

glycerine compound, and no drill-hole shall be bored in any remaining portion of a hole in which a charge of nitro-glycerine compound has been previously exploded.

227. (1.) Before any shot is charged the direction of the hole shall, where practicable, be distinctly marked on the roof or other convenient place.

(2.) Every charge shall be placed in a properly drilled and placed shot-hole, and shall have sufficient stemming, and each such charge shall consist of a cartridge or cartridges of not more than one description of explosive. It shall be the duty of the person firing the shot to satisfy himself that these requirements are fulfilled before he fires the shot.

(3.) Shots shall be stemmed with clay or other soft non-inflammable material, provided, where required, by the owner or manager; in no case shall coaldust be used for stemming.

(4.) No iron or steel tool shall be used for charging or tamping shots, and no iron or steel tamping-bar shall be taken into any mine.

(5.) No explosive shall be forcibly pressed into a hole, and when a hole has been charged the explosive shall not be unrammed, nor shall any part of the stemming be removed, nor shall the detonator leads be pulled out.

228. (1.) The person firing the shot shall, before doing so, see that all persons in the vicinity have taken proper shelter, and he shall also take suitable steps to prevent any person approaching the shot. He shall also himself take proper shelter. If he has reason to believe that there is a possibility of the shot blowing through into an adjoining place he shall send verbal warning to the persons in that adjoining place to take proper shelter.

(2.) No shot shall be fired in any mine except by means of an efficient magneto-electrical apparatus, or by means of a fuse complying with the conditions and ignited in the following manner:—

The fuse shall consist of a core of gunpowder, protected by not less than three coverings of thread or by not less than two coverings of thread and one of tape or gutta-percha. The fuse shall be of such quality that the time of burning of the fuse shall not vary more than ten seconds above or below the rate of ninety seconds for every yard of fuse. The fuse shall be ignited by means of an igniter contained in a tube which when attached to the fuse forms a completely closed chamber or, in the case of a mine or part of a mine in which the use of safety lamps is not required, the fuse may be ignited by means of a naked light, subject to the conditions that in such mine or part of a mine no person while charging a shot-hole or handling any explosive not contained in a securely closed case or canister shall smoke or allow any naked light to be within a distance of 4 ft. of the shot-hole or explosive, and before a light is brought near to the hole for the purpose of firing the shot all other explosives shall be removed from the neighbourhood of the shot-hole.

(3.) The person firing the shot shall, after the shot has been fired, make a careful examination of the place, and see that it is safe in all respects.

(4.) Where shots are fired electrically they shall only be fired by a person authorized in writing by the manager for the purpose. The authorized person shall not use, for the purpose of firing, a cable which is less than 20 yards in length. He shall himself couple up the cable to the fuse or detonator wires, and shall do so before coupling the cable to the firing-apparatus. He shall take care to prevent the cable coming into contact with any power or lighting cables. He shall also himself couple the cable to the firing-apparatus. Before doing so he shall see that all persons in the vicinity have taken proper shelter.

(5.) Every electrical firing-apparatus shall be provided with a push-button and with a removable handle, which shall not be placed in position until the shot is required to be fired, and which shall be removed as soon as a shot has been fired. The removable handle shall at all times remain in the personal custody of the authorized person whilst on duty. For the push-button there may be substituted an arrangement by which the firing-contact is automatically made at the end of the travel of the handle, and on the release of the handle is automatically broken.

229. (a.) When required by the Inspector, a sufficient number of competent persons (in these regulations referred to as shot-firers) shall be appointed by the manager in writing for the purpose of firing shots.

(b.) No person shall be qualified to be appointed or be a shot-firer unless he is the holder of a fireman-deputy's or higher certificate, or unless he has previously been employed for at least two years as a miner at the coal-face and has obtained a gas-testing certificate.

(c.) Where shot-firers have been appointed, no shot shall be fired underground except by a shot-firer.

(d.) In any mine in which explosives other than gunpowder are used for shot firing, such shots shall, if so required by the Inspector, be fired electrically.

230. If a shot misses fire—

(a.) The person firing the shot shall not himself approach or allow any other person to approach nor shall any person knowingly approach the shot-hole until an interval has elapsed of not less than half an hour in the case of shots fired by electricity, and not less than one and a half hours in the case of shots fired by other means.

(b.) If the persons firing the shot has occasion to leave the place, he shall fence off the place before leaving, and attach to each fence a danger-board indicating the presence of a miss-fired shot.

(c.) A second charge shall not be placed in the same hole.

(d.) If the shot was fired electrically, the person firing the shot shall, before approaching or allowing any one to approach the shot-hole, disconnect the cable and the removable handle from the firing-apparatus and shall examine the cable and connections for any defect, and no person shall knowingly approach the shot-hole until this has been done.

(e.) Except where the missfire is due to a faulty cable or a faulty connection, and the shot is fired as soon as practicable after the defect is remedied, another shot shall be fired in a fresh hole, which shall be drilled not less than 12 in. away from the hole in which the shot has missed fire, and shall, as far as practicable, be parallel with it.

(f.) If the missfired shot contains a detonator the person firing the second shot shall, before doing so, attach a string to the electric leads or the fuse of the missfired shot, and secure it by attaching it to the cable or to a prop or otherwise.

(g.) After the second shot has been fired no person shall work in the place until the person firing the shot or an official of the mine has made a careful search for the detonator and charge of the missfired shot. If the detonator and charge are not found the stone or coal shall be loaded under the supervision of the person firing the shot, or an official, and sent to the surface in a specially marked tub. The search for the detonator and charge, and the loading of any stone or coal which may contain a detonator, shall be carried out as far as possible without the aid of tools.

(h.) Should the missfired shot not be dislodged by the second shot, further holes must be drilled and the same precautions taken as aforesaid.

(i.) The person or persons firing the shots shall report the circumstances to the manager or underviewer without delay, and the number of cartridges (if any) which have not been found, and hand to him the detonator and charge, if found.

231. Where a mine contains separate seams, all regulations regarding explosives shall apply to each seam as if it were a separate mine.

232. A copy of all regulations regarding explosives shall be supplied in booklet form by the owner to every shot-firer, and shall also be kept posted up in some conspicuous place at or near the mine where it may be conveniently read or seen by the persons employed.

Part II.—Special Provisions.

233. (1.) In any coal-mine in which inflammable gas has been found within the previous three months in such quantity as to be indicative of danger, or in which safety-lamps are required to be used, no explosive other than a permitted explosive as hereinafter defined shall be used in or taken for the purpose of use into the seam or seams in which the gas has been found, or any shaft or drift communicating therewith which is in process of being sunk, deepened, driven, or enlarged, as the case may be.

(2.) In all coal-mines (other than opencast workings) which are not naturally wet throughout, no explosive other than a permitted explosive as hereinafter defined shall be used in or taken for the purpose of use into any road or any dry and dusty part of the mine, or any shaft or drift communicating therewith which is in process of being sunk, deepened, driven, or enlarged, as the case may be.

234. In all cases in which permitted explosives are required by these regulations to be used—

(a.) (i.) No shot shall be fired except by a shot-firer.

(ii.) No shot shall be fired unless the shot-firer has examined with a locked safety-lamp or other apparatus approved for the purpose by the Minister the place where the shot is to be fired and all contiguous accessible places within a radius of 20 yards from the place, and has found them clear of inflammable gas.