

# The Popular Science Ram

A small but efficient ram may easily be built at home. For the base, use a 2" x 4" cast-iron reducing sanitary cross. Saw off the small 4" end 2" below the threads. Face or dress the bell end flat and true.

Make the spring, strap, and clamp from 3/16" x 1/4" galvanized flat-bar stock. For the escape valve, assemble a 1/2" x 3" nipple, 1/2" galvanized waste nuts with the ears cut off, a 4" valve rubber, and a backing disk. A 1/4" rod threaded at each end holds the assembly together.

The flange is made from a blind flange for 6" pipe. Drill a 2-7/8" hole in the centre and drill and tap two holes for the 5/16" cap screws that retain the spring. Carefully dress one side of the flange to provide a smooth valve seat.

Assemble the cross with a 2" x 10" nipple and a 2" conduit elbow. Tap the latter for 3/8" pipe about 2" below the threads at one end for the sniffling valve.

Invert this assembly on the flange, with the bolts and clamp screws in place. Centre the anchor bolts in the flange holes with tape, and wire the washers in position. Stuff the interior of the cross with crumpled newspaper, topping off the stuffing with a small piece of chicken wire. Also wrap several layers of wire fencing loosely around the cross to reinforce the cement. Then build a wood form to enclose the cross.

The cement block must supply a solidity and mass that

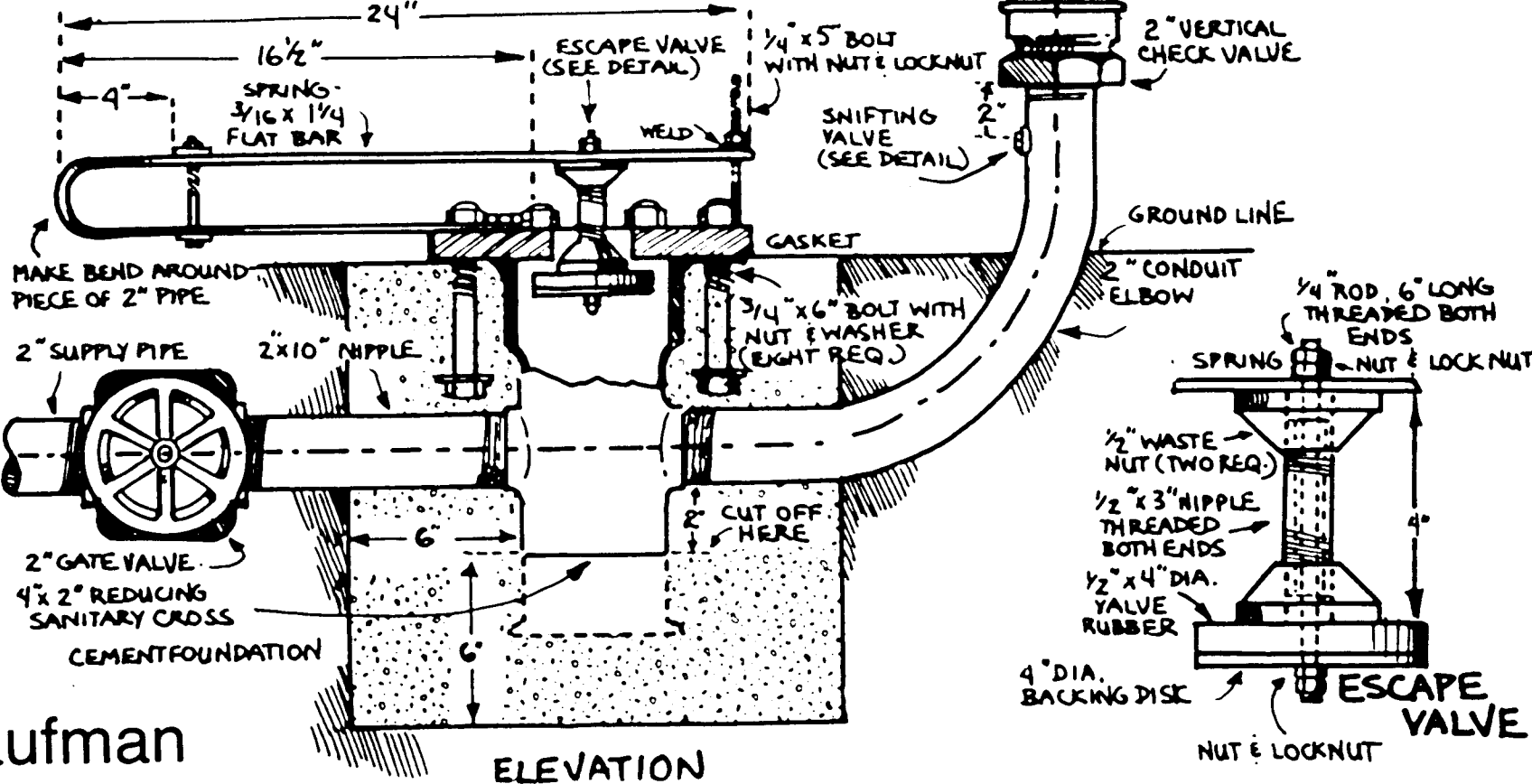
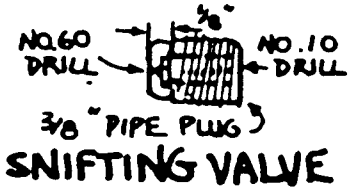
