is believed to have been entirely novel, is admirably adapted to use in places where piles cannot be driven, and posts merely braced together are not to be trusted; it is effective, can be put in rapidly, and may be used where the rock is overlaid with several feet of sand, the posts being sunk by blowing away the sand with a stream of water forced through the central hole.

After the removal of the screws the caisson was sunk two feet farther to the rock by means of a water jet, directed by a diver working on the outside; a single day proving sufficient to bring it to its permanent bearing. The water jet used on this, as well as on subsequent occasions, consisted of a copper or iron nozzle attached to a three-inch flexible hose, and sufficiently loaded to be handled with ease under water; through this a stream of water was driven by either a centrifugal or reciprocating pump, the former being used on the foundations first put in, but the latter being found the more efficacious. The attempt to fit the rock by shaping the bottom of the caisson proved a failure, and a good joint was only secured by means of the sheet piles; these were driven by a light ringing engine, and by bruising against the rock secured an accurate fit. The caisson was then surrounded on the outside by a double row of gunny bags filled with clay, which were carefully placed by the diver in a trench excavated by him with the water jet. These bags were further surrounded with hay, which was again covered with a bank of clay, protected from the water by a canvas tarpaulin, and the whole covered with a layer of clay and stones.

On the 10th of October these preparations against leakage had been completed, and the work of pumping out the caisson was begun. The joints were found to be admirably tight, a nine-inch Alden pump, driven by a twelve-horse power engine lowering the water five feet in an hour. Additional braces were placed within the caisson as the water was lowered, to resist the increasing outside pressure. The small amount of sand and mud remaining on the rock was cleaned off, and removed in boxes, when two beautiful springs of clear water, contrasting strongly with the muddy Missouri, were found issuing from the fissures in the rocks, and the rough and jagged surface was quarried to an even bearing, suitable to receive the masonry. The solid character of the rock was also proved by drilling into it.

To facilitate handling the stone a trestle bridge was built, extending from