

become frozen, the detonator should only be removed after the cartridge has been thawed and in this last operation altogether special precautions should be taken.

On no account, should an attempt ever be made to untamp a mis-fire or to deepen holes from which the tamping has been blown out, when the bottom of such holes has remained intact after the explosion; when another hole is drilled in the neighborhood, it should be at a distance of at least one foot from the first and located in such a way that at least that distance from the old holes will be always maintained, and if the rock be fissured and there is reason to fear that the nitro-glycerine of the misfire has filtered through the rock by means of such fissures, the distance between the old and the new hole should be increased. After the explosion of a blast placed alongside the misfire, an effort should be made to find the unexploded dynamite in the first hole and thus avoid accidents to the men working with the pick or around the crushers, for such dynamite might be exploded by the shock of the tools.

In the same hole, only one cartridge with a detonator should be placed and this should be put over the charge with particular care.

To get a good result from a blast, the hole above the charge should be well tamped and, as far as possible, no space should be left for air or dust between the cartridge and the rock, and great precautions should be taken to avoid such spaces, for besides the loss of effectiveness in the blast, certain cartridges might not go off and dynamite would be left free in the rock, which would expose the workmen to the dangers so well known. These partial explosions are all the more dangerous that the charge might be thought to have been too weak and thus the necessary precautions would not be taken with regard to the dynamite remaining in the hole.

To prevent any air space, the cartridge should be split and then pressed carefully to the bottom of the hole with a wooden tamper. The cartridges should be thus pressed one against the other, avoiding all shocks and taking good care that no earth or dust shall fall between them; the tamping should then be done with sand or ordinary dry earth for the first six inches by pressing lightly with the tamper and then with clay upon which more force may be used in the ramming. Great precaution should also be taken in handling the fuse or the electric detonators, for any deterioration of these articles may cause a delay or greater celerity in the explosion or they may make the shot miss fire altogether.

Too much care cannot be taken in employing frozen dynamite; no frozen or partially frozen cartridge should be used in that condition; it should first be thawed out, taking all the necessary precautions. Cartridges should never be thawed by the direct action of fire or by putting them near a boiler, on steam pipes, or exposed to the direct action of the sun or by plunging them