horse, and has abandoned the old style farming implements for those of improved pattern which permit of his work being done better and more quickly. Then why should the housewife be obliged to carry water from a well for drinking, cooking, washing and bathing for the entire household, when at a comparatively small expense the house can be equipped with running water? The farmer can do all the work connected with installing a domestic water system, and it is the purpose of the accompanying sketches to convey an idea of how this may be done. Of course these plans would not exactly fit many homes, but with a few changes necessitated by the particular arrangement of the house with respect to the well, the scheme would fit nearly every case.

The prices given are not exact, but are close enough for estimate purposes. Kitchen sinks, bath tubs, and similar equipment, are made in several qualities and sizes with corresponding variations from the prices quoted herein. The costs do not include the well and in some cases the pump, because these are necessary whether the water is piped into the house or carried from the well. A fair type of force pump, such as is ordinarily connected with a windmill can be bought for about $15.00. The pipe within the house should be three-quarter galvanized, and the supply pipe leading to the house should be not less than one inch, and larger if the distance is great, or an unusual quantity of water is required, or if the pressure is very low. The water tank should be high enough to give a fair pressure on the highest faucet in the house.

It will be noticed that the accompanying drawings call for the water pipes above ground to be wrapped, packed and boxed to protect them from freezing. The pipes should be wrapped with burlap, rags or tar paper; then surrounded by a box at least six inches square so the space between the pipe and box may be filled with shavings, sawdust, excelsior or straw. The packing must be kept dry and should not be tamped solid because dead air spaces

are necessary to prevent the pipes from freezing. Proper attention to this point will save a lot of trouble.

The waste pit consists of a hole, say 3 feet across and 5 to 6 feet deep, which is filled with gravel. This can be near the house in nearly every case, because only wash water and similar waste waters will be run into this pit. If a septic tank has been installed on the premises, it is very probable that water has been provided for the house, and such waste water is naturally run into the septic tank. However, the simple gravel pit will serve this purpose well, provided no slops of an unsanitary nature are run into it.

Care must be exercised to insure purity of water supply, especially if it is taken from a natural stream. Many wells and springs have been found to be contaminated, and the "old oaken bucket" is largely a matter of sentiment, for science has proven it to be a frequent source of sickness. See that drain waters from the barnyard, cesspool or waste-water pit do not drain into the well either at the surface or through the soil immediately around the well. This precaution is good health insurance.

CASE NO. 1

Every woman appreciates the convenience of an ample supply of hot water always available. This may be obtained by the simple arrangement shown in Fig. 1, which consists of a barrel connected

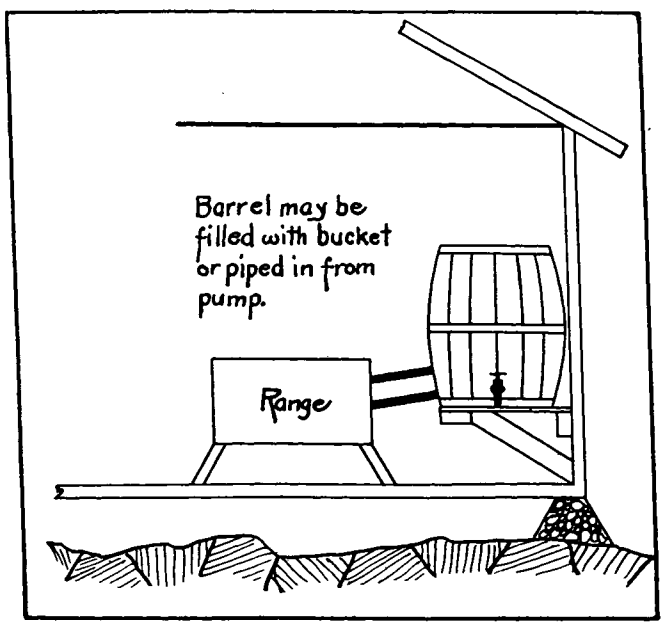

Fig. 1—Barrel hot water tank

to the water front of a kitchen range by two pipes, one above the other. These pipes must be inclined, with the higher end at the barrel, but if the lower pipe is taken out at the bottom of the barrel there should be a sediment cock at the elbow in the pipe to prevent clogging. A faucet may be placed in the side of the barrel, making it unnecessary to lift water out of the barrel when needed. The barrel may be filled by bucket or from a pipe leading from the pump. If filled from a pipe the barrel may be placed high enough to supply water for a tub or shower bath.

