

## NEW ROCK DRILLING MACHINE.

We witnessed on Tuesday in company with Mr. I. B. Reynolds of Rutland, Vermont, the operation of a drilling machine recently invented, and of which he is one of the proprietors. The machine consists of an upright boiler, having an oscillating steam cylinder attached which drives the drill, and a pump which constantly forces a stream of water into the bore-hole. The drill is a short hollow cylinder of iron armed with diamonds placed upon the lower end, which is serrated, to form seats for the diamonds. This tool is fixed to a hollow tube of iron to which two gears are attached, connecting with the primary gear, which is driven by the steam cylinder. The upper and lower gear give, by the ordinary adjustment, reverse motion to the tube. The water is forced through the tube by the pump and effectually clears the bore-hole of detritus. The cutting is done in a circle, by the revolution of the tool, and a plug is left which passes up through the tube as the latter descends, leaving, however, sufficient room for the descent of the water. This plug or cylinder of rock is easily broken off and removed, and is in many cases valuable, as it is always a good specimen of the rock through which the boring is done. Surveys may thus be made of rocks deeply imbedded and their quality ascertained with comparatively small expense. The machine, working at moderate speed, bored in our presence a very smooth, round hole, through extremely hard rock, at the rate of one inch per minute. The diameter of the hole drilled was one and one half inches. Inspection of the drilling tool with a magnifying glass, showed no appreciable wear. The machine is perfectly automatic, and will drill with equal facility at any angle.

## DANNER'S PATENT PENCIL GUARD.

The little device illustrated in the engraving is designed for clerks, freight agents, merchants, and others whose business requires during business hours frequent resort to the common lead pencil. It is intended as a holder for the pencil and a guard to its point, so liable to be broken and so annoying to frequently sharpen. The guard pinned to the coat or vest, is a much better receptacle for the pencil than the pocket, and it has the advantage of being always ready and in place for use. It is a simple sheath of sheet metal, of a proper diameter to receive the pencil, the lower or closed end being of a larger diameter and lined with a circular or cylindrical gland of india-rubber designed to embrace and hold the pencil. In the engraving the pencil is seen with the sharpened point protruding, but it may be placed in the sheath by either end. Two spring needles or pins serve to secure it to the clothing. It is durable, and cheap. It may be made of white metal, sheet brass, or other material, and can be left the natural color of the material, plated, or japanned.

Patented, June 16, 1858, by John Danner, Canton, Ohio, who may be addressed for additional particulars.



## The New Oxygen Light.

The American proprietors of the oxygen light, recently invented in France, have been submitting it to Prof. Doremus for examination and experiment. We understand that the results of these experiments have been so satisfactory that a company has been formed to introduce the invention. A large laboratory is to be erected, two hundred feet long and one hundred in breadth, on Forty-first street, in this city, for the extensive manufacture of oxygen gas. This gas is to be mixed with the ordinary street gas. An exchange says:

"It is not intended to lay pipes in the thoroughfares for the conduction of the oxygen for some time, even if the company were authorized, but they do propose conveying it in portable vessels to the buildings, public or private, in which it may be desired for illuminative purposes. Mr. Booth is placing throughout his new theater on Sixth avenue duplicate pipes, so that, when the oxygen is manufactured in quantities sufficient, it can be introduced without delay, and many gentlemen of fortune who have seen the light at the office of the company in Nassau street are also anxious to have it in their houses.

"About the middle of November, it is thought, the new light, which is nearly 200 times more brilliant than that emitted by a wax candle, and 14 times more powerful than the illuminative power of carbureted hydrogen (19½ times that of the gas made by the Manhattan Company, as shown by actual measurement in the laboratory of the College of the City of New York), will be formally and permanently introduced. It is not only more powerful, as has been demonstrated, in brilliancy, but, compared with the ordinary gas light, many per cent cheaper. A thousand cubic feet of oxygen will cost the consumer, it is estimated, \$25, and a thousand feet of street gas, \$3, or \$28 for two thousand feet of oxygen and carbureted hydrogen, which total of mixed gases is equal in their illuminative quantities to not less than 28,000 feet of the gas that is consumed in our street lamps, at a cost of \$74, or \$46 more than apart from its great steadiness, purity, and beauty, the oxygen light it is now believed will

cost. This will certainly, in the course of a year, aggregate to the people of a city so large as is New York an enormous saving."

