

ANNUAL REPORT
OF THE
COMMISSIONER OF PATENTS.

UNITED STATES PATENT OFFICE,
January 26, 1860.

SIR:—In compliance with the 14th section of the act entitled "An Act in addition to an Act to promote the progress of Science and Useful Arts," approved March 3, 1857, I have the honor to submit the following report of the operation of this Office, during the year terminating the 31st of December, 1859:

No. 1.

Statement of the Transactions of the Patent Office during the Year 1859.

Number of applications for patents during the year 1859.....	6,235
Number of patents granted, including designs, re-issues and additional improvements.....	4,588
Number of caveats filed.....	1,047
Number of applications for extension of patents.....	41
Number of patents extended.....	32
Number of patents expired, Dec. 31, 1859.....	563

Of the patents granted, there were—

To citizens of the United States.....	4,491
To subjects of Great Britain.....	23
To subjects of the French empire.....	16
To subjects of other foreign governments.....	8

The patents issued to citizens of the United States were distributed among the several States, Territories, &c., as follows:—

New York.....	1,237	Michigan.....	64	Alabama.....	26
Pennsylvania.....	532	Vermont.....	63	Mississippi.....	25
Massachusetts.....	493	Missouri.....	63	South Carolina.....	15
Ohio.....	390	Georgia.....	58	Delaware.....	12
Connecticut.....	253	Dist. of Columbia.....	55	Arkansas.....	5
Illinois.....	236	Maine.....	51	Minnesota.....	5
Indiana.....	143	Louisiana.....	51	Florida.....	5
New Jersey.....	119	California.....	43	Oregon.....	1
Maryland.....	116	Kentucky.....	41	Wash. Territory.....	1
Rhode Island.....	85	Iowa.....	37	U. S. Army.....	4
Wisconsin.....	71	Tennessee.....	31	U. S. Navy.....	2
Virginia.....	65	Texas.....	29		
New Hampshire.....	65	North Carolina.....	26	Total.....	4,491

No. 2.

Statement of Moneys Received at the Patent Office during the Year 1859.

Received on applications for patents, re-issues, additional improvements, extensions, caveats, disclaimers and appeals.....	\$228,864 60
Received for copies and for recording assignments.....	17,478 15
Total.....	\$246,342 75

No. 3.

Statement of Expenditures from the Patent Fund during the Year 1859.

For salaries.....	\$93,242 36
Temporary clerks.....	48,425 25
Contingent expenses.....	41,561 48
Payments to judges in appeal cases.....	875 00
Refunding money paid into the Treasury by mistake.....	391 60
Refunding money on withdrawals.....	30,733 32
Total.....	\$210,378 41

No. 4.

Statement of the Condition of the Patent Fund.

Amount to the credit of the Patent Fund on the 1st of January, 1859.....	\$50,341 83
Amount paid in during the year.....	245,942 15
Total.....	\$296,283 98
Deduct the amount of expenditures during the year.....	210,378 41
Which leaves in the Treasury on the 1st of January, 1860, the sum of.....	\$85,905 57

No. 5.

Table exhibiting the Business of the Patent Office for Seventeen Years, ending December 31, 1859.

Years.	Applications filed.	Caveats filed.	Patents issued.	Cash received.	Cash expended.
1843.....	819	315	501	\$35,315 81	\$30,776 96
1844.....	1,045	389	502	42,539 26	36,344 73
1845.....	1,246	453	502	51,076 14	39,395 85
1846.....	1,272	448	619	50,304 16	46,158 71
1847.....	1,331	532	672	63,111 19	41,878 35
1848.....	1,623	657	660	67,576 69	58,905 84
1849.....	1,955	595	1,070	80,752 78	77,716 44
1850.....	2,193	602	995	86,927 05	80,100 95
1851.....	2,358	760	869	95,738 61	86,916 53
1852.....	2,639	996	1,020	112,056 34	95,916 91
1853.....	2,673	901	953	121,527 45	132,869 83
1854.....	3,224	868	1,362	163,789 84	167,146 32
1855.....	4,435	906	2,024	216,439 35	179,540 33
1856.....	4,960	1,024	2,552	193,588 02	199,931 02
1857.....	4,771	1,019	2,910	198,132 01	211,522 09
1858.....	5,394	943	3,719	203,716 16	193,163 74
1859.....	6,235	1,087	4,585	245,942 15	210,378 41
Total.....	48,338	12,437	25,851	\$2,025,488 01	\$1,888,653 21

