

AUXILIARY RIFLE BARREL FOR GUNS.

We give an engraving of an improvement in guns which permits of converting any ordinary center-fire, breech-loading rifle into a weapon of smaller bore. This invention consists in an auxiliary rifle barrel adapted to be inserted in the ordinary gun barrel in the place of a cartridge, the auxiliary barrel being rifled and furnished with a hinged breech cap for confining the smaller cartridge.

The rear end of the auxiliary barrel is reduced in diameter, and grooved longitudinally to receive the cartridge extractor to which the breech cap is pivoted, and the breech cap and the cartridge extractor are inclosed in a sleeve screwed on the auxiliary barrel. The breech cap is provided, in the present case, with an oblique firing pin, but where a center-fire cartridge is used, the pin goes straight through the cap. The sleeve on the auxiliary barrel is provided with a flange corresponding to the rim of the shell of the larger cartridge, and the auxiliary barrel is arranged to be withdrawn from the gun barrel by the usual cartridge extractor.

The cartridge in the auxiliary barrel is fired in the same manner as the ordinary cartridge, and the empty shell is removed by drawing out the cartridge extractor, the hinged breech-cap being used as a handle for the purpose.

One advantage claimed for this improvement is that a sportsman may use the auxiliary barrel and the smaller cartridges for small game, and without any change or adjustment may withdraw the auxiliary barrel and use the gun for the larger shot.

This invention has been patented by Mr. James W. McCandless, of Florence, Colorado.

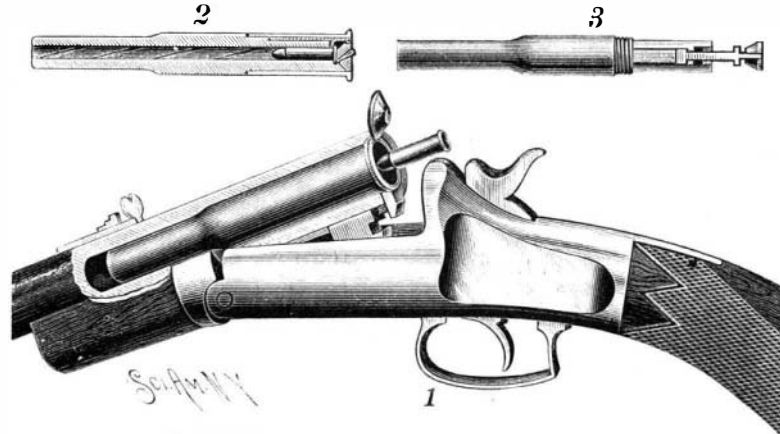
NOTES ON QUARRYING.

BY WM. L. SAUNDERS.

I have recently spent a little time at some quarries in the South, notably the extensive granite quarries of Brandywine Granite Co., on the Brandywine Creek, Wilmington, Del., and the soapstone quarries of the Albemarle Soapstone Co., North Garden, Va. It is a conspicuous fact that the quarries in the South are better equipped with machinery and with modern appliances than those in the North. Any one who has made a tour of inspection through the extensive marble

Hand drilling may be seen in many of the quarries. The derricks have the old iron rod guys. Boom lifting is unknown there, and in some of the deeper quarries a block of marble is lifted several times and by several derricks before it is landed on the bank. But the backwardness of Vermont quarrymen in modern methods of handling stone is nowhere shown so conspicuously as in the old stone boats which are drawn about the yards and mills by the ponderous ox.

The quarries in the South are of more recent origin than those in the North; hence those who operate them seek and apply all modern improvements. In



McCANDLESS' AUXILIARY RIFLE BARREL.

some cases which have come under my observation the equipments have not been applied only because the foreman was from New England, and sailed in the old "stone boat" so long that it was difficult to get him out of the rut.

I visited the Brandywine quarries with a gentleman from Brazil, who came here for the purpose of studying American methods of granite quarrying. He had been through New England, and had been told that the best way to split up large blocks of granite into small ones was to do it by hand, just as he had been doing it in Brazil. This statement was made by men of large experience in the New England quarries, and it made such an impression upon him that it was necessary, in order to offset it, to show him actual results. We found at the Brandywine quarries a machine at work splitting up blocks of granite readily, economically, and satisfactorily. We got at the exact facts in regard