In warm climates, or during the warm season in Colorado, a simple kitchen water supply may be had from a barrel placed outside the house on a raised platform or on a bracket attached to the side of the house. The barrel may be filled through a pipe or hose attached to the pump, and the outlet pipe run through the side of the house directly over the kitchen sink. The hose or pipe run over the top of the barrel for filling purposes must not run deep into the

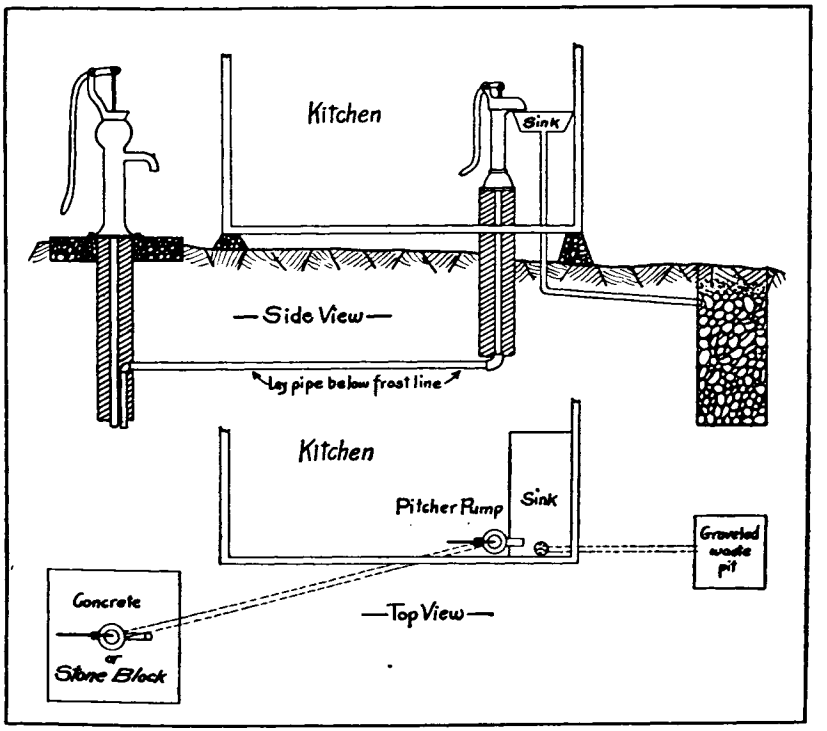

Fig 2—Simple Scheme to save carrying water from well. Well not over 50 feet from kitchen. Water in well not more than 20 feet lower than kitchen pump

barrel or it is apt to act as a siphon and empty the barrel when the pump is stopped. The barrel should be provided with a dirt-proof cover.

A desirable shower bath for summer can be made under this barrel or the windmill tank, by connecting a shower spray directly to a faucet or to a piece of rubber hose. The spray may be similar to that on a flower watering pot. Privacy may be had by a simple board shelter or a curtain hung around the shower bath.

CASE NO. 2

One of the most simple and inexpensive schemes to avoid carrying water into the house is shown in Fig. 2. It presupposes a shallow well within say 50 feet of the house, from which a pipe may be run to the kitchen and connected to an ordinary small kitchen pump. The water in the well should not be over 20 feet below the kitchen pump, the outdoor pipe should be laid below frost line, and the pipe above ground should be protected against freezing. That this plan is inexpensive is shown by the following estimate:

1 kitchen sink	$ 2.50
1 No. 2 kitchen pump	2.25
50 ft. 1 1-4 inch galvanized suction pipe	7.50
25 ft. waste pipe	2.50
	$14.75

CASE NO. 3

This is one step beyond Case No. 2 and may be used with either a shallow or deep well, but for either well a force pump will be required as is shown in Fig. 3. It is taken for granted that such a pump is already installed. Water is pumped into a galvanized iron storage tank of 150 gallons capacity or larger, which is placed in the attic of the house and provided with an overflow pipe leading to the roof. This tank must be protected against freezing, and though covered, it should be cleaned frequently. When the tank is filled the one who is pumping can tell by the overflow pipe when enough water has been pumped. The size of the tank should be suited to the water requirement of the household for an entire day.

