

IN SENATE OF THE UNITED STATES.

APRIL 28, 1842.

Ordered to be printed.—To accompany bill S. 225.

Mr. CHOATE made the following

REPORT :

*The Committee on Naval Affairs, to whom was referred a bill authorizing the Secretary of the Navy to purchase for the United States, the right to use Babbitt's anti-attrition metal, present the following report :*

The facts upon which the committee have decided to recommend the passage of the bill are these : Babbitt has letters patent for a mode of applying an anti-attrition metal to exposed parts of machinery and confining the same thereto. The improvement thus patented consists in the substitution of a soft unctuous metal, for the hard brass or composition heretofore used to sustain the journals and other moving parts of machines, which soft metal is enclosed in a new and improved manner, in ribs or ledges of harder metal, to prevent its being spread by the weight of the shafting or by pressure.

In the judgment of the committee, the improvement is one which the Government ought to possess the right to use. It secures a great diminution of friction, and a consequent saving of fuel, and saves one half or more than one half of the oil heretofore necessary ; lessens the cost of the original construction of the brasses which receive the journals—since they may be made much lighter than before ; lessens the expense of repairs, because the soft metal wears longer than the hard, and the ribs and ledges may be relined at small cost ; communicates increased efficiency to the engines by the diminution of friction ; and prevents the heating of the journals, crank-pins, and other moving parts of the machinery.

The invention has been tested by a satisfactory series of experiments in different places, on different kinds of machinery, and by different persons of skill and judgment ; and seems to be universally regarded, so far as it is known, as an improvement of great practical utility. The committee refer to, and make part of their report, the letters of S. V. Merrick, of 15th April, 1842, of J. Ericsson, of the 2d April, 1842, of George C. Read, of 14th April, 1842, to the Secretary of the Navy ; of Chas. W. Copeland, of the 5th April, 1842, to Com. L. Warrington ; of the Secretary of the Navy, of 12th April, 1842, to Hon. R. Williams ; and of Charles Howard, of the 15th April, 1842, to Hon. R. Williams. The Franklin Institute, and other societies for the promotion of practical science, concur in the opinions expressed in those letters ; and some one of them or more, has bestowed a gold medal upon the inventor.

The committee are, therefore, of opinion, that the Secretary of the Navy,  
Thomas Allen, print.

as a measure of true economy, should be authorized to purchase the right to use this improvement, and accordingly report the bill which was committed to them.

WASHINGTON, *April 15, 1842.*

SIR: Referring to a conversation with you this morning upon the merits of "Babbitt's anti-attribution metal," I beg leave to submit, that Mr. Babbitt's invention consists of substituting a soft unctuous metal for the hard brass or composition heretofore used to sustain the journals and other moving parts of machinery—which soft metal is enclosed in ribs or ledges of harder metal, to prevent its being spread by the weight of the shafting or pressure.

This metal has been long enough in use fully to test its merits, and I have no hesitation in saying, that it is one of the most valuable improvements, in the construction of moving machinery, that has come to my notice.

The effects produced are—

1st. A great diminution of friction.

2d. A saving of oil to the extent of one half or more.

3d. An economy in the original construction, as the brasses which receive the journals may be made much lighter when lined, than when they come in direct contact with the hard metal.

4th. A saving in repairs, as the soft metal will wear longer than the hard, and they may be relined at small cost.

5th. A saving of fuel consequent upon a reduction of friction.

My opinion is that the introduction of this metal into the Government steamers will be of essential service.

I herewith transmit a copy of a letter received from Captain J. Erricsson, the engineer employed by Captain Stockton to superintend the machinery of the "Princeton," United States war steamer, which gives his view of the subject. Long experience in the use and construction of machinery entitles his opinion to great weight.

I am, with much respect,

S. V. MERRICK.

HON. ABEL P. UPSHUR,  
*Secretary of the Navy.*

NEW YORK, *April 2, 1842.*

DEAR SIR: Your letter of 31st March, has come to hand, and I regret to learn that there are any difficulties in the way of employing Mr. Babbitt's anti-attribution metal in the engine now constructing for the "Princeton." In fact we have proceeded so far that we can not now dispense with it.

Respecting the general utility of Mr. Babbitt's metal, I can safely assert, that there is not, in a strictly practical point of view, a greater desideratum in mechanics, and the advantages which will be derived from its employment in marine steam machinery are of paramount importance. The complete prevention of the heating of the main journals and crank pins, effected by the interposition of the anti-attribution metal, is an advantage in itself suf-

ficient to warrant its employment. I once happened to be on board a steamer when, close on a lee shore, the crank pin got so hot, that the engine had to be stopped at the imminent risk of touching ground. Again, in a dollar and cent point of view, the anti-attribution metal recommends itself strongly, as it will quite obviate the necessity of renewing the bearing brasses. The cost of supplying a new coating or lining of the soft metal being very trifling. Another important saving will be effected by the greatly diminished consumption of oil, consequent on its employment.

To these advantages may be added an increased duty of the engines, owing to diminished friction; some saving of fuel must result from this. Again, and lastly, the important fact must not be lost sight of, that an engine, in which every bearing is provided with the anti-attribution metal, requires very little attention from the engineer, while its performance will be uniformly effective.

Yours truly,

J. ERRICSSON.

Messrs. MERRICK & TOWNE.

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COMMANDANT'S OFFICE, U. S. NAVY YARD,  
*Philadelphia, April 14, 1842.*

SIR: I have the honor to acknowledge the receipt of your letter of the 12th instant, and being desired to make an early reply, I hasten to give you all the information I have been able to obtain in the course of the day respecting Babbitt's anti-attribution metal.

