launch. All spaces between the skin and the timber have been filled with cement.

The skin performs two principal offices—that of making the air chamber tight; and, secondly, to protect the timber above against fire. It also adds to the strength of the whole structure.

Inasmuch as the skin is pierced with six thousand bolts, besides its own rivets and caulking seams, it was expected that the leakage at first would be considerably greater than in a caisson made tight by caulking with oakum. The expectation was more than realized, since four air pumps were required to inflate the caisson sufficiently to enter it, whereas one pump sufficed for the Brooklyn caisson. As soon, however, as access was had to the air chamber, the leaks were easily stopped, being both audible as well as readily accessible, and it is even tighter than the Brooklyn caisson.

Air Locks.

Two sets of double air-locks are provided, each six and one-half feet in diameter by eight feet in height, and capable of containing thirty men; thus enabling the whole working force of one hundred and twenty men to enter at once locking. The locks are built into the roof of the caisson—the lower half projecting four feet into the air-chamber, and the upper half communicating with a rectangular trough seven feet long, which connects each pair of locks. This trough enlarges above into a circular well of boiler plate eight feet six inches in diameter, which is carried up inside the masonry as the caisson sinks. This style of lock presents some advantages as well as disadvantages, when compared with the old mode. Less time is occupied in passing through a large number of men, and the fatiguing labor of climbing a high vertical iron ladder within the compressed air is avoided.

On the other hand, the locks are dark; they are liable to be flooded by leakage from the well above, thus cutting off both ingress and egress, and in case of an incursion of the waters from below, the avenue of escape is sooner cut off. Steam coils are provided for maintaining a uniform temperature when coming out of the lock.