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Fusible Plugs for Steam Boilers.

The article on this subject which appeared in our columns (page 117) on the 20th ult., has attracted the attention of our steamboat engineers generally, and since then we have received a number of communications on the subject. As the law for the better protection of life on steam vessels compels the owners to employ fusible plugs in all their steam boilers, and as these fusible plugs are provided by Government, and for which Inspectors charge the sum of one dollar per pound, it is certainly of vast consequence that these plugs should perform their appropriate functions correctly.

Do they answer the purpose for which they are provided by law—are they safety fusible plugs ? This is an important question. If they do not, they are *shams ;* they do more evil than good ; for the very use of them for an object prescribed by law, which object they do not fulfill, is a public deception.

Thomas H. Borden, of New Orleans, a skillful and experienced Western steamboat engineer, informs us, in a letter, that he "doubts if fusible plugs can be constructed in such a manner as to be relied upon with any degree of safety. The pressure of the steam coming upon them totally destroys their fusibility." He refers us to the experiments of Cadwallader Evans, of Pittsburg, with fusible plugs, under various steam pressures, in which he demonstrated that they will not answer to prevent explosions. He believes that Mr. Evans' "Safety Guard" is a most useful instrument for preventing steam boiler explosions.

In a letter from L. N. Nutz. of St. Louis, Mo., he states that the Government fusible plugs have been denounced in a daily paper in that city, by one of the Steamboat Inspectors, who stated that they were unfit for the purpose for which they were employed—that they were not safety plugs. Mr. Nutz informs us that he has long used fusible plugs of an alloy which may always be trusted. An alloy of eight parts bismuth, five of lead, and three of tin, will fuse in boiling water ; by reducing the proportions of bismuth and tin, in this alloy, a plug can be made which will fuse at any temperature desired, according to the pressure of the steam in a boiler. These plugs contain no mercury, and he says they will not undergo any change unless heated beyond the fusible point. He has a safety tube in his boiler, in which he uses an alloy composed of these three metals, and it has always given the alarm, when the steam has risen to the extreme pressure for which the alloy is made. He also asserts, that such an alloy will always fuse when raised to the same temperature, no matter how often the experiment may be repeated. The Government fusible alloys have been complained of by engineers as not being uniform in their effects ; if they melt at the correct temperature once, they do not do so a second time, consequently they are not reliable.

How to View Pictures.

Although the relief of solid objects (and distances as its representative) is best seen with two eyes, yet it is equally true that vision with one eye is superior to two for some purposes. In looking at an oil painting the surface of which is covered with varnish the figures and objects represented appear more distinctly when examined with one eye only. The varnish reflects the light which falls upon it to each eye—when both are open—and from objects in various parts of the room, therefore, by closing one eye, a quantity of the reflected light is shut out, and the mind then contemplates the picture with less disturbance. All painters (artists) are well aware of this fact, hence they generally examine oil paintings under a bright light by monocular vision. The pictures in a room or gallery having side lights, should always be viewed with one eye closed, the open one being that which is best shaded from the light. The light which falls in greatest quantity on any one eye, diminishes its sensibility to the red rays, and gives a false coloring to the pictures.

A photographic picture is seen more perfectly with one than with two eyes ; it being a plane surface, the one eye is not so much troubled in adjusting the pupil while examining the different points ; and, besides, as it cannot appreciate distance so well as two eyes, the light and shadow, although on a plane surface, actually appear like a solid picture.

There are three kinds of relief when we look at a picture on a plane surface, such as a daguerreotype, viz., ocular, with two eyes, monocular, with one, and binocular, when two pictures of the same figure are combined, as in the stereoscope. If we look at any one of two stereoscope pictures with two eyes it has very little relief ; if we look at it with one eye, either in or out of the stereoscope, the relief is greater than with two eyes ; but when we look at the two pictures combined in the stereoscope, the relief is perfect, giving an accurate representation of the original, if the two pictures have been taken at the proper angle for two eyes, at about three inches apart.

The New Patent Bill.

In another part of this number of our journal we publish entire the proposed law for the amendments of the Patent Laws, which is now before Congress.

The main features of this Bill were discussed by us in our issue of Jan. 3rd.