Mr. J. Henry Towne, who knows as much upon this subject as any other person in this city, and who, I believe, was on the committee appointed by the Franklin Institute, gives the following information in answer to the queries contained in your letter:

"*Utility.*—Experience has proved the utility of Mr. Babbitt's application of anti-attribution metal. It has been used with great success on locomotives and steamboat engines, in parts which are exposed to great stress, and where the ordinary composition is very rapidly abraded. Its advantages are found to be, 1st, increased durability; 2d, diminished friction; and 3d, reduced consumption of oil: to which might be added the ease and cheapness of renewing a bearing when worn out.

"A committee of the Franklin Institute in this city, after a careful examination of the merits of this invention, made a highly favorable report, and it is thought by those conversant with such matters, to be an improvement in machinery, of great practical utility.

"*Cost.*—The materials of which the anti-attribution metal is made are not more costly than the materials in common use for the same purpose. Mr. Babbitt's agents sell it at the same price as the ordinary composition, and it is fair to infer that they have a handsome profit.

"*Amount required.*—This can not well be estimated. It would be of comparatively small amount. Mr. Babbitt's patent is for the *method of confining* the metal, and with the privilege to use the patent, it would not be necessary to provide a stock in advance, because the materials could at any time be purchased, and the mixture made when required for use.

"*Value of the right to United States*—would depend upon the extent of its application, but we cannot form a definite opinion on this point."

If further information should be required, Mr. Merrick and Mr. Copeland are now in Washington, and can furnish all that is desired.

I have the honor to be, sir, very respectfully, your obedient servant,  
GEO. C. READ.

Hon. A. P. UPSHUR,  
*Secretary of the Navy, Washington, D. C.*

WASHINGTON, April 5, 1842.

SIR: A new metal for the boxes of journals has been recently introduced, known as Babbit's patent metal. The patentee Mr. Babbit is now in Washington.

I would respectfully suggest that some arrangement be made with him for the use of his metal on board the steamers about being built. The metal has been thoroughly tested in the navy-yards at Washington and Boston, and also on board the steamer Fulton.

I remain, sir, very respectfully, &c.,

CHAS. W. COPELAND,  
*Steam Engineer, U. S. N.*

Com. L. WARRINGTON,  
*President of the Board of Navy Commissioners.*

NAVY DEPARTMENT, April 12, 1842.

SIR: In reply to your letter of this morning, I have the honor to state that I have the most satisfactory testimonials in favor of Babbit's anti-attrition metal. I am not, however, prepared to say what appropriation will probably be necessary. I will immediately write to Philadelphia, where the metal has been used, for full information upon the subject, which I will communicate to you as soon as I receive it.

I am, respectfully, your obedient servant,

A. P. UPSHUR.

Hon. R. WILLIAMS, *Senate.*

OFFICE BALTIMORE AND SUSQUEHANNA RAILROAD Co.,  
Baltimore, April 15, 1842.

SIR: At the request of Mr. J. Babbit, of Boston, I take the liberty of giving you a statement in reference to his invention of a method of so constructing the bearings of steam and other machinery, as to interpose a soft metallic substance between the iron and brass which have heretofore generally been placed in contact with each other. Although I do not flatter myself that my opinion will be considered as entitled to any weight, yet, having been requested to make it known to you, I feel bound to do so, because I am satisfied that in the machinery which the Government may have occasion for, and especially in that which is to be applied to war-steamers, it is of high national importance that such machinery should be as perfect as possible; and because I am convinced that, if Mr. Babbit's in-



vention is not made use of, a steam-engine can not be made to operate with any-thing like the same efficiency that it would possess if constructed with his improvement.

After making, for some time, trials of his invention, which proved entirely satisfactory, I purchased of Mr. Babbitt last winter, for the sum of \$1,050, the right to use it on the machinery of the Baltimore and Susquehanna Railroad Company, including their locomotives and cars which run between Baltimore and Wrightsville, Pennsylvania, a distance of 70 miles. The price was considered a high one, for the comparatively limited extent to which the company would have an opportunity of making use of the patent right; but we were satisfied that it was for our interest to avail ourselves of the invention. I can now say, that, having better tested its value by a more extensive application of it, I think that the company would be very unwise to relinquish their right to use it, for a much higher consideration than that which was given for it; and I have no doubt, that if such a proposition were to be made to the company, it would without hesitation be declined.

The great merits of the invention are that it prevents the heating, and consequent cutting and destruction of the *bearings*, which are so numerous in a steam engine, and on the perfection of which, depends the value of the engine; while, at the same time, there is a very great saving of oil, the expenditure for which forms a material item in the cost of working a large engine. In the locomotives of the company, I find the saving to be fully one half of the quantity which was required before Mr. Babbitt's invention was applied to them. Some of these locomotives having run several thousand miles, I can also say that this invention makes the machinery much more durable, so that while the effective power of the machine is increased, the cost of repairs is diminished.

It may be proper to add that I neither have now, nor have I had at any time, any interest in, or any connexion with, Mr. Babbitt's patent-right; or any acquaintance with him, other than that which has grown out of my having purchased from him, as I have stated, the right to use his invention. My only motives for addressing you are, a conviction of the importance to the public of an adoption of his plan by the General Government, and a desire that the inventor of a truly useful improvement shall receive that reward for his ingenuity which I think he richly deserves. The first of these reasons you will, I hope, sir, consider as a sufficient apology for my troubling you with this communication.

I have the honor to be, respectfully, your obedient servant,

CHARLES HOWARD,

*President Balt. and Susq. Railroad Co.*

Hon. R. WILLIAMS,

*Committee Naval Affairs, Senate U. S.*