The estimated cost of Case No. 3 is as follows:

1 kitchen sink	$ 2.50
1 galvanized iron storage tank, 150 gal. capacity	7.50
75 ft. 1 3-4 inch galv. pipe with valves and fittings	15.00
25 ft. water pipe	2.50
	$27.50

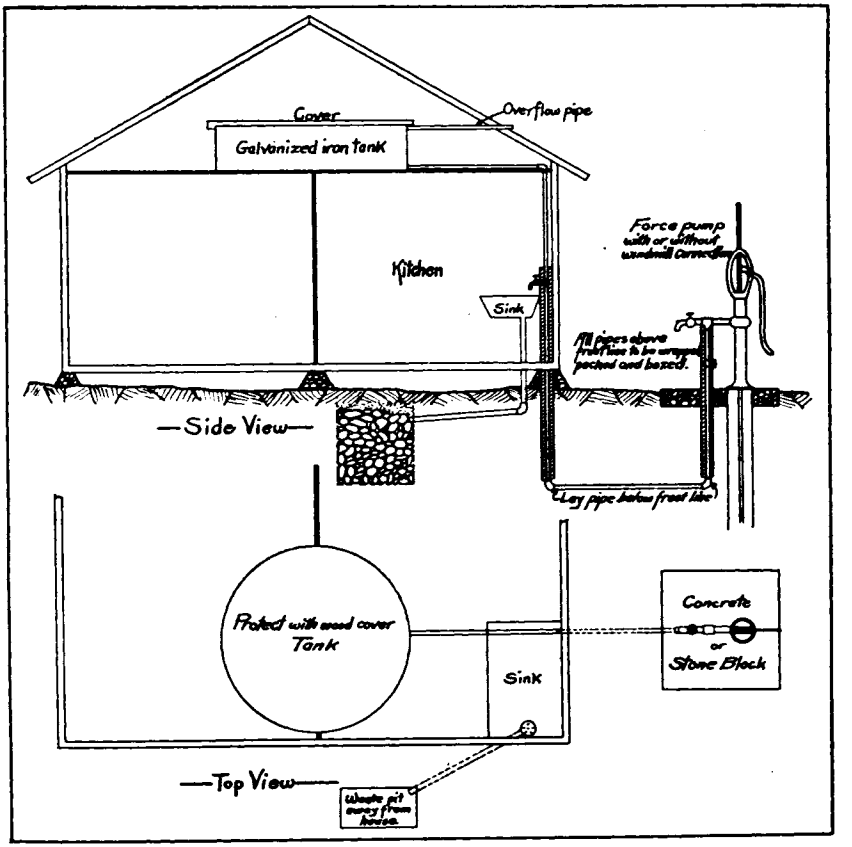

Fig. 3—Running water for kitchen supplied by tank in attic filled from hand pump

CASE NO. 4

This is applicable where a windmill is installed on the farm. A storage tank near the windmill, Fig. 4, is used to give both supply and pressure for the house, but the tank is also used for general farm purposes. This scheme goes one step beyond the preceding cases in that it provides cold running water for the bath. This costs as follows:

1 kitchen sink	$ 2.50
100 ft. 1 1-4 inch galvanized pipe with valves and fittings	15.00
25 ft. waste pipe	2.50
1 bath tub, enameled cast iron	20.00
	$40.00