## BURGESS' PATENT WINDOW WIPER.

Next to the nuisance of washing off side-walks with hose in our cities is that of window-washing. In summer this is



simply an annoyance; in winter absolutely dangerous, as the flagged or bricked walks are made really unsafe for pedestrians. The rebound of a stream from the nozzle of a hose pipe against a window in warm weather will do no other damage than to wet and soil the clothes, but a fall on slippery pavements jeopardizes life and limb. To prevent this splashing of water with its accompanying annoyances in washing windows is the object of the device illustrated in the engravings.

It is a rectangular frame, A, made of sheet metal, as tin, and attached by a swivel to a handle so that it will freely rotate. The sides are perforated, as seen in Figs. 2 and 3. On one of these faces, B, is secured, by means of elastic bands, a washing cloth of Canton or woolen flannel, or other material, or, for polishing the windows, a piece of chamois skin may be substituted. The other face, C, is covered first with a sheet of rubber or other elastic material, over which is drawn a wiping cloth two yards or more in length, and wound on rollers inside the frame or box. One end of this cloth is secured to the pivot, D, of the box, which passes through it from end to end, and the other to a roller inside the box, having a crank E, on the outside of one end by which the cloth may be wound up, thus presenting a dry face as fast as that portion in use becomes wet. By turning the box on its pivot or swivel the cloth may be wound or unwound on the central spindle at pleasure.

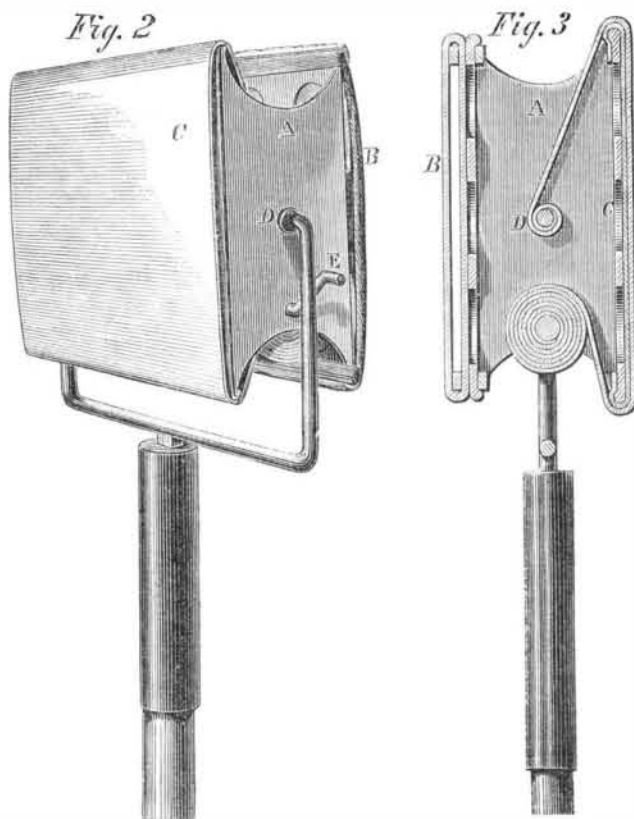


Fig. 1 shows the method of using the device; Fig. 2, gives a perspective view, and Fig. 3 is a transverse section. The rectangular form of the implement allows it to work into the corners of the panes. By the use of this implement there is no necessity of climbing steps or chairs, and as there is no spilling and spattering of water it may be employed for inside as well as outside cleaning. The box can be reversed instantly to wash or wipe. Its advantages are apparent at a glance.

Patented July 28, 1868, by B. F. Burgess, Jr., who may be addressed at 9 West street, Boston, Mass. The patentee is desirous of disposing of the entire right, as he is engaged in another business, and the price and terms will be made correspondingly accommodating.

