

nel; but though the money went, the drills did not come, and, it is understood, will not. One reason given for their not coming is, that the French engineers, or the Italian engineers, or some 'cussed furriner,' would not sell a drill to a Yankee; another is, that the drills would not work in the Mont Cenis rock; the third is, that though they might work in that rock, they would not in the Hoosac rock. The 'dem'd total' is, that the Mont Cenis drill calculation has gone to the tomb of the other 'great expectations,' which illustrate the history of the Hoosac Tunnel.

"In their first report the Commissioners handle the matter of machine drills, or boring machines, very gingerly. Haupt had failed, and they seemed to fear to rush hastily in where his genius had been foiled. But between that time and last December they had acquired confidence. In their last report, December 20, 1864, they say: 'Drilling machines will not be likely to be in operation at this place (the east end) before next midsummer.' That is cautious and safe. Of the central shaft, they say: 'We hope by the latter part of winter to get some automatic drills at work in the shaft, etc.' Of the west shaft they say: 'Machine drills are not likely to be used here before next spring, and perhaps not till early summer.' Well, 'the latter part of winter,' 'the next spring,' 'early summer,' 'midsummer,'—all have gone; and nothing appears of the automatic drills but the *disjecta membra* of all the contrivances hitherto tried. 'These are our failures,' Beau Brummell's valet used to say; but he could point to the one cravat-tie which was a success. The truth is, no intelligent man puts the slightest confidence in the successful working of any borer or drill in the rock of the Hoosac Mountain, unless operated by hand. In a strictly homogeneous rock machine drills or borers might work—even then, as the Commissioners admit, saving only time, but not money—but in a rock like the Hoosac, where the drills, working generally in a comparatively soft material, are liable at any moment to strike nodules, or veins of quartz, and where a part of the hole will be in the slate and the rest in the quartz, no machine-drill or borer has yet been found to stand. What science and perseverance may achieve no man can say; to-day the path to success has not been found. I shall not be charged with partiality to Haupt; but it cannot be denied that the big hole bored by Haupt & Co., at the eastern face, shows a greater result and promised more success if it had been followed up with adequate means, than every thing Mr. Brooks has accomplished with the treasury of the Commonwealth subjected to his draft."

#### WHAT IS TO BE DONE.

"A year ago the State could have wound up the concern and got out with a loss of about \$600,000. The advances with interest to July, 1864, had amounted to about \$1,000,000. We had on hand nearly 3,000 tons of railroad iron, which was worth last year \$110 per ton. This might have been sold for \$330,000. There was other saleable property on hand belonging to the State which would have brought enough to reduce the deficit to \$600,000. Even upon the assumption that the State was surely to complete the tunnel, it would have been the best policy to sell this iron at the enormous price of last year, and hereafter buy other iron at less than half that price, in season to finish the road before the tunnel could be opened.

"Mr. Brooks was urged to do this by gentlemen whose judgment is as good as that of any men in the State. But no; it must be kept, and for no earthly business reason except that the Fitchburg Railroad Company and the Vermont and Massachusetts Railroad Company had offered to pay, for rent of the road for six years after it shall be finished, \$129,000—an average of \$21,500 per year, for the use of a road which could not be put in proper running order for a million of dollars (including, of course, the cost of the iron); while at the end of six years the road would be thrown back upon the State, to lie dead till the tunnel is finished, or to be run with a traffic which would not half pay running expenses.

"What is to be done? To-day we can get out by pocketing a loss, say, of \$1,800,000. Every day's work only increases the sum, which will be a total loss in the end. One of two things the State will do—either abandon the enterprise, sell off, and close up a bad job, or else find some responsible parties who will agree to take the whole thing off her hands

and complete it. If it cannot be got rid of on better terms, a gift of a million or two of money with it to any parties that will relieve the State of the disreputable business would be better than for the State to continue the work."

#### RECENT AMERICAN PATENTS.

The following are some of the most important improvements for which Letters Patent were issued from the United States Patent Office last week; the claims may be found in the official list:—

**Knitting Machine.**—This invention relates more particularly to that class of knitting machines represented in the Letters Patent granted to the inventor Sept. 15, 1863, having two rows of needles; and also to machines having straight frames and only one row of needles. One part of the invention relates to the construction of the cams for operating the needles and to the manner of operating such cams. Another part relates to the manner of regulating the length of the loops; another relates to the manner of supporting the sliding carriage; another relates to the manner of constructing the jacks; another relates to the manner of driving the sliding carriage; another relates to the construction and operation of the yarn guide or carrier and to means for doing it; another relates to a novel construction of latch openers; another relates to the means for connecting suitable weights to the work. I. W. Lamb, of Rochester, N. Y., is the inventor.

**Distilling Apparatus.**—This invention relates to an apparatus which is to be used for distilling alcohol and other liquids, but which is particularly intended for refining petroleum, and which is so constructed that the process of distillation can be continued without interruption, and the oils of different specific gravity or density can be separated while the process of distillation is carried on. Furthermore, the apparatus is so constructed that the naphtha and lamp oil, or the light constituents of the petroleum, are evaporated by the heat of the vapors of the heavy oil, and only the heavy constituents have to be distilled by direct heat. By this arrangement a great saving of fuel is effected. A. Kreisler, of New Lebanon, N. Y., is the inventor.

