



WOOL
HARVESTING
NOTE

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GATE CATCHES: HAND OPERATED

INTRODUCTION

A wide range of gate catches is found throughout Australia. Selection depends largely on materials used for gates and gateposts, and whether the producer is going to make his own or purchase a commercially manufactured type.

Whatever fastener is used, it must:

- secure the gate adequately,
- be quick and easy to use,
- remain effective should the outer end of the gate drop slightly,
- need little or no maintenance,
- allow the gate to swing both ways if required,
- not be a potential cause of injury to sheep or operators.

A gate catch is a good one if the gate can be opened or closed quickly and simply by an operator who, at the same time, is holding or restraining a sheep. This implies single handed operation of the gate and catch.

Gate catches should be selected to match the function of the gate. For example, a single position positive latch gate catch is unnecessary and unsuitable if the gate is needed only to retain sheep in a pen or race. However, such a catch may be ideal if the gate must be held securely in a particular position.

Generally, the catch should be from one-half to two-thirds of the way up the outer edge of the gate. If higher than this, the gate may be bent or twisted. If lower, the catch may be too hard to reach or too awkward to operate.

For catches made from steel, the use of galvanised material where possible reduces corrosion effects and assists trouble free operation.

TYPES OF GATE CATCHES

Manually operated catches only are covered in this Note. Catches based on electronic or hydraulic principles, together with catches operated by any form of remote control, are not considered.

TYPE 1: Chain and Slot Catches

Slot with width slightly greater than the thickness of a chain link

Fastening plate

Gate frame

Gate post

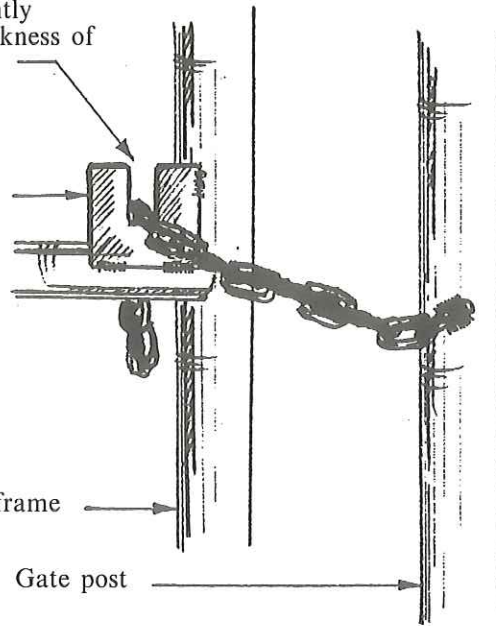


Diagram 1. Chain and slot catch

These are effective catches for most gates in sheep yards, and can be made in the farm workshop. They allow a gate to swing either way from its closed position. Their security can be improved by drilling a hole at the bottom of the slot in the fastening plate, the diameter of the hole being three-quarters of the overall width of a chain link. A horizontal link then locks into the hole preventing the chain from lifting out. Security is further improved by passing the chain under the fastening plate before placing it into the slot.

The chains and slots should be high enough above ground to prevent the chain being jammed beside sheep thus making the catch awkward to operate.

This catch may not be as easy to operate as the sliding bolt arrangement when holding a sheep. However, they are eminently suitable for gates in, and at the back of, a working race. The flexibility of gate position allowable with this catch is particularly useful in these situations. The operator does not have to push the gate to a specific position to effectively close it. This catch is also satisfactory for fastening double gates, and does not require close matching of the two gates to be effective.

TYPE 2: Sliding Bolt Catches

Amongst the most effective of these catches is the spring loaded unit shown in Diagram 2.

