36TH CONGRESS, 1st Session. } HOUSE OF REPRESENTATIVES. { REPORT No. 464.

FRANKLIN PEALE.

[To accompany Bill S. No. 189.]

APRIL 20, 1860.

Mr. TAPPAN, from the Committee of Claims, made the following

REPORT.

The Committee of Claims, to whom was referred the Senate bill (No. 189) "for the relief of Franklin Peale," have had the same under consideration, and beg leave to report:

That the following report states fully and clearly all the facts of the case, and your committee therefore adopt it as their own, and report back the bill, and recommend its passage:

From 1833 to 1854 the memorialist was employed in the United States mint, at Philadelphia, occupying successively the positions of assistant assayer, melter and refiner, and chief coiner, all places of high trust and responsibility, and which appear to have been filled by Mr. Peale with great credit to himself and advantage to the government. During this period, as clearly appears from the papers in the case, Mr. Peale invented and brought into practical use many valuable improvements in the machinery and processes applicable to the refining and coining the precious metals.

The following are amongst the improvements introduced by Mr. Peale, for which compensation is claimed, viz:

First. The use of common salt in reducing silver from its solution in nitric acid.

John J. Morrell, foreman of the refinery, certifies that when Mr. Peale became melter and refiner, in 1836, in consequence of the necessity of precipitating silver by copper, the only process then in use, it was unhealthy and deleterious, so much so as to make it impossible to remain in the room and breathe the fumes without the risk of life. Soon after Mr. Peale came into the office he introduced improvements in the processes of refining, particularly the precipitation by salt and the recovery of fine silver by zinc and sulphuric acid, by which means the troubles above mentioned were entirely overcome, and much greater facility given to the operation, both in regard to the economy and rapidity, which process still continues to be employed.

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Professor Booth, the present melter and refiner, says: "The improvement which you (Mr. Peale) justly claim, of precipitating the chloride by common salt, instead of by muriatic acid, which the chemist employs on a small scale, was a positive advance in the whole process, in economy of material and apparatus, and in convenience of execution. By means of this improvement I was enabled to employ wooden vessels, instead of the more costly stoneware and porcelain, when the subsequent influx of California gold assimilated our operations to those of an ordinary manufacturing establishment, and demanded precisely such an improvement. By means of this improvement I have recovered a ton of silver in a single day, after its employment in refining gold."

Second. Invention and construction of machinery.—Devising and directing the construction of a power-press for coinage, and the application to it of steam power; the invention and construction of a milling machine, moved by steam power, which is now in use at all the mints; the invention of a laying and piling box, &c.

On this head Mr. Bale, late treasurer of the mint, says: "An official service of several years as treasurer of the mint afforded me frequent opportunities to admire the perfection of the apparatus and machinery of that establishment. My own observations, and the concurrent testimony of my associates, left no doubt on my mind that to [Mr. Peale] the country is mainly indebted for the perfection thus realized. I then learned, and firmly believe, that it was [his] inventive skill that planned and supervised the execution of nearly every part of the machinery which adorns the mint, among which I may refer, as examples, to the steam coining presses, the milling machine, the rolling-mills, the piling board, and the small and large engines."

Mr. Eckert says: "As director of the mint, I had ample opportunity of becoming familiar with his (Mr. Peale's) extraordinary inventive genius, and the facility with which he overcame and surmounted all the mechanical difficulties as they would present themselves, in the practical application of his inventions and improvements. In the substitution of steam instead of hand power to the coining presses alone he has saved thousands upon thousands to the government, and it is but just that he should receive some compensation, especially as he has never availed himself of the patent laws."

Judge Kane, chairman of the assay board of the mint, says: "I have no hesitation in saying that Mr. Peale's improvements in the machinery alone, not to speak of the processes which he introduced, have saved the government hundreds of thousands of dollars."

George Eckfeltd, foreman of the machine shop of the mint, states that Mr. Peale, while he held the office of melter and refiner, drew the plans and directed the construction of the first press used in the mint for coinage by steam; for the engine employed in propelling the coining and milling machines; for the steam milling machine, and laying and piling boxes, all original inventions; and that he furnished designs and drawings and directed the construction of the machinery for the branch mints generally; and, finally, that most of the improvements referred to are entitled to the merit of original inventions.