**Rifling Barrels of Fire-arms.**—This invention relates to rifle grooves, the transverse section of which is not rectangular but getting gradually smaller toward the outside—their form being dependent upon the kind and size of the fire-arms. The depth of these grooves decreases for a certain distance, and, together with the depth, the width decreases, so that the advantages of the wedge-shaped grooves are obtained, and where the depth does not alter, the width remains unchanged. The production of these grooves is much simpler and more correct than that of the wedge-shaped grooves, because the cutters used for cutting the same have to move only in a radial direction in the proper proportion in order to produce the desired result. In the same manner the operation of polishing the improved grooves, which is difficult with wedge-shaped grooves, is easily accomplished and can be effected simply by radially expanding polishing jaws. As previously remarked, the depth and length of these grooves gradually decrease from the chamber up to a certain point, and then they continue to the muzzle without diminution. A. Trauth, of Chemnitz, Saxony, is the inventor.

**Paddle Wheel.**—The object of this invention is to obtain a paddle wheel by which the lift and plunge now occasioned by the entrance and emerging of the floats of the ordinary wheels into and out of the water, will be avoided, and a great saving of power effected, as well as an avoidance of the jars and concussions attending the operation of the ordinary paddle wheels. William Choate, of Newburyport, Mass., is the inventor.

**Explooding and Opening Oil and Other Wells.**—This invention has for its object to open the veins and seams of oil and other deep wells by exploding powder or other substances therein. It is also applicable to clearing away paraffine and other obstructing matters from the sides of such wells and from the seams in the rock. It consists in constructing it of such material as to enable the operator to withdraw it, after the explosion, without difficulty, and also in so constructing it that it shall be exploded by its own weight after it has nearly

reached the point to be acted on. A. T. Ballantine, of Morristown, N. J., is the inventor.

**Steam Valve.**—This invention relates to the valves of steam engines. Its character makes it especially suitable for use in propellers, but it is applicable to all kinds of steam engines. The valve is a rotating slide valve counterbalanced or supported at its center of rotation, and is fitted with a graduated cut-off, which is so constructed and applied that the steam is cut off by the motion of the main valve itself. The cut-off may, however, be applied so as to work also independently of the motion of the main valve. Ethan Rogers, of No. 127 Warren street, New York, is the inventor, who has assigned one half of it to Wm. P. Williams.

**Gas Burner.**—The object of this invention is to produce a gas burner by which, with a comparatively small expenditure of gas, a good light is obtained. The invention consists in a gas burner forming a hearth or grate below and a chimney above. The grate in the lower inside parts of the burner, consists of a perforated bottom surmounted by a system of wire work, which equalizes the pressure of the gas and regulates the quantity which is permitted to reach the flame. The chimney consists of an inclosure rising somewhat above and surrounding the jets of gas emanating from the burner in such a manner that the draught of the atmospheric air to the flame is increased, and, at the same time, the heat of the flame is concentrated, and by this combined action the carbon is readily raised to a bright white heat and a brilliant flame is obtained with a comparatively small expenditure of fuel. Dr. V. Dubourg, of Frankfort-on-the-Main, Germany, is the inventor.

**Improved Suspender.**—The object of this invention is to improve the suspenders by which pantaloons are held upon the person of the wearer, the particular features of the improvement being as follows:—To combine with the suspenders the quality and office of a shoulder brace; to simplify the construction of the suspenders; to make them in such a manner that each side of a pair of pantaloons is suspended independently of the other; and, lastly, attaching the several straps of which the suspender is composed, to their buckles or links, in such a way as that they will pull squarely thereon, and so preserve the evenness of the straps. B. J. Greely, of No. 540 Broadway, New York, is the inventor.

#### Enormous Stock Business.

According to the returns made to the Internal Revenue offices, of this city, it appears that the stock and gold brokers return their aggregate sales for one year at the enormous sum of six thousand and seventy-three millions seven hundred and eight thousand eight hundred and eighteen dollars. Quite a number of the firms have only made returns for one, two, three and five months. If the list included a full statement of all the houses for the entire year the amount of sales would exceed three times our national debt. Computing the tax on the basis fixed for the transactions in stocks we find that the brokers contributed to the revenue of the Government three million thirty-six thousand eight hundred and fifty-four dollars. One firm sold stocks and gold to the amount of \$169,232,939. These figures appear incredible, but they are no doubt substantially correct, as brokers do not like to be overtaxed.

PROF. W. A. MILLER recently stated before the British Association that an extensive branch of industry was now springing up in the improved methods of voltaic deposition of the metals. We had, by the use of an alkaline solution of tartrate of copper, contrived to coat iron and steel with a tough closely adherent sheathing of copper, by simply suspending the articles to be coated by means of a wire of zinc in a metallic bath. No battery was required. Lead and tin might in a similar manner be deposited on copper, iron, or steel, if the oxide of tin or of lead was dissolved in a bath of strong solution of caustic soda.

A NEW MACHINE.—From the *Commercial Bulletin* we learn that there are at the fair in Boston "two bars, exhibited, one with a  $4\frac{1}{4}$ -inch hole punched in a bar,  $1\frac{1}{2}$  inches in diameter." We deem this a praiseworthy style of thing.