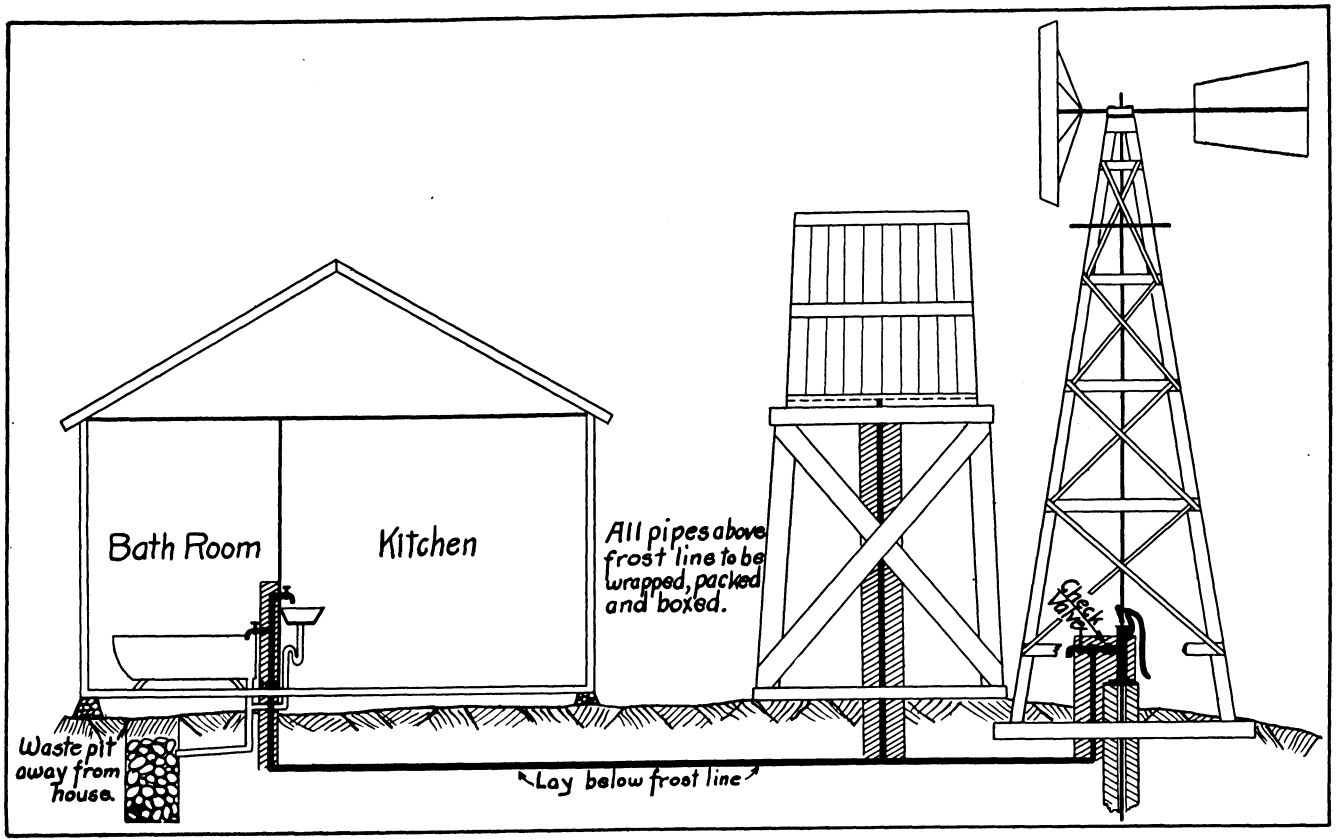

Fig. 4—Cold water for kitchen and bath supplied by windmill and tank

Should it be necessary to provide the windmill and tank, the following expense should be included, although this should not be entirely charged against the water supply for the house, because it is equally valuable for the farm:

1 8 ft. windmill with steel tower	$50.00
1 500-gal. galvanized iron storage tank and tower	30.00
	$80.00

which, added to the $40.00 above stated, would give a total of $120.00.

CASE NO. 5

This is a more expensive equipment, but is likewise more convenient and satisfactory than the previous ones. It provides a power-pumped, stored water supply, both hot and cold, for the kitchen and bath. (Fig. 5.) It calls for a hot water tank connected to the water front of a kitchen range, but otherwise the water supply is similar to Case No. 4. The estimated cost is:

1 kitchen sink	$ 2.50
150 ft. 1 1-4 inch galvanized pipe with valves and fittings	25.00
1 bath tub, enameled cast iron	20.00
1 30 gal. hot water tank	12.50
25 ft. waste pipe	2.50
20 ft. boxing and packing	1.00
	$63.50

As in Case No. 4, if it is necessary to install the windmill and tank for this purpose, an additional charge of $80 would be necessary, making a total of $143.50.

There are many different arrangements for a supply tank other than placing it upon a tower. If the windmill is near the barn, the tank may be placed in the loft of the barn if provided with a dirt-proof cover, or may be placed on top of the silo. A supply tank may be placed on a hill at a higher elevation than the barn or house; this tank may be an underground cistern.

A three-way valve at the pump will permit the water being shut off from the tank and pumped directly into the house pipes, which will give a cool water supply. An overflow pipe at the house can be arranged to permit the water not used in the house being carried to a small reservoir, which in turn supplies the watering troughs for

