

A Single Bayonet Gate for Trapping Range Cattle

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Abstract

Single bayonet gates are effective in trapping range cattle inside a corral in which water is located. These gates require less time to construct than similar-size double bayonet gates and contain about half as much material.

Labor costs are second only to land charges in the high cost of today's livestock production (Maddox 1970). When labor-saving equipment is added to a livestock enterprise, personnel are released to concentrate efforts on other areas of the ranching operation. The efficiency of labor use is increased if animal behavior is considered in livestock management decisions. By capitalizing on an animal's need for water, one can trap cattle with a single bayonet gate, thus reducing the stress, time, and effort involved in conventional roundups. The technique involves setting up a one-way maze in a corral at which the animals will water. If all other gates into the corral are closed and a single bayonet gate is located at the entrance, cattle can be trapped as they enter to drink water. Double bayonet gates (Low and Hodder 1976), triggers (Ward 1958; Freeman [No date]; Welchart and Gray [No date]; Hughes 1978), or crushes (Ernst 1977) as they have been called are not new to the livestock industry. The single-bayonet gate described in this paper requires less material for construction than double bayonet gates, yet does not reduce the gate's ability to trap and hold animals in a corral.

The Location

Several items should be incorporated when constructing a corral (Fig. 1) in which bayonet gates will be used:

- Physically separate the entrance and exit locations in the one-way maze to prevent congestion during periods of heavy use.
- Provide an alternative gate for use in the event a need arises to haul livestock from the corral or to service the water source.
- Locate the single bayonet gates on pre-established trails that will radiate from the water source.
- Provide a corral of adequate size for the number of cattle that would normally water and be gathered at the particular location.

Construction

The single bayonet gate (Fig. 2) can be constructed from scrap material found at most ranch headquarters (Table 1). Once the material has been cut to proper length, the gate can be constructed in several hours.

The five pipes that form the bayonets [1]¹ are individually attached to the vertical pipe support [4] with two links of chain [2] that serve as a multidirectional hinge. The individual bayonets can be properly spaced if cross pieces from old tire chains [3] are welded as shown in Figure 2. Each of the bayonets is pointed on the end opposite the hinge. If animals attempt to move through a properly set single-bayonet gate from the pointed ends, the points will penetrate their skin and prevent passage. Blunt points are as effective as sharp points in preventing two-way movement through a properly set single bayonet gate. However, the possibility of serious animal injury will be reduced with blunt points should an

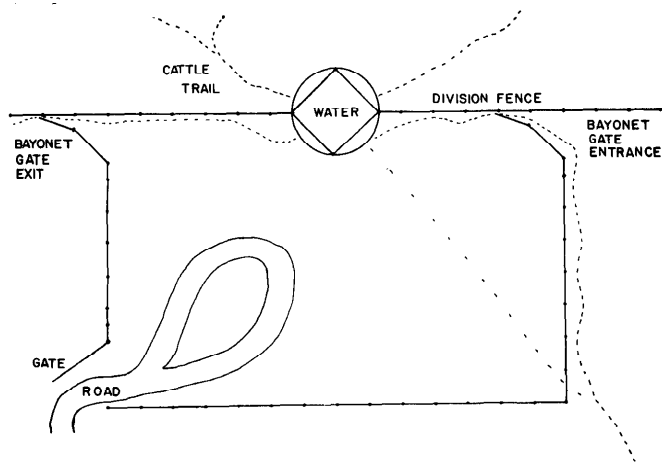


Fig. 1. Corral with single bayonet gates located at entrance and exit locations.

animal attempt to move the wrong direction through a properly set single-bayonet gate.

A horizontal pipe [7] is welded to the pipe cap [5] at a 90° angle to serve as an attachment for the flexible bayonet panel (Fig. 2). So the pipe cap cannot move freely around the vertical pipe support, a nut is welded to the pipe cap and a bolt is tightened against the vertical pipe support [6]. Once the gate is set in place the flexible panel can be leveled by twisting the galvanized wire [9] that attaches the flexible bayonet panel to the horizontal pipe support.

A single-bayonet gate that is properly adjusted to trap livestock will have the blunt-pointed ends of the bayonet panel in contact with a stop plate [8]. To achieve this position, one rotates the pipe cap until the flexible bayonet panel is in contact with the stop plate. The bolt in the pipe cap is then tightened against the vertical pipe support to insure the contact of the bayonet points with the stop plate is re-established after an animal passes through the trap.

