

## Correspondence.

## Turbine Propellers.

To the Editor of the SCIENTIFIC AMERICAN:

Having followed through the columns of the SCIENTIFIC AMERICAN the development of the marine steam turbine, and having read with great interest the article entitled "Turbine Propellers" in the SCIENTIFIC AMERICAN SUPPLEMENT of August 8, 1908, I fail to see the advantage of placing the low-pressure turbine propellers in the wake of the high-pressure propellers, as in the "Lusitania" and "Mauretania."

When two force pumps are connected in series, the discharge of the first being the suction of the second, the latter must work twice as fast to be of the same efficiency. When two paddle wheels are placed one ahead of the other, as in the steamer "Bessemer" in the article above referred to, the aftermost wheel should either revolve faster or be of wider tread, because, as therein stated, the second wheel is called upon to give an added impetus to water already set in motion by the first. For the same reason, when two screw propellers are placed tandem on one shaft, the hindmost one is at a great disadvantage in rotating at the same speed as the foremost, unless it be of larger diameter. The circle made by its blade tips should be twice the area of the similar circle made by the blade tips of its forward shaft-mate.

In the original Parsons "Turbinia," the high-pressure shaft was in the center and farthest aft, while the intermediate and low-pressure were on either side and forward of the central one. Thus the slower rotating propellers took hold of stationary water, while the faster-turning high-pressure propellers gave the added impetus to water already in motion.

In the "Lusitania" the high-pressure propellers are forward, and the low-pressure ones aft; so that the high-pressure shafts are doing nearly all the work, while the slower-turning low-pressure shafts in their wake are at a great disadvantage. If their positions were reversed, the high-pressure shafts aft, and the low-pressures forward, the load would be more evenly distributed, and greater efficiency and speed would result.

H. B. NEWTON.

Santa Rosa, Cal.

## An Important Patent Law.

To the Editor of the SCIENTIFIC AMERICAN:

One of the most important pieces of legislation passed in years is the amendment to the Legislative Appropriation Bill. (Public No. 130, H. R. 16,682, approved May 22, 1908.) This amendment is as follows:

"For rent of rooms in the Union Building for Patent Office model exhibit during so much of the fiscal year nineteen hundred and nine as may be necessary, and for necessary expenses of removal and storage of said exhibit, nineteen thousand five hundred dollars. Provided, that a commission, which is hereby created, to consist of the Secretary of the Interior, the Commissioner of Patents, and the Secretary of the Smithsonian Institution, shall determine which of the models of the Patent Office may be of possible benefit to patentees or of historical value, such models thus selected to be cared for in the new National Museum building. The remainder of said models shall before January first, nineteen hundred and nine, be disposed of by sale, gift, or otherwise as the Commissioner of Patents, with the approval of the Secretary of the Interior, shall determine."

The above Act of Congress, appointing the above-named model commission, clearly specifies that said commission "shall determine which of the models of the Patent Office may be of possible benefit to patentees and of historical value." The Act does not say that the members of the Model Commission shall merely express their opinions as to the "possible benefit to patentees or the historical value" of the Patent Office models; nor that some one else for the Commission shall determine the status of the models; nor that the Commissioner of Patents shall dispose of or prepare to dispose of, or that anyone else for the Commissioner shall dispose of or prepare to dispose of any of the Patent Office models, before the Model Commission have "determined the possible benefit to patentees or the historical value" of the models; but the Act does limit the power of the Commissioner of Patents by the action of the Model Commission, and does fix the terms on which the commission's action shall be based.

There are 157,000 models in the Patent Office collection. These models form an integral part of the patent system. They can no more be destroyed than the files of the Patent Office can be destroyed. These models cover the history of the main industrial arts of the last century. They directly relate to nearly every field of industry, and include all kinds of mechanical movements: cams, gears, levers, brakes, clutches, bearings, wheels, motors, housings, joints, cutters, and devices and machines that have never been properly studied nor adequately described.