The above statement of the transactions of the Patent Office during the year 1859 affords a gratifying indication of the advancement of our country in the art of civilized life, and demonstrates the wisdom of Congress in enacting laws to protect the inventor in the enjoyment of the fruits of his labor. The patent laws of this country are based upon the idea that, if the inventor is afforded a reasonable protection for his invention, his energies and talent will be constantly exerted in devising something new and useful to the public. These laws have answered, to a great extent, the purposes for which they were intended, but experience has proved that they are yet defective in many respects. The necessity of further legislation on the part of Congress, for the purpose of remedying these defects, has been urged by my predecessors for the last five years. Congress, however, has failed to afford the remedies so urgently desired. Notwithstanding this, I deem it my duty again to call its attention to this subject, in the hope that the still greater necessity which now exists for further legislation, and

the important bearing which the patent laws now have upon all sections of the country, will prove sufficient to engage its immediate attention.

Under existing laws no provision is made for securing the testimony of witnesses in contested cases pending before this Office. As a natural consequence of this, cases are frequently decided, involving thousands and even hundreds of thousands of dollars, upon the testimony of merely voluntary witnesses. Many persons whose testimony is important in such cases, well knowing that there is no law by which they can be compelled to testify, either decline to appear as witnesses at all, or govern their action according to the amount of money which may be offered by the parties in interest. The result of this is that, in such cases, the poor are completely in the power of the rich—the weak in the hands of the strong. This is not only repugnant to the great principle of equality upon which our government is based, but is at war with every principle of justice and equity.

There are many other alterations and amendments to the present patent laws required, in order to adapt them to the wants and necessities of inventors and of the public; these have been so frequently alluded to by my predecessors in their annual reports, and so urgently recommended by them to the favorable consideration of Congress, that I deem it unnecessary to do anything more than to endorse the recommendation made by them.

The practice of the Office, however, has suggested one or two additional features, which have not heretofore been brought to the attention of Congress, but which deserve serious consideration at their hands. Under the 8th section of the act of July 4th, 1836, the Commissioner is required, whenever an application is made for a patent which would interfere with any other application already pending, or with any unexpired patent already granted, to declare an interference between the parties in order to establish the question of priority of invention. It has been held by the judges on appeal, and is now held by this Office, that he is the first and original inventor (within the meaning of the patent law) who first conceived the idea of the invention, and first gave such an expression to that idea, either verbally or in any other manner, as would enable any person skilled in the art to which such invention appertained, to construct therefrom a working model or machine. Scarcely a patent is granted which proves profitable to the inventor and important to the public, but that, under this section of the law, is brought into interference with subsequent applications. Thus not only the first patentee, but all those who have purchased rights under him, on the strength of Letters Patent issued by the United States, are liable to be deprived of their property, upon the testimony of witnesses, that a subsequent applicant for a patent for the same invention had conceived and explained to others the same idea, previous to the date of the invention of the patentee. The ease with which testimony of this kind can be obtained, and the liability on the part of witnesses to be mistaken in regard to the extent and details of an invention explained to them many years before, renders property in patents extremely precarious and uncertain. An honest and bona-fide inventor, who has expended years of labor and large amounts of money in perfecting and patenting an invention, and creating a market for it, is liable to be deprived of his property by any person who can find witnesses to swear that he conceived and described the same invention prior to the invention of the patentee. There is no species of property in the country subject to the same hazards and uncertainty as property in patents, subject as it is to the above-named contingencies. Neither are there any cases in which false testimony can be presented with as little liability to detection as in the trial of interferences, to establish priority of invention. The error in the law, as it now stands, consists in awarding priority to the person who first conceived and described the invention, and in giving no consideration to the bona-fide inventor who first reduces his invention to practice, or first notifies the Office of his invention, either by a caveat or by an application for a patent. As between two independent inventors, he certainly is entitled to the most credit, and best deserves the reward, who first reduces his invention to a practical shape and first gives the public the opportunity to use it. One man may conceive an invention and yet require years before he may be able to reduce it to practice. In the meantime, another, conceiving the same invention, may reduce it to