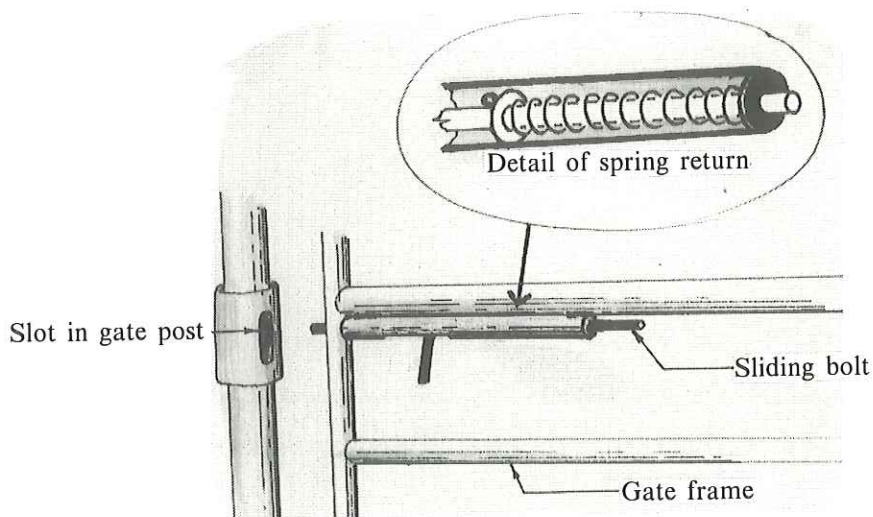


Diagram 2. Sliding bolt catch with spring return

Having a slot in the gate post is preferable to a circular hole, as it allows for changes in vertical alignment of the gate and post. Being assembled as part of the gate, the catch can be released and the gate opened in one movement—there is no need to change the grip of the hand.

This catch can be improved by fitting angled striker plates on the gate post. This refinement means that the gate can be closed by simply pulling or pushing the gate frame without manually operating the catch at all.

Care is required in manufacture to ensure the bolt slides freely. Furthermore, the catch can be damaged by unduly rough treatment, and spring failure may occur due to the effects of corrosion over a long period of time. However, experience indicates that these points are not serious disadvantages.

Other forms of sliding bolt catches are illustrated in Diagrams 3 and 4. Each catch applies to gates made from steel pipe, but the gate posts may be either steel or timber.

These catches are simpler than the spring loaded type, and need little or no maintenance. It is necessary however to manually operate the catch for both opening and closing the gate. Furthermore, the gate must be correctly aligned in order to close it. This requires care and is a drawback, particularly if the operator is holding a sheep.

As before, a vertical slot in the gate post (rather than a round hole) accommodates changes in alignment of the gate and post.

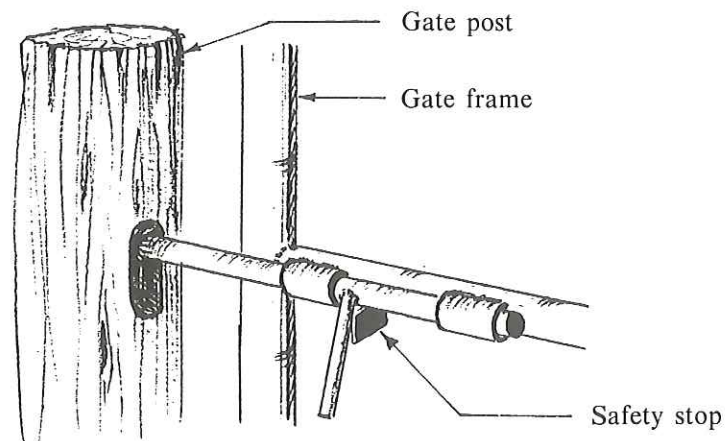


Diagram 3. Sliding bolt catch with safety stop to prevent inadvertent release

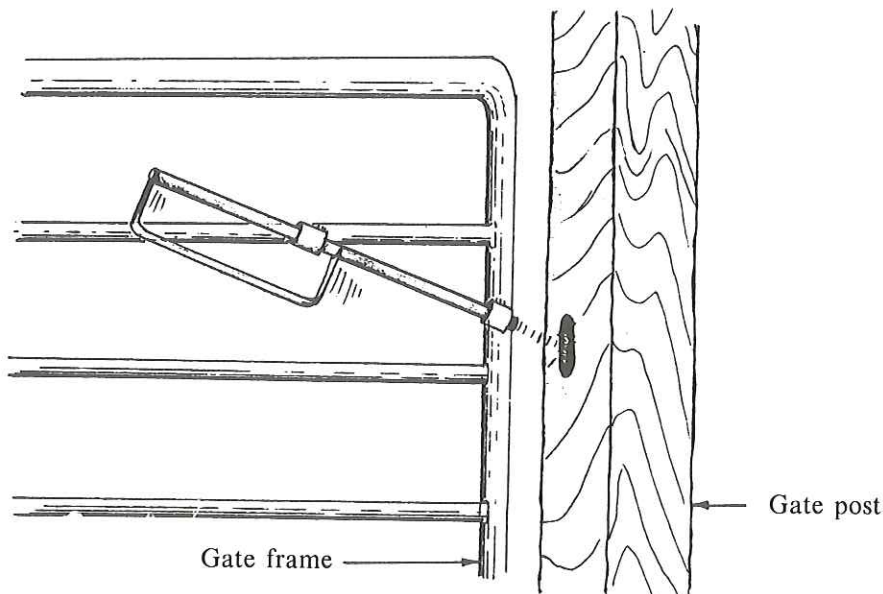


Diagram 4. Inclined sliding bolt catch. The natural tendency for the bolt to remain in the down or closed position guards against unintentional release