Practically all of the inventions disclosed by these models are now public property by reason of the expiration of the patent franchise. Commissioner Moore

is authority for the statement that many of the Patent Office drawings do not disclose the inventions they cover. But, he says, the "models always do." Destroy the models, and you destroy the means by which the public can secure knowledge of their property; destroy the models, and a precedent is at once established for destroying other records. What inventor will grant anyone the right to annul his rights, or weaken the value of his patent properties? The patent records establish priority, and on priority all patents are based. But why should any records be destroyed, why should dangerous uncertainties be placed around existing patent rights, and the status of the Patent Office lowered in the eyes of the world? Who is to benefit by the destruction of any model, however worthless it may be of itself? Why this haste to destroy records of human initiative that have never cost the nation a cent, and now cost the inventors only fifteen cents a year on the average? Surely, no one desires to establish an irregular standard of fixing priority. The inventors must meet the question full in the face.

At the present time there is a surplus of nearly \$7,000,000 to the credit of the inventors. Instead of Congress formulating measures to develop the patent system and to encourage the production of invention, instead of Congress preparing plans by which the inventors' money may be spent for the inventors' and the nation's good, it smuggles an amendment through to seriously disable the patent system, and which can but seriously discourage every honest inventor. The manner in which the amendment was prepared, the manner in which it was passed, all indicate a desire on the part of somebody to destroy the models regardless of their value. But even if all the models deserved destruction because of their intrinsic worthlessness, they deserve conservation because of their extrinsic worthfulness.

When one compares the administration of the Patent Office with the administration of the Department of Agriculture; when one compares the Patent Office building, with its complete lack of fireproof facilities and file vaults with the magnificent Library of Congress, the evidence of Congressional inattention and consistent neglect accumulates. The time has come when the inventors should vigorously confront Congress with their grievances, and its members convinced that the inventor is not now treated justly by the government, or the Patent Office provided with proper facilities for carrying on its work, or invention properly encouraged by the national government.

The Patent Office has repeatedly solicited the active interest of the inventors, and the appointment of the Model Commission presents a magnificent opportunity for the inventors to express in definite and useful terms their needs and grievances.

Before the Model Commission can intelligently "determine the possible benefit to patentees or the historical value of the patent models," the commission as a commission must freely consult with the patentees and the historical societies. Before they can intelligently consult with the patentees or the historical societies, the commission will be compelled to catalogue, classify, and describe the models, so they and the inventors may know what they are discussing. This classification would be incomplete and of little use to the mass of the people or to the commission if it did not comprehend the growth of civilization in all of its many phases: the climatic, the geological, geographical, biological, racial, age, political, tribal, communal, agricultural, industrial, intellectual, religious, economic, consumptive, distributive, democratic, despotic, military, creative, scientific, mechanical, educational, and æsthetic.

If the Model Commission will consistently and fairly attempt to determine the inventive and historical value of the Patent Office models, it will bring about a profound and wholesome discussion of present inventive needs that will do much to restore lost inventive leadership to America, and definitely help to secure leadership in discovery for this country.

There have been two fires in the history of the Patent Office, and no adequate provision has been made against a third, which is likely to occur at any time; and if it did occur, it is more than likely that the Patent Office would be a mass of ashes a few hours after the fire got a good headway. After the first fire, which occurred on December 15, 1836, Henry L. Ellsworth, then Commissioner of Patents, said: "Interest, sympathy, and patriotism will unite to repair the loss. Justice demands all the reparation that can be made. Government has received from industry and ingenuity their choicest tributes. She confided the valuable repository to a place of little security. I have mourned in common with others at the ruin, but candor compels me to say that without much help I can do nothing to repair the loss. I leave, therefore, with the National Legislature the opportunities of those I am compelled to hear, but which I have not the power to relieve." The Hon. John Ruggles, chairman of the Senate committee having charge of the erection of a new Patent Office building, in his report