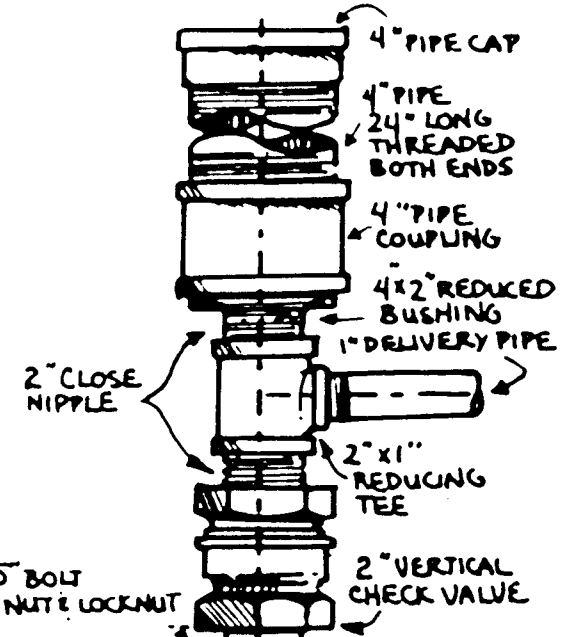
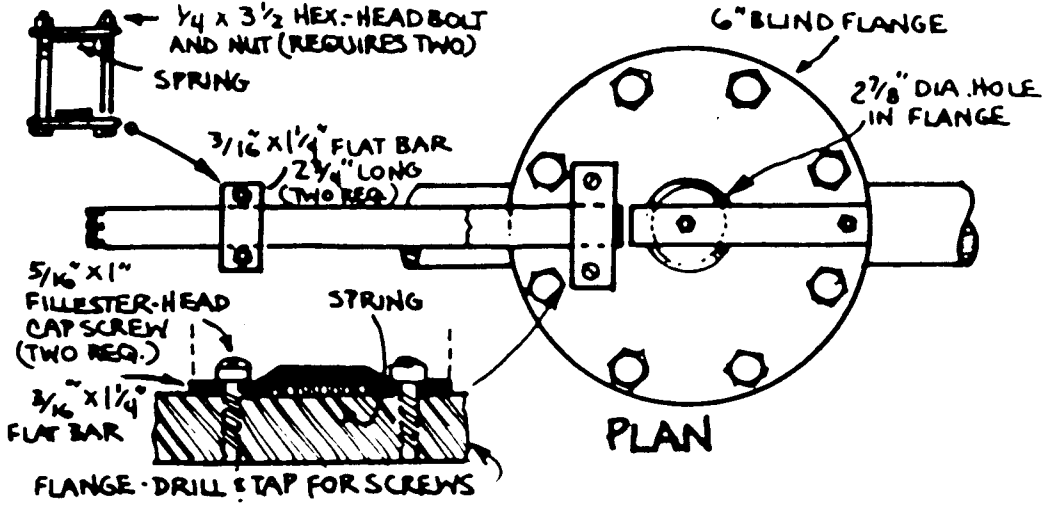
absorbs the ramming shocks of the water. Hence it should be carefully made. Thoroughly mix equal parts of sharp coarse plaster sand and lump-free cement. Wet slowly until jellylike and tamp into the mold. When the cement has set, knock off the form, remove the flange and the newspaper stuffing, and fill the interior with cement up to the lower level of the inside of the 2" pipes. Smooth this to reduce friction.

The ram is now ready for installation. Lay a 2" supply pipe of a length equal to the height the water must be raised, keeping it straight and uniformly slanted. The fall should be as great as possible.

Cement the ram in position, connect the supply pipe, fit a gasket to the top of the cross, and bolt on the flange. Then assemble the escape valve and spring. Finally, attach the check valve and the capped 4" x 24" pipe nipple that functions as an air dome.

To start operation, open the gate valve, permitting the water to close the escape valve. Then push the escape valve open and allow the water pressure to close it. Repeat this action several times and the ram should pick up the cycle and operate automatically thereafter.

If you house the ram and use a tail pipe to carry away the waste water that flows out of the ram, be careful to locate the tail pipe high enough so it won't be submerged in times of flood.



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ELEVATION