The Great Mormon Tabernacle at Salt Lake.

Our engraving presents the commencement of the structure, which has since progressed so far towards completion as to have the bents upon both sides added, and to be largely covered in. By it a correct idea may be had of the enormous size of the building, and the mechanical difficulties attending the construction of so ponderous a roof. The credit of carrying on such a vast work can best be appreciated when it is borne in mind that the timber is brought from a considerable distance, and other materials imported from the States.

This building was not constructed with any view to display architecture, but merely as a temporary meeting place for the people to assemble, and to take the place of the old Tabernacle and Bowery, the former of which was a large building, and the latter simply a huge shed covered with green boughs. Inside of the Tabernacle an organ is now constructing, second in size to none in the United States except the celebrated one in Boston.

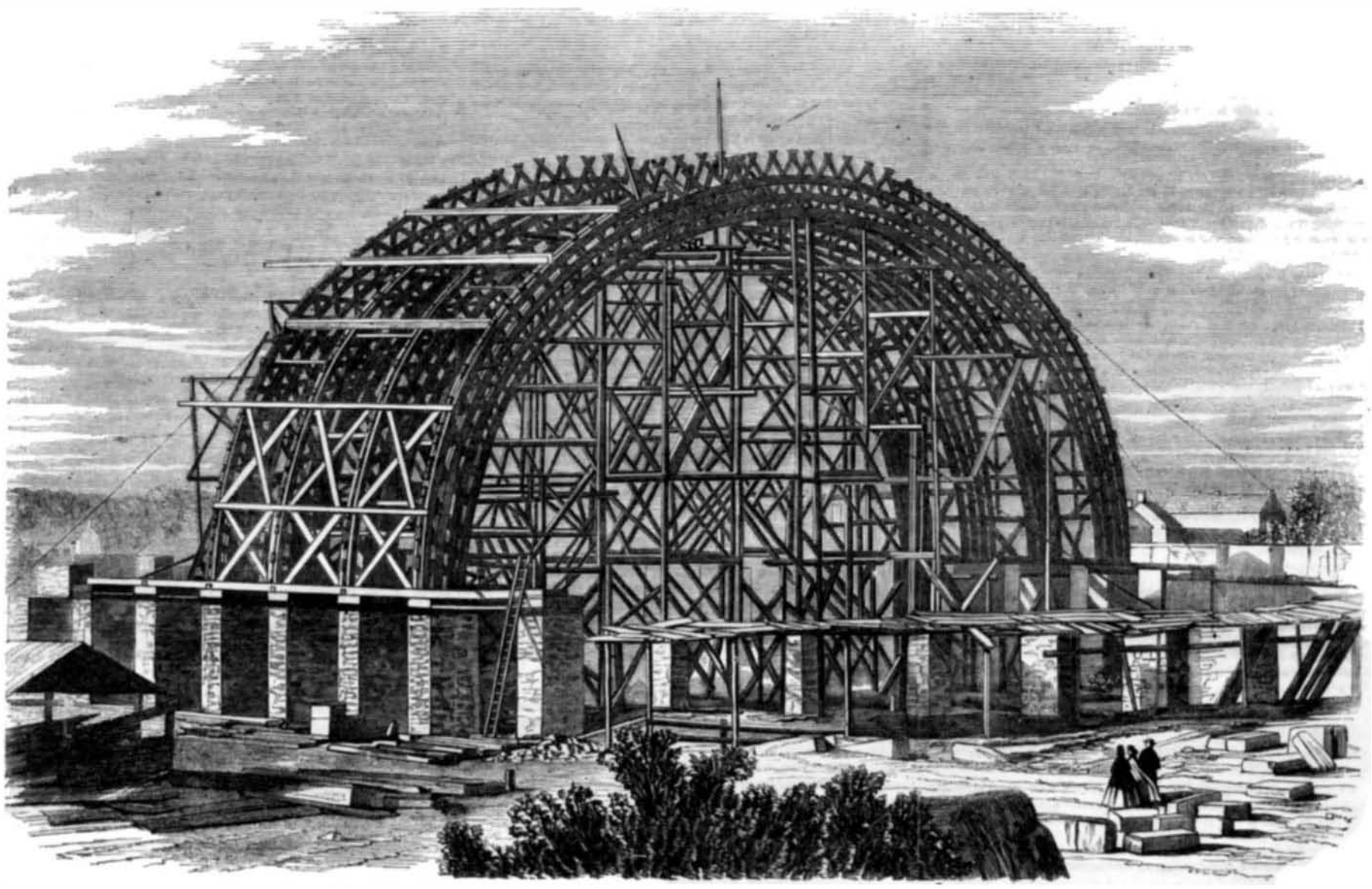
Our readers must not confound this edifice with the great Mormon Temple, which is a far more elaborate structure, of cut granite, erecting not far from the Tabernacle, and more slowly progressing. The granite is brought from a distance of about ten miles, and the blocks are so large in size, and the quantity so great, that a canal is being built to the neighborhood of the quarry for transportation of the material.

The Tabernacle is in the form of an ellipse, with an extreme length of 250 feet, and width of 150; extreme hight of roof 78 feet; hight of ceiling 68 feet. The immense roof frame rests upon 44 cut stone piers, about 12 feet apart and 20 feet in hight, which gives 48 feet of spring to the arch. The 44 bents, or principal rafters forming the arch are composed of 6 thicknesses of 2½ inch plank, framed like lattice work, strongly pinned and bolted, and tied together by 15 horizontal cross timbers on the outside, upon which the smaller rafters for the sheeting will be laid, and 15 similar cross timbers inside, to which the ceiling joists will be stayed. The 13 half bents, resting upon the 13 piers, in curve, at each end, join diagonally upon the apex of the arch of the two outside parallel bents.