practice, and present it to the public as a perfect working machine, secured by Letters Patent of the United States, before the first inventor has even commenced a drawing or written a description of the same. Still, in this case, the first but tardy inventor, by the aid of the very working machine of his more diligent rival, may finally succeed in reducing his invention to practice, and then obtain a patent for the same device, and thus render the well-earned property of the other perfectly worthless. In order to remedy this defect in the law, I would recommend that, in interference cases, he shall be deemed the first and original inventor, who, previous to the application of either party for a patent, first filed a caveat in the Patent Office, describing his invention; and in case no caveat is so filed, he who first presented to the Office and completed his application for a patent, shall be entitled to the patent, unless it shall appear (from the testimony submitted) that the person first filing such caveat or first making such application was not an original and bona-fide inventor of the device for which he seeks a patent. Such an amendment to the present law would work no hardship to an honest inventor, and would prove an effectual bar to a vast amount of perjury, while it would render the rights of patentees and of the public more secure. In addition to this, it would very materially reduce the number of contested cases before the Patent Office as well as before the courts. I believe this recommendation will be sanctioned by most men of standing and respectability who have been accustomed to the investigation and trial of patent cases. At the same time it is not at all improbable that a certain class of patent agents who seek to make profit by aiding dishonest men in annoying and robbing honest inventors of their just rights, rather than by an honorable practice of their profession, may endeavor to defeat any amendment of the law which will diminish litigation, fraud, perjury and corruption. It is a matter of regret that the present law affords so many facilities for the dishonest practices of such men, by whom innocent inventors are continually plundered.

The business of the Patent Office is rapidly increasing from year to year, as is evinced by the fact that the number of applications for patents during the year 1859 was nearly 60 per cent more than during the year 1855. Notwithstanding this, the number of principal and first-assistant Examiners remains the same. To these gentlemen is entrusted the examination of all applications for patents, in order to determine their novelty and patentability. The labor of performing this duty on every application for a patent must necessarily increase in proportion to the number of applications for similar inventions previously made. Hence it follows that the labor and time necessary to investigate, thoroughly, the novelty and patentability of an invention increase from year to year. Unless, therefore, authority is given by law for the increase of the number of these officers in proportion to the increase in the number of applications for patents, one of two evils must necessarily occur—either hasty and imperfect examinations, or great delay to the business. The former results in continual and almost endless litigation, while the latter would soon become so annoying and troublesome to inventors as to prevent them from seeking to obtain patents at all. Rather than suffer the business of the Office to become seriously delayed, we have been compelled to grant patents upon hasty examinations. As a natural consequence many things have been patented which ought to have been rejected. This difficulty must continue to exist unless Congress confers upon the Commissioner its authority to add to the force of Examiners from time to time as the necessities of the business require. As the inventors of the country pay for all the expenses of these examinations, it is no more than just to them that their business should be transacted properly and with dispatch. I would therefore recommend that such authority be conferred upon the Commissioner, subject, however, to the provision that the annual expenses of the Office shall in no case exceed the annual receipts.

For some time past, three of the principal Examiners have been withdrawn from their appropriate duties, and have been entirely occupied in the examination of appeals from the decisions of the Examiners in rejected applications for patents. In the meantime their duties have been performed by first-assistant Examiners. Under these circumstances it is no more than right that such first-assistant Examiners should be allowed the salary of principal Examiners, for the time that they have performed their duties. They have performed the duties assigned to them with credit and fidelity; and I earnestly recommend that they be allowed the salaries as suggested.

For several years in succession Congress has been appealed to by the Patent Office, by the public, and by the inventors of the country, to revise and amend our patent laws. These inventors are an intelligent, deserving, influential and important portion of our citizens, whose just demands and urgent necessities should no longer be disregarded. For other reasons, it is to be hoped that Congress will no longer delay taking such action on the subject as will fully meet the wants and necessities of the country.

The 14th section of the Act of Congress, approved

March 3, 1837, and entitled "An Act in addition to an Act to promote the progress of Science and Useful Arts," requires the Commissioner "to report annually to Congress, in the month of January, a list of all patents granted during the preceding year, designating under proper heads the subjects of such patents, and furnishing an alphabetical list of the patentees, with their places of residence; also a list of all patents which shall have become public property during the same period, together with such other information of the state and condition of the Patent Office as may be useful to Congress and the public."

