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place e the e or a t the de, so of a d has brought disaster to many a traveller who has staked his faith on the fidelity of a shiftless and incompetent pathmaster and gone abroad at night on the country highway.

WOODEN CROSS DRAINS.

Wood is perishable and is not well adapted to the making of drains, but it is cheap and in many localities it is the only available material from which a drain can be made at a reasonable cost. If stone cannot be had and drain pipe is out of the question, a substantial cross drain can be made of flattened timbers and planks as shown in Fig. In making this drain the trench is dug across the road in the 7.



WOODEN CROSS DRAIN.

depth and width to contain the timber and planks. Then the bottom is carefully formed so as to make a smooth, solid foundation, having a slight grade or pitch in the direction in which the water is to run. Two flattened timbers are then laid at

some convenient point on the roadway near the drain and so placed as to be parallel with each other and as far apart in the clear as they are designed to be when placed in the drain. A course of three-inch plank is then spiked across these timbers from end to end. using 50-penny nails for this work, until the course of planks extends from end to end of the timbers. This row of planks is to be the bottom of the drain and when the short bottom planks are securely spiked to the timbers, the timbers are turned over (thus bringing the planks at the bottom) and placed in the pit dug to receive them. After this is done another pair of flattened timbers are placed on the top of the first course already in place, and threequarter inch augur holes bored through the centre of the top timber and half way through the bottom one, about three feet apart throughout their entire length. Into these augur holes should be driven, securely, drift bolts, three-quarters of an inch square, and of sufficient length to fill the augur holes, and the timbers are thus securely fastened together. In the same way, if necessary, another course of timber is put on top of the ones already in place, till the drain walls reach the height of the surface of the road, after which another course of three-inch plank is securely spiked crosswise over the top of the drain, and, over this, for greater strength and permanence, it may be well to spike a layer of three-inch plank endwise across the roadway or at right angles with the shorter planks which are spiked directly to the timbers.