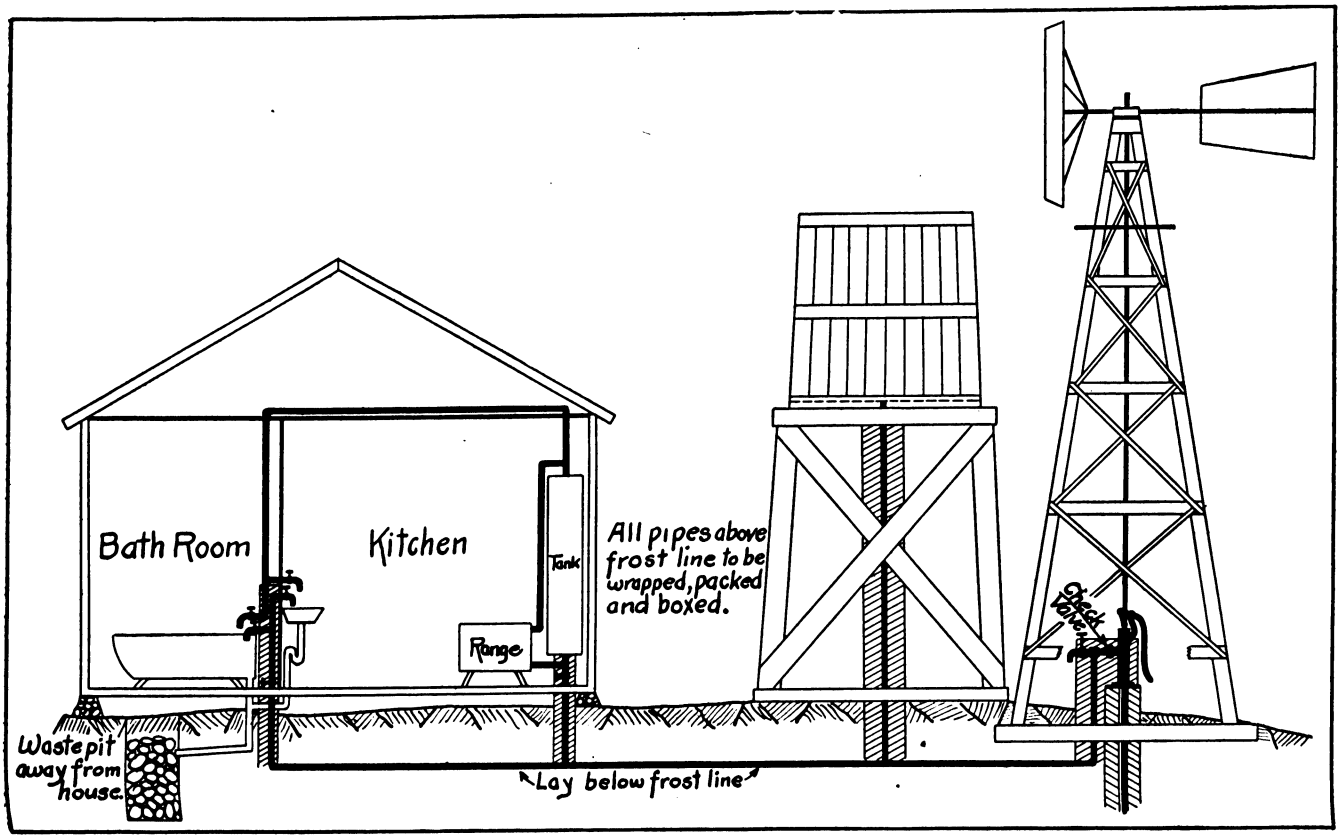

Fig 5—Hot and cold water supply for kitchen and bath

the barns and corrals, or the excess water from the house may be piped directly to the watering troughs and the overflow from these troughs be carried to a reservoir for irrigation purposes or wasted into a nearby natural stream.

Quite frequently a good water supply from a spring or natural stream located at a higher elevation than the house may be obtained without the use of power. The pipe line should be protected against frost and a small reservoir may be built in connection with the spring. Such arrangements are so simple they are often overlooked.

A hydraulic ram may be used to good advantage to provide a water supply in a house that is higher than the stream. It is necessary that the stream carry considerably more water than is desired to be forced up the hill, for the flow of the larger amount of water is used to force the small amount up the hill. It is not a cheap device as far as first cost is concerned, but there is practically no expense connected with its continuous operation and many years of experience have proven it to be very satisfactory.

Within the past few years considerable progress has been made with compressed air systems for providing both hot and cold water throughout the house. There are several of these compressed air systems on the market, of which probably the best known is the Kewannee system. A six- or seven-room house can be fitted with this system, including hot water supply tank and equipping a well appointed bath room and installing the apparatus, at a cost of from $200 upwards. This is purely a mechanical device. It is somewhat difficult to install, and as there are more or less chances for parts to get out of order, unless one is mechanically inclined, one of the simpler water supply systems will be more satisfactory in the long run for the average farm.