The 4th section of the Act of Congress, approved March 3, 1859, and entitled "An Act making Appropriations for the Legislative, Executive and Judicial Expenses of Government for the Year ending the thirtieth of June, 1860," provides that "the Secretary of the Interior be, and he is hereby directed to cause the annual report of the Commissioner of Patents, on mechanics, to be hereafter made to the Senate and House of Representatives, to be prepared and submitted in such manner as that the plates and drawings necessary to illustrate each subject shall be inserted so as to comprise the entire report in one volume not to exceed 800 pages."

It will be observed, from the foregoing provisions of the law [of 1837], that the Commissioner is required to report annually to Congress:—1st, A list of all patents granted during the year preceding, and an alphabetical list of the patentees, with their places of residence; 2d, A list of all patents which shall have expired during the preceding year; 3d, Plates and drawings to illustrate each subject; 4th, Such other information of the state and condition of the Patent Office as may be useful to Congress and the public. Every effort has been made to limit the rise of the mechanical report, so that it might be embraced within 800 pages, as required by the law [of 1859]; but this is found to be a physical impossibility. The list of patents expired and granted during the year 1859 will occupy about 260 pages of the printed report; the drawings or plates necessary to illustrate each subject will require about 340 pages; while the claims and descriptions necessary to explain the drawings, and without which the report would be utterly worthless, will require about 1,200 pages more. This information, which is required by law to be reported, cannot therefore be published in less than 1,800 pages. We have thus been reluctantly compelled to present a report exceeding the limit prescribed by the last Congress by 1,000 pages, and have no doubt but that Congress, in view of these facts, will so modify the law that future embarrassments of this kind may not arise. Nothing is embraced in this report but such information as is believed to be absolutely necessary to enable Congress and the public to understand the condition of the Patent Office, and the character of the inventions which have been patented during the last year, while even this is condensed into the smallest space that the nature of the case will admit.

The Act of Congress approved February 5, 1859, entitled "An Act providing for keeping and distributing all Public Documents," authorized and directed a transfer of all matters pertaining to copyrights from the State Department to the Department of the Interior. The Secretary of the Interior has very properly placed this matter under the immediate supervision of the Commissioner of Patents. It therefore becomes my duty to call the attention of Congress to this subject. The object of the copyright law is to protect authors in the exclusive ownership and control of their own literary productions, in a similar manner to that by which inventors of mechanical improvements are protected in the exclusive enjoyment of their own new and original inventions. The law now requires a person who may desire to secure the benefit of a copyright, to make his application to the Clerk of the District Court of the United States for the district in which the applicant resides. The Clerk of the District Court is directed to keep a record of all such applications, and to transmit (at least once in each year) to this Office a certified list of such records and of all copies of books or other works deposited in his office in accordance with the provision of the copyright law. The copies of records and books, &c., thus received are to be preserved in this Office. The only fee paid by the person to whom a copyright is granted is a fee of fifty cents to the Clerk of the District Court; no provision being made by which the necessary expenses incurred by this Office, in taking charge of and preserving the records and books, are to be paid by them for whose benefit this law was established. I see no good reason why authors should not be required to pay these expenses in the same manner that inventors are required to pay the expenses incurred in transacting their business before this Office. Neither can I discover any good and sufficient reason why applications for the benefit of the copyright act should not be made direct to this Office instead of being made to the Clerks of the United States Courts. It is found to be impossible to conduct the business with uniformity and accuracy under the present system. This evil must necessarily continue to exist as long as the execution of the law is committed to the hands of so many different persons in various sections of the country. The law should therefore be amended in such a manner as to remedy this objection. The amount of fees to be paid by those who desire to avail themselves of the benefit of the copyright law should also be sufficient to meet the necessary expenses of the officer in attending to that particular branch of the public business.

WM. D. BISHOP.

Hon. John C. Breckinridge,
Vice-President of the United States.)

AMERICAN NAVAL ARCHITECTURE.