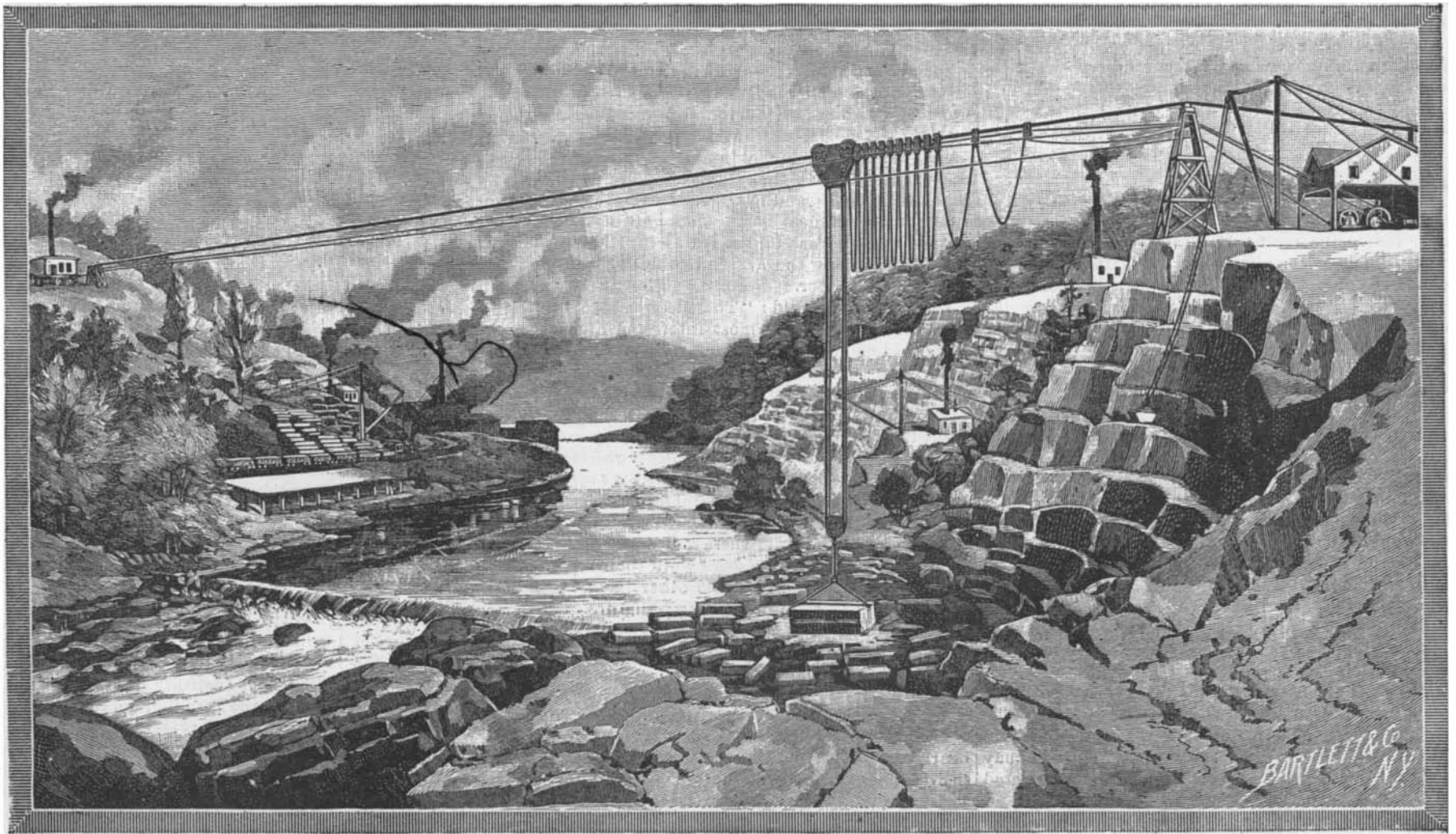
lifted by one man operating a hoisting engine, and by him transferred across the river and deposited upon a car. The conveyer is a steel wire rope two inches in diameter, anchored and resting upon "A" frame braces at each end. The cable may be either level or inclined as desired. The carriage travels either way on the cable, being propelled by means of an endless rope operated by a hoisting engine. This endless rope is sustained by carriers to prevent its sagging. By means of this rope the carriage may be stopped and held at any point on the cable while the stone is being hoisted or lowered. The hoisting and conveying may be carried on either separately or together, in the latter case effecting a great saving in time.

The reach of one of these conveyers extends at an angle of 45 degrees from the cable, by means of which stone can be dragged until it is suspended. Sometimes it is advisable to use a snatch block, by means of which the distance of drag may be considerably extended.

While at the Brandywine quarries I saw a man lift a large mass of stone from the quarry, run it across the river on the conveyer and deposit it on a bank there. There was no one on the other side of the river, so that the stone was dislodged by the man running the hoisting engine. The courteous and intelligent secretary of the Brandywine Co., Mr. H. M. Barksdale, informed me that this stone was of a size and kind for

which they had no orders at present, and they were simply depositing it on the other side of the river in order to get it out of the way, intending to bring it back again and use it later on. Here was a means by which a quarryman could, with but little expense, deposit his different grades of stone in different dumps on a line with each other, keeping his yard clear and free from all unused stone, and having a means by which he can pick up a block at any time that will nearest conform to an order which he has in hand. That the Brandywine quarries are producing stone economically is evident from the fact that they are supplying a large amount of finished stone for use on the Sodom dam, on the New York aqueduct.

This same system of hoisting and conveying, somewhat modified, is in use by the contractors who are building the Sodom dam, and I have also seen it in the slate quarries at Monson, Me. There are many



WIRE CABLE HOISTING AND CONVEYING APPARATUS AT QUARRIES OF THE BRANDYWINE GRANITE CO., WILMINGTON, DEL.

quarries of Vermont, going there with a view of entering the quarry business and of learning something, will find that, while he will be interested and instructed in what he sees, yet, if he goes through the Georgia quarries, stopping *en route* at the Tuckahoe deposits, Tuckahoe, N. Y., he will realize that his Vermont instruction was largely in the line of ancient history. This applies not only to the quarrying, but to the finishing of the marble. Hand channeling is still pursued in some of the Vermont quarries, though this is rare.

to it, which showed, beyond dispute, that the work can be done cheaper by machinery than by hand.

But the most interesting feature of the Wilmington quarries is the wire cable hoisting and conveying apparatus, an illustration of which is herewith shown. There are three of these conveyers reaching from one side of the river to the other, a distance of about 1,200 feet. The stone is quarried from both sides of the river, though at present operations are going on only on one side. Blocks of granite weighing ten tons are

quarries in Vermont that might apply it with profit to themselves.—Stone.

At the shops of the St. Charles Car Company there have recently been built four gorgeous museum cars. The gilding alone cost over \$3,000, and the cost of the entire coaches is about \$24,000. The idea is to run the train into a town and have the exhibition on the cars. One car contains the electric light plant which is to light the museum train.