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NEW YORK, SATURDAY, JULY 5, 1862.

SIX GOOD REASONS WHY EVERY MANUFACTURER, MECHANIC, INVENTOR AND ARTIZAN SHOULD BECOME A PATRON OF THE "SCIENTIFIC AMERICAN."

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THE NEW AMENDMENTS TO THE PATENT LAWS.

We publish on another page the Patent Law Amendment Act which has recently passed the House of Representatives. We hope all our readers will peruse it carefully, with our comments thereon, and if they concur with us in thinking the first section is one which should not become a law, we hope they will use their influence in opposing the measure. By what shadow of right an inventor should be required to pay $20 for the privilege of asking the Commissioner to revise the decision of his Examiner, is what we could never understand; but so long as there was an intermediate tribunal between the Examiner and Commissioner, wherein the inventor could seek redress for any erroneous decision of the former, without paying an additional fee, we did not deem it necessary to protest against the section in the existing law which provides for the payment of $20 on appeal to the Commissioner. But now it is proposed to abolish the Board of Examiners-in-Chief, which was created to review the decisions of the Examiners, and to apply the services and wisdom of the three, who constitute this Board, to aid the Commissioner in performing the same duties which have heretofore devolved solely upon them; in other words, they are to perform the same duties as heretofore, but in their new relation as "advisory to the Commissioner of Patents," inventors appealing to them, to correct erroneous decisions of the Examiners, must pay a fee of $20.

Where an inventor applies for a patent and receives letters from the Department, signed by the Commissioner, he naturally supposes that he is in correspondence with the head of the Patent Office. If his case happens to be rejected, he receives a letter *signed* by the Commissioner, which sets forth, briefly, the reasons for the rejection. The inventor examines the cases referred to, and becomes satisfied the decision is incorrect. He writes his views upon the subject and sends them to the Commissioner, and a letter is received in reply, stating that the previous decision of the Office is confirmed. Not satisfied with this summary disposal of his case, and thinking he may not have clearly explained the difference between his invention and the cases referred to, he writes again; and then, for the first time, he is informed that if he wishes his case reëxamined he must first remit a fee of $20 in addition to what he has already paid, and the *Commissioner* will give the subject his personal attention.

The first section of the proposed amendments of the Patent Law, if enacted, will place an applicant for a patent, who is so unfortunate as to have his case rejected, in just the predicament above stated. We do not believe the revenue of the Patent Office could be increased by the proposed amendment, but, on the contrary, if enacted, it would deter many persons from applying for patents who can afford to pay the $35, but who would not risk the exaction of an additional fee of $20 before they can have the decision of the Examiner reviewed by the person—Commissioner—with whom they naturally supposed they were doing their business.

We hope the gentlemen comprising the Senate Committee on Patents, will examine the first section of the proposed amendment, and if they consult the interests of inventors, we are sure they will report adverse to its passage.

EXPERIMENTS WITH A SUBMARINE CANNON.

On Saturday the 21st of June, a respectable number of people collected at the Club House, Jersey City, to witness some experiments with Duffy's submarine gun. This gun is the invention of Joseph Duffy, of Paterson, N. J. The gun is placed on a deck in the vessel as far as possible below the water line, with the muzzle end passing through a stuffing box in the vessel's side. Mechanism is so arranged that when the gun is forced inboard by the muzzle coming in contact with the side of a hostile ship, the gun is discharged, sending not merely the shot, but also a considerable portion of the expanding gases into the hold of the enemy's vessel. Valves are provided to prevent the ingress of water as the gun is driven inboard by the recoil.

A small model was provided for the experiment, and was placed in the bow of a skiff, about 20 inches below the surface. The boat was rowed stem on against an oak target, and as the gun struck, it was discharged, driving the shot through two 3-inch planks, and considerably shattering the target. The result was entirely satisfactory.

CALIFORNIA STATE AGRICULTURAL SOCIETY.

We have received from O. C. Wheeler, Esq., Corresponding Secretary of the California State Agricultural Society, a communication stating that the flood in Sacramento last winter materially injured the cabinet and utterly destroyed the library of the Association. They request copies of the Transactions of kindred societies, files of papers, and specimens in natural history, to aid them in the restoration of their well-begun work of collecting the natural history of the Pacific coast, and furnishing the agriculturists, miners, and mechanics of California with such a library as will at all times meet their wants.