TYPE 3: Pin and Ring Catches

These catches are simple, effective, cheap and require a minimum of maintenance. Generally they are easy to open and close, but if pressure is being applied to the gate, single-handed release of the catch may be difficult.

Note that the arrangement shown in Diagram 6 is accessible from both sides of the gate, whereas that in Diagram 5 is located on one side and is therefore awkward to reach from the opposite side.

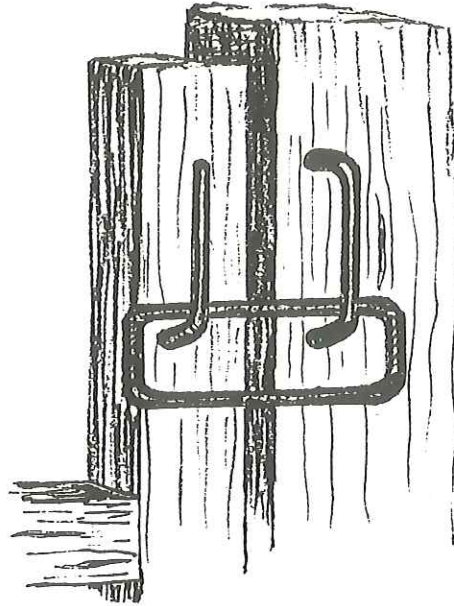


Diagram 5. Pin and ring catch for timber gates

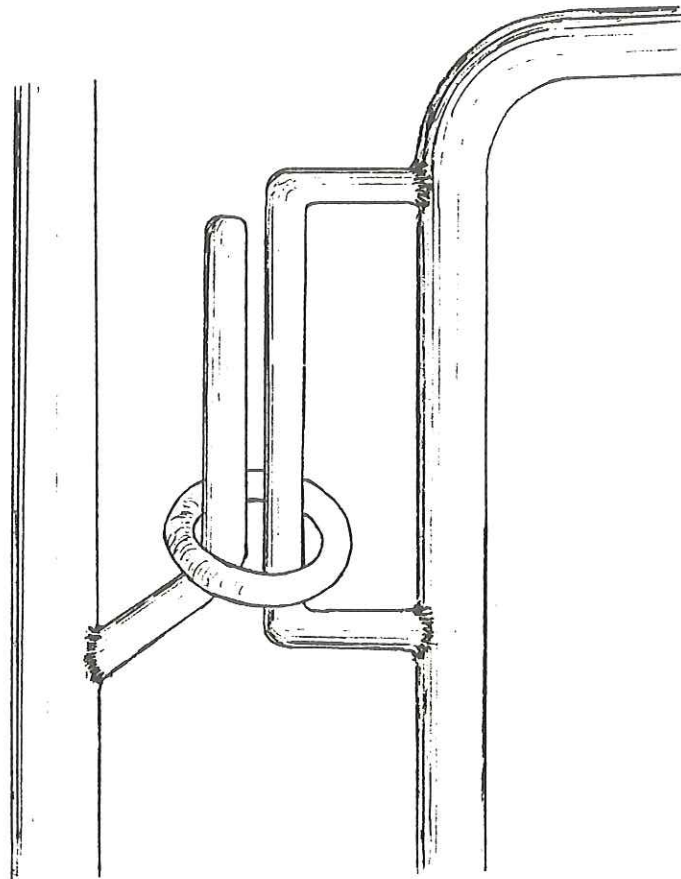


Diagram 6. Pin and ring catch for steel gates

TYPE 4: Tongue and Slot Catches

These catches can be made for both steel and timber gates, and they can be fitted to allow the gate to swing either way from its closed position.

One form of this catch is shown in Diagram 7. A tongue, pivoted at one end, is arranged so that its other end can slide up an inclined surface and drop into a slot as the gate is closed. Thus the catch need only be manually operated when opening the gate. The action of the tongue dropping into the slot can be speeded up by adding a spring to the tongue. When this is done, the catch is more positive in its action, less likely to be accidentally released, and the slot can be narrower than for the case where the tongue drops under gravity action only.

