

entire, instead of being, as usual, erected piecemeal in the lock-pit—a tedious operation, necessarily performed after the lock-walls were built; whilst, by the plan adopted, the construction of the gates was entirely independent of the lock-work. The balance beams, anchor caps, foot sockets of the heel posts, and fender frames (of which there were four built into each lock wall,) were all of cast-iron.

The culverts and sluices were all placed in the pier between the locks. There were five culverts; one for filling and one for emptying each lock, and one for connecting the two locks. In consequence of the confined lateral space, those for the western lock had to be built above those for the eastern lock—the roof, or flooring, separating them, being formed of cast-iron plates. The sluices were, to a certain extent, self-acting. This was effected by making them somewhat in the form of a caisson, which worked perpendicularly and nearly watertight in a chamber. There were two valves in the caisson, one for emptying the chamber or allowing the water to run off, and the other for filling, or allowing the water from the upper level to pass into the chamber. When it was required to raise, or open the sluice, the former valve was opened, which released the water in the chamber, and left against the sluice the upward pressure due to the difference between the two levels (ordinarily 10 feet,) which tended to force it up. When the sluice was to be lowered, the water was generally at the same level on both sides, in which case it descended by its own weight; but should it be necessary to lower it against a pressure, the water from the upper level was allowed to run into the chamber, so as to produce a downward pressure. These sluices could be raised by one man in half a minute, and by their aid the larger lock could be filled or emptied in less than two minutes. They were designed and manufactured by Messrs. Lawrence, Brothers.

The wharf and towing-path walls were formed of headers of Kentish ragstone, backed with concrete. The material used for raising the towing-path was almost entirely obtained by dredging the main river, and consisted of gravel mixed with a small proportion of peat and mud. This made a perfectly water-tight bank.

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