

CANNON BALLS IN QUARRYING.

The United States government recently sold a large quantity of old cast-iron cannon balls, which had been stored in the Charleston navy yard, to a Boston dealer, who has found a market for them among the Cape Ann and Quincy quarrymen. The first use they were put to was in place of steel wedges in cutting off large blocks of granite. The method pursued with the cannon balls is to start the block of stone away by a slight blast, and then between the quarry face and the block several of the smaller solid shot, usually the 4-inch sort, are dropped down into the aperture. Two men with crow-bars give the blocks a little shake, and the instant the block moves in the slightest manner forward the shot take up their purchase on the space made, when the large cannon balls some measuring 12 to 15 inches and weighing 290 to 300 pounds, are dropped into the top of the gap. Now the slightest outward jar by the levers on the big stone, sends these heavy cannon balls downward of their own weight, until, with an easy forward movement, the cube goes over on its face. These shots do away with any driving; of necessity their great weight in proportion to their size forces them downward, and their form prevents any chance of backward setting of the block. The cannon balls are also used as rollers, as they take up and go over the inequalities of the quarry surface and can be rolled in any direction without resisting, thus doing away with the old style wooden rollers. They are also used to smother heavy clearing out blasts. Heavy rope mats are thrown over the surface where the blast has been set and these cannon balls are thrown on the mats.

STREETS PAVED WITH CRYSTAL.

A new paving material of great strength and durability has been invented by M. Garchey, a well-known European scientist, and preparations are now being made to use it on some of the main streets of several cities in the old world. It is called ceramo-crystal, and is mainly composed of pounded glass, which has simultaneously been submitted to a considerable pressure and to a very high temperature. Its hardness is described as perfectly astonishing by those who have seen it tested, and it has a resisting power of 1,359 to 2,414 kilos to every square centimetre. Moreover, neither cold nor heat has the slightest influence on it.

A weight of 4,200 kilos was recently allowed to fall on a flagstone of this material, yet it did not make the slightest impression on it, and not until it had fallen twenty-two times from a height of three feet did a crack appear in the crystal.

The authorities of more than one European city say that, if the tests which they propose to make on a few main thoroughfares prove satisfactory, it is prac-

tically certain that all the streets will in time be paved with ceramo-crystal. They point out, however, that a few years must elapse before it can be really known whether or not this new material possesses all the merits that M. Garchey's friends claim for it.

FOR FILLING NAIL HOLES.

The following method of filling up nail holes in wood is not only simple, but said to be effectual: Take fine sawdust and mix into a thick paste with glue, pound it into the hole, and, when dry, it will make the wood as good as new. Frank Christin, Jr., in Stoves and Hardware, says he has followed this for thirty years, with unvarying success in repairing bellows, which is the most severe test known. Often by frequent attachment of new leather to old bellows frames, the wood becomes so perforated that there is no space to drive the nails, and even if there were, the remaining holes would allow the air to escape. A treatment with glue and sawdust paste invariably does the work, while lead, putty and other remedies always fail.

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WEIGHTS ROPES CAN SUPPORT.

According to an interesting study in the "Praticien Industriel," the maximum weight a good hemp rope can support without breaking is equal kilogrammes; New rope to four times the square of its diameter; tarred rope, three times; old rope, twice. In current practice, however, it is prudent only to reckon one-fourth of the resistance; for example, a hemp rope 30 millimetres in diameter can support with perfect safety a weight of 900 kilogrammes when new; 655, tarred; 450 old. The strength of a new and wet rope further momentarily increases by one-fifth. When the action of water is prolonged, the fibres lose strength and resistance of the rope easily decreases, on the contrary, one-half.

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Correspondence invited.

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