

**Explosion of a Boiler and its Cause.**

On Saturday, the 6th inst., a steam boiler exploded at the factory of I. M. Singer & Co., Delancey street, this city, by which three men who were employed on the premises lost their lives. A coroner's inquest has been held on the bodies of the victims, and a decision rendered to the effect that the deceased came to their deaths by injuries received by the explosion, and that "the jury believe that the engineer and the fireman of the factory are censurable for the explosion; the fireman for starting the fires after he had been informed of the state of the boiler, and the engineer for not making a thorough examination of the boiler and its connections after being notified of the trouble."

To understand the nature of this decision and the charge against the engineer, William Ford, and the fireman, Michael Reagan, it is necessary to give the substance of some of the evidence before the jury:—The private watchman of the establishment stated that he had examined the four boilers in the factory on the evening before, and found that no water would flow out of some of the gage cocks, although there was a high pressure of steam on. He then went for a boiler maker named McGiven, with whom he was acquainted, and both of them tried to raise one safety valve with their hands and were unable to do so. It pressed against the ratters so firmly that they could only slightly raise it with a piece of timber placed under the ball. He informed the fireman of this next morning, and also the engineer. The fires were started before sufficient water had been let into the boilers, and the pumps did not seem to operate well.

William M. Storm, a mechanical engineer for the Police Department, stated that three of the four boilers in the establishment were uninjured, and upon examining their safety valves he could lift three easily, but the safety valve of the one which exploded was fast; the lower gage cock was also immovable. The four boilers were in a gang—all alike and set side by side. Their connections were such that they could work all together or in pairs. They have return flues 14 inches in diameter, and both flues of the one that exploded were collapsed from end to end and torn away at their junction with the ends of the boiler. Joseph E. Coffee, engineer and boiler inspector for the Metropolitan district, stated that he had examined the exploded boiler and that the safety valve had been shut at the time of the explosion. All the four boilers had their feed water pipes open, but two of them had their steam pipes, which led to the engine, closed, and only one of these exploded—the one which had its safety valve fast. There had been fire under all the four boilers. The steam which was generated in the two boilers that were disconnected with the engine, forced the water out of them, as the pressure increased, into the other two boilers, thus nearly emptying the two former boilers. "The flues of these then became overheated and one gave way with an ordinary pressure of steam." This was the cause of the explosion, in the opinion of Mr. Coffee, and it is very evident that it is a clear explanation of it. Mr. Coffee also stated that had the boiler been full of water and the safety valve in proper order the explosion would not have taken place. It was the duty of the engineer to see that the connections were in proper order. Mr. B. G. Lord, sergeant of the sanitary police, stated that the engineer who had charge of these boilers, had no certificate from the Police Department.

Nine-tenths of all the explosions which take place are the results of similar causes.

**The Genius of Our People.**

Notwithstanding a vast number of the loyal inventors of our land are in the ranks of our army, the lengthy list of claims published weekly in these columns, indicates that the "inventors are not all dead," or all gone to the war. Although the patent office bureau has suffered considerably in the diminution of its business, and ourselves proportionately to the patent office, there have been over one hundred and forty applications for patents made through this office per month, on an average, since the year 1862 was inaugurated. Up to the first of September our books show that eleven hundred and eighty-nine patents have been solicited through the Scientific American Patent Agency, during the past eight months.

**How Engineers in the Navy are Appointed.**

In answer to many inquiries that have been made to us of late from parties who desire situations as Engineers in the naval service, we give the following as the system adopted by the Navy Department previous to the breaking out of the rebellion. We are not advised that any changes have since been made, although the exigencies of the service have been very pressing.

Before persons can be appointed Assistant Engineers in the navy, they must have passed a satisfactory examination before a board of at least three engineers, designated at such times as the wants of the service require. Application for permission to appear before such board must be made in writing to the Secretary of the Navy, accompanied by satisfactory testimonials as to good moral character, correct habits and sound constitution. The application will be registered, and when a board next meets permission will be sent to the applicant, stating the time and place of the board.

In the examination of a Third Assistant Engineer, the candidate must be able to describe all the different parts of ordinary condensing and non-condensing engines, and explain their uses and their mechanical operation; to explain the manner of putting engines in operation, how to regulate and modify their action, and the manner of guarding against danger from the boilers, by the means usually applied to them for that purpose. He will be expected to write a fair, legible hand, and to be well acquainted with arithmetic and the mensuration of surfaces and solids of the regular forms; to have worked not less than one year in a marine engine manufactory, and present testimonials of his mechanical ability from the director of the establishment in which he may have served. He must not be less than twenty, nor more than twenty-six years of age.

Candidates for promotion to the rank of Second Assistant Engineer must have served at least two years as Third Assistants in the management of steam engines in the navy in actual service; must produce testimonials of good conduct from the Commanders and Senior Engineers of the vessels in which they have served; and must pass a satisfactory examination upon the subjects and to the extent prescribed for Third Assistants; they must likewise be able to explain the peculiarities of the different kinds of valves, the construction of expansive valves, the manner of their operation, the remedies which are usually resorted to to check foaming in boilers; must possess a knowledge of the usual causes of derangement in the operation of air pumps, force pumps and feed pipes; the proper preventatives and remedies, and the mode of cleaning boilers when required. They must have a general knowledge of the mensuration of surfaces and solids.

