

THE "TEMPLE BLOCK," SALT LAKE CITY.

The Mormon Tabernacle at Salt Lake City, the central one of the three structures shown in our illustration, has had the reputation of being, ever since its erection, the largest assembly hall in America. It is capable of comfortably seating 8,000 people. It is 250 feet long, 150 feet wide, and 80 feet high. The building was completed October 6, 1867, having been a little more than two years and a half in process of erection. Its construction was superintended by Mr. Henry Grow, and the cost was paid by the voluntary contributions of the Mormon people. The roof is composed of a lattice truss, the thickness from the inside of the ceiling to the shingles being ten feet, and the trusses resting upon forty-four sandstone piers built in the most substantial manner. There are twenty double doors, nine feet wide, opening outward, with large windows above them running up under the eaves, serving the double purpose of lighting and ventilation, there being also two large windows in the roof. It is lighted by electricity. The large organ with which it is furnished was made in Salt Lake City, and nearly all of the work was done within the Tabernacle itself. Mr. Joseph Ridges superintended the construction and Messrs. Johnson & Taylor added many improvements. It has 57 stops and 2,648 pipes, the largest made of wood brought from Southern Utah, and its cost was over \$100,000.

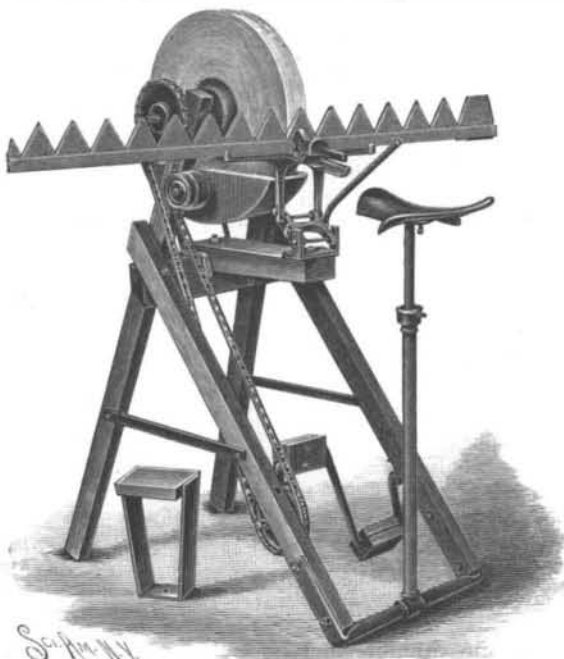
Twice a year, April 6 and October 6, the Tabernacle is filled to its utmost capacity. Perhaps the most remarkable thing about the building is its marvelous perfection as a sound chamber, a faint whisper being plainly heard 250 feet away, at which distance also can be distinctly heard the fall of a pin dropped only two inches upon a table. The latter fact was demonstrated only a few weeks since, in the presence of a representative of the SCIENTIFIC AMERICAN. Curiously enough, however, it appears that, although a speaker need never speak very loudly to be distinctly heard in all parts of the building, yet a serious obstacle to the hearing frequently arises from any noise made by the hearers—the moving of feet, or other slight cause, naturally producing as far-reaching effects as the voice.

The Temple, shown at the right of the picture in its present unfinished state, was commenced in 1853. Upon the arrival of the Mormons in Salt Lake Valley, in 1847, Brigham Young, looking toward Ensign Peak, marked the site with his cane, saying: "This is the place to stay; this is the spot I have seen in vision." When completed it will be one of the most durable and imposing edifices in America. The walls are ten feet thick at the surface of the ground. There are to be three towers at each end, the center ones being each 220 feet high. The building is 186 feet long by 99 feet wide. It is built of white granite, quarried at the mouth of the Little Cottonwood canon, twenty miles

The Assembly Hall, in the southeast corner of "Temple Block," is 68 by 120 feet in size, and has an auditorium designed to seat 2,000 persons. The cost of the building was nearly \$250,000.

A MACHINE TO GRIND SICKLE BLADES, ETC.