We are glad to notice that the information we had then received concerning the proposed enactment, viz., that it contained no provisions for a radical change in the Patent Laws, but was chiefly designed to promote *the better administration af the present system*—is fully confirmed by the document itself.

Some of its provisions appear, at present, objectionable to us. These points we have before discussed, and it is unnecessary again to repeat them. We should be better pleased to see the Bill pass that we presented to the public on page 189, Vol. 11 Scientific American, but we are not among those who refuse to take part of a loaf because a whole one cannot be had.

Whatever may be the defects of this Bill, it is but fair to admit that, regarded as a whole, it is *good.* Its passage will, perhaps, be productive of some evils that at present do not exist. On the other hand, many serious evils that are now daily felt, will be abated and other highly important benefits will ensue. We commend the document in question to the careful examination of all our readers.

Mineral Rods.—Searching for Precious Metals.

We have had frequent inquiries respecting the existance of what is called a "mineral rod," said to have the quality of detecting metals—especially gold and silver—in the earth, under the surface of the soil. To such inquiries we have uniformly returned the answer that "we were totally unacquainted with the existence of such rods" for discovering the precious metals. We have heard of persons who claimed the possession of knowledge to make and use such mineral rods, and thereby the power of discovering hidden treasures, but these claims we have treated with skepticism, because we are not acquainted with a single feature in science that would warrant us to treat them in any other manner.

That magnetic iron ores in the earth will attract a magnet is a well known fact, but neither gold nor silver ores in the earth so affect the magnet.

We do not pretend to an acquaintance with all knowledge, and it may be that there are many secrets of nature possessed by persons, who, for good reasons, keep such knowledge private ; and it may be so with such an instrument as a "mineral rod." Until, however, we have positive demonstration that such an instrument will affect the objects claimed for it, we must deny the veracity of those claims.

The Connecticut State Agricultural Society, at its annual session, appointed a chemist, at a salary of $400 per annum, for the purpose of analyzing manures.

An American Inventor Shot in Paris.

Recent foreign papers contain an account of the death of Charles Morey, of Boston, Mass. He was shot by a sentry while standing at a window of Clichy Debtors' Prison, in Paris, on the 30th of last month. He was proprietor of Goodyear's patent for vulcanized India rubber for England and France, and had been imprisoned through some dispute between him and Mr. Goodyear, (who has also been residing for sometime in France,) with the merits of which we are not acquainted. Msrey was to have been discharged on the very day he was shot, the court having declared, after a tedious process, that his arrest had been illegal. The sentry stated that he had commanded Mr. Morey to depart from the window, this having been the orders in other prisons, and as he did not do so, he fired upon him. A letter in the London *Times* from an English prisoner says:—"This morning (30th Dec.) Charles Morey, an American gentleman, patentee of the vulcanized india rubber, was deliberately shot dead by a soldier of the 88th Regt. on guard, when standing with his hands in his pockets at one of the windows which are public to all the inmates. He had committed no infraction of the regulations ; and these forbid the sentry carrying a loaded musket in the day time. The unfortunate victim, while in prison, was one of its most respected and honored inmates."

Mr. Morey was thirty-two years of age, and leaves a wife and family. On a few occasions he corresponded with the Scientific American, from Europe. He was the joint inventor with R. Johnson, of Boston, of a single thread sewing machine, illustrated on page 145 of our fourth volume—the first sewing machine illustrated and described in any publication in this country. He was the first person who publicly exhibited a sewing machine in this city, which was in 1848, and by his enterprise and business tact, he first gave that public impulse to the importance of such machines, which has resulted in their great improvement and wide-spread use at the present day. The event is a painful calamity ; he was cut off in the very vigor of health and manhood, suddenly and without a fault on his part, on the very day he was to be liberated from a lingering confinement ; perhaps he was in reverie at the prison window, thinking joyfully of his anticipated liberty, when the ball of the stupid and brutal soldier struck him down a lifeless corpse !

Improvements in Molding Metals.

In the Scientific American of Jan. 3rd, we published an illustrated description of an improved method of molding metals, for which a patent had been obtained in England by J. Downie. We have received a letter from Geo. Peacock, of Canandaigua, N. Y., a practical molder of much experience, who claims to have invented the same improvement for molding pipes, and to have carried it into practice about eighteen months since, in the city of Cleveland, Ohio, in molding the water pipes for that city, which pipes were cast vertically. "His friends," he states, "strongly advised him, at that time, to make applications for a patent, but he thought the improvement one of those things so hard to protect by a patent, conceiving that by so doing he would make known to the public an idea, which was worth more than the mere mode of working it out."

