

ment, and led to the substitution of the large deep well system for the tube wells and conduit first proposed.

Owing to the large flow of water, great difficulties had been experienced in sinking the first well, the inrush of water carrying with it soil from outside the well curb, undermining the foundations of the buildings, and making it necessary to stop the well short of the rock and put in a strainer of broken stone and concrete.

Looking to the necessity for taking more full advantage of the artesian supply, it was evident that the next well should be sunk into the rock, and that the curb and pumps should be placed upon the rock. It was also considered that the principal wells should be in duplicate, so that in case of an accident to one, the other could be brought into service. With these objects in view it was decided to sink well 1 into the rock and to construct well 2 as a duplicate or reserve. The system of unwatering by pumps used in the construction of well 1 had, owing to a large flow of water, proved ineffective. It was necessary, if the construction was to be under complete control such as would enable the permanent pumping machinery to be erected at rock level, and the pump suction extended into the rock, that some other system of unwatering should be adopted. It was, after consideration, decided to use the pneumatic caisson system of sinking the well. A double steel shell caisson 18 ft. in diameter filled between the shells with concrete, was constructed at ground level, and sunk in the usual way. When water was reached, an air lock was attached to the caisson and the work of sinking continued under air pressure, sufficient to keep out the water, until the caisson reached the rock. The cutting edge was then sealed to the rock by concrete, 6-in. inlet pipes for the water being set in at rock level. A shaft 10 ft. in diameter was then sunk into the rock for a distance of 16 ft., and a gallery driven for a distance of about 40 ft. The pump suction extend into the shaft sunk in the solid rock. This system of sinking was found to be most efficient, the water being easily controlled, and all kinds of work, including setting up the machinery at the bottom of the well, were executed without difficulty.

Well 2 yielded 4,500,000 gal. when tested soon after completion, but has decreased on account of some obstruction in the inlet pipes by sand and gravel, which can be removed. Wells 3 and 4, under construction, will yield volumes, which are estimated by Col. Rutan in connection with the discharge of Nos. 1 and 2 as follows: Nos. 2 and 3, 6,000,000 gal.; Nos. 2, 3 and 4, 8,000,000 gal. Well 1 will be completed like No. 2, and its yield in-

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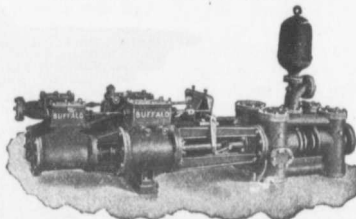
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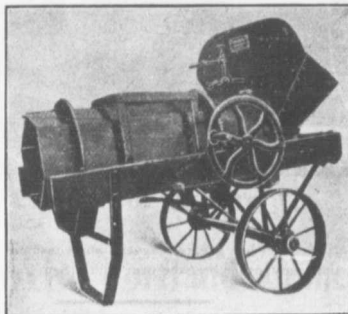
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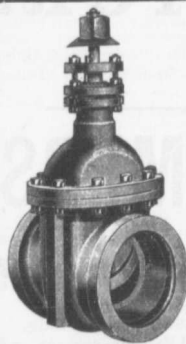


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