



A Creditable Piece of Engineering.

MESSEURS. EDITORS:—An attentive perusal of the SCIENTIFIC AMERICAN for some time past having convinced me that you desire to relate the practical, as well as discuss the theoretical value of mechanical science, I venture to enclose a short account of the tapping of the largest body of water ever operated upon in this State; the feat is regarded about here as "a very pretty piece of engineering." On the Ashland estate, in the vicinity of the town of Ashland, are located two large collieries; one, worked by Bancroft, Lewis, & Co., employing between four and five hundred hands, and the other, worked by Mr. Moody, almost as many. These collieries are situated on opposite sides of the Mahanoy creek, and the slopes in each have been sunk to the depth of 600 feet perpendicular. The mining engineer of the estate, seeing the great advantage to be derived from having the draining of both mines effected by one pump, proposed that an engine should be constructed of sufficient power to perform the required work. A direct-acting engine of 500 horse power was built by the firm of Pott & Vastine, of Pottsville, and erected at Bancroft's colliery, and having been found to work satisfactorily, the work of connecting the two collieries was commenced. This, as all engineers will understand, was a most difficult undertaking. The intervening distance between two slopes consisted partly of precipitous mountain side; and the slopes, following the pitch of the vein to the depth of 600 feet, were very steep and unfavorable for the use of instruments. A small gangway, merely large enough to allow the workmen room, was started at 500 feet below water-level in the eastern colliery, and driven forward with the intention of meeting a similar gangway from the western colliery; but as the miners advanced the influx of water became greater, and finally, owing to some accident to the pump, drove the men out and arose 300 feet in the slope, completely drowning out the lower part of the mine. The western gangway was then driven to within 60 feet of the flooded gangway, and preparations made for boring through the intervening mass of coal and slate. A strong battery of heavy timber was first erected to prevent the washing away of the coal by the immense pressure of the 300 feet of water about to be tapped. The drill was then put in operation, and with such nicety and skill had the gangways been driven, and so exactly was the direction of the drill determined, that the water was struck at the first attempt. Only from an actual inspection of the collieries can an idea be formed of the delicacy of leveling and measurement required to execute successfully such a work, where the smallest error in the direction or slope of the gangways would involve everything in inextricable confusion. Mr. H. H. Fisher, the engineer under whose direction this work was performed, has had for several years the entire control of the engineering department of the Ashland estate, upon which are situated some of the largest collieries in Schuylkill county. VISITOR.

Pottsville, Pa., June 15, 1863.

[The undertaking seems to have been successfully accomplished, and the originator and director of the scheme is certainly entitled to great credit for the fortunate issue of it.—Eds.]

Steam on Canals.

MESSEURS. EDITORS:—From the SCIENTIFIC AMERICAN, No. 23, current volume, it appears that steam power on the Erie canal has not yet proved successful—horse-power being again in the ascendant. For the benefit of all persons interested I wish to say, through your paper, that I have just completed a device for propelling canal boats by steam; it requires but little room, it does not wash the bank, and yet it does the work. This propeller I am prepared to introduce on the following terms, namely, with twelve bushels of coal per twelve hours, to do the work of six horses; and for every additional horse-power, two bushels of coal per twelve hours, for any speed desired, attainable by power. This I guarantee at the above cost. I made a trip on the Miami canal on the 27th ult.,

running at the rate of seven and a half miles per hour. Will the above pay? Any person wanting steam power on the Erie canal, with the above conditions guaranteed, can have it by addressing—

A. E. HARDING,
Middletown, Butler Co., Ohio.

Will Vulcanized Rubber corrode Iron?

MESSEURS. EDITORS:—Recently in a common two-flue boiler belonging to the works I have charge of, we found it necessary to make some repairs, and we find that in the last sheet at the bottom, where the blow-off pipe is bolted on, the fire has burnt entirely through the sheet in a circle just outside the flange of the pipe, causing the feed to leak out faster than it could be pumped in. I conclude that it was the action of the sulphur in the vulcanized rubber packing which was between the flange and the boiler, that enabled the heat of the fire to burn so deeply at that particular spot, while other parts of the same sheet, as much exposed, were uninjured. How can this be accounted for? CIVIL ENGINEER.

Mount Vernon, Ohio, June 4, 1863.

[We do not exactly understand the disposition of the blow-off pipe. How could it be under the action of the fire? Vulcanized rubber packing does not stand much over 250° of heat, and we are puzzled to know why the joint did not burn out in a short time, as the heat of the fire must have far exceeded that temperature. Sulphuric acid may be formed by the action of heated water on the sulphur contained in the packing, but it must be necessarily very dilute, and does not affect the integrity of the iron. It is the common practice in all engineering establishments to use vulcanized rubber, to a greater or less extent, for making joints. We have never met with a case in our experience where iron was in the least injured by vulcanized rubber, and we cannot account for the occurrence on the theory advanced by our correspondent. Perhaps some of our readers may have observed a similar phenomenon (we cannot call it anything else), and will favor us with their experience.—Eds.]