Some problems may be encountered with timber gates through faulty action of the catch brought about by warping or twisting. Furthermore, components need to be strong enough to withstand the forces likely to be applied to the catch when in use. In Diagram 7, the catch has been fitted at the level at which these forces are likely to be applied. Since the catch would be awkward to operate at this level, the release rod has been added as shown, and so the catch can be worked easily from either side of the gate.

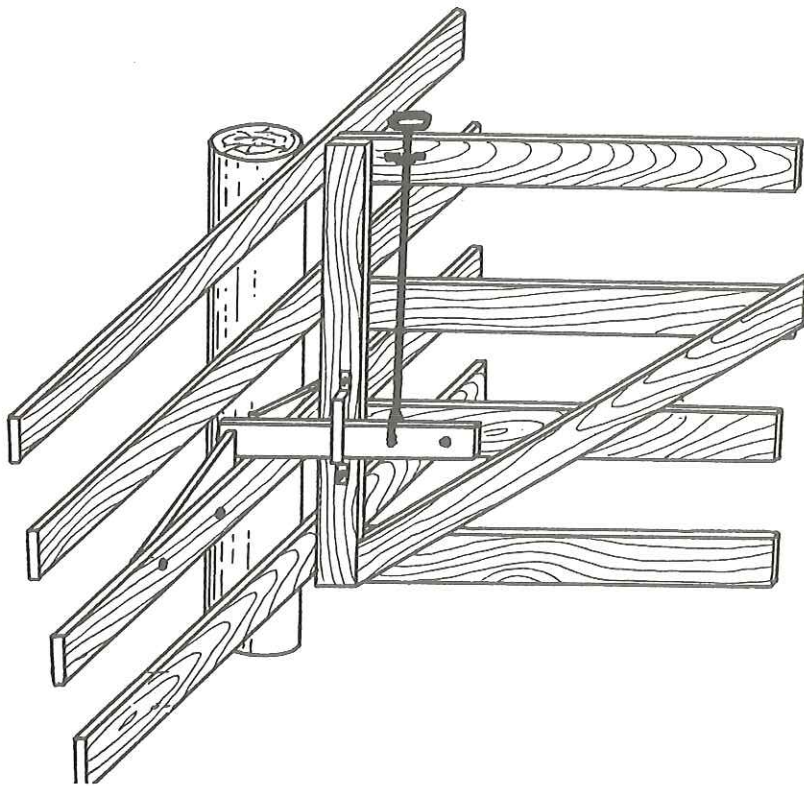


Diagram 7. Tongue and slot catch with self-closing action

When adapted for steel gates, this catch can be easily operated from a remote position by lever or cable. This makes it suitable for use on a gate at the front (or outlet end) of a working race. Having treated the sheep, the operator can release them by opening the gate while he is at the opposite end of the race ready to bring in the next batch.

A second form of this catch, suitable for timber gates, is shown in Diagram 8. In this case, the tongue slides horizontally to locate in a slot cut in the timber gate post. This catch is operated by a vertical lever, but many similar catches function effectively using only the horizontal tongue. In either case, the catch can be operated easily from either side of the gate. However, care is needed to position the gate accurately for closing to ensure the tongue enters the slot, and this may be a disadvantage. Suitable chamfers on both the outer end of the tongue and the entrance to the slot make closing easier. Simple safety stops can be fitted to guard against inadvertent opening of the gate.

