United States Patent Office.

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Letters Patent No. 65,677, *dated June* 11, 1867.

IMPROVED MODE OF DISINTEGRATING ROCKS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, JOHN JOHNSON, of Saco, county of York, State of Maine, and R. CARLTON OVERTON, of the city, county, and State of New York, have invented a Process for Disintegrating Rock, &c.; and we do hereby declare that the following is a full description thereof.

The nature of our invention consists in fracturing, separating, or disintegrating rock by differences of temperature.

In accomplishing so desirable a result in the manner we do, for the purposes set forth, we employ a controllable fuel in the form of a liquid or in a gaseous condition. For the purpose of overcoming cohesion of rock when tunnelling or abrading, we first heat the rock, and subsequently cool it, when neccessary, by the use of water, air, or steam, or other medium. We are aware that excavating or working in rock by the aid of differences in temperature has been accomplished.

In our process, when we use any of the liquid hydrocarbons as fuel or basis of temperature, that we may have perfect combustion and a high temperature, as well as a large volume of flame, we force the required amount of air, or air and steam, through the liquid hydrocarbon, under suitable tension for the purpose of having the air, or air and steam, take up and carry with it the required amount of the hydrocarbon for the production of the greatest amount of heating power. In this condition, with suitable pipes and appliances, we force the flame upon the rock to be removed. When the rock in the locality being heated is of sufficient temperature, if disintegration does not take place, the jet supplying the flame is elevated or lowered. Another workman immediately, with a suitable jet of water, steam, or air, directs it upon the heated spot. The sudden difference of temperature, &c., forces cohesion to yield, thus disintegrating and tunnelling or abrading. In our process we contemplate continuous working, heating and cooling being alternate and continuous when necessary.

When we use the gaseous hydrocarbons it becomes necessary to compress the gas into suitable holders that we have a supply for the work intended. When using this gaseous fuel we also force in the requisite amount of air, or air and steam, that perfect combustion and a high temperature result for the purpose of separating and disintegrating rock.

We claim liquid and gaseous hydrocarbon and air, or air and steam, as fuel, for the purpose herein set forth, and when employed with the agents for the reduction of temperature, substantially as specified.

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Witnesses:
ALEX. KNOX,
JAMES RICHMOND.