From these and other statements before the committee, it is clearly apparent that the mechanical skill and genius of Mr. Peale contributed largely to the state of perfection to which the mechanical operations of the United States mint has attained. When he entered the mint, in 1833, its capacity for coining was about $3,000,000 per annum, and when he left it, in 1854, its capacity was equal to $60,000,000 per annum. It was, evidently, no part of Mr. Peale's duty, as melter and refiner, to make the drawings and superintend the construction of the engines and machinery of the mint and its branches, and much less was it any part of that duty to give the government the great benefit of his rare inventive genius, by the application of which the mint of the United States has attained the reputation of being the best appointed mint in the world.

It is believed to be shown that many of the improvements introduced into the machinery of the mint were original inventions of Mr. Peale, and as such subject to be patented as his private property. But as these inventions were mainly useful in mint operations, his sense of honor did not permit him to appropriate to his exclusive private emolument the improvements required for the efficient operations of the mint, of which he was an officer, and with the honor and reputation of which he felt himself identified.

But as he has now retired from office, and is in need of the fruits of his labors, now enjoyed by the United States, for the support of his declining years, the committee are of opinion that it would not become a liberal and enlightened government to withhold a just and reasonable compensation for such long-continued, valuable, and meritorious services.

Mr. Peale submits the following estimate of the value of his inventions and services, for which no compensation has been received, viz:

For improvements and inventions in refining	$5,000
Apparatus in saving and concentrating sweep	5,000
Coining presses, mint machinery, &c	15,000
Services, not official, in making mint machinery and apparatus for branch mints	2,500
Use of the above processes and machines at the branches and offices	2,500
Total	30,000

In submitting this estimate, Mr. Peale says: "This estimate is made under the acknowledged conviction that it is entirely optional with the government to withhold any recompense, and that no claim could be established by law. Nevertheless, it is confidently affirmed that if I had, according to present usage, protected myself by securing the benefit the laws of the United States would have conferred, I should have demanded from four to ten times the amount, according to the circumstances and the exigencies of the particular case and time."

The memorial and accompanying "memorandum" of Mr. Peale, which are believed to present a fair and truthful statement of the grounds of the claim, are hereto annexed.

Believing that the services of the memorialist, beyond the proper sphere of his official duties, have been of essential and paramount value to the United States, the committee think that he is equitably entitled to some remuneration. But in view of the fact that the improvements were carried out and perfected at the expense of the government, they are not prepared to recommend the allowance of the full amount of their value, as estimated by the claimant and other officers of the mint. They have, therefore, come to the conclusion to report a bill, allowing the sum of $10,000 as a full compensation to the memorialist for all his inventions and extra official services in connection with the United States mint and its branches.

To the Senate and House of Representatives of the United States in Congress assembled:

The memorial of the undersigned, Franklin Peale, of the city of Philadelphia, respectfully showeth:

That from the year 1833 to the close of 1854 he was engaged in the service of the United States, in the various capacities of assistant assayer, melter and refiner, and chief coiner of the mint.

That during the time of such official relation to the government he was the author of many original inventions and improvements in the machinery and processes applicable to the refining and coining of the precious metals, for a detailed statement whereof he refers to the memorandum hereunto annexed, which he asks to have received as a part of this memorial.

That these inventions and improvements were of such novelty and utility that he could have protected himself in the ownership thereof under the patent laws, but, in view of his official relations, he declined to do so, and consented to the gratuitous use thereof in the mint and branch mints of the United States. And although a change in his official relations has since taken place, which obviates the objections which might otherwise have been taken to his availing himself of his rights of patent, yet the lapse of time and the public use of his inventions and improvements have, as he is advised, debarred him from adopting that course.

Your memorialist avers that these inventions and improvements, and other extra official services performed by him, were of great pecuniary value to the Government, both directly and indirectly; that he has never received any compensation therefor, and that such compensation is justly due.

Wherefore your memorialist respectfully prays that an appropriation be made by your honorable body, in such sum as you may deem adequate for his remuneration, for the services thus gratuitously rendered to the government; such remuneration to be accepted by him in full for all further claims against the government or the public by reason of the inventions, improvements, or services in question.

And your memorialist will ever pray, &c.

FRANKLIN PEALE.