Naval pre-eminence secures universal dominion over the wealth of the world; since whoever commands the sea commands commerce, and whoever controls the traffic of the nations commands the riches, the liberties and the happiness of the world. The superior qualities of American merchant ships are causing them to fast supplant the mercantile navies of every other nation, and our vessels are rapidly becoming the carriers for people of every clime. As much of the commercial greatness of the United States is due to our ship-builders and navigators, it will therefore, at all times, give us much pleasure to publish such written communications from practical men of the above class as we may deem conducive to the enlightenment of our readers, in regard to the progress of improvements designed to promote the advancement of maritime science, and in accordance with this resolution, we will now proceed to detail the general construction and peculiar points of three recently-completed vessels, which are considered to exhibit, in many respects, marked evidences of that excellence which always results from a perfect coincidence of action between the designing mind and the executing hand.

THE STEAMER "GEORGE ANNA."

This vessel has just left the hands of her builders, and will at once take her appropriate place on the route of her intended service, which is between the ports of Baltimore and Richmond, and occasionally to this city. Her dimensions, with particulars of engines and boilers, are given in detail below:—Length on deck, from fore-part of stem to after-part of stern-post, above the spar deck, 208 feet 6 inches; breadth of beam (molded), at midship section above the main wales, 30 feet; depth of hold, 10 feet 3 inches; depth of hold to spar deck, 18 feet, 3 inches; draft of water at load line, 6 feet; dimensions of engine space, 60 feet 4 inches; area of immersed section (at load draft of 6 feet) 169 square feet; tonnage, 574.

The *George Anna* is fitted with a powerful vertical beam engine; diameter of cylinder 44 inches; length of stroke of piston, 11 feet 6 inches. Diameter of paddle-wheels (over boards) 28 feet 2 inches; length of blades, 8 feet 3 inches; depth, 1 foot 10 inches; number of blades, 20.

She has one return tubular boiler, the length of which is 14 feet 6 inches; breadth of same, 14 feet; height (exclusive of steam chimney) 11 feet 6 inches; and beneath this there are five furnaces—breadth 3 feet 6 inches, and 2 feet 6 inches; length of fire-bars 6 feet. There are 154 tubes above; number below, 4 arches. Internal diameter of tubes above, 3 $\frac{3}{4}$ inches; internal diameter of arches below, same of furnaces; length of tube both above and below, 5 feet 8 inches; diameter of chimney, 4 feet 6 inches; height of same (above grate), 46 feet 3 inches.

The weight of her engine is 210,000 pounds; that of her boiler, with water, is 90,000 pounds; load on safety valve, per square inch, 30 pounds. She possesses a heating surface equal to 2,114 square feet, and will consume $\frac{3}{4}$ of a ton of coal per hour. The maximum revolutions per minute, at above pressure of 30 pounds, are 22; and steam is cut off at one-half stroke; draft forward, 6 feet; draft aft, 6 feet.

The frame is of wrought iron plates, $\frac{1}{2}$ to $\frac{3}{8}$ of an inch in thickness; and they are fastened with $\frac{5}{8}$ -inch rivets between every 2 inches; shape of frame I, 3 inches in depth by $\frac{3}{4}$ of an inch in width, and the same are 18 inches apart at centers. The number of strakes of plate, from keel to gunwale, are 11; the cross floors are 13 in number, and 18 inches in height; they are molded at the throats 3 inches, sided $\frac{3}{4}$ of an inch, with angle iron on top, and shaped I; shape of keel Γ , and dimensions of same, 6 inches by half an inch. Her bunkers are made of iron. The boiler is located in the hold, and is protected from communicating fire by felt and iron; she does not use blowers.

This vessel has three water-tight bulkheads, a commodious promenade deck, and a large saloon cabin; also water wheel guards fore-and-aft. Her ceiling is of pine, $1\frac{1}{2}$ inches thick. She is fitted with one independent (steam) fire and bilge pump, is supplied with one bilge injection, and has valves or cocks to all openings in her bottom.

The builders of the hull and machinery are Harlan, Hollingsworth & Co., of Wilmington, Del. She is owned by Mr. George R. H. Leflie.

THE STEAMER "PENGUIN."