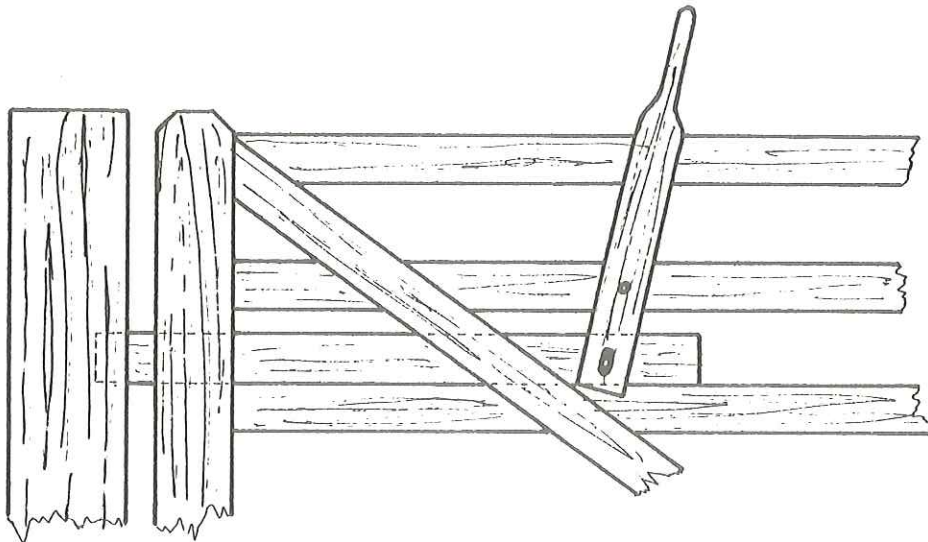


Diagram 8. Sliding catch for timber gates

With all tongue and slot catches, it is essential that vertical alignment of gate and gate post is maintained or the catch will not function correctly.

TYPE 5: Chain and Loop Catches

These catches consist of a short length of chain on one end of which is a loop. The loop passes over some kind of hook or staple to keep the gate closed.

Generally the components of the catch can be fitted in two ways. The first way has the chain attached to, say, the gate, and the hook or staple fitted to the gate post, as in Diagram 9. The second method has both the chain and hook on the gate post, with no part of the catch attached to the gate frame. This is illustrated in Diagram 10. It is usually only a matter of personal choice which method is used.

In both cases, the length of the chain is critical, since it determines the amount of free movement of the gate when the catch is applied. Too much movement may allow lambs to escape through the opening between gate and gate post.

These catches are generally simple to make and need no maintenance. They also allow the gate to swing both ways, and will accommodate some gate sag. However, they have disadvantages when considered for sheep yard use. They have no self-closing features, and so must be manually opened and closed. Furthermore, they have to be operated from one side of the gate, and this is awkward in many instances. Another factor is that, since the catch is not a rigid part of the gate, the catch must first be released and then the grip changed so as to control the gate.

Various types of chain and loop catches are illustrated in Diagrams 9 to 13.

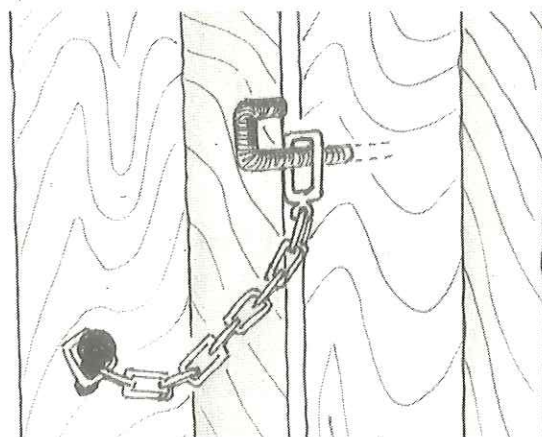


Diagram 9.

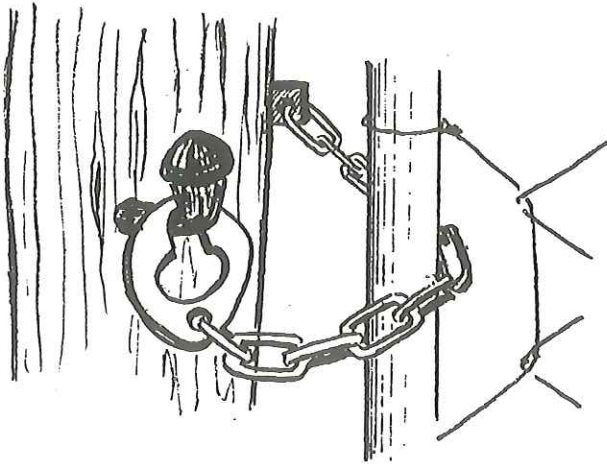


Diagram 10.

