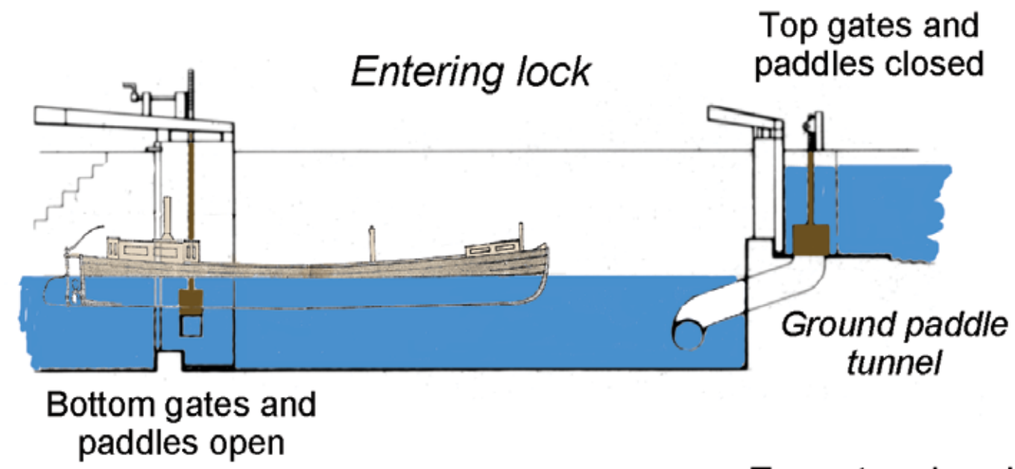
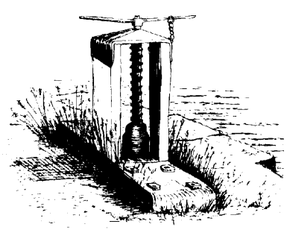
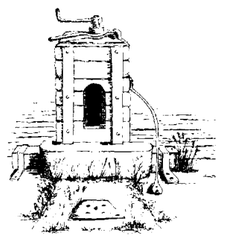


HOW A LOCK WORKS

On the left are illustrations of three stages for passing through a lock. The first shows a boat entering a lock. Before this happens, the upper gates and paddles need to be closed and the lock emptied by opening the lower gate paddles. 'Paddle' is the canal term used for a valve by which water levels are controlled. When the water level in the lock and in the lower canal are the same, the lower gates can be opened.





Two drawings of typical Leeds & Liverpool Canal ground paddles, called 'box cloughs'. Every canal had its own particular style.

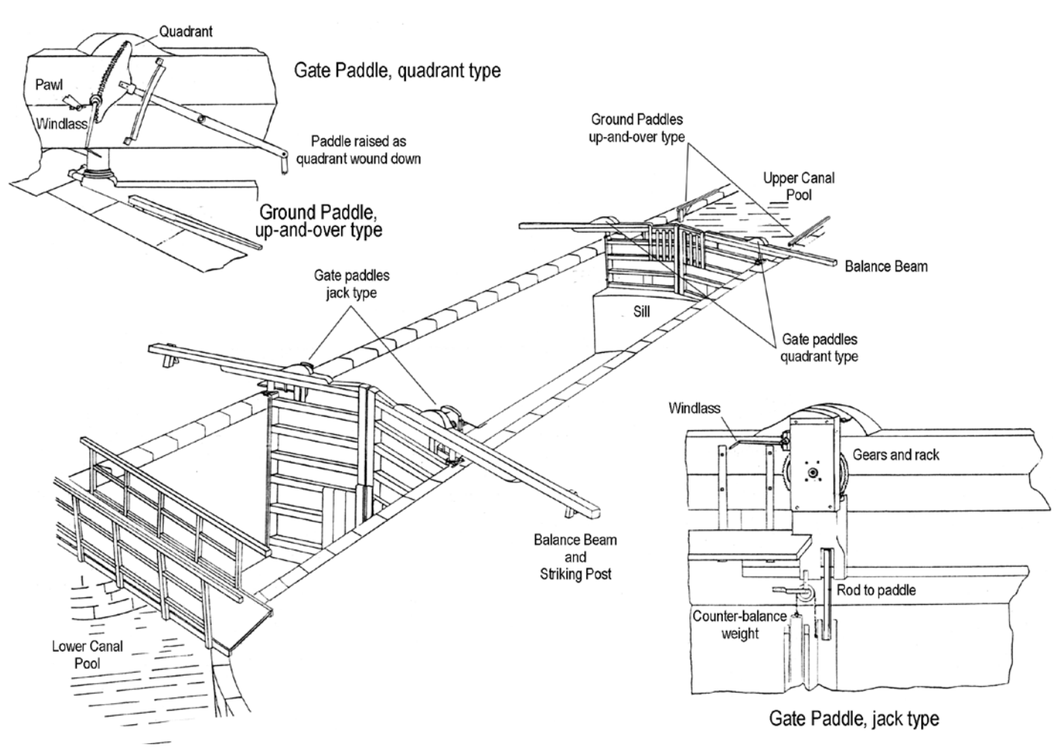
The second illustration shows a boat rising in a lock. To make this happen, the lower gates and paddles must be closed, and then the upper ground paddles opened. Ground paddles are built into the side of the lock, the water flowing from the upper canal into the lock chamber through a tunnel. On some locks, there are also upper gate paddles. Care must be taken in opening these in case the water flowing through them falls onto the boat, which could sink it.

There were a wide variety of gate paddles on the Leeds & Liverpool Canal ground paddles. This one has a horizontal rack which pulls or pushes a long lever pivotted just above water level. This allows the paddle hole under water to be opened or closed.

The third illustration shows a boat leaving the lock at the upper level. The water level in the lock and upper canal needs to be equal before the gates can be opened; even a slight difference can prevent this. After the boat has left the lock, the gates and paddles should be closed. When the canal was used for carrying cargo, the gates and paddles could be left open as there were so many boats using the canal, and lock keepers were on hand to prevent water wastage. Today, it is up to the boater to ensure that water is not wasted and everything closed before they continue on their way.

Two photos of upper lock gates which were taken when locks were being repaired. Both show ground paddles, but of different types. On the left is a 'box clough', where the paddle covering the drain hole is raised by a screw. This one is held in an iron frame, but usually they are in wooden boxes, as in the drawings above right.

The lower picture shows one of the up-and-over type of ground paddle. You can see the pivot just above the paddle hole, the arm being used to turn the vertical lever. The groove in the stonework can be used for 'stop planks', which allow the gate area to be drained.



A drawing of a Leeds & Liverpool Canal lock showing further types of paddle gear. On the up-and-over type, the horizontal bar is raised at one end, turning it through 90 degrees, and this turns the vertical lever to which it is attached, opening the paddle hole.

The counter-balance weights on the gate jack paddle were introduced in the mid-19th century. At that time, canal operation was speeded up to compete with railways, and some paddle holes were enlarged to make locks fill and empty quicker. The additional weight of the larger paddles needed the counter-balance to make them easier to operate. They were worked from small platforms over the lock chamber, and are no longer used for safety reasons.

The balance beam rested against the 'striking post' when the gates were closed, and ensured that the mitre, the vertical seal between the two gates, made a perfect fit every time. By accident, a person could become trapped, and today these have been removed. An occasional one can still be found, though the beam no longer rests against it.

LOCKS