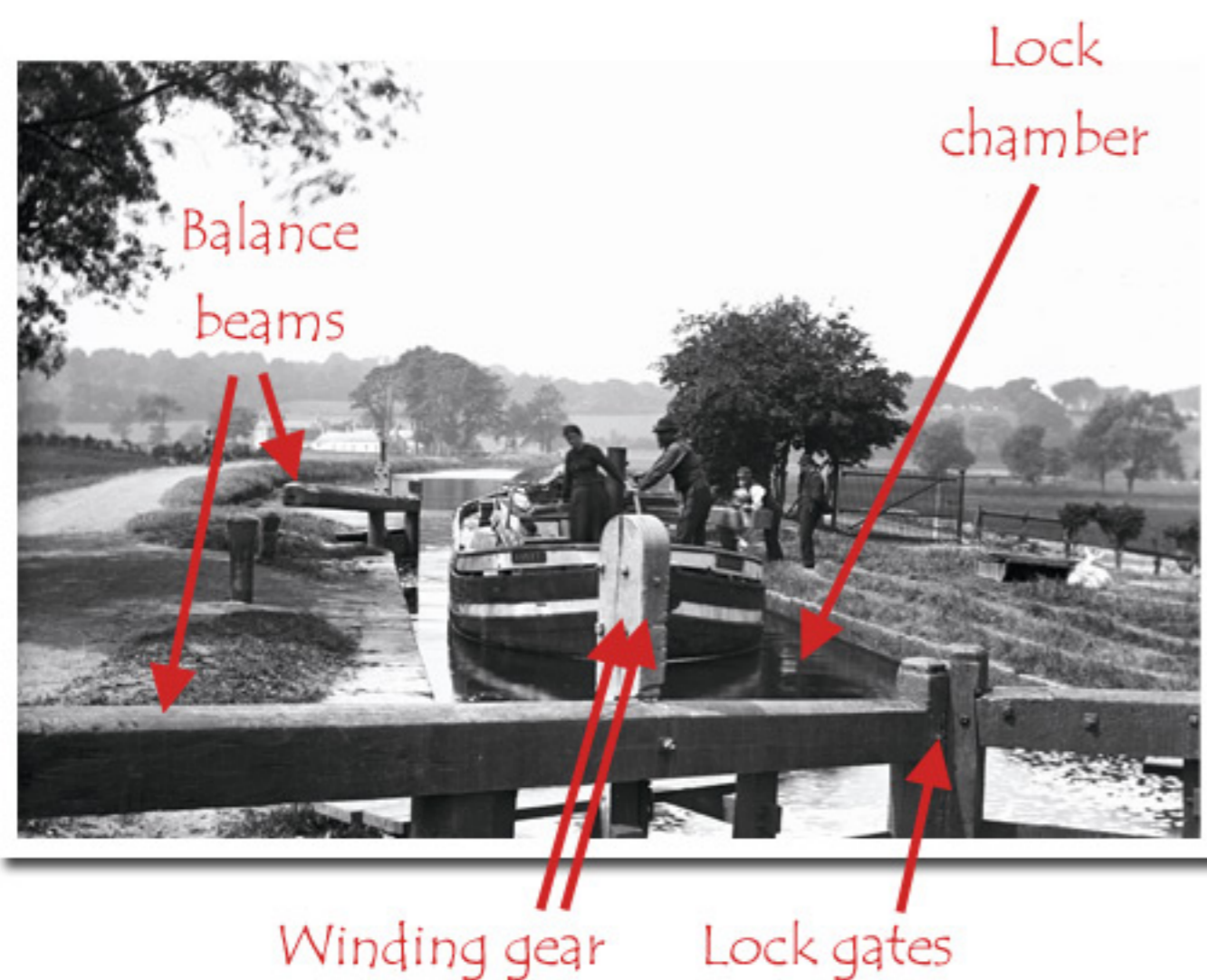


Locks on the Lagan have two sets of gates and a chamber, which the boat would enter. Locks also have sluice gates built into the gates themselves, which are opened and closed to allow the water in and out to change the water level and therefore raise or lower the boat or lighter.

Passing through a lock

When a lighter was going upstream, the lock keeper would open the lower lock gate and the lightermen would steer the boat into the lock chamber. The lower gate would be closed. The sluice gate in the top lock gate was then opened to allow the water to flow in and raise the boat up. Once the water level has reached the same level as the canal ahead, the top gates would be opened and the lighter towed out by the horse. The lock and sluice gates would be closed once the lighter had cleared the lock.

When going downstream the process would be done in reverse with the lighter entering the lock and the water level being lowered by opening the sluices on the lower gate.