We regret, for his own sake, that Mr. Peacock was governed by such reasons. This is not the age to keep improvements secret, as the best means of reaping personal benefit. Every man who invents an improvement should apply for a patent as soon as possible for, in all likelihood, if he endeavors to keep it secret for any length of time, some other person will invent the same thing, apply for a patent, and thereby acquire the means and authority to prevent the first but secret inventor from using his own invention. Mr. Peacock says, "should Mr. Downie apply for a patent here, I trust the Commissioner of Patents will be careful in the matter, and not grant anything that is known here."

If Mr. Downie applies for an American patent for his improvements in molding, as embraced in his English patent, the Commissioner will be likely to grant it, and the Courts will sustain it. The patent law does not recognize any secret invention ; this question has been decided in our United States Courts. We know an inventor who, by the advice of injudicious friends, was prevented becoming a rich man, by keeping and working a valuable invention in secret, and not patenting it. It was afterwards patented by another person, who has made an immense sum of money by it ; our correspondent, in our opinion, has neglected the advice of *judicious* friends, to his own great loss.

The Cold Weather.

The present has been the coldest weather in the United States, within the memory of man, and it has been distinguished for high winds and drifting snows, which have obstructed travel to an extent never before known since the introduction of railways. A severe snow storm commenced on Sunday the 18th, and extended over a very wide area, drifting the snow into such deep banks as to stop all travel for a number of days ; indeed, we did not receive a mail from Washington for five days afterwards, and we have received but very few mails from any part of the country since then. Our correspondents, whose letters have been detained by the mails, will thus know the reason why they have not received answers.

Mr. Green Smith, of Peterboro, Madison county, N. Y., informs us by letter that the thermometer was 32° below zero in that place on the 18th ; at Watertown, N. Y., it was 40° below zero ; at Albany, N. Y., it was 21° at New York, 4°. The winter of 1856 was thought to be very cold in this city, but the coldest day of that year—9th January—was only 5° below zero, while on the morning of the 24th inst. it was 14° below zero.

Pennsylvania Coal Trade.

The production of bituminous coal, in Pennsylvania, last year, amounted to 2,000,000 tuns, and the anthracite trade amounted to 7,258,891 tuns,—making an aggregate of 9,258,891. The total value of this coal, for 1856, reckoned at $4·25 a tun, at the place of delivery or consumption, would be but a fraction short of $40,000,000. In the year 1825, the amount of bituminous coal employed in the manufacturing establishments of Pittsburg and vicinity was one million of bushels, which, at eighty pounds to a bushel, would amount to 35,714 tuns. In 1842 the production largely exceeding the consumption, amounted to 420,000 ; which was increased in 1846 to 678,572 tuns. The bituminous coal produced during the past year was consumed principally in the iron works of western Pennsylvania ; while, with the remainder, a profitable trade was carried on with the regions adjacent, with the West, and with Philadelphia.

In 1820, only 365 tuns of anthracite coal were mined. In 36 years it has grown to be the most magnificent mining interest on our continent.

A favorably situated coal mine is about the most valuable paying estate in our country. We perceive, by some of our Western exchanges, that there is a great scarcity of coal in some of the Western cities this winter, and that great numbers of the poor are suffering for want of fuel ; this should not be. There is no country on the globe so well supplied with coal resources ; the most abject pauper should not be allowed to suffer for want of fuel.

The Atlantic Telegraph Cable.

Mr. Newall, of Gateshead, Eng., is engaged to make one half of the Atlantic Telegraph, and Messrs. Kuper & Co., of London, the other half. These firms are under contract to complete their respective portions in the course of the ensuing summer. The Gateshead *Observer* says :—

"It may assist the reader to a fair conception of the immensity of the task, to state that Mr. Newall will have to twist strands of wire as an outer protection of the electric line itself, 25,000 miles in length, or long enough to go around the whole earth."

40,000 lbs. of cochineal are used at the Lawrence, Mass., woolen mills, annually.