This steamer was built by the Commercial Steamboat Company; and has but recently taken her place on the route between New York city and Providence, R. I. We annex full particulars of hull, together with minute details of her machinery:—Length on deck, from fore-part of stem to after-part of stern-post, above the spar deck, 165 feet; breadth of beam (molded), at midship section above the main wales, 30 feet 8 inches; depth of hold, 10 feet; depth of hold to spar deck, 17 feet 6 inches; draft of water at load line, 12 feet; draft of water below pressure and revolutions, 11 feet 9 inches; length of engine space, 10 feet 8 inches; tonnage, 460. Her frame is made of white oak, chestnut and hachmetac; it is molded 14 by 9 inches, and 11 inches, and 26 inches apart at centers; depth of her keel, 14 inches.

The *Penguin* is fitted with a vibrating lever (Ericsson) engine; diameter of cylinders (two) 48 inches; length of stroke of piston, 2 feet 6 inches; diameter of propeller 11 feet 6 inches; pitch of same, 20 feet; length of blades, 4 feet 6 inches; number of blades, 4.

She has one return tubular boiler, the length of which is 20 feet; breadth of same, 14 feet 3 inches; height (exclusive of steam-chests) 13 feet 6 inches; and beneath this there are three furnaces—breadth 4 feet each; length of fire-bars 7 feet 6 inches. There are 93 tubes, the internal diameter of which is 3 $\frac{3}{4}$ inches; length of same, 15 feet; and they possess a heating surface of 2000 square feet; diameter of chimney, 4 feet 4 inches; height 20 feet 3 inches; the load on safety valve, in pounds, per square inch, is 30; maximum revolutions per minute, at above pressure, 70. The area of immersed section (at load draft of 12 feet) is 323 square feet; the cross floors are molded at throats 14 inches, and sided 9 to 12 inches.

This vessel contains three masts, and is bark-rigged. Her boiler is located on deck; she does not use blowers. She is fitted with one extra size independent (steam) fire and bilge pump, has bilge injections, and valves or cocks to all openings in her bottom.

The builder of the hull is C. H. Mallory, of Mystic, Conn.; the builder of the machinery is C. H. Delamater, of this city.

THE UNITED STATES STEAM SLOOP "NARRAGANSETT."

As much has been written relative to the disparagement of this new vessel, and as our naval authorities have dispatched her to a southern navy-yard, preparatory to making extensive alterations and modifications in her machinery, we regard it as essentially necessary that our readers should possess a correct knowledge of her dimensions, with particulars of her engines and boilers; the details will be found annexed:—Length on deck, from knighthead to taffrail, 208 feet 3 inches; length at the deep load-water line, 186 feet 6 inches; length for tonnage, 188 feet 6 inches; breadth of beam (molded) at midship section, extreme, 31 feet 6 inches; depth of hold, 14 feet 2 inches; depth of hold to lower side of berth-deck beams, 5 feet 11 inches; draft of water at deep load line, 10 feet 3 inches; tonnage (carpenter's measurement), 930.

The *Narragansett* is fitted with two horizontal back-action engines; diameter of cylinder, 48 inches; length of stroke of piston, 2 feet 5 inches; diameter of propeller shaft, 9 $\frac{3}{4}$ inches; diameter of crank shaft, in journals, 10 $\frac{3}{4}$ inches; maximum pressure of steam (in pounds) per square inch, 20; maximum revolutions per minute, at above pressure, 80; weight of engines 80 tons (179,200 lbs.); the length of same, fore-and-aft of ship, is 13 feet 9 inches; breadth, athwart of ship, 15 feet 5 inches; they are supplied with an adjustable slide cut-off; diameter of screw, 9 feet 6 inches; length, 37 $\frac{3}{4}$ inches; pitch of same, 18 feet 2 inches; number of blades, 2.

She has two of D. B. Martin's vertical tubular boilers, the length of which are each 10 feet 2 inches; breadth, 18 feet 6 inches; height of same (exclusive of steam drum), 10 feet 7 inches; height (inclusive), 11 feet 6 inches; and beneath them there are 11 furnaces—breadth, 36 inches; length of grate bars, 6 feet. There are 3,190 brass tubes, the external diameter of which is 2 inches; extreme length of same, 32 inches; extent of grate surface, 200 square feet, and they possess a heating surface of 5,945.7 square feet; diameter of small pipe, 6 feet; height of same, above grates, 50 feet; length of engine and boiler space, 49 feet 3 inches; length of