was calculated to relieve the caisson from side friction. The workmen, however, never dug out far enough behind the shoe, thus causing great friction for several feet up the sides, and pressing in the sides to as much as nine inches in some places. The side friction probably never exceeded three thousand tons. The larger the base of a caisson the smaller is the percentage of side friction available to counteract downward pressure, whereas in a narrow caisson, penetrating a uniform sand, it is often sufficient to counterbalance the whole weight.

Brick Piers.

When the caisson had arrived within three feet of its proposed resting place, it was considered advisable while the air chamber was being filled with concrete, to erect for its support seventy-two brick piers. systematically located, and averaging twenty square feet of base. Their ultimate capacity was just sufficient to support the whole weight above in case the air should blow out. It was felt that where openings exist like the water shafts or supply shafts, there exists also a possibility of the air blowing out, no matter what precautions are taken, or how much care is used. The precaution was, therefore, safe, even if not needed. Subsequent events showed the necessity of it. The piers were completed in three weeks, requiring 250,000 bricks in their construction. The inevitable strike attended the employment of the large force of bricklayers, men new to the place and circumstances. It was easily overcome, however, and caused no delay.

Blowing Out of Supply Shaft.

Shortly after the caisson had come to a bearing on the piers and the concreting had been in process a fortnight, one of the supply shafts blew out. The tension of the air was reduced in a few minutes from eighteen to four pounds, and the piers had to bear the brunt of the weight.

A few words will suffice to explain the mode of operating the supply shaft. It consists of a tube forty-five feet long