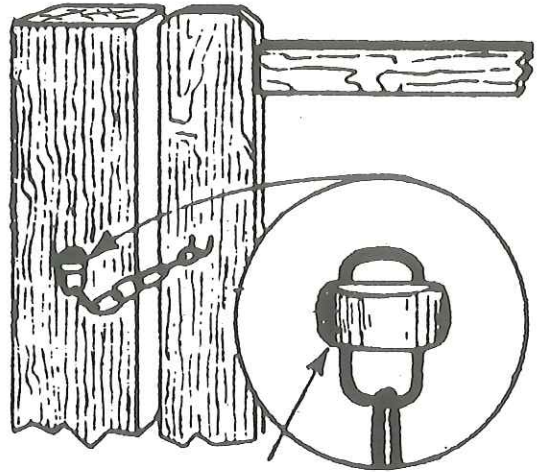


Diagram 11. Carriage bolt with head ground back as shown

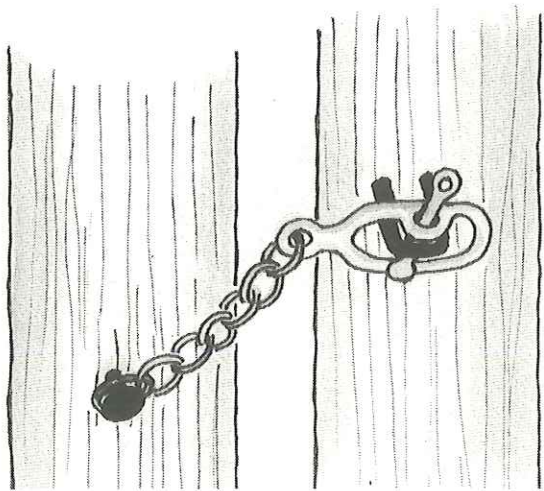


Diagram 12. Chain and loop catch with safety pin

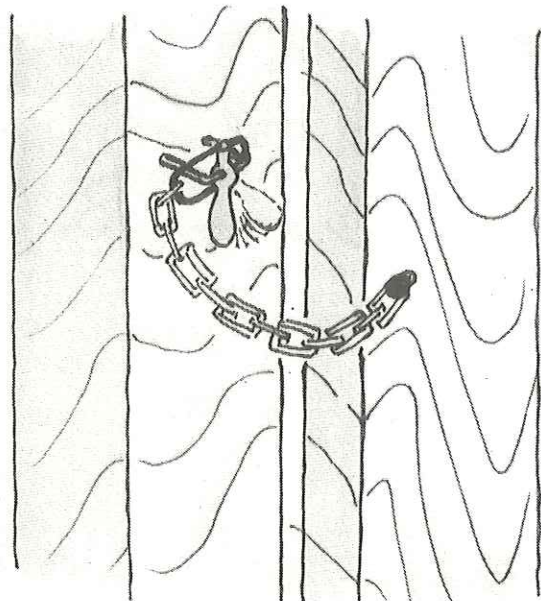


Diagram 13. Chain and loop catch with safety latch

TYPE 6: Chain and Hook Catches

These catches are similar to the previous type but, instead of a loop on the end of the chain, there is a hook. They can be fitted in the same two ways as described for Type 5.

Three varieties of chain and hook catches are shown in Diagrams 14 to 16.

Generally, these catches are regarded as unsuitable for yard use. This is due to the fact that, apart from the drawbacks mentioned for chain and loop catches, the hook tends to catch other objects and cause inconvenience or injury.

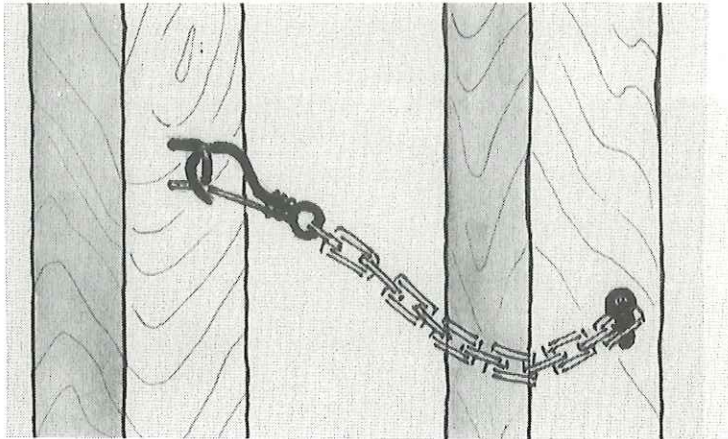


Diagram 14.

