

space, giant No. 2, or 36 to 45% strong is used, lower grades being discarded in all such work. These explosives, bought at a cheaper rate when in a considerable quantity, are best stored in a small vault or room excavated from one side of the tunnel near the entry, well boarded up and floored so as to be perfectly dry, with double doors, one locked, and good ventilation. Here it will be safest from any harm, as fire, lightning, or mischief, and liable to freeze only a little. The boss should prepare the cartridges, knowing just about the number of sticks needed, and then take them in at loading time when he sees that this important part is properly executed. In small work the miners usually carry in the necessary powder stuck down in their boot-leg and fire the holes as soon as ready.

In thawing out giant, which by the way should not be kept too long in stock, or over $1\frac{1}{2}$ years, some simple arrangement is easy if there is a steam engine where a small box can be heated by the exhaust or live steam, but if a large amount is being used daily, it may be better to have a small house 6 x 6 feet, with racks for holding the stacks and trays of sawdust beneath, all heated by steam, and with a good supply of powder thus kept ready the cartridges can be safely made on a broad shelf opposite a window, without running the chances of danger always liable if this work is done, say, in the engine-room. With a small Brunton fuse-nippers cartridge loading is done much better and quicker, as with the nippers the fuse is cut square off and compressed so that it slips easily and snugly into the fulminate end of the cap, which is then fastened tightly on by an incircling squeeze from another part of the same tool.

Firing—If the tunnel is being driven by hand-drilling, the shots are always exploded by simply snuffing or igniting the fuses with the candle, but with air-drills the battery is much used, first firing the centre cutting holes and then the remainder, although if the timbering is kept close up to the face, this method is found to be harder on it, and for very good reasons many superintendents prefer lighting the charges by hand, making the fuses of the centre, or over, or undercutting holes shorter, so as to fire first and give the other shots their maximum efficiency. In this large tunnel where the driving was hard and fast, the battery was used for some time, but returning to hand-firing it was found more satisfactory, as the preparations for shooting were quickly made, the rotation of shots was nearly controlled, the timbering not nearly