A compact and simple machine to facilitate the grinding of sickle blades of harvesters or mowing machines while on the cutter bar, giving them a correct beveled cutting edge, and also adapted for sharpening



KNOBEL'S SICKLE GRINDER.

cutting tools of various kinds, is shown in the accompanying illustration. The improvement forms the subject of a patent issued to the Rev. A. Knobel, of Louisville, Ky. To a forwardly extending portion attached to a casting to which the four legs are bolted, is attached a sickle clamp, consisting of three pieces, one of which is bolted to the base piece, an intermediate part being attached to this piece by a hinge joint, and an upright clamping section being hinged to the intermediate part, whereby the knife may be kept in a horizontal position and at the same time moved perpendicularly to bring all parts of the edge to be ground against the stone. A lever inserted in holes in either side of the intermediate piece may be used to move the knife perpendicularly, but this lever may be dispensed with, and the knife moved by simply grasping a two-part handle, the lower part being movable, so that by closing the hand the knife is gripped. The clamping section has side arms or extensions, whereby

it may be adjusted backward and forward, while the seat-holding rod is held in any position to which it may be raised by a key seated in the socket portion of the support. The tool rest or table is designed to facilitate the handling of the work, and the cranks and pedals are adapted to insure a steady motion in either direction.

The Manufacture of Mosaics.

One of the few industries of Rome is the manufacture of mosaics, the largest establishment being under the control of the Church, and employed almost entirely in the adornment of churches and religious establishments. The process of making a picture in mosaic is very slow and requires the highest order of skill. To begin with, mosaic is made of glass, and its value consists in its being indestructible.

The workmen in great pictures have to use something over 26,000 shades of colored glass to produce the tints requisite, as in a mosaic every color is necessary, just as in an oil painting. To make a picture, the process is this: A plate of metal of the required size is surrounded by a raised margin an inch in height. A mastic cement of powdered stone, lime and linseed oil is spread over the bottom of the plate, and that is covered up with plaster of Paris to the level of the rim. Upon this the picture to be made is very carefully drawn, and the mechanic's work begins.