A pipe stand support set in concrete will hold the vertical pipe support should one decide to use existing gates (Fig. 3) to funnel animals through the single-bayonet gate. The pipe stand support is identical to the pipe cap, except that it does not have the horizontal pipe attached. For removal of the single-bayonet gate, loosen the bolt in the pipe stand support and remove the bayonet trap from the gate opening. So the pipe stand support will not fill with debris

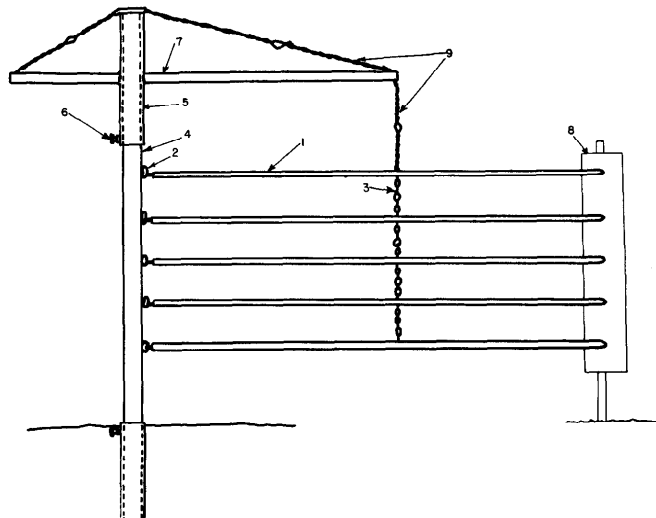


Fig. 2. Single bayonet gate, side view. The numbers refer to the following materials; pipe bayonet [1]; double chain links [2]; tire cross chain [3]; vertical pipe support [4]; pipe cap [5]; bolt and nut [6]; horizontal pipe support [7]; stop plate [8]; galvanized wire [9].

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¹Numbers in brackets refer to the material shown in Figure 2.

Table 1. Material list for construction of a single-bayonet gate, 91 cm (36 in.) high, with pipe stand support and stop plate.

Figure 2 Numbers	Material	Quantity	Size					
			Metric			English		
			Length ¹ (m)	Height (m)	OD ² (cm)	Length ³ (ft)	Height (ft)	OD (in)
[1]	Pipe bayonet, top four	4	2.44	—	1.91	8.00	—	0.75
	Pipe bayonet, bottom one	1	2.44	—	2.54	8.00	—	1.00
[2]	Chain links, double	5	—	—	d	—	—	—
[3]	Tire cross chains	4	0.23	—	—	0.75	—	—
[4]	Pipe support, vertical	1	—	2.59 ⁴	5.08	—	8.50 ⁴	2.00
[5]	Pipe cap ⁵	2	0.61	—	6.35	2.00	—	2.50
[6]	Bolt and nut	2	2.54 cm	—	1.27	1.00 in.	—	0.50
[7]	Pipe support, horizontal ⁶	1	2.59	—	3.81	8.50	—	1.50
[8]	Stop plate	1	0.30	1.07	—	1.00	3.50	—
[9]	Wire, galvanized (9 gauge)	—	4.65	—	—	15.25	—	—

¹Lengths are in meters except as noted.

²Outside diameter.

³Lengths are in feet except as noted.

⁴Height includes portion in pipe stand support.

⁵Pipe cap without horizontal support when inverted and set in concrete serves as the pipe stand support.

⁶Pipe cap is welded 53 cm (21 in.) from one end of this horizontal support.

when the single bayonet gate has been removed from the corral, the opening in the support can be plugged with an end-capped pipe of 15 cm (6 in.) length and 5 cm (2 in.) outside diameter.

Application

Single-bayonet gates are being used successfully on the Jornada Experimental Range to trap range cattle that weight from 90-408

kg (200-900 lb). Animals do require a period of training to learn how to walk through a bayonet gate. Their training may require several weeks and is best started with the swinging panel of bayonets in a fully open position. The distance between the blunt-pointed ends and the stop plate can be reduced until the animals no longer hesitate when the bayonets press against their sides as they pass through a "set" trap. If animals try to escape by lifting the bottom bayonet with their heads, several alternatives can be tried. Lower the bayonet panel so the bottom bayonet is almost touching the ground, increase the diameter of pipe used in the bottom bayonet, or weld a solid piece of steel between the bottom two bayonets in place of the chain. Any of these alternatives should prevent the trapped animals from escaping.

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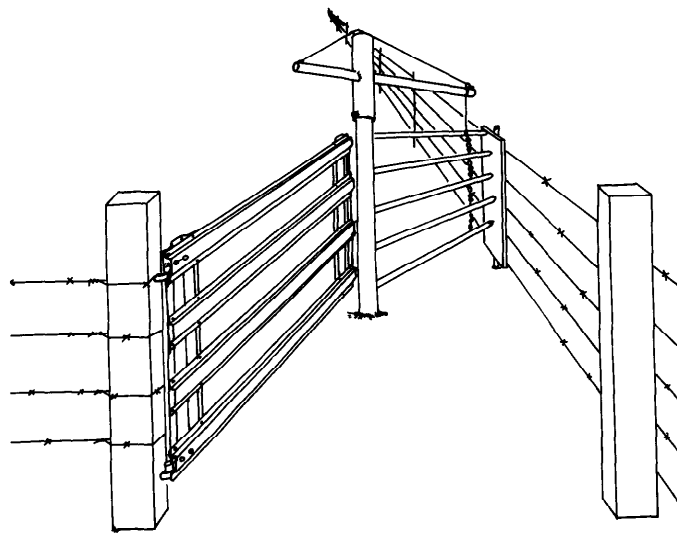


Fig. 3. Single bayonet gate showing proper adjustment of bayonets for trapping animals.