Memorandum of the services of Franklin Peale, late chief coiner of the mint of the United States, which he deems extra official, of which the government has hitherto and now enjoys the benefit, and for which he has rceived no compensation.

Mr. Peale was employed on a special mission to Europe "connected with the affairs of the mint," with the title of assistant assayer. His instructions were dated May, 1833. He returned from his mission in 1835, and reported in full in writing, accompanied by drawings, on all the numerous and important matters that were deputed to him, and much more, and subsequently aided in introducing into practice all and every art and process deemed of value in the various departments of the mint. For these services no further compensation was ever or is now asked or expected. But other services, not connected with the foregoing, extra official in character, and for which he has received no compensation, were subsequently rendered by him, and will be as briefly as possible stated, as follows:

Whilst melter and refiner of the mint he introduced the new and most important process, still practiced in the mint and its branches, &c., of reducing silver from its solution in nitric acid by precipitation with chloride of sodium and its recovery by zinc and sulphuric acid.

The general principles of this process were communicated to him and practiced in the refinery of P. N. Johnson, of London; but the use of salt was proposed by Mr. Peale, and employed with great advantage in economy and otherwise over muriatic acid, which had been previously employed.

This process was entirely unknown and not included in the instructions above referred to. It was the acquisition of private and unofficial friendly relations, and partly original with Mr. Peale. It possessed the advantages of freedom from noxious vapors, and the return of pure silver, so useful in mint operations, over the famed sulphuric acid process, for a knowledge of which a fee of 50,000 francs was asked by the principal refiner of Paris, and for which an appropriation of 10,000 francs was subequently made and transmitted to Mr. Peale, but not used, and therefore saved to the government.

A full description, with illustrative drawings of the sulphuric acid process, are embodied in the report of Mr Peale.

The zinc process, so comparatively valued, and put in practice by Mr. Peale in 1835–'36, continues still in use in the various refineries of the mint and its branches, &c., an undoubted proof of its applicability and value.

Whilst melter and refiner Mr. Peale devised and directed the construction of a power-press for coinage, and applied steam to its propulsion by means of an engine constructed by him, which engine remains to this day a model of perfection of workmanship and efficiency.

The press referred to has been improved and perfected during the long series of years that have since elapsed, until its efficiency is such as to place the presses of the mints of the United States far above those of the most advanced governments of the world, and they are now in

use in all the establishments of the Union, and in other or others in South America.

Patents for the various improvements in the operative parts and general design would have secured to the inventor the benefit of his labors; no such protection has ever been sought, and the parent mint, as well as all others, have the sole benefit.

It may not be improper at this point to state that the buildings, machinery, and apparatus of the branch mints at New Orleans, Charlotte, and Dahlonega, have been constructed and put in operation, in a great measure, under the advice or direction of Mr. Peale, although not embraced in any of the duties prescribed by law as appertaining to the chief coiner.

Whilst melter and refiner Mr. Peale invented a milling machine, moved by steam-power, in place of the very imperfect and inefficient hand machines, the only ones previously known in the mint; which machines he improved and perfected, until their efficiency is now such as to remove all impediment to the most rapid execution of this previously tedious process—an idea of which may be given by the statement that eight hundred pieces of the smaller denomination of coins per minute do not by any means limit the capacity of one machine.

For the purpose of meeting the necessity of rapid supply to the above-mentioned machines, and for other purposes very important in the manipulation of coin during its preparation, Mr. Peale invented the laying or piling box, a machine by means of which, in almost momentary time, planchets and coins may be laid in roleaux or piles, affording great facility for the above purposes, and producing in its use an effect more like that of magic than an ordinary one of simple agitation.

The Commissioner of Patents, soon after its invention, on witnessing the operation of this machine, urged the inventor to patent it both in this country and Europe; but, in accordance with the principles which have always governed his action whilst in office, he refrained from so doing, has never received any pecuniary benefit from his inventions, and has in consequence lost the protection that the law of patents would have insured to him.

At a very early period Mr. Peale became aware of the imperfect adaptation of the annealing furnaces of the mint, and from his knowledge of the forms of those used in the principal mints of Europe, and unsatisfactory trials of the best, he was induced to invent and erect others of entirely original forms, which have proved eminently successful, and are now in use in the various establishments of the government.