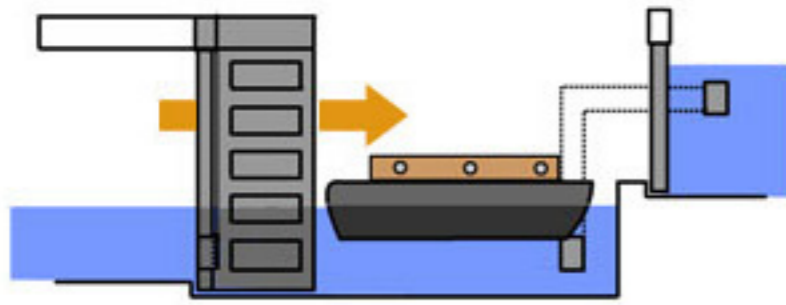


Lock components

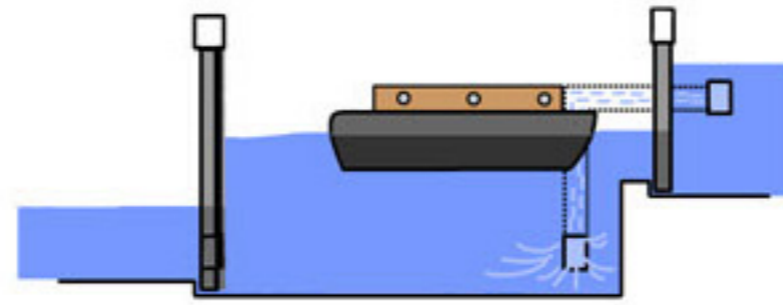
The chamber is the main feature of the lock; the walls were constructed of sandstone with timber floors and puddling clay, a material made by compacting clay and water tightly together to form a watertight seal. This meant that the locks would be made of whatever suitable stone could be sourced in its locality reducing construction time and costs. When suitable stone was not available, it would have to be transported to the site. The chamber was lined with heavy support beams to help keep the stone on place and along the bottom of the chamber. Over the years materials changed and this is plain to see on the walls of the existing locks today, they are made up of patchwork of materials (masonry, brick and concrete) due to repairs done since their original construction.

The lock gates were usually made from oak or elm, which is a high-density timber able to withstand long-term exposure to water. The gates would meet at a point or mitre with the angle pointing upstream to prevent them from being forced open by the water pressure above, this would also help to keep the gates closed tight.

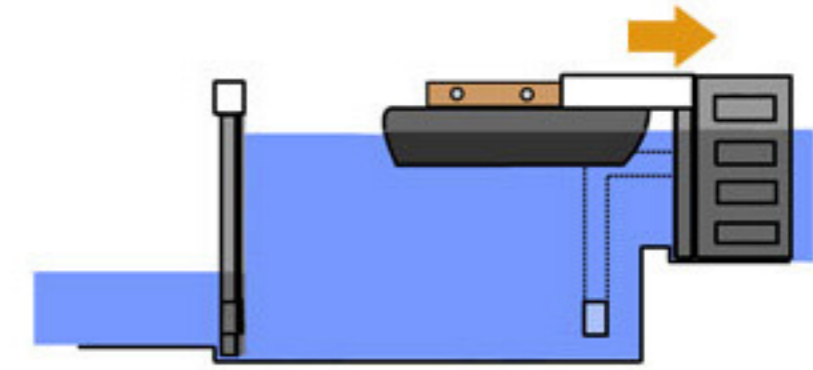
Sluice gates are built into the lock gate at the base in order to raise the water levels within the lock chamber. These would be raised or lowered by the lock keeper using the winding gear, which was operated by a windlass or crank handle. The lock keepers would have to be mindful of the position of the lighter when it was heading upstream: if the sluices of the top gate were opened with a lighter directly underneath, the torrent of water could cause the boat to capsize or spoil the cargo. by the lock keeper using the winding gear, which was operated by a windlass or crank handle. The lock keepers would have to be mindful of the position of the lighter when it was heading upstream: if the sluices of the top gate were opened with a lighter directly underneath, the torrent of water could cause the boat to capsize or spoil the cargo.



1 The boat passes through the lower lock gates and into what is called the "lock chamber" and the lower gates are closed tight.



2 The sluice gate or "paddle" on the upper lock gates is raised by winding it up. The sluice gate is at the bottom of the gate which means that the water comes through slowly and the lock starts to fill up with the water coming in underneath the lighter.



3 When the water in the lock chamber is at the same level as the water at the top level the upper lock gates are opened and the boat can pass on its way.

The balance beam is the long arm attached to the top of the lock. The beam used as leverage to open the lock and to counter balance the gate when the lock is empty and there is no water to support its weight.

Each lock would have its own weir, for which the lock keeper would also be responsible. A weir is a small dam across the river to reduce the flow. The weirs were fitted with sluice gates to regulate the speed or flow of water and water levels. The lock keepers would have to use the weirs to make sure there was enough water in the river sections of the navigation to enable a fully loaded lighter to be towed; this was because every time a lighter went through a lock thousands of gallons of water would be lost. They were also vital for lowering water levels during times of floods. Weirs were used to maintain reservoirs such as the Broadwater at Moira to feed the canals and rivers during dry spells. The lock keepers were pivotal in this regulation of water levels on the Lagan Navigation and would work round the clock to this end.