chambers, not working in unison, would undermine them and destroy their effect.

The plan next adopted worked very well, and was pursued to the end. It consisted in supporting the frames every eight feet on two wooden blocks, twelve inches square and two feet long, one above the other, with four stout oak wedges interposed between the blocks and bottom of the frame. A continuous trench, two feet deep and four feet wide, was thus maintained under the frames, giving ample working room for the removal of boulders. Whenever the shoe had been cleared out for six inches in advance, these wedges were then loosened with sledge hammers, one by one, and frame by frame, until the caisson slowly settled. Then, either new blocks were put in of a smaller size alongside, or, as was usually the case, they were allowed to crush. Very often a sudden descent of the caisson would crush half the bearing blocks, until brought up by the shoe. The operation was analogous to the splitting out of blocks and wedges during the launch of a ship.

The bottoms of the frames were originally two feet wide. This width was found too great to allow of the easy removal of rocks from underneath. They were, therefore, cut down to a width of one foot. The lower ends of the frames were likewise cut loose from the side of the caisson, to allow more easy access to the point of junction. This reduction of bearing surface added materially to the risk in case of accident.

Removal of Boulders and Earth.

Boulders occurring inside of a chamber were usually left undisturbed until the caisson had sunk sufficiently to enable us to attack them above the water level. They were then split into manageable blocks by plug and feather.

Boulders under the frame presented more difficulty. The ground in which they were imbedded was cut away with steel bars as much as possible; they were then drilled under water, and a lewis inserted. The appliances for pulling them out of their beds were various. Those first in use consisted of double sets of block and tackle, aided by winches and crow-