The counting board, in its primitive form, was patented by the administrator of the late R. Tyler, of the New Orleans branch, and the right purchased for use by the mint. The above-named coiner was familiar with the original counting machine of Mr. Peale, a model of which is now, or was lately, preserved in the mint, made many years previously, which embraces the general principles of the machine.

The counting board was subsequently, and to a very marked extent, improved by Mr. Peale, and all the fixtures in connexion with it are

original with him. The facility and certainty with which it operates have been of incalculable value to the mint. It is only necessary to refer to that period when the passage of the "silver bill" caused a coinage of the smaller denominations of silver money, entirely unprecedented in mint affairs, the whole coinage amounting in 1853 to sixty-nine and three-fourths millions of pieces. Nearly the whole labor of counting this enormous number was performed by two or three females and one man; without the intervention of the counting table, it would have required the labor of thirty-five or forty experienced counters to have met the exigencies of the service; in one day of twenty-two out of twenty-four consecutive hours eight hundred and fourteen thousand pieces were coined and counted, giving a striking illustration of the truth of the above statement.

Without the aid of the fixtures under notice, the enormous labor of the period referred to could not have been performed without a correspondently increased manual force, thereby increasing the expense and liability to error, and augmenting in an equal ratio the liability to another and greater evil, too obvious to need remark.

The balances for weighing the precious metals and other mint operations have received the devoted attention of Mr. Peale from the period of his first connexion with the mint; those of the best construction then known were unsatisfactory, and it was after years of laborious experience and careful study that he was enabled to perfect them so as to give uniform and certain, as well as delicate results to the weighings, upon the integrity of which all the value of mint operations depends, both as it regards its interior relations and those to the community at large. His efforts in this department have proved that the operations on heavy masses in weight, and of course in value, can and have been made more accurately than when divided into smaller amounts—a fact that cannot be overestimated when such enormous values are under manipulation. They amounted in the coining department alone, in one year, to ninety-four millions of dollars, in gold only; in the weighing of which, economy of labor was all important, but to which may be added increased security from error.

The balances of the mint thus perfected were not only entirely satisfactory in use, but have served as models of construction; although original in design, and peculiar in detail, their use has been freely given to the mint and the public, a full description having been published by Mr. Peale in the July number of the Journal of the Franklin Institute of the State of Pennsylvania for the year 1847.

The exigency caused by the influx of gold from California was required to be met; for this purpose Mr. Peale designed and executed, under his superintendence, a steam-engine and rolling-mill of peculiar construction, adapted to their specific objects. The rolling-mill being new in design, dispensing entirely with the expensive gearing usually connected with them, and furnished with wheel work and dial plates for the regulation of the slips of rolled metal, giving greatly increased facility, as well as accuracy, to this important operation.

The engine possesses novelties of form specially adapted to the object of its construction, and has been furnished with a "throttle-valve" of original form, devised by Mr. Peale to control its speed during the

irregularities inherent in the rolling operations—a desideratum that was never before accomplished, although the best mechanicians have long made it their study, and numerous patents have been granted by the office for arrangements whose objects are those above stated.

For the purpose of reducing to its minimum the inevitable "*wastage*" attendant on the working of the precious metals, Mr. Peale invented an apparatus for filtering and recovering the minute particles usually lost by floating away with the water and other media employed in the washing, cleaning, and whitening of the coin during preparation, and for the purpose of concentrating and recovering the precious metals from the "*sweep*" of the establishment.

No exact value estimate can be made of this apparatus. It is sufficient to state, as a striking and significant fact, that a trial of it, in an incomplete state, in December, 1851, gave a saving of $271 62 worth of metal, during a period of ten months, from the washing of the hands of the female "adjusters" of coin.

The operations of the year 1852 amounted to $91,297,460 in the chief coiner's department, the legal limit of "*wastage*" on which was $136,946 19, the actual wastage only $7,246 14. This extremely small ratio of loss may very justly, in a great measure, be attributed to the use of the apparatus referred to, and is cited in evidence of its value to the institution.

FRANKLIN PEALE.

CITY OF PHILADELPHIA, *ss:*

Sworn and subscribed before me April 22, 1856.

JOHN THOMPSON, *Alderman.*