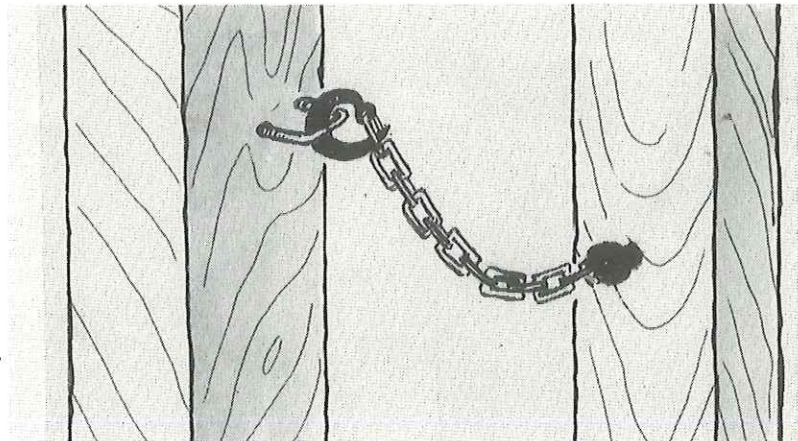


Diagram 15.

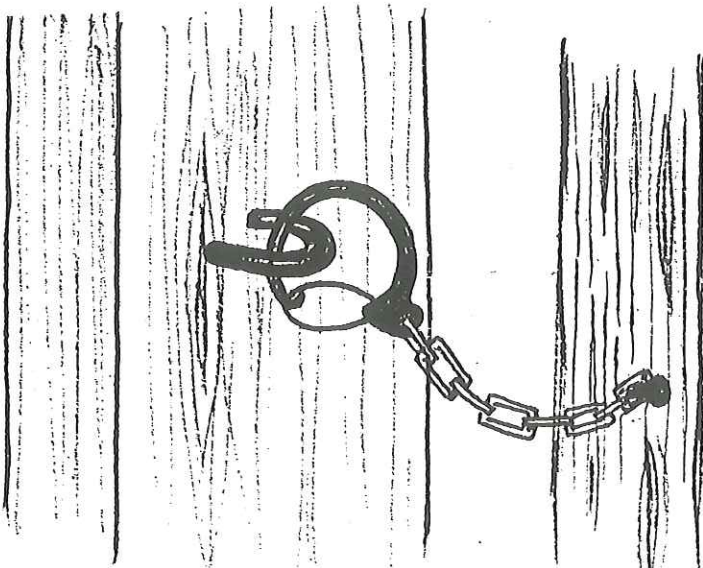


Diagram 16.

TYPE 7: Chain and Peg Catches

This common catch is simple and effective. The peg fits into an inclined hole in the gate post, and the chain is only required to prevent the peg being lost.

The principle of operation requires a stop to be fitted to the gate post, and so the gate can swing only one way from the closed position. However, this makes closing of the gate somewhat easier, since it can be simply pushed against the stop, and not carefully aligned in a specific position as for some gates which swing both ways.

The catch is located on one side of the gate, and so there is the problem of difficult access from the other side. It is generally used with a timber gate post, although can be adapted to suit steel construction.

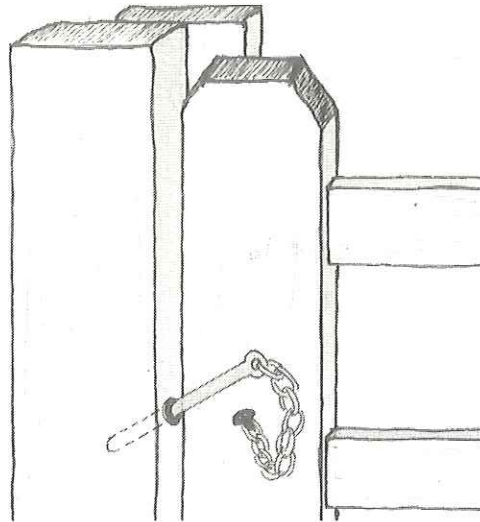


Diagram 17. Chain and peg catch

TYPE 8: Lift and Drop Catches

This type of catch is illustrated in Diagram 18. It is fitted at the top of the gate, and functions by the offset pin locating in a vertical hole in the gate post or yard rail.

They are simple and effective, and can be operated by one hand from either side of the gate. The gate can also swing either way from its closed position.

A disadvantage is that the catch depends on maintaining the spacing between the gate and the adjoining rail or post. Any sag of the gate, or misalignment of the fence, results in failure of the catch. In addition, since the catch is at the top, the gate can be more easily bent or twisted than if the catch was lower down.