Nothing in the history of California is more surprising than the attention to intellectual culture which has accompanied her wonderful career. Very early after the tide of emigration commenced, free schools were established all over the State, scientific and literary associations were formed, her unparalleled mineral deposits were explored by competent geologists, and her students of natural history disputed with Agassiz the claim to certain discoveries in ichthyology.

We have no doubt that this call for contributions to the cabinet and library of the State Agricultural Society will meet with a prompt and liberal response. All parcels should be addressed to the Society, in care of O. C. Wheeler, Corresponding Secretary, and each should be accompanied by the address of the contributor and any facts that may be useful to the Society.

LOCOMOTIVE BUSINESS IN PATERSON.—A NEW DUMMY ENGINE.

The city of Paterson, N. J., has long maintained a high reputation for building locomotive steam engines. Last year this business was almost suspended, but it has since greatly revived, and is now rapidly improving. There are three large locomotive establisbments in Paterson, viz:—The Rogers's Locomotive Machine Works, the New Jersey Locomotive and Machine Company, and Danforth, Cooke & Co's. Locomotive and Machine Works. In the latter there are about two hundred and thirty men now employed. One dummy engine for drawing the cars of the Hudson River Railroad through the streets of New York is now being built there. It is the third of this character provided for the same company. The two which were previously furnished have, after a long trial of their qualities, given great satisfaction. The dummy is a condensing locomotive of peculiar construction, and its object is to supersede horses in the streets of the city. Outwardly it resembles a big box on wheels, like a freight car with a chimney. This long box is made of boiler iron; it has double hollow sides which contain water, and forms the tank of the engine. The boiler, engine, condenser and pumps are placed within this box and supported on a suitable framing. The boiler is vertical and tubular, and spreads out toward the top. The engines consisting of two horizontal cylinders with their appurtenances, are placed in front of the boiler, and very nearly in the middle of the car, inside of the wheels. The cylinders are each ten by fifteen inches, and their piston rods work a transverse double crank shaft situated close to the lower part of the boiler. On the outer ends of this shaft are grooved friction pinions, each twelve inches in diameter; these gear into large grooved friction wheels, each thirty inches in diameter, and from the shaft of the latter, motion is given by connecting rods to the two front and two back driving wheels at each side. This frictional gearing, as a substitute for cog gearing for reducing the speed of the driving wheels, is an excellent arrangement. One of these dummy engines will haul thirty-four cars. The speed, of course, is slow, but this is a necessary requirement for large cities. The object of using a condensing locomotive for such a purpose, is to obviate the noise peculiar to the exhaust in the smoke stack. The cylinders of the dummy exhaust in front into a small tubular condenser, the condensing water of which is supplied from the tank. The water to feed the boiler passes from the condenser by a tube into a cylindrical iron well situated under the two feed pumps, which are placed close together between the two cylinders, and are worked from the link motion. The feed is thus always proportioned to the amount of steam consumed, which is carried at from 110 to 140 lbs. on the inch, and is cut off short. The construction of such an engine is far more difficult than a common locomotive, because it embraces more parts, and these are required to be arranged in a very small compass. Coke is used as the fuel so as to obviate smoke, and a blower is employed to furnish the draft. One beautiful large ten-wheeled locomotive for Cuba, is now about finished here, and will soon be sent away. It is furnished with two common feed pumps, a Giffard's injector, and a hand pump for the boiler. An order of fifteen locomotives for the Atlantic and Great Western Railroad—which is to tap the oil regions of Pennsylvania—is being filled up; two engines are

being built for the Raritan and Delaware Bay Railroad, and several large freight engines for the Delaware, Lackawana and Western Railroad.

The New Jersey Locomotive and Machine Company, have now over two hundred men employed. An order is also being filled by this company for seven locomotives for the Atlantic and Great Western Rail road. Five of these will be large freight engines with four feet drivers, and they will use bituminous coal. Two will be wood burning passenger engines, with five and a half foot driver wheels, and cylinders sixteen by twenty-two inches. A large freight engine with six four feet drivers, a two-wheel Bissell truck, and cylinders eighteen by twenty-two inches, is also being constructed for the New Jersey Central Railroad. It is designed to burn anthracite coal, and will draw from eighty to a hundred loaded coal cars. The fire box of this engine is very long; it has a hundred and ninety tubes and a total heating surface of one thousand two hundred square feet; the grate bars are water tubes. This engine is to be provided with one feed pump and one Giffard injector for the boiler. An engine of the same size was recently built by this company for the New York and Erie Railroad, which was furnished with two of Giffard's injectors and no feed pump. This locomotive has worked very satisfactorily. A large wood burning engine belonging to the Erie Railroad, is now being converted into an anthracite coal burner in this establishment. The furnace is eight and a half feet long; a long thin fire is required, and hot air is fed to it through the furnace door, which is formed into a box; the air passes through small holes in it, and becomes heated before it reaches the fire. The engineer's platform, or foot board, is at the side; the fireman's is on the tender. A first class engine is now nearly completed for the Government, to be employed on the military railroads in Virginia. It is the second furnished by this company for the same purpose within a very short period. The materials and workmanship are first class.