to the twenty-fourth Congress, second session, said: "In examining the subject referred to them, the committee have been deeply impressed with the loss the country has sustained in the destruction by fire of the records, original drawings, models, etc., belonging to the Patent Office. They not only embrace the whole history of American invention for nearly a half of a century, but were the muniments of property of vast amounts, secured by law to a great number of individuals, both citizens and foreigners, the protection of which must now become seriously difficult and precarious. Everything belonging to the office was destroyed, nothing was saved. There were 168 large folio volumes of records and twenty-six large portfolios containing nine thousand drawings, many of which were beautifully executed and very valuable; there were also all the original descriptions and specifications of inventions, in all about ten thousand, besides caveats and many other valuable papers. The Patent Office also contained the largest and most interesting collection of models in the world, there being about seven thousand."

The second fire in the Patent Office occurred in 1877, when about 87,000 models were destroyed, and a large number of important records. A few of the models that were generally regarded as of great importance were restored, and most of the records were replaced, so far as was possible. The Commissioner of Patents in his report of the fire (Official Gazette, October 9, 1877) remarks: "If the above statement (the one of Senator Ruggles) was true in 1836, what might be said of the model room of the present time? Seven thousand models comprised what was then called the grandest collection in the world. If such solicitude was felt for its welfare when the patent system was just gaining a foothold, what could be said of it at the present day? And how varied are the interests affected, and what multitudes are thrilled at the destruction which has overtaken so large a portion of these representatives of American skill and industry."

In his report of 1878 Commissioner Ellis Spear said: "The mind cannot grasp, no data can be collected to state, the vast results of American invention since 1836. . . . The records of the Patent Office, as well as the history of our manufactures, show the immense labors and achievements of inventors during the last half century. But the end in no department is not yet reached. The fields of invention are exhaustless, and under protection wisely given, the future will be richer in inventions than the past."

Lester Ward in his magnificent work, "The Psychic Forces of Civilization," says: "Civilization has really advanced in exact proportion to the extent to which society was prepared to employ the arts brought out by the inventive genius of a small proportion of its members." (See page 191.)

What a singular contrast between 1836, 1877, and 1908! Instead of an increase in public appreciation, we find evidences of legislative antagonism to invention, for no matter how beneficial the Model Amendment may be made, the fact remains that it was conceived in a spirit of indifference and antagonism. Let the commission open the question for discussion and let the inventors vigorously discuss the question.

Washington, D. C.

JOSEPH J. O'BRIEN.

## The Current Supplement.

James N. Hatch in the current SUPPLEMENT, No. 1711, traces the development of the electric railway, and shows to what it has developed from insignificant beginnings. Mr. T. Kennard Thomson concludes his excellent presentation of pneumatic caissons, in which he shows the exact manner in which they are employed in engineering construction. Recently there was inaugurated what in the eyes of the Mohammedan faith ranks as the most important railroad in the world, that extending from the city of Damascus in Palestine through the wild mountain ranges and expanses of the Arabian desert to the sacred cities of Medina and Mecca. The English correspondent of the SCIENTIFIC AMERICAN describes this road in detail. Dr. D. T. MacDougal contributes an excellent article on the seasonable activities of plants. Dr. Charles Denison exhibited at the International Congress on Tuberculosis a model of a house constructed of hollow cement blocks, with cement roof tiles or shingles, and reinforced concrete floors. The houses are described and illustrated. Dr. Ludwig Günther writes popularly and instructively on ultra-violet rays. J. E. Gore presents some astronomical facts and fallacies which he has collected from various sources, and which are not usually mentioned in books on astronomy. The usual engineering notes, electrical notes, and trade notes and formulæ are published.

The best preventive for spontaneous ignition of coal, says Compressed Air, is a small cylinder containing compressed carbon dioxide, fitted with a fuse plug melting at 200 deg. F. A cylinder one foot long and 3 inches in diameter is sufficient to take care of 8 tons of coal.