## A Large Elevator in Boston.

Boston is to have another big feature beside the great organ. The Boston and Albany Railroad corporation are erecting a new and capacious grain elevator. The plan of the building is somewhat different from the large elevators at Albany, N. Y., Chicago, and other places. The building is making of brick and wood, and will be about seventy feet high. The upper or wooden story will contain 82 bins, some of which will contain 1,500 bushels of grain, and others twice that amount. The total capacity of the edifice will be 250,000 bushels. The machinery will be worked by steam, and there will be millstones to grind corn for patrons. On the lower floor is a track to accommodate three freight cars at the side. The center of this floor is occupied by a deep vat, into which the grain will be shoveled from the cars in a very few minutes, and the empty cars will then be run out and three full ones take their place, and so on. In the center of the building will be a shaft running up to the roof. An endless belt runs over a wheel at the roof and another in the vat, the face of which is covered with cups, and as the belt will constantly move, those cups will ceaselessly go up full and come down empty.

At the top another form of propulsion will carry the grain into any particular bin desired. By this process a car load of grain can be brought direct from Chicago, emptied at the elevator, in the elevator, in ten minutes, and the car sent back the same day. The cost of elevating and storing the grain will be one cent per bushel for the first five days, and for a longer storage so much for every ten days. The grain can be readily removed from a pointed opening in each bin. The detention of cars loaded with grain, while waiting for merchants to take it away, will be remedied, and the facilities for storage will be an item which it is expected Western merchants will appreciate. The elevator will be in working order in about two months.

## New Theory about the Formation of the Diamond.

The origin of the diamond has been a subject of much speculation, inasmuch as the circumstances under which it is found in nature afford us no clue to the process of its formation.

Lately, Prof. Simmler of Switzerland has added a new theory to the many existing ones, which seems to us to be the most probable of all. The diamond often incloses cavities, which in some instances contain a gas, in others a liquid. Sir David Brewster, who had given much attention to the subject, found in investigating the nature of the liquid, that its refractive power is less, but its expansive power greater than that of water. Further inquiry as to the probable nature of these substances was not made until quite recently.

In comparing the results obtained by Brewster with those calculated for other liquids, Simmler found the numbers for the expansive and refractive power of the liquid referred to, to coincide singularly with those for liquefied carbonic acid. But other facts observed by different savans, tend to prove also the presence of this agent in the coating of the most valuable of gems. We mention the bursting of such crystals, when exposed to heat, the frequent occurrence of two liquids in the cavities, wherefrom the one behaves like water towards heat and light and the other like liquid carbonic acid. On one occasion it was observed that the liquid in a quartz crystal which was dashed to pieces, scattered its contents around with a great noise, burning holes in the handkerchief wound around the hands of the experimenter. The acid content itself had disappeared. Upon these observations Prof. Simmler establishes his theory. If carbon, as he supposes, is soluble in liquid carbonic acid, it would then only be necessary, to subject the solvent to slow evaporation—the carbon would thereby be deposited and by taking proper care assume crystalline forms. In evaporating quickly, the so-called black diamond might perhaps be produced, which in the state of powder is largely used for polishing the colorless diamond. Though the liquid referred to has never been subjected to chemical analysis, the formation of liquid carbonic acid in the interior of our globe, may nevertheless be considered as highly probable. In the gaseous form, we know it to be evolved in immense quantities from fissures, volcanoes, and mineral springs. When now this gas is produced in the cavity of a rock which is free from fissures, it will finally be compressed so highly, that it will assume a liquid form by itself. Certain rocks may be considered strong enough to resist the expansive force of this agent. Let now carbon be present. If the same is soluble, it will be taken up and deposited again while the carbonic gas is escaping through some newly formed cracks or fissures.

CHINESE GRAMMAR.—Max Müller recommends the study of the Chinese grammar. "Those," he remarks, "who can take an interest in the secret springs of the mind, in the elements of pure reason, in the laws of thought, will find a Chinese grammar most instructive, most fascinating. It is a faithful photograph of man, in his leading strings, trying the muscles of his mind, groping his way, and so delighted with his first successful grasps, that he repeats them again and again. Every shade of thought that finds expression in the highly finished and nicely balanced system of Greek tenses, moods, and particles, can be expressed and has been expressed in that infant language by words that have neither prefix nor suffix, no termination to indicate number, case, tense, mood, or person.