Rogers's Locomotive and Machine Works are very extensive. There are about four hundred hands employed at present, mostly on locomotives. A large and beautiful steam plow of the Fawkes class, is standing here all complete. It has two cylinders, eight by twelve inches; a corrugated driver roller, four and a half feet in diameter, and six feet broad in the face. It is capable of tearing through twenty acres of stiff land in one day. Beside it stands a large locomotive which was built for a railroad in South Carolina, but fortunately it was not sent away to Dixie. [The New Jersey Locomotive and Machine Company, have also on hand a set of large flue boilers which had been built for a Southern cotton factory.] Two first class coal burning locomotives, with combustion chambers and copper-lined fire boxes, are now being constructed in Rogers's Works for Cuba; one wood burner for Dubuque, Iowa, and several orders for other places are in the course of being filled. A most favorable opportunity is afforded in this establishment for comparing the present with the past era in locomotive construction. Here on the outside of the shop is to be seen one of the old fashioned eight ton dumpy engines which were early used; and inside may be seen some elaborately-finished engines weighing from twenty-six to thirty-five tuns. American built engines have the preference in Cuba and in South America. Two locomotives furnished a few years since by this company for a railway in Chili, surpassed two English-built engines in speed and power of haulage up steep gradients upon a fair trial. A splendid new engine for the same railroad was lately forwarded from this establishment.

Formerly much cast iron was employed in the framing of locomotives; now only the best wrought iron is used, and the frames are all massive and rigid. The workmanship displayed and the materials employed in all these establishments, are of the first quality. None of the Paterson companies are working up to their full capacity, but they all say, "we are doing a very good business in railway machinery." Rogers's Works and Danforth, Cooke & Co'.s, also manufacture cotton machinery; but little is now doing in this line. Coal-burning engines are becoming numerous in comparison with wood-burners. They effect a saving in the cost of fuel ranging from twenty to more than thirty per cent. Giffard's injectors for locomotive-boiler feeders, is also a noticeable and novel feature. They possess the important advantage over pumps in being able to feed the boiler while the engine is standing with steam up. It is gratifying to know that the manufacture of railway machinery, which is a great branch of national industry, is in such an improved condition. It also indicates the condition of our internal commerce.

PATENT LAW AMENDMENTS.

SECTION 1. *Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That from and after the passage of this act the three Examiners-in-Chief created by the act of March second, eighteen hundred and sixty-one, to which this is additional, shall not constitute an independent tribunal in the Patent Office to revise and determine upon the validity of the decisions made by the Commissioners of Patents in the refusal of Letters Patent or in interference cases; but that the duties of said Examiners-in-Chief shall be only advisory to the Commissioner of Patents, who shall prescribe rules for their action. And after the second rejection of an application for a patent, or after one decision by the Commissioner, in cases of interference, the party who may be dissatisfied with such decision may appeal therefrom to either of the judges of the circuit court for the District of Columbia.

SEC. 2. *And be it further enacted*, That every patent shall be dated as of a day not later than six months after the time at which it was passed and allowed, and notice thereof sent to the applicant or his agent. And if the final fee for such patent be not paid within the said six months the patent shall be withheld, and the invention therein described shall become public property, as against the applicant therefor: *Provided*, That in all cases where patents have been allowed previous to the passage of this act, the said six months shall be reckoned from the date of such passage.

SEC. 3. *And be it further enacted*, That so much of section seven of the act entitled "An act to promote the progress of the useful arts," approved July four, eighteen hundred and thirty-six, as requires a renewal of the oath, be, and the same is hereby, repealed.

SEC. 4. *And be it further enacted*, That whereas the falling off of the revenue of the Patent Office required a reduction of the compensation of the examiners and clerks in the office after the thirty-first day of August, eighteen hundred and sixty-one, that the Commissioner of Patents be, and he is hereby, authorized, whenever, in his opinion, the revenue of the office will justify him in so doing, to pay them such sums, in addition to what they shall already have received, as will make their compensation the same as it was at that time.