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:—

Lamp.—This invention relates to an improvement in that class of lamps the wicks of which are supplied with oil or other burning material from an elevated fountain, or one which projects above the burner. This class of lamps possess an advantage over the ordinary lamps which have the burner attached to the top of the fountain for the reason that the former supply the flame with a uniform amount of burning material, and thereby cause a constant flame or one of uniform intensity so long as any burning material remains in the fountain, whereas, in the ordinary lamp the intensity of the flame diminishes as the level of the burning material in the fountain descends from the flame, as the supply of the former to the flame proportionally diminishes with its descent. The object of this invention is to obtain a lamp with an elevated fountain which will admit of a uniform supply of burning material to the wick or flame, and render an overflow impossible, so that volatile substances, such as the lighter grades of coal oil may be burned with perfect safety. J. H. Seaman, of Brooklyn (E. D.), N. Y., is the inventor of this improvement.

Submarine Battery.—This invention consists in extending the turret of a vessel or floating battery through its deck and bottom, in such a manner that a gun placed in the bottom of the turret can be fired below the water-line; it consists, also, in combining with the turret a mechanism for raising and lowering it, in addition to and entirely independent of the ordinary mechanism for producing a rotary motion of the same, in such a manner that one or more guns placed at the bottom of said turret can be fired under water in any desired direction; the invention consists, further, in the arrangement of water-tight cases which surround the guns or mortars and which are provided with springs in their back ends in such a manner that the entrance of water into the turret is effectually precluded, and the recoil of the guns or

mortars is taken up entirely by the springs in the cases. F. A. De Mey, of Brooklyn, N. Y., is the inventor of this improvement.

Printing Apparatus.—This invention relates to a new and improved apparatus or device for printing direct from the type so as to avoid the labor of setting up the type, and also the subsequent manipulation of taking the impression therefrom. The invention is designed for printing letters, circulars, &c., either directly on ordinary paper or on transfer paper; and it is also designed for forming electrotype molds, the type in the latter case being pressed directly into wax, or other suitable plastic substance, on which, after it has received the impressions of the type, a coating of copper is deposited through the agency of a galvanic current. F. A. De Mey, of Brooklyn, N. Y., is the inventor of this apparatus.

Rotary Engine.—This invention consists in a novel construction of the stationary steam cylinder with its abutments and mode of combining them with the rotating cylinder or piston wheel to which the pistons are attached, whereby provision is made for dispensing to a great extent, if not wholly, with the use of packing and with working joints composed of surfaces perpendicular to the axis of rotation which are so difficult to keep steam-tight in rotary engines. It also consists in certain means of operating the pistons to bring them to positions to be operated upon by the steam, and into positions to pass the abutments of the stationary cylinder, as required; and in certain means of cutting off the steam from the pistons at various points in their revolution, to provide for working the steam more or less expansively. C. T. Boardman, of Bergen Point, N. J., is the inventor of this engine.

Steam Radiator Connector.—This invention consists in making the connection between the several sections of steam boilers, generators or radiators, by means of metallic thimbles having a right-hand screw-thread on one end and a left-hand screw-thread on the other end of its exterior; one end screwing into a hole with a corresponding internal thread in one section of the boiler generator or radiator, and the other into a hole with a corresponding internal thread in the adjacent section thereof; such thimbles constituting not only the means of connecting the several sections, but as durable communications between them, for the circulation of steam or water, and dispensing with the use of soft or perishable packing, such as cement, putty or india-rubber gaskets; it also consists in the construction of the interiors of such thimbles of square or other suitable form for the reception of a key of corresponding form by which to screw them into their places to make the connections. Charles Whittier, of Roxbury, Mass., is the inventor of this improvement.

LITERARY NOTICE.

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That an accurate compilation of the names of our citizens, their business and the places at which they transact it, is absolutely necessary to the daily duties of life, will be admitted by all. The value of such a catalogue may be well conceived by supposing it altogether suppressed and the community left to grope blindly after the information that is readily found in its pages. The City Directory, this year, completed by H. Wilson, is creditable to the canvassers and the editor of it, and doubtless contains as few mistakes as possible under the circumstances. Among the names of our own acquaintance we have not been able to detect any. The publisher apologizes for any inaccuracy by stating, in the preface, that the canvassers have had to encounter many difficulties when demanding names from persons, under the impression that they were enrolling for the draft, and he also instances other causes which conflicted with a thorough prosecution of the duties of the name-collectors. The cost of the production of the volume has been largely increased this year from obvious causes, but the publisher states it is still the cheapest book, considering its value, issued from the press.

Just as we go to press we are in receipt of a letter from a correspondent at Erie, Pa., announcing that oil had just been struck there at a depth of 500 feet.