The stand will be in the west end; the floor to be laid level for a distance of 60 or 70 feet in front of the stand, thence gradually raising to the east end, where the seats will be level. It is estimated that the house will seat about 10,000 persons.

But, large as is the extent provided for the accommodation of the people in the above building, it is now feared that it will be too small and that further accommodations will be necessary. For freedom of egress, a very material consideration where large audiences are concerned, ample provision has been made in the folding door appointments of the entire space between the 9 piers in line on either side.

A cornice, 8 feet deep, will ornament the stone work. In the majestic, towering, self-supporting roof of this building, there will be consumed nearly 1,000,000 feet of lumber. When finished it will present the appearance of a ponderous half globe, with sides slightly compressed, and although of a



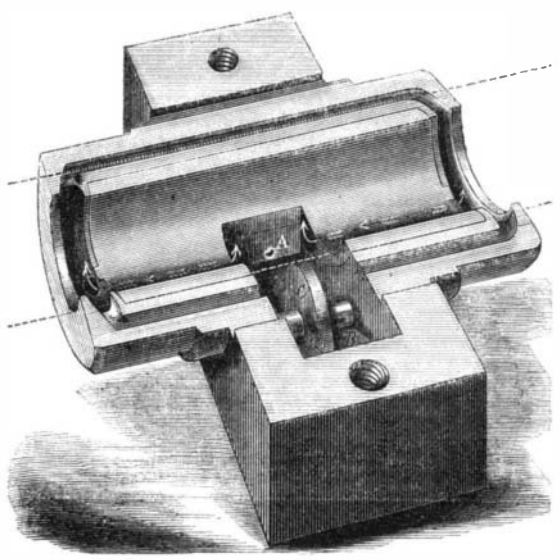
THE GREAT MORMON TABERNACLE AT SALT LAKE.

Sweet's Matrix-Printing Machine.

The principle of this ingenious American invention, which excites so much interest at the Paris Exposition—having even been elaborately described and illustrated in the *Engineer*—is the arrangement of a complete alphabet of steel types radially upon a vertical wheel, with apparatus for bringing any type at pleasure, by the revolution of the wheel, into vertical position under the center, and there pressing it downward to the precise and uniform depth chosen for the matrix. The impression is made upon soft thick paper prepared for casting upon, which is fed forward by mechanism, the precise breadth of each letter brought into play. The transition from the end of one line to the beginning of the next is provided for in a similar way. The process is subject to the inconvenience of a calculation to be made beforehand upon every letter and word of the copy, to see just what spaces must be introduced between the words in order to fill each line with precision, since the line cannot be "justified" if unequal, after being imprinted.

MORRIS' SELF-OILING BOX.

The box seen in the engraving was patented through the Scientific American Patent Agency, Jan. 1, 1867. It is a device for lubricating the journals of shafting, by means of a reservoir in the body of a box and an arrangement of parts for distributing the oil to the shaft. It is not expensive in construction and appears to be very effective in operation. By reference to the engraving it will be readily understood. The engraving shows only the lower part of a stand box, as the cover does not materially differ from those in ordinary use, except in a particular hereafter to be mentioned. Hanger boxes can be made with the peculiar devices shown in the engraving as well as stand boxes.



A is a reservoir for the oil, cast in the box, having an incline toward one side on which rests a flat slotted spring, B, which supports the pivots of the disk wheel, C, the body of which projects through the slot so that its surface turns in the oil. As the shaft revolves the wheel turns by its slight pressure upon the shaft, shown by the dotted lines, and brings the oil to the surface of the shaft. Any superabundance of the oil is deposited in the longitudinal channels in the face of the box, which communicate with end channels conforming to the contour of the box. From these end receptacles passages lead under the lining to the central reservoir. The direction they take is shown by the arrows, and their appertures are seen at one end and in the center. The cover has end passages or channels corresponding with those in the box and an oil hole over the outer portion of the rim of the roller, C.

It will be seen that a continual circulation of the oil is kept up and that no oil can escape from the box to be wasted. With this device drippers to hangers are unnecessary, and the journals will run for months without being oiled.

Further information relative to this box can be obtained of the patentee, Geo. M. Morris, Cohoes, N. Y.

Ericsson and the British Navy.

An English journal which champions the cherished broadside system of the British navy, having attempted to weaken the influence of Bourne in favor of the monitor system by insinuating that he was an agent for Capt. Ericsson, Mr. Bourne has published certain correspondence showing that Ericsson at his solicitation had consented a year or two ago, to give the Admiralty any advice that might be desired in the construction of turret ships. Having failed however, to induce the Admiralty to act in this direction, the matter dropped. The following is the concluding portion of Mr. Bourne's last letter to the Secretary on the subject:—

"In now notifying to you Captain Ericsson's acquiescence in this decision, I may be permitted to express my regret that their lordships have not been able to render available for the public interests the talents and experience of one of the most remarkable men of the present age, and his assent to my proposal that he should give the Admiralty the benefit of his information, I thought it a matter of some importance to have obtained, especially as he was willing to act without emolument or conditions, both his reputation and his wealth rendering him independent of such considerations.

"I have the honour to be, etc.,

J. BOURNE."

"London, May 30, 1866.

THE HAMMOND RIFLE—A new American breech-loader—receives very high encomiums in England. The British Government, which has adopted the Snider conversion for the Enfields, pending a mature and final selection, have ordered a competitive trial of all patterns, and the *Mechanics' Magazine* predicts that the Hammond rifle and the Daw cartridge will be formidable competitors among the 98 which the Commission already have before them.