REMARKS ON THE ABOVE.

SECTION 1.—We very decidedly object to the passage of this section, for reasons which we will now explain. When an application for a patent is rejected the applicant, if he is dissatisfied with the decision, has but to renew his oath of invention and demand a rehearing before the same Examiner, and if his case is again rejected, and he still deems the reasons insufficient, he has a right to take his case to the Appeal Board, composed of the three Examiners-in-Chief, and have it carefully examined by them. This involves no additional expense, and hundreds of cases which are rejected by the primary Examiners are appealed and allowed, and many worthy inventors thus able to secure their just rights in the Patent Office. It is now proposed by this bill to deprive inventors of the full benefits hitherto enjoyed from this Appeal Board. As the law now stands, whenever the applicant has exhausted all the other remedies within his reach in the Patent Office, he can, on payment of a fee of $20, appeal his case to the Commissioner of Patents in person and afterward to one of the judges of the District Court by the payment of an additional $25. Under this section of the amendment here proposed, the Examiners-in Chief are reduced to the position of clerks or Assistant Examiners to aid the Commissioner, and no applicant for a patent can have the benefit of their opinion unless he pays the required appeal fee of $20. The present system has now been in operation substantially for several years and has worked admirably. No change is desired or sought for by the great body of inventors who, from time to time, seek the protection of the Patent Office. Then why this proposed change? We suppose it is wholly based upon a desire to increase the revenue for the Patent Office. Judging from the large amount of business constantly before the Appeal Board the Committee on Patents has been made to believe that here, in this particular department, is a chance to give one more turn to the financial screw upon the neck of the poor inventor. But we are almost certain that the result will not justify the experiment, as few, comparatively, will risk the payment of an additional fee of $20, upon the hypothesis that the Commissioner will take a more enlightened view of the case than that of the primary Examiner, and thus many a worthy inventor will be turned out of the Patent Office with his rejected claims for lack of ability to pay for the examination of his case on appeal.

We are decided in our conviction that an applicant for a patent has a right to the opinion of the Commissioner of Patents whenever a question arises between himself and the Examiner respecting his claims, and this right he ought to be allowed to exercise without the payment of an additional fee. In this respect the law as it now stands is wrong, but no complaint has been made against it so long as there existed a competent tribunal in the Patent Office to which such appeals could be made. It is a piece of gross injustice to take this right away from the inventor, and we hope the Senate will either reject this clause or so modify it that an additional fee shall not be exacted. As this clause now stands it is an injustice to inventors, and ought not to become a law.

SECTION 2.—There can be no good objection to this requirement. There is no reason why a patentee should not pay the second patent fee within six months after his patent is allowed. As the case now stands the law puts no limit on the time when the payment should be made, consequently there are hundreds of suspended cases in the Office awaiting the voluntary payment of the required fee, impoverishing the Patent fund.

SECTION 3.—This is a very sensible amendment. The renewal of the oath is useless and involves a great deal of unnecessary delay and trouble, especially in all foreign cases. Commissioner Mason first introduced this system of requiring a renewal of the oath. We never regarded it as either necessary or requisite, and it ought to be abolished.

Value of Railway Inventions.

It is questionable whether in any other interest as many and as valuable patents have been taken out as in connection with the railroad, during the last forty years. Invention has built it up from nothing to the representative of at least twelve hundred millions of dollars, in this country alone. Yet the career of improvement seems as far as ever from having reached a limit; indeed, no bound to inventive progress can be imagined. Every invention calls into existence a class of others as necessary accompaniments. The business of procuring patents has become a recognized pursuit, as much as the importing of dry goods or the sale of hardware. Among those who have entered upon it, we need not do more than name Messrs. Munn & Co., publishers of the SCIENTIFIC AMERIACN A visit to their establishment in the "*Times* Building" will amply repay the stranger the time required, if he have a taste for mechanical pursuits. We need not say it has no rival in the world, as it has none in this country. This will be best understood from the circumstance that in seventeen years they have acted as agents for more than fifteen thousand inventors, or nearly one thousand per annum. With the utmost readiness to befriend the great interest with which they are so closely identified, Messrs. Munn & Co., have the amplest facilities, both in this city and Washington for aiding inventors in the matter of procuring patents.

[We copy the above excellent notice from the *American Railroad Journal*, which has been published in this city since 1831. It is a most valuable and reliable journal in all questions relating to railways and enjoys a deservedly high character.—EDS.

Two extensive iron rolling mills are going up in Chicago.