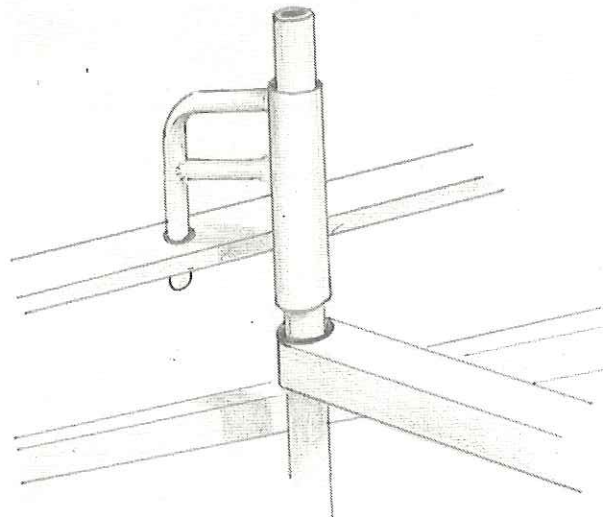


Diagram 18. Lift and drop catch

TYPE 9: Throw Over Catches

These traditional catches are well known. They are particularly useful for double gates, and may therefore find only limited application in sheep yards.

Their effectiveness is dependent on the alignment of the gates being maintained. The catch is again fitted at the top of the gate, and thus it is less effective in withstanding pressure applied to the gate by sheep.

The simple catch in Diagram 19 can be opened by stock. One way of preventing this is shown in Diagram 20, where the U-shaped component on the right-hand end of the catch hangs vertically and just clears the top edge of the gate rail. This prevents the left-hand end of the catch from being lifted. By first swinging the safety catch out of the way, the catch can be operated. However, this makes the catch more difficult to operate with only one hand.

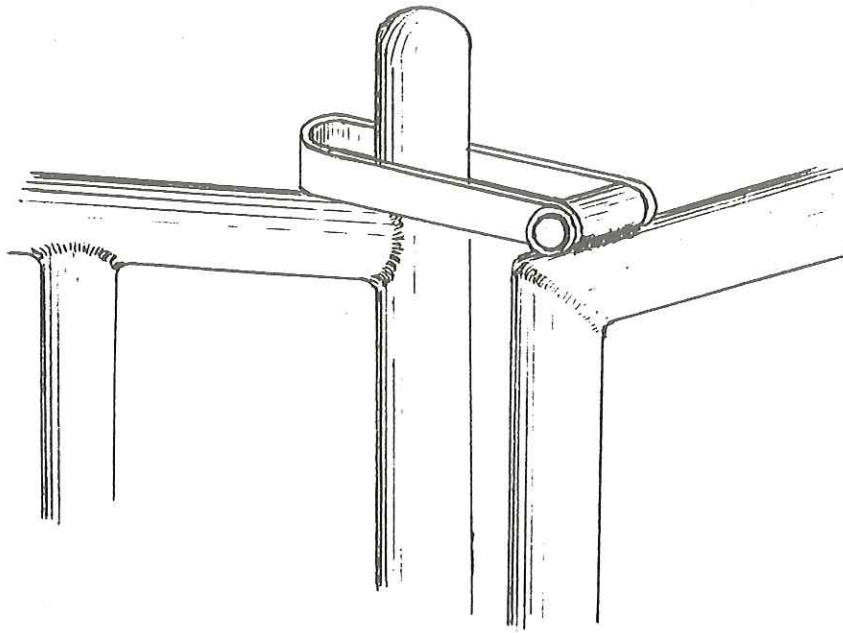


Diagram 19. Throw over catch for steel gates

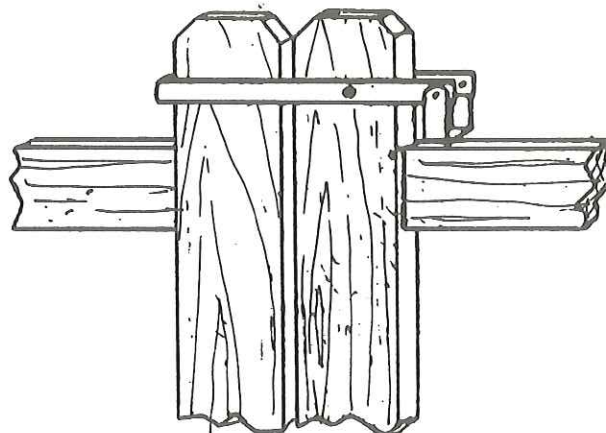


Diagram 20. Throw over catch with safety device