Before promotion to the rank of First Assistant Engineer, candidates must have been employed at least three years as Second Assistant Engineers in the management of steam engines in actual service, and produce testimonials of character and good conduct from their former commanders and superior engineers; must pass a satisfactory examination upon the subjects prescribed for Third and Second Assistants, the mechanical powers, the general principles of the operation of steam engines, the causes of, and the best means of removing, the different kinds of deposits and incrustations to which boilers are exposed, and be able to furnish a working sketch or drawing of different parts of engines and boilers; to superintend their construction, and determine upon their accuracy and fitness for use.

Promotions to the grade of Chief Engineer are to be made after the candidates have served for two years as First Assistant Engineers in the management of steam engines in the navy in sea service, and have been examined upon any of the subjects specified for Assistants, which the board may deem expedient; and after they shall have satisfied the board of their previous good conduct and character, of their sufficient knowledge of mechanics and natural philosophy; of the forms, arrangements and principles of different kinds of steam engines, boilers, propellers, and their various dependencies, which have been successfully applied to steam vessels, and their alleged relative advantages for sea or river service, and shall have attained twenty-six years of age.

The Assistants must employ all favorable opportunities for acquiring a practical knowledge of the fab-

rication of the different parts of steam engines and their dependencies, that they may be able to repair and replace such parts as the space and means for making and repairing can be furnished in steam vessels. When other qualifications are equal, candidates whose skill and abilities in these particulars are superior will have precedence over others, for admission or promotion, who may be considered equal in other particulars.

The engineering corps are paid as follows:—Chief Engineers, \$2,600; First Assistants, \$1,250; Second Assistants, \$1,000; Third Assistants, \$750 per annum. When off duty the pay is reduced.

**THE FRIGATE IRONSIDES.**

This vessel recently went on her trial trip to Fortress Monroe, and after being absent from Philadelphia for about three weeks, she has returned. Some of our Philadelphia cotemporaries speak of her performances in flattering language, and yet there are some circumstances connected with her which require explanation, before those who are capable of judging are satisfied of her success. Her spars were previously secured in position, then they were taken out before she made her trip, and now, it is stated, she is to be hauled on the central pier at the Navy Yard, her spars to be put in at once, and some alteration made in her steering apparatus. It is stated that she made ten miles an hour on her trip, which had it been perfectly successful, she would not, we think, have been brought back to Philadelphia for alterations, when her services are required in Hampton Roads.

**THE NORTH IS INVADED.**

Let every man who sincerely loves his country in this the hour of her greatest peril, reason with his soul earnestly what he ought to do in this great crisis. In the language of the noble Patrick Henry "is life so dear and peace so sweet, that they must be purchased at the price of liberty? Forbid it Almighty God!" This war has now assumed such magnitude that there is no knowing where it may stop, and unless we spring to arms with new resolution our Government will be overthrown, and the last hope of free institutions perish forever. The crisis is imminent and pressing, and all should push forward to the front who are able to bear arms.

**Wholesale Prices of Domestic Goods in New York.**

Shirtings, Brown.....	per yard.—	18	@—	22
Shirtings, Bleached, 26 @ 32.....		16	@—	17
Shirtings, Bleached, 30 @ 34.....		18	@—	22
Sheetings, Brown, 36 @ 37.....		22	@—	25
Sheetings, Brown, 39.....		23	@—	25
Sheetings, Bleached, 34.....		18	@—	22
Sheetings, Bleached, 36.....		18	@—	22
Calicoes, Fancy.....		15	@—	22
Brown Drillings, 27 @ 30.....		25	@—	—
Bleached Drillings, 30.....		23	@—	—
Kentucky Jeans.....		—	@—	18½
Cloth, all wool.....		1	60	@ 3
Cloths, Cotton warp.....		70	@—	80
Cassimeres.....		1	25	@ 1 37½
Sheep's Grays.....		65	@—	75
Satinets.....		50	@—	75
Flannels.....		25	@—	35
Canton Flannels, Brown.....		23	@—	25
Canton Flannels, Bleached.....		22	@—	25
Cotton Osnaburgs.....		20	@—	24
Printing Cloth, 44 by 48.....		—	@—	8½

The prices of cotton goods are still on the rise.

SAN FRANCISCO.—The census of 1860 gave the city 60,000 inhabitants, and a census has been taken yearly since, each of which illustrates its progress still more remarkably. In 1861 the population was 83,000, and in 1862 it is 90,000. Its progress since the breaking out of the gold fever has been as follows:—

1850.....	20,000
1852.....	34,876
1860.....	60,000
1861.....	83,000
1862.....	90,000

FISHING BY STEAM.—A novel experiment is to be tried by a steam fishing vessel lately fitted up at Leith. Her trawling gear, which is very heavy, is to be wound up by a capstan driven by steam power, and all living fish thus taken will be put into a well, or salt water aquarium, having a constant circulation of water through it, and thus the fish will be kept in existence until brought to market. This is said to be the first direct application of the steam engine to the purpose of catching fish.