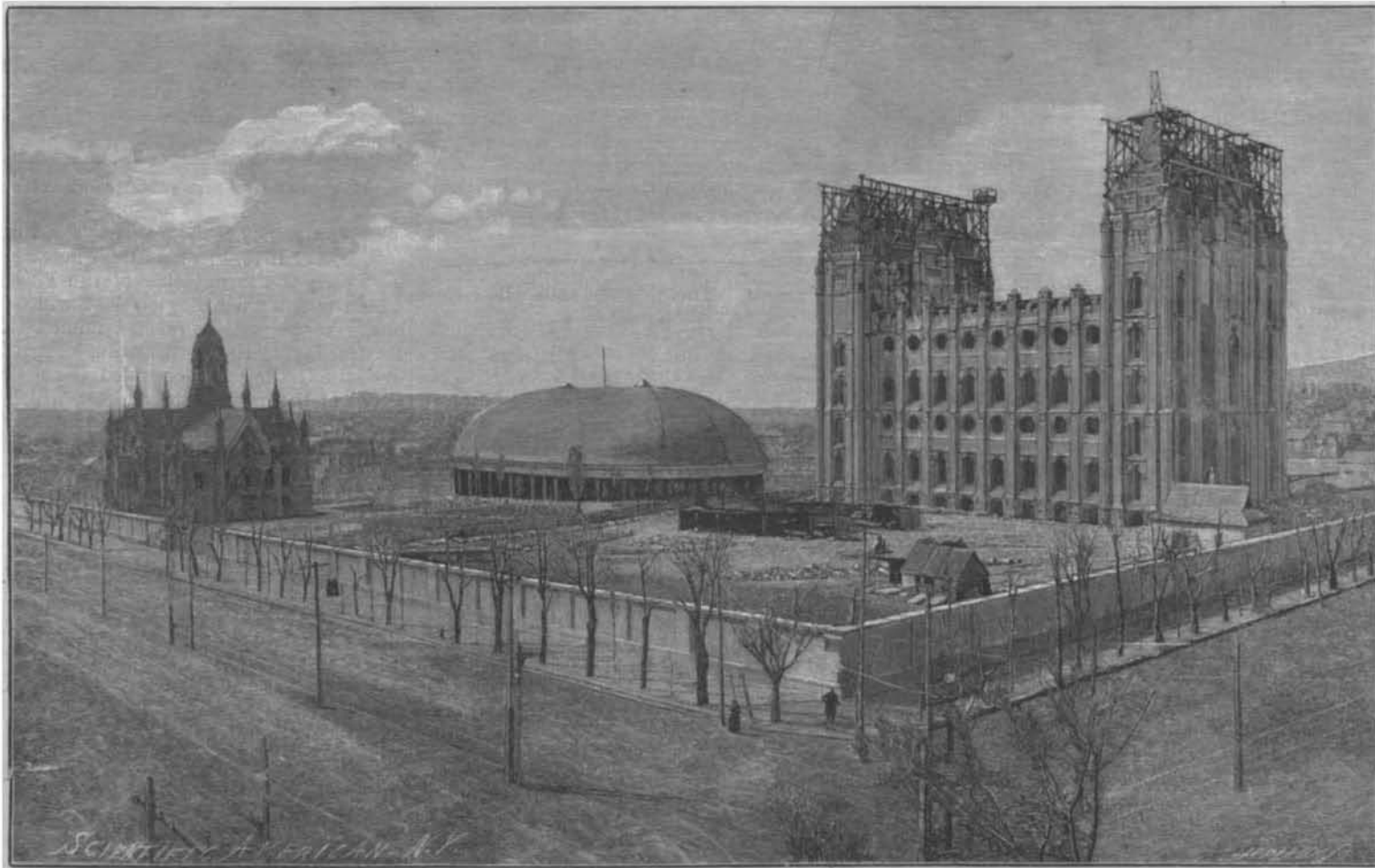
He takes a piece of glass of the exact tint necessary and fits it into its place, grinding to the shape. Then he goes on, one piece at a time, till the picture is finished; then the face is ground down to smoothness, and the picture is set in its place.

Some of the greatest pictures of ancient and modern times are in mosaic, the tints, with all the delicate shades, being carefully reproduced as in oil, and the effect being finer. The ceilings of many of the great churches of Rome are entirely of mosaic, as well as many of the altar pieces and other decorations. As they are entirely indestructible, and never lose their color, they are very much prized. A picture in mosaic costs a great deal, but then it is eternal, barring fire and earthquakes.

All over Rome there are small shops devoted to the manufacture of mosaic table tops, box covers, etc., the workman toiling all his life on one subject. The man who begins on St. Peter's or the Coliseum never does any other subject, and he becomes so skillful in this one that he is enabled to execute it not only well, but cheaply. He has only the tints to manage that enter into one picture, and he places them mechanically and very rapidly.

Cement for Metal.

This well known cement, which is prepared from zinc oxide and zinc chloride and some other material,



THE FIVE MILLION DOLLAR MORMON TEMPLE AT SALT LAKE CITY.

distant, and formerly hauled by ox teams, but now brought by rail direct to the Temple grounds. It has cost up to date nearly four millions of dollars. The Mormon temples are not designed for public worship, but for the administration of ordinances, rites and ceremonies, etc., and the assemblies of the orders of the priesthood.

the knife will be firmly seated when the end sections are being operated on, and the clamp, while holding the knife securely, allows it to be quickly and easily released and a new section clamped as the work progresses. The seat for the operator has a pipe support, in the upper end of which slides a piece of square iron, to which the saddle is attached by a set screw, so that

such as iron slag, powdered glass, etc., may be caused to set more slowly by adding with the zinc chloride, when it is mixed with the other ingredients, some zinc sulphate and powdered limestone. The adhesive power of the cement (for cementing metals) may be increased by the addition of 2 per cent